

Project Zero and Its Impact

AN ENIGMATICALLY NAMED
LITTLE THINK TANK THAT
ENDURED AND GREW



By Ellen Winner

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ellen.winner@bc.edu

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Dots indicate nations where one or more Project Zero frameworks have been adopted.

FRONTISPIECE

Documenting the history of PZ is so much more than preserving the past. It's a testament to the enduring power of ideas, relationships, and evolving purpose. It offers both inspiration and perspective for those striving to create something meaningful and have a lasting impact.

JIE-QI CHEN

a long-time member of the Project Zero community, and co-developer of Spectrum, a project discussed in these pages

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EXECUTIVE SUMMARY

Much as educators in the latter years of the twentieth century cited Dewey and Montessori as influences, many schools, educators, and networks in the early years of the 21st century cite the work of Project Zero (PZ). PZ does not usually create curricula. Rather, this organization—housed since 1967 at the Harvard Graduate School of Education—creates broad “frameworks” along with usable tools that educators can draw on, adapting them to their own circumstances.

By framework, I mean a research-informed, cohesive structure to support teaching with certain goals in mind, (e.g., goals such as creating a culture of thinking, expanding awareness of other cultures, learning to think like an artist, and so on). PZ frameworks are *not* curricula with specific content (like a social studies curriculum). Instead, they are overall structures with tools that teachers can use. PZ frameworks are flexible enough that teachers can adapt them to their own circumstances.

This report documents educator impact, including educators’ beliefs about how learning in their classrooms has changed as a result of PZ’s influence. It is vital for any education research organization to track the effects of its ideas on educational practice in order to discern which ideas take root (and which do not) and the conditions needed for change. This means finding out how teachers have been affected and how the ideas have been implemented (including how they have been interpreted, adapted, and further developed). While PZ researchers have been able to gain an understanding of the impact of their work while it is being carried out, this is the first investigation to look at the long-term impact of all the major PZ educational frameworks thus far.

I set out to write this report to answer one broad question: What impacts have our educational frameworks had on teachers’ ideas and practices? More specifically:

- Who and where are the educators who have adopted PZ approaches?
- How have PZ ideas affected these educators’ understanding of teaching and learning?
- In what kinds of educational sites or organizations have PZ ideas taken root?
- Where have our ideas lasted after professional development from PZ has ceased?
- What are the ideal conditions that allow changes to last after PZ has left?

Over the course of 227 interviews with educators all over the world, carried out over a three-year period, I learned about how Project Zero has inspired schools to transform themselves from traditional models of education, based heavily on rote learning and scripted teaching, into places where many of the following characteristics are foregrounded:

- Learning is active – occurring via exploration and reflection.
- Learning is collaborative.
- Learning is project-based and interdisciplinary.
- Learning is personalized because students learn in different ways.
- Learning connects to real-world issues.
- Assessment of learning is formative and hence a tool for learning.

- Teachers collaborate and form informal professional learning communities.

My primary evidence for documenting PZ’s impact on educators is in-depth qualitative interviews with educators all over the world. In each chapter, before presenting evidence of impact of a particular framework, I describe the framework’s core ideas. As a result, and importantly, this report also serves as a comprehensive overview of the major educational frameworks PZ developed.

Because of its interview-based methodology, this report does not, indeed could not, include *direct* measures of student impact, although it does include reports from teachers on that theme. In Chapter 5, I discuss what a study of student impact might look like. I stress that, logically, one first needs to demonstrate that teachers began to teach in a new way after working with PZ. One should look for student impact only once teacher impact has been established.

After an introduction to PZ and an overview of the methods used in this report, I begin with three foundational areas of PZ research, each of which has spawned multiple frameworks: (1) thinking and understanding; (2) the arts; and (3) and ethics. I then review eight additional areas, many of which grow out of the three foundational areas. In all areas reviewed, I found impressive evidence of impact: teachers changed their understanding of good teaching, impactful learning, and accordingly changed their practices. In a phrase, they experienced one or more “mind-set” changes.

Of course, the frameworks from PZ and other frameworks like them are not “magic wands” that transform education easily in almost any setting. Certain conditions were revealed as crucial for achieving sustainable impact. Leadership is critical: school leaders—designated or self-selected—must believe in the changes to be implemented and need to hold teachers accountable. But such a sea change is likely to occur only if a critical mass of teachers themselves buy into the changes sought. And to bring about this sea change, teachers must have time to collaborate and reflect together as they change their practices. The most effective way to get “buy in” is for school leaders and teachers first to experience for themselves the kinds of changes that they are interested in making. Project Zero’s conferences and concomitant professional development do just this—they put teachers in the role of students, trying out new approaches themselves. Nonetheless, there are often challenges to implementation, for some frameworks more than others. The chapters to come discuss the challenges educators told me they faced. Readers who would like a somewhat fuller but still brief summary of broad results can find that in the final chapter.

It is unrealistic to expect new approaches to last indefinitely. When school leadership changes, and new leaders come in with different ideas, things change. But even when the schools move away from using Project Zero frameworks, the individual educators who were involved remain changed, as far as I can ascertain. They do not—indeed, perhaps they cannot—go back to their old ways of educating.

I seek to address the following audiences:

- First and foremost, I hope that this report can serve as a model for other education researchers seeking to document the impact of their work. Thus, one audience is the *community of education researchers*.
- This report is also written for *Project Zero’s many funders* over the decades, showing them or their successors the contributions they have made to education.

- Needless to say, I want to share my findings and conclusions with all the educators and schools, museums, and other organizations profiled in this report and in its appendices. And I thank them for their cooperation and forbearance.
- Finally, this report is written for Project Zero itself—the many hundreds of researchers and staff who have directed Project Zero’s many projects for 60 years! The lessons learned about the conditions for achieving sustainable impact should guide future Project Zero researchers.

The report is long, and some readers may be particularly interested in the chapter that documents projects in which they have been involved. Accordingly, each chapter has been written to stand on its own with a summary of the particular framework being reviewed, along with evidence of its impact. It is my hope that educators around the world using a particular Project Zero framework will take the opportunity to contact one another and, as appropriate, form professional learning communities.

From a small think-tank founded in 1967 by a philosopher intent on understanding cognition in the arts, Project Zero has grown greatly in numbers and has expanded its research across the educational landscape – all without one cent of endowment...at least to this moment!

A Note on Use of First Names

After the first mention of a person’s name within a chapter, I have used that person’s first name only, except when clarity required both names.

PART I

INTRODUCTION

Part 1 introduces Project Zero (Chapter 1), outlines the methods used in this report (Chapter 2), and discusses how educators learn about Project Zero (Chapter 3).

Chapter 1

What is Project Zero and Why This Report?

In 1967, a small, non-profit start-up think-tank was founded at the Harvard Graduate School of Education (HGSE).

Two things are surprising about this event. First, the founder, Nelson Goodman, was a formidable analytic philosopher, an unlikely player in a graduate school of education. Second, this think-tank was henceforth to be called Project Zero—a name that was completely opaque.

Here's how an analytic philosopher, who had scarcely delved into the philosophy of education, found himself at a school of education. To begin with, Nelson was very interested in the arts and aesthetics: he was married to an artist, he was an art collector, and at one time ran an art gallery. TheodoreSizer, then the dean of HGSE and son of a fine arts professor, welcomed an initiative on arts education at the school. Nelson had shifted from the philosophy department of the University of Pennsylvania to that of Brandeis University in suburban Boston. As related in Howard Gardner's 2013 personal [history](#) of PZ, and in his other writings (Gardner, 2020, 2024), Nelson really wanted a position in Harvard's philosophy department (where he had done both undergraduate and graduate study), and they wanted him. But these things take time. And so it was tacitly understood that Nelson would take a "holding" position at HGSE until a tenured position in Harvard's philosophy department came through.

Once Nelson had come to Harvard, he brought on board two research assistants to work with him on an arts education initiative. In 1967, he hired David Perkins—then a doctoral student in mathematics and artificial intelligence at MIT studying perceptual psychology. At the same time, he hired Howard Gardner—then a graduate student in developmental psychology at Harvard. Nelson hired David after a recommendation from his friend Paul Kolars, whom he had met at the Center for Cognitive Science. Paul was a psychologist focusing on perception at MIT with whom David had studied.

Howard relates how he got hired as follows. He had found himself frustrated because the field of developmental psychology had paid so little attention to artistic development – in contrast to, for example, development in memory, attention, language, mathematics, or logical, scientific reasoning. When he learned by coincidence that a philosopher at Brandeis was looking for research assistants for a project in the arts, he eagerly drove out to Waltham for an interview. When Nelson asked him what philosophers he had read, Howard mentioned Maurice Merleau-Ponty—causing Nelson, who disliked phenomenology, to roll his eyes. But when Howard added that he had also read Susanne Langer (a philosopher of symbol systems), Nelson smiled and said, "Well, that's another story."

For both David and Howard, meeting Nelson was life-changing. The trio of Nelson, as ably assisted by Howard and David, turned out to be exceptional—three broad and deep thinkers willing to ask new and wide-ranging questions.

And here's how Project Zero (henceforth, PZ) got its surprising name. Nelson determined that the focus of his new little research group was to be the theoretical and empirical study of thinking and learning in the arts. Having spent a year at Jerome Bruner's Center for Cognitive Studies at Harvard, he had become familiar with research in the then-new field of cognitive psychology—and he once quipped that the most interesting branch of philosophy was cognitive psychology. Just one year after moving to HGSE, in 1968, he published a pathbreaking book on aesthetics, *Languages of Art: An Approach to a Theory of Symbols*, which for many years members of Project Zero referred to as “The Bible.”

On the final page of *Languages of Art*, Nelson wrote something that helps to explain the name Project Zero:

Once the arts and sciences are seen to involve working with—inventing, applying, reading, transforming, manipulating—symbol systems that agree and differ in certain specific ways, we can perhaps undertake pointed psychological investigation of how the pertinent skills inhibit or enhance one another; and the outcome might well call for changes in educational technology. Our preliminary study suggests, for example, that some processes requisite for a science are less akin to each other than to some requisite for an art. But let us forego foregone conclusions. Firm and usable results are as far off as badly needed; and the time has come in this field for the false truism and the plangent platitude to give way to the elementary experiment and the hesitant hypothesis.

At last: the name. Nelson loved to be provocative. In view of the lack of “firm and usable results” about the ways in which individuals become involved in artistic activities and practices and gain knowledge and skills, he called his new organization Project Zero. Later he elaborated more directly: “We found at once that we had to begin almost at zero, with basic theoretical studies into the nature of art and of education” (Goodman, 1988, p. 1).

At its founding and ever since, PZ has conducted its work without an endowment. It relies entirely on government grants, foundation grants, and private donors for its operations. PZ receives no funding from Harvard, and in fact pays overhead both to Harvard University and to the Harvard Graduate School of Education. It has never sought to commercialize the ideas it develops. Many other educational research organizations, in contrast, create products that can be sold, or they carry out studies that can be used by commercial entities. Those few research organizations with substantial endowments or assured annual incomes have more flexibility than does PZ in their activities and initiatives. At PZ, when the funded time period of a project is over, the project is no longer active. However, via the vehicles of dissemination described in Chapter 3, educators can find out about PZ's many projects, including those no longer active.

The Early Years

Nelson, Howard, and David were an interdisciplinary group representing, respectively, philosophy, psychology, and perceptual psychology. Both Howard and David came to consider themselves cognitive psychologists, but neither stayed in their own lanes, venturing broadly outside the traditional topics and methods of their fields. They went on to make PZ even more interdisciplinary, convening stellar thinkers in various fields: Rudolf Arnheim, psychologist of art and art education; Jeanne Bamberger, musician studying children's conceptions of the sound and structure of music; Norman Geschwind, neurologist studying the structure and function of the brain with particular focus on cognition; Vernon Howard, philosopher of aesthetics; John Kennedy and Paul Kolers, perceptual psychologists; Diana Korzenik, historian of art education; and Barbara Leondar, scholar of narrative. In its early years, Nelson convened a series of memorable “lecture-

performances” at HGSE in which artists explained and demonstrated how they worked in their respective art forms, including photography, poetry, theater, opera, dance, and mime.

The initial focus of PZ was on conceptual and theoretical analyses of the nature of the arts and artistic symbols, and what learning and cognition in the arts would mean. Goodman argued against a false dichotomy between the arts as a realm for feeling and the sciences as a realm for thinking, noting that participation in both the arts and sciences requires “inventing, applying, reading, transforming, manipulating symbols systems” (Goodman, 1976, p. 265). At the time, Goodman’s claim that the arts are cognitive activities was new and not widely accepted. Indeed, it was sometimes severely criticized – even lampooned – by those who considered the arts to be matters of feeling and emotion. Some feared that the arts would be distorted or even destroyed by systematic investigations. By the time of this writing, though, the cognitive view has become an important part of debate and discussion for arts educators, and perhaps more so in Europe than in the US.

In 1971, Nelson, by then a member of Harvard’s philosophy department, felt that PZ was well launched. He was ready to hand over the reins and let others do the fund raising. “You can have the project,” he told Howard and David, neither one of them yet 30 years old. And so, David became the sole director in 1971, joined in 1972 by Howard. They led the organization for 28 years, followed by Steve Seidel in 2000, Shari Tishman in 2008, Daniel Wilson in 2014, and Liz Dawes Duraisingh and Carrie James in 2023. As of the fall of 2025, all of the former directors have remained an integral part of PZ (rather than retiring or moving on to some other organization). Such loyalty speaks to the strong bonds these former directors have to the values of PZ and to the organization itself. For the remainder of his life, Nelson remained a fan—though sometimes a critical fan—of PZ. Much honored both in the US and abroad, he died in 1998.

In the first few years of PZ there were just Nelson, Howard, David, and a handful of students and research assistants (I was one of those research assistants.) As of this writing, in the spring of 2025, there are 18 active projects, 14 Principal Investigators (PIs), 17 Project Managers (PMs), 20 employees serving as research assistants or administrators, and a number of part-time student research assistants. PIs are researchers with doctorates who can officially apply for grant funding. PMs are researchers without doctorates who manage research projects. Often PIs and PMs work together as equals. PZ has been able to survive, to grow, to become part of the educational research landscape by staying current with evolving thinking in the fields of learning and thinking, and thereby developing ideas, questions and approaches that funders are willing to support and that educators are motivated to learn about and often to adopt.

Many PZ PIs and PMs have spent their entire careers at PZ, often starting out as research assistants. The hiring of research assistants and PMs is decided on with PZ leadership, but the status of PI is allotted only to those with doctorates. That status must be approved by both the PZ Executive Committee and HGSE leadership.

Research assistants are often hired from those master’s or doctoral students at HGSE who become interested in PZ and are invited to intern on a project. Many have had experience teaching in K-12 schools. Often these research assistants go on to become PMs. Those who go on to get a doctorate may become PIs. As discussed in Chapter 3, PZ has also offered various courses at HGSE, and these are also ways of recruiting interested students after observing how they performed in class.

In 2020, a survey of individuals who had worked at PZ was conducted to investigate the impact of PZ on these researchers' lives. Many described ways in which PZ's values, ethos, and/or community had influenced their work and lives. As stated in [the report](#), they recalled the positive atmosphere at PZ—a combination of talking, discussing, processing, arguing, researching, and writing; a concern with the minutiae of research but also the big questions; and responsible mentoring, ranging from the training of specific skills to the ways in which “old-timers” navigate the landscape of research, fund raising, relation to the University, and to one's close colleagues.

The Psychology Years

With the new co-directors in the early 1970s, PZ took a turn towards psychology and empirical research. David led the “cognitive skills” group in conducting basic research on visual perception, perception of aesthetic aspects in the visual arts, and “process-tracing” studies of poets and artists creating. In one project, for example, David and members of his research team asked poets and painters to speak aloud in a stream of consciousness as they worked. By uncovering the ideas and associations that led up to an eventual artistic breakthrough, David demystified the idea of the sudden creative breakthrough appearing “out of the blue” like a flash of inspiration. These findings and others are described in his 1981 book, [The Mind's Best Work](#).

Howard led the “developmental” group in studying the development of artistic and other symbolic abilities in children. Two examples of studies by the developmental group:

Howard and Dennie Wolf led a project on early symbol use following nine young children over several years in seven domains: language (storytelling and metaphor), pretend play, number, music, dance and movement, two-dimensional representation (drawing and mapping), and three-dimensional representation (clay and block-building).

In a study of the development of children's drawings from preschool through the elementary school years, Howard and I documented a “U-shaped curve” in artistic development, with artistic creativity at its height in early childhood, declining in middle childhood, only to rise again after adolescence in those who go on to become artists, musicians, writers, etc. (Gardner & Winner, 1982; Winner & Gardner, 1981).

While leading the developmental group, Howard concurrently held a research position in the Aphasia Research Center of the Veterans Administration Hospital in Boston, where he studied the breakdown of the same kinds of artistic and symbol using processes whose development he was studying at PZ. For example, in a 1983 chapter called “Missing the Point,” Howard and colleagues showed that the right hemisphere of the brain, usually considered the non-language hemisphere, is crucial in understanding metaphor and getting the gist of a story. These two lines of work (development and breakdown) coalesced in the theory of multiple intelligences (MI), published in *Frames of Mind* (Gardner, 1983), the work for which Howard is best known.

The Turn Towards Education

In the 1980s, PZ's focus shifted significantly from empirical research in psychology of the arts to multi-disciplinary approaches to education—not only education in the arts but education writ large. Thus PZ became an education research lab, comparable in some ways to labs such as the Learning, Research and Development Center (LRDC) at the University of Pittsburgh, CEMREL (Central Midwestern Regional Education Lab) which focused on aesthetic education (no longer in existence), or the ten [regional education labs](#) long funded by the Institute of Education Sciences

(IES) with the goal of school reform. PZ shares with these labs the ambition to develop new approaches to education and the effort to promulgate these approaches in various ways.

The Influence of Progressive Education on PZ

Whether explicitly or not, PZ's educational philosophy draws on John Dewey's progressive educational philosophy as it emerged in the US early in the 20th century (cf. Dewey (1916)). The progressive revolution in education entailed a wholesale rejection of the transmission model of learning, where the teacher transmits knowledge to students who must memorize what has been transmitted. Progressivism favors instead an inquiry-based, constructivist model of learning where students actively construct knowledge for themselves as they engage in inquiry often in collaborative, interdisciplinary projects. Borrowing the words of psychologist Jerome Bruner, a long-time friend and advocate of the organization: PZ's projects ask that students go "beyond the information given" (the title of Bruner's 1973 book) to construct their own understanding.

PZ's Contribution to Progressive Education

Often, despite their best intentions and robust beliefs, educators who value the goals of progressive education need scaffolding in order to move beyond the direct instruction, transmission model of education to a constructivist model. PZ research makes two key contributions to help educators carry out progressive education.

First, PZ research brings a sharp analytic focus to concepts such as *intelligence*, *thinking*, *understanding*, *documentation of learning*, *ethical thinking*, *interdisciplinarity*, and other educational terms and buzzwords.

Second, PZ has created frameworks rather than curricula.

What is a framework? By framework, I mean a research-informed, cohesive structure to support teaching with certain goals in mind, (e.g., goals such as creating a culture of thinking, expanding awareness of other cultures, learning to think like an artist, and so on). PZ frameworks are *not* curricula with specific content (like a social studies curriculum). Instead, they are overall structures with tools that teachers can use. PZ frameworks are flexible enough that teachers can adapt them to their own circumstances. Long-time PZ member Mindy Kornhaber offered this analogy:

An educational framework is something like an architectural plan or a blueprint for a house. The house can be finished in many different ways depending on the circumstances, e.g., the work crew, needs of those who will live there, local weather, and building site. Or it's something like a chord progression in jazz, which specifies some parts of the composition and allows for improvisation depending on the players.

PZ frameworks are designed to support educators in moving away from a transmission-based model of teaching. Such a reorientation can be difficult for those working within a system that limits them or pushes them in one direction or another. PZ frameworks help educators translate progressive education theory and concepts into accessible and workable practice. These frameworks also help educators make sure students are thinking rigorously and deeply. In short, PZ frameworks help make progressive education rigorous as well as progressive.

Here are just a few of these frameworks:

- **Teaching for Understanding** (no matter the subject area), as evidenced by “performances” of understanding where students apply what they have learned to new problems (see Chapter 4)
- **Visible Thinking and Cultures of Thinking**, providing a large body of thinking routines which educators can use with any subject area (see Chapter 4)
- **Making Learning Visible** by documenting key moments in the process of learning and then drawing on that documentation as a way to deepen learning (see Chapter 4)
- **Studio Thinking**, a lens to use for visual art education focusing on the habits of mind fostered by learning in the arts (see Chapter 17)
- **Good Work**, which includes ethical dilemmas to stimulate complex ethical thinking (see Chapter 18)
- **Looking at Student Work**, which involves protocols for collaborative assessment (see Chapter 26)
- **Global Competence**, providing methods to foster intercultural understanding (see Chapter 43)

Lin Tucker, one of the coaches for PZ’s online courses, said that PZ frameworks (she calls them tools) “organize vague ideas into clear hierarchies and actionable steps,” As she testifies,

[These tools are] incredibly useful, not only for individual teachers but also for groups of teachers and administrators working together to implement Making Learning Visible [a PZ framework] and other practices. Tools like thinking routines, feedback protocols, entry point charts, and speech bubbles offer concrete (sometimes even step-by-step) guidance to create and document (observe, record, interpret and share) learning experiences. Because the tools relate to broader ideas in education, using the tools creates openings for deeper conversations. Documenting what happens when they experiment with tools helps teachers develop a common language and set of shared experiences. It also helps them hold themselves and each other accountable.

The Debate about Inquiry-Based vs. Direct Instruction

The benefits of inquiry-based education over direct instruction has been investigated (e.g., Chase & Klahr, 2004; Dean & Kuhn, 2006; Klahr & Nigam, 2004). Some studies have shown better outcomes with inquiry-based instruction, others with direct instruction, and others an equivalence in outcomes. To evaluate the relative benefits, two considerations are essential. (1) The nature of the inquiry-based instruction: is it entirely unguided or is it scaffolded? PZ’s frameworks provide a necessary (in our view) scaffolded approach. (2) One must also evaluate the outcome measures. Are the measures open-ended or closed (as in multiple-choice or short-answer)? Are students asked to recall information or go beyond what they learn and apply that learning to an unfamiliar topic? The Teaching for Understanding framework discussed in Chapter 4 clearly distinguishes understanding from knowledge. Understanding needs to be fostered by inquiry-based methods.

A “Loose Confederation” with Three Major Throughlines

The projects under the PZ umbrella have been described by David as a loose confederation. Nonetheless, I discern three decades-long major throughlines connecting PZ's educational initiatives:

- Fostering thinking, learning, and understanding (rather than amassing and remembering information, regardless of subject area)
- Fostering broad thinking dispositions in the arts, whether in responding to works of art, or in creating works of art
- Fostering ethical thinking and behavior, particularly with respect to the roles of student, educator, and other professionals

There are also a number of other significant initiatives of more recent vintage which can be found under the following sections of this report:

- Fostering learning through assessment
- Fostering institutional change
- Fostering scientific thinking
- Fostering interdisciplinary thinking
- Fostering meaning, purpose, and critical thinking in college
- Fostering citizenship from local to global
- Fostering learning through play and tinkering
- Fostering innovation in the workplace

How PZ Frameworks Are Developed: Researcher-Educator Collaboration

PZ never presents educators with a set of pre-made lessons or curricula. Educators' contributions to the development of PZ frameworks are essential – educators are likely to have valuable insights that researchers outside of classrooms may well lack. When PZ works with educators, a research-practice partnership model is generally employed. Educators are treated as professionals, and they work side by side with PZ researchers in developing a framework. Not surprisingly, when new approaches are co-developed with educators, other educators are more likely to implement them (Tyack & Cuban, 1995, p. 135).

How PZ Frameworks are Introduced to Teachers

Teachers who are introduced to PZ frameworks often find themselves encountering an approach to education that is very different from how they themselves were educated – particularly in the US (Hatch & Sahlberg, 2021). PZ's approach to professional development has therefore always been to engage teachers in the practices that they will later use with their students. To use just one example, when PZ researchers introduce teachers to PZ thinking routines, they don't lecture them on the "what" and the "why" of these routines. Instead, they turn the teachers into students, posing thinking routines to the teachers. Experiencing an approach directly is the best way to then be able to use this approach in the classroom.

It is powerful to treat educators as co-researchers and is not typical of most "top-down" educational professional development. David Cohen and Carol Barnes (1993) have argued against top-down professional development where policy makers "tell knowledge" to educators. Instead, they insist that "educational policy should be deeply educational for those who enact it" (p. 257).

That is, professional development should involve teachers in the very kind of learning that the professional developers are championing. Only when professional development changes teachers' experiences of learning will they be able to teach their students in this new way.

When teachers are simply told about a new way to teach, they are unlikely to adopt the new approach in any genuine way. In a 2020 [blog](#), Larry Cuban described the difference between reform talk and what teachers really do as follows:

Perhaps the pendulum is the wrong image to capture the differences between reform talk and what happens in classrooms. Perhaps the metaphor of a hurricane is better. The hurricane whips up twenty-foot high waves agitating the surface of the ocean yet fathoms below the surface fish and plant life go undisturbed by the uproar on the ocean's surface.

Alongside involving educators in the development and use of the PZ frameworks, the frameworks are introduced with an explanation of the why (why this framework is useful) and the how (how to use them). Frameworks provide a practical structure but leave room for educators to make their own decisions about how to use them. In a PZ professional development workshop, teachers are encouraged to adapt what PZ offers in a way that fits their particular students' needs and contexts. And PZ provides feedback on their adaptations. Long-time PZ member Tina Blythe calls this *adaptation with integrity*—teachers adapt the frameworks but keep the essential core ideas.

This approach to professional development has been endorsed by leading education researchers. They recognize that for any new approach to be internalized, it must be interpreted by those who will put it into practice (Cuban, 1998; McLaughlin, 1987). Tyack and Cuban (1995, p. 64), refer to the way schools shape reforms as teachers using “their ‘wisdom of practice’ to produce pedagogical hybrids.”

And this is what David Perkins and Jim Reese, a long-time PZ colleague, have observed about PZ professional development:

In our experience, teachers are more likely to warm to frameworks they can adapt to their personal styles and circumstances. It's not just adjusting yourself to the clothing, but also adjusting the clothing to yourself! (2014, pp. 42-3)

Over the years, we have collaborated with, and had an influence on, some of the best schools in the world: The Riverside School in India, deeply influenced by PZ ideas, was voted the World's Best School for Innovation in 2023; the former Key School in Indianapolis, based on multiple intelligences (where Robin Houdek, a former student, and daughter of a Key School teacher, was voted Best Teacher in Indianapolis in 2023); the New City School in St. Louis, based on multiple intelligences; the Reggio Emilia schools in Northern Italy; and the Montserrat Schools, with the original one in Barcelona, among others.

School leaders who approach PZ for help are typically educators looking for innovative new ideas. Sometimes teachers already have the “PZ mindset” before encountering PZ but lack the PZ language and analytic framework. When such educators encounter a PZ framework, they can readily run with it. They have discovered an approach from PZ that fits with, and gives language and structure to, practices they already use.

Some testimony: Consider Holly van der Molen, a teacher at the American School of London. She wrote that she had used a PZ-like approach before encountering PZ—but that having the Harvard “seal of approval” made a difference (a comment often heard in the interviews conducted for this report):

It is hard to state clearly the effect of the work and theories of Howard Gardner and Project Zero on my teaching because they have been such a profound influence. The way my classroom looks, the ways I am with children, my notions and assumptions about curriculum, about teaching, about children...all have links to the work of Project Zero. The view of the child ... worthy of a constructivist, inquiring (problem-solving and problem-finding) education is at the center of the research and theories of Project Zero and it is fundamental to the way I hope to teach each day in the classroom. Gardner's theory of multiple intelligences is such a gift to all children. It offers such a positive statement of value for all the many intelligences children bring to the classroom. Furthermore, the focus on artistic intelligence and knowing as equal in importance to knowing in the sciences, mathematics, etc. offers both insights into children's development and abilities in the arts, and also a rebalancing of the curriculum in my teaching to include the arts in as robust ways as other disciplines. I may have had these beliefs/values without Project Zero – it's hard to say – but I imagine that the Harvard "seal of approval" allowed these constructivist ideas and aesthetic values to flow into teacher training programs as well as into curriculum and schools. This flow of ideas was aided by the clarity in which concepts were presented which allowed teachers and schools to adopt frameworks because they intuitively made sense. I am so thankful that Project Zero offers a research base for beliefs around children's innate intelligences, creativity and capabilities which supports teachers to teach in ways that can provoke and sustain these competencies.

How One Member of the HGSE Faculty Views PZ

Matt Miller, a Senior Lecturer in Education at HGSE, sees PZ as one of the intellectual centers at HGSE. What he admires about PZ: PZ creates useful tools that are practical for teachers and useful at scale. These tools do not depend on technology—thus they cost no money to implement. If these tools are used badly, they don't do any damage—at least they get kids talking to one another. But if used well, they give teachers an inspiring tool that is backed up by solid theory. PZ's educational approaches are what anyone would want for their own children. PZ develops its frameworks WITH teachers, rather than delivering something TO teachers. This is an important epistemological stance. PZ is future oriented, working on fresh ideas. In Matt Miller's well-regarded, pioneering course with Catherine Snow, *How People Learn*, a number of PZ frameworks are included.

Variability in Scale, Site, and Duration of PZ's Projects

The scope of PZ projects varies considerably. A PZ research team may work with just one or two educators in a school, with a group of educators within a school, with a whole school, and/or with school networks and entire school districts. Some PZ projects last two or three years; others much longer. This variety is not due to capriciousness but to the kind and duration of the funding received. Sometimes projects have to end before a topic or idea has been fully explored simply due to a project not getting refunded. Occasionally PZ researchers continue a project even without funding “on their own time,” and, on rare occasions, funding happily re-emerges.

Most PZ projects focus on education in K-12 schools, with some focusing on students at the college level. Not all PZ projects focus on school: quite a few have been based in informal learning contexts

such as museums, community arts organizations, and, at least in one case, a theater. And one project has centered on adult learners in business organizations.

A PZ Framework for Excellence in 21st Century Learning

An overview of the PZ approach to education can be found [here](#), in a 2020 White Paper authored by Mara Krechevsky, Daniel Wilson, and Emily Gonzalez. They describe this synthesis as “an emerging educational framework that is informed by key ideas and practices from over 50 years of Project Zero educational research and from other learning organizations...We identify four essential questions in service of fostering citizen-learners, along with a set of core capacities and related competences.” This document refers to learners as “citizen-learners,” a way of thinking about children originally seen in the Reggio preschools in Italy, discussed in Chapter 40.

Here are the four questions addressed:

- **Who are we as citizen-learners?** Answers to this question draw on an understanding of human beings as fundamentally social as well as individual learners who are constantly constructing and reconstructing knowledge.
- **What do citizen-learners learn?** Answers to this question take a stand on what is worth learning now and in the future by naming criteria for understandings that matter most for navigating a complex and uncertain world.
- **How do citizen-learners learn?** Answers to this question describe how learning happens when schools are viewed as places of inquiry that honor children’s and adults’ social, emotional, esthetic, physical, and ethical forms of knowing, as well as scientific analysis.
- **What do citizen-learners do with what they learn?** Citizen-learners demonstrate their learning in and across contexts by listening to the voices of others, including those who are often silenced, engaging in civic dialogue, taking purposeful action, and imagining new possibilities.

This framework was originally developed as part of a collaboration with a school network in Brazil. The work was undertaken to develop an innovative K-12 framework for curriculum and professional development, with the goal of fostering thinking, learning, and entrepreneurial skills needed in the 21st century. Although this framework has not yet been implemented in Brazil, it serves as a valuable resource – both as a description of the essential aspects of a PZ approach, and as a guide for PZ researchers who are involved in developing curricula and professional development.

What PZ is Not

PZ has never developed a comprehensive school curriculum or asked schools to become PZ schools (though PZ has been asked to do both and has graciously declined). PZ does not tell schools how to organize themselves. PZ offers no quick fixes and instead values complexity and “no one right way.” In one of his typical quips, Nelson Goodman wrote “...when Project Zero turns to writing prescriptions and instruction books, when it becomes Project-How-To, it will have passed on to an unjust reward” (1988, p. 2).

PZ approaches do not aim for technical improvement in teaching and learning, that is, doing the same old things better. Rather, they are designed to be transformative – supporting teachers and hence students to think *differently*. PZ ideas are meant to help teachers develop and also to become more courageous in interpreting existing curricula instead of stubbornly following them. For a fuller articulation of the transformative approach, see [Aquiline & Krechevsky \(2019\)](#).

The Challenges of Achieving Impact

The main goal of this report is to document changes in educators' ideas and practices due to the influence of PZ and to document whether these changes “stick.” It is challenging for any educational innovation not mandated by the government to achieve lasting impact (Tyack & Cuban, 1995). Yet, in this report I document many teachers who told me that after encountering professional development PZ style, they could never go back to their old ways of teaching.

David Perkins and Jim Reese (2014) have posited that for change to “have legs,” three kinds of visionaries in formal or informal leadership roles are essential. First one needs *theoretical visionaries* – those with the ideas. At PZ, the theoretical visionaries are often a group of researchers and educators working together and learning from one another. One also needs *political visionaries* – those able to garner the resources and muster the influence to make changes in schools or other settings of learning, while their broad responsibilities usually do not allow them to closely nurture the change. Finally, one needs *practical visionaries* – those who facilitate the change on the ground and across several classrooms or other settings, typically while maintaining some teaching or other responsibilities. Practical visionaries don't make changes on the ground “directly” except perhaps in their own classes. These visionaries have primarily a facilitative, scaling, coaching role.

Most educational research findings do not get taken up by teachers. A number of plausible reasons have been suggested by Cuban (2014) and Schneider (2014):

- *Teachers are not trained to study research findings.* They are not trained to monitor research findings to improve their practice.
- *Much research addresses issues not seen as relevant to teachers.* Many studies provide answers to questions teachers don't ask, addressing issues irrelevant to educators on the ground (Cuban, 2014).
- *Professional development typically occurs as a “one-shot” workshop.* Any new approach requires far more learning than can be accomplished in one professional development session.
- *Teachers have too little time to learn about research findings.* American teachers work an average of 52 hours a week, with 37 hours in the classroom and the rest used for lesson planning, grading, and administrative duties. There is no scheduled time for teachers to meet and discuss new findings about teaching (National Education Association (2010).

The situation is different in other countries. American teachers teach an average of 25-30 more hours a week than do those in other member nations (OECD, 2011). And in the preschools in Reggio Emilia, discussed in Chapter 4, teachers have scheduled time to reflect and plan together on a daily basis.

In a book entitled *From the Ivory Tower to the Schoolhouse*, education researcher Jack Schneider (2014) argues that four things are necessary for research to make its way into classroom practice:

- *Perceived significance.* The research needs to deal with issues that matter to teachers.
- *Philosophical compatibility.* The research must be consistent with the teachers' world view—that teachers are professionals and that all children can learn.
- *Occupational realism:* The research must be able to be put into immediate use and not require extensive training or major changes in existing practices. Thus, new teaching methods that can be used with established curricula are more likely to be used than new teaching methods that require new curricula as well.
- *Transportability.* The research should be able to move from teacher to teacher in peer-to-peer networks and also easily make it into professional development workshops.

In addition, unless these four characteristics “are cultivated intentionally and energetically, scholarship may enter classrooms only to be watered down or shallowly implemented.” (Schneider, 2014, p. 12).

Though it has long been PZ's hope that its approaches would spread widely, PZ researchers did not or could not carry out large-scale systematic work across school districts and nations to make that happen. Nonetheless, as I document in this report, many PZ approaches have had staying power. Most PZ frameworks meet the above four requirements. In addition, most PZ initiatives are co-created with teachers and are always designed to be adapted by those who put them into practice.

Of course, PZ frameworks are not magic wands. There is great variability in how educators are exposed to these frameworks. As discussed in Chapter 2, exposure can occur through PZ conferences, professional development workshops, other colleagues pursuing a particular practice, or reading an article or materials on the PZ website.

Some teachers catch on to a framework more readily and deeply than others. Sometimes a framework is implemented in a superficial way. A checklist of the elements of a framework hardly guarantees that the teaching – let alone the learning—will be strong! Clearly the greater the exposure and the greater the follow up and support, the more likely things will go well, and will last.

In addition, there is the issue of push and support. Howard has often said that “we develop ideas and give them a push in the right direction.” But PZ projects do vary in how much “push” is given. Multiple intelligences (see Chapt. 4) is an idea that caught on spontaneously in many settings, with comparatively little support from PZ. At the other extreme is the Cultures of Thinking project (see Chapt. 4), where PZ members and affiliates have done extensive professional development work on many sites, indeed on several continents. In addition, teachers can find support in their schools from other colleagues pursuing the same goals. But when teachers find themselves working alone in their schools with PZ ideas, the new ideas are less likely to have staying power.

PZ never systematically pushed its educational frameworks out into the world. One might ask why. The answer that David Perkins gives, and that I agree with, is that pushing frameworks out into the world typically leads the organization to focus on a very small number of frameworks and their wide propagation. This of course may serve well those specific frameworks, but such an

undertaking has a very different character from the research and development orientation of PZ and the constant reach for new perspectives and approaches.

A final word now about what one might predict about PZ's broader impact. Here are three possible outcomes:

- *A quiet death.* PZ frameworks might die a quiet death after the funding runs out and direct contact with PZ ceases. Leadership and teacher turnover can result in the undermining or termination of a new approach. And teachers may give up when they find themselves isolated in trying a new approach and lack support from the school leadership.
- *Adding but not transforming.* PZ frameworks might be adopted in schools that are already practicing similar approaches. In this case, adopting these frameworks may provide a language with which educators can talk about what they have been doing, but this would not in and of itself be transformational.
- *Significant and lasting change.* PZ frameworks might be adopted by educators who wish to transform their individual teaching practices or their entire schools.

Once a new framework is implemented, one can expect a lot of variability in implementation:

- ✧ *Expect Adaptation.* Educational reforms inevitably change once educators begin to try to implement them (Cuban, 1998). Cuban calls the process of school reform one of constant adaptation. At PZ, researchers embrace this stance. PZ offers broad frameworks to educators and challenges teachers to see whether these frameworks can be molded to fit their needs. Practical visionaries don't just take the ideas and implement them directly, in a top-down manner. Practical visionaries need to work collaboratively with educators at particular sites, piloting the new ideas, and determining when and where it makes sense to adapt the ideas for particular settings.
- *Expect Incremental Change.* Implementation depends on how educators on the ground interpret the research and act on it (Cuban, 1998; McLaughlin, 1987; Tyack & Cuban, 1995). Changes are often more incremental and less extensive than the original researchers had envisioned. Many local factors affect how educators will implement the research, e.g., support vs. resistance from administrators and/or parents, resources or lack thereof, and competing priorities. Milbrey McLaughlin writes of the difficulty of making something happen, noting that "policy success depends critically on two broad factors: local capacity and will" (p. 172). While capacity can be addressed by providing professional development and funding, the attitudes of those asked to implement a framework are less easily molded. There must be teacher buy-in for change to happen.
- *Breadth of Implementation.* New practices may be implemented by a single teacher, a single school, or an entire system of schools
- *Hope for Stickiness.* Ideas may be implemented for a while but then get forgotten. Or they may become part of the school culture and (whether or not their origins are remembered) thus remain for a long time.

- *Hope for Internalization.* When practitioners internalize researchers' ideas, the impact is deep. Sometimes practitioners do not even know where the ideas came from as they have become part of the school (or even the societal) culture – in Lee Shulman's words, "part of the familiar furniture of the mind." (personal conversation, December 2023). This is what has happened with broad ideas like progressive education, hands-on learning, and project-based learning. It is not uncommon for PZ researchers to find themselves at a conference and hear people talk about PZ ideas without referencing them as originating from PZ. For example, Jim Reese reported hearing about the global competence framework and the "peel the fruit" thinking routine but never hearing them linked to PZ. These ideas have become part of the "conventional wisdom" of progressively oriented educators. As I show in this report, there is evidence that PZ research has "changed the conversation," and this is far more important than referencing the source of these ideas.

This report documents only a few "quiet deaths," though of course, there may be many such deaths that I could not document due to not having any contacts to interview. In contrast, I have documented examples of adding but not transforming, as well as examples of radical change in which teachers left a traditional, transmission model behind. What is most striking and surprising are the instances where radical and long-term change, lasting years after direct contact with PZ, has been achieved.

Of course, when teachers or principals retire, changes that were put into place often fall by the wayside. But in the interviews that I conducted, I have been struck over and over with the fact that educators who were transformed by one or more PZ frameworks were changed forever.

In the next chapter, I describe the methods used for this report.

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Chapter 2

Methods

This study of how PZ has affected educators is based on qualitative methods. Qualitative methods are particularly useful for exploration and discovery rather than for hypothesis testing. Data were collected from one-on-one interviews. The interviews conducted for this study were in-depth and semi-structured with open-ended questions. In semi-structured interviews, the interviewer has a set of questions to explore, rather than an unmodifiable interview protocol. In order to probe the topic and elicit deep and detailed information, the interviewer listens carefully to the interviewee and adapts the wording and order of questions depending on what the interviewee has said. The developmental psychologist Jean Piaget, who worked primarily with children, called this kind of interview “le methode clinique” (the clinical method) (Inhelder & Piaget, 1955). One of the founders of qualitative evaluation research, Michael Quinn Patton, called it, “the general interview guide approach” (1990, p. 280).

Open-ended questions provide a window into the world view of the interviewee without predetermining any kind of response. In contrast, standardized questionnaires are “closed-ended.” While very good for testing specific hypotheses, questionnaires with categories to check off for each response significantly limit the kinds of responses an interviewee can make.

Decisions about whom to interview were made as follows. First I asked PZ researchers to give me the names of all of the educators with whom they had collaborated in the development of particular frameworks. I then asked each interviewee for further recommendations of educators using particular frameworks. And so on. Thus, the sampling method was basically a snowball sampling method. For some frameworks, particularly the older ones, I exhausted all of the recommendations. For many of the frameworks, however, I could have continued interviewing an indefinite number of people. But once I reached saturation, that is once I was hearing the same stories about the impact of a particular framework, and once I had interviewed people from a wide variety of geographic locations, I moved on.

Each interview lasted between 45 to 60 minutes. They were conducted over Zoom except in the relatively few cases where an in-person interview was possible. Interviews were recorded by Zoom, and an automatic transcription was provided both by Zoom and by Otter.ai. I often include direct quotations from the interviews that illuminate the thinking of the interviewees and shed light on how PZ ideas have shaped their ideas and work. All of the interviewees had the chance to edit my interview summaries and correct for any errors or omissions. Each of the PZ researchers whose projects are represented in these chapters read and fact-checked the chapter(s) reporting on their work.

Interview guidelines can be found in Appendix 1. The questions were modified slightly across interviewees to take into account the role of the interviewee (e.g., teacher, principal, superintendent) and the particular PZ framework or frameworks that the interviewee had worked with.

Sampling

After reviewing the PZ website, I selected 50 projects to include. The following kinds of projects were *not* included: Projects from PZ's first "psychology" decade, such as investigations of creative artists and of children's artistic abilities, because these did not lead directly to educational frameworks; later projects that also did not result in educational frameworks; projects either too small or too new to have had impact; and projects on which PZ collaborated but which were not based primarily at PZ. Of course, historians of PZ may well want to examine these as well. In Appendix 4, I list the projects included and not included. Perhaps others at PZ will want to review the impact of those I was not able to include.

Decisions about whom to interview were made using snowball sampling, a method used when the target population is difficult to identify. Per Patton (1990) "The process begins by asking well-situated people, "Who knows a lot about___? Who should I talk to?" By asking a number of people who else to talk with, the snowball gets bigger and bigger as you accumulate new information-rich cases" (p. 176).

For the sample of projects included, I began by asking all of the Principal Investigators (PIs) or Project Managers (PMs) at PZ to complete a brief summary of each of the projects for which they were responsible, including the names and contact information for educators who collaborated in the development of a project. The first round of interviewees for each project were the PIs or PMs. The second round were those outside of PZ who co-developed the project. The final round were those whom the co-developers identified as having used the particular framework. Often this resulted in an exponential increase in interviewees, as each person I spoke to identified more than one other likely candidate.

For some frameworks, particularly the older ones, I was able to speak to all those recommended by PIs and co-developers. For many of the frameworks, however, I could have continued interviewing an indefinite number of people. But once I reached saturation, that is, once I was hearing the same stories about the impact of a particular framework, and once I had interviewed people from a wide variety of geographic locations, I moved on.

I knew that I could never locate and speak with all of the educators who had implemented each framework. I cannot pretend to have been exhaustive, but I was not seeking a count of how many educators used each framework. Rather I aimed to reach as many "adopters" of PZ projects as time and funding allowed—enough so that I could draw conclusions about how widely (or narrowly) each project had spread, and enough so that I could find evidence of projects lasting after a PZ project reached the end of its funding period.

Requests for interviews were sent out over email to 287 educators (a sample interview request is included in Appendix 2). 229 educators agreed to be interviewed. Two people declined to be interviewed; 58 individuals did not respond after a second request, possibly because their email addresses had changed. Thus a total of 227 interviews were conducted. All interviewees signed an informed consent form (included in Appendix 3), and this study was IRB approved.

Conduct of the Interviews

Most of the interviews were conducted by me (n=148, 65 percent). The remainder were conducted by one of my two research assistants who were master's students at HGSE Huayu Liu (n=57, 25 percent) and Anil Saleem (n=23, 10 percent). Before Huayu and Anil conducted any interviews,

they shadowed me in my interviews. After a while, they became interviewers and I observed and provided feedback to them after the interview about their interviewing technique. I provided the tweaking of the generic interview questions for each interview that Anil and Huayu conducted. Huayu continued working with me until the report was completed. She drafted summaries of her interviews and helped with the multitude of details needed to finalize this report.

During each interview, I took detailed running notes and soon thereafter (usually the same day), wrote a summary of the interview. When my notes were not clear, I listened to the zoom recording. In the case of the interviews conducted by Anil and Huayu, I watched the video recordings and then wrote the summaries. After a year working on this project, Anil left for another position. Huayu stayed on and began to draft the summaries of her interviews herself before I reviewed them. All summaries were sent to the interviewee for edits (a process often called member-checking), and this typically resulted in several back and forths as I posed further questions of clarification. For ease of writing, I do not indicate which interviews were by Anil or Huayu or me and simply use the first person in reporting on what the interviewer asked.

Data Analysis

I did not employ qualitative data analysis software. In order to be able to come to conclusions about what I found, I followed a multi-step process. First, I reread and annotated the interview write-ups as they appear in the report. Next, I looked for convergences and divergences of ideas and beliefs in interview responses *within* projects. I then looked *across* project interviews for convergences and divergences of ideas and beliefs, searching for the kinds of contexts in which PZ ideas did and did not take firm root. These procedures allowed me to draw conclusions in my summary chapter.

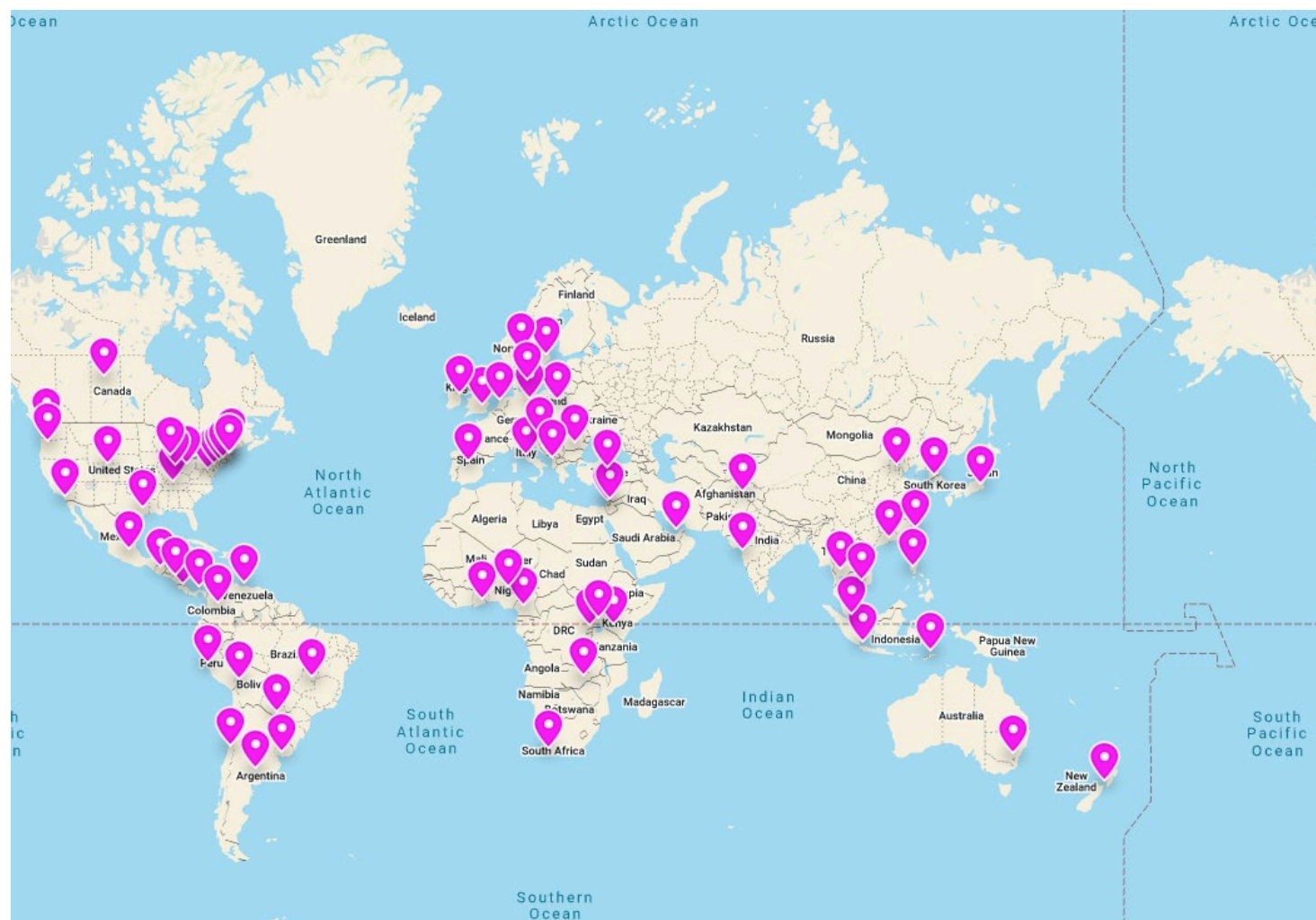
Is this study an evaluative one? Yes and no. *No*, because I am not evaluating how well a particular approach works. Rather, I am describing how educators have thought about and implemented PZ ideas and frameworks. And *yes*, because the interview data allow me to ascertain the effectiveness of PZ in spreading its frameworks and the effectiveness of the various vehicles by which PZ frameworks spread. Of course, the conclusions I draw about effectiveness vary across frameworks—some spread more widely than others, some have lasted longer than others. And this allows me to draw conclusions about the optimal conditions for the spread and the sustainability of approaches based on PZ ideas. This kind of information should prove very helpful for PZ researchers going forward as they strive to make their educational frameworks spread and become an organic part of an educational institution. I hope these lessons will help other educational researchers as well.

The table and interactive map on the following pages show the 57 countries where I found PZ frameworks being used — in every continent except Antarctica.

Asia	Africa	Europe	North America	South America	Oceania
China East Timor Hong Kong India Indonesia Israel Japan Jordan Nepal Pakistan Philippines Singapore South Korea Taiwan Thailand Turkey United Arab Emirates Vietnam	Cameroon Ghana Kenya Nigeria Rwanda South Africa Uganda Zambia	Albania Croatia Denmark Germany Ireland Italy Norway Poland Romania Spain Sweden Netherlands United Kingdom	Canada Costa Rica Guatemala Mexico Nicaragua Panama United States	Argentina Bolivia Brazil Chile Colombia Paraguay Peru Uruguay Venezuela	Australia New Zealand

Countries Where PZ Frameworks have Spread

[Click to view an interactive version of this map showing where PZ frameworks have spread.](#)



What about Student Impact?

In the Executive Summary, I note that this report focuses on how teachers are affected by PZ frameworks.

Demonstrating teacher (and classroom) impact is a necessary first step before examining student impact. A study of student impact would be an entirely different and far more expensive venture. Such a study would require one or more control groups and, most importantly, would require the right kinds of outcome measures. Standardized tests (which assess verbal and math skills) might be the first thing researchers would think of, but that would be a big mistake as PZ classrooms are not focused on teaching reading or math. The development of measures would need to capture what it is that PZ frameworks are intended to develop— curiosity, deep thinking, genuine understanding, open-mindedness, reflection, and the like. This would not be a simple undertaking. It would also require making sure that teachers in the control classrooms don't begin to ask provocative questions, for example. These kinds of studies are much easier to do in specific subject areas like reading and math.

Some Caveats

I am a longtime member of Project Zero and have led or participated in some of the projects described in these chapters. I also happen to have been married for a long time to the long-time co-director of Project Zero, Howard Gardner. Might I not thus be subject to a positivity bias?

I have taken steps to guard against this by asking open-ended interview questions, member checking with interviewees, and often quoting directly from what these educators told me. I have also sought feedback on this report from key long-time members of Project Zero and have incorporated many of their suggestions.

This report reflects my own understanding of Project Zero and the frameworks I describe. Others might present the PZ story differently. A study of PZ impact by an outside organization would, of course, always be welcome.

It is my hope that by presenting the development and spread of frameworks from Project Zero this report will inform other organizations making similar efforts at ascertaining their impact.

The next chapter describes how educators learn about the research developed at PZ.

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Accompanying Appendices

Appendix 1 Interview Guidelines

Appendix 2 Sample Email Request for Interview

Appendix 3 Consent Form

Appendix 4 Projects Included/Not Included in this Report

Chapter 3

How Educators Learn about Project Zero's Educational Frameworks

There are many ways for educators to find out about PZ ideas, and many ways they can explore our frameworks.

Of course there are publications. PZ researchers have published well over one hundred books—some scholarly, some applied, some popular—and several thousand articles.

There are also many courses in college and university departments of education taught by professors influenced by Project Zero ideas. Both undergraduates and graduate students take education courses whether or not they are preparing to work in schools, and the PZ idea most often encountered in such courses is Howard Gardner's theory of multiple intelligences. MI is often the entry point to learning more about PZ ideas, but other PZ ideas are also encountered in education courses. In the pages that follow, you will read about education professors who have become influenced by PZ ideas and who include these ideas in their courses.

There are also a number of other kinds of vehicles by which Project Zero ideas have spread. Based on my interviews, I found that the two most often cited ways in which individuals became acquainted with PZ approaches were via attending the Project Zero Classroom (our yearly summer institute, referred to henceforth as the PZC), and enrolling in one or more of PZ's online courses.

In addition, educators sometimes first discover PZ while searching for new ideas in education and landing on the [PZ website](#). In fiscal year 2024, the PZ website was visited by thousands of viewers from countries across five continents (North and South America, Europe, Australia, and Asia), with the highest number of users from the US (283,001) and Australia (68,189).

PZ sends out a regular e-newsletter and has a presence on social media, as shown by these data below for fiscal year 2024:

- 27,893 PZ Zero e-newsletter subscribers
- 41,600 Twitter/X followers
- 19,000 Facebook followers
- 10,300 Instagram followers
- 52,906 YouTube views:
- 3,500,000 page views on PZ website

In FY 2024, over 1,500 educators enrolled in PZ's online conferences, in person conferences, online courses, and online mini-courses.

Often as a result of relationships formed during a conference or course, PZ researchers are invited to run professional development workshops in a school (or for large groups of schools). Although the most obvious opportunities for impact have been within the US, in fact PZ has developed relationships with schools all over the world: in Africa (Cameroon, Ghana, Kenya, Nigeria, Rwanda,

South Africa, Uganda, Zambia), Asia (China, East Timor, Hong Kong, India, Indonesia, Israel, Japan, Jordan, Pakistan, Philippines, Singapore, South Korea, Taiwan, Thailand, Turkey, United Arab Emirates, Vietnam), Oceania (Australia, New Zealand), North America (Canada, Costa Rica, Guatemala, Mexico, Nicaragua, Panama, United States), South America (Argentina, Bolivia, Brazil, Chile, Colombia, Paraguay, Peru, Uruguay, Venezuela), and Europe (Albania, Croatia, Denmark, Germany, Ireland, Italy, Norway, Poland, Romania, Spain, Sweden, Netherlands, United Kingdom), and very likely other settings that have slipped through my efforts to build this list.

Sometimes schools have banded together to form networks of schools, all building on Project Zero's work. It is my hope that with this publication, more networks will form as teachers discover like-minded schools and teachers around the world.

Sometimes teachers or school leaders learn about PZ ideas from other educators who have adopted one or more PZ frameworks, or from other schools or school districts. These educators may then decide to work with PZ—which, in turn, may lead to other schools becoming involved. These are ripple effects.

The goal of conferences, courses, and workshops run by PZ researchers is to spark educators' curiosity about the complexities of learning and teaching, to help educators reflect on their own assumptions, and to inspire them to become more effective teachers and leaders. PZ strives to help educators not only to understand specific frameworks but also to adapt these frameworks to their specific educational contexts, whether rural, urban or suburban, well-resourced or under-resourced, public or independent, US-based or international.

Below I describe the Project Zero Classroom (an annual summer conference), PZ's online and in-person courses, and the International Conference on Thinking.

The Project Zero Classroom (PZC)

Launched in 1996, the Project Zero Classroom (PZC) is an annual summer institute that has served as a major vehicle for spreading PZ ideas to schools and museums around the world.

The PZC takes place over five days. (It started as a seven-day program.) Held at HGSE, the PZC is planned and operated by PZ researchers and educators who are experts in our approaches. Participants are encouraged to attend as teams but may also attend as single individuals. Schools pay to send their teachers. (The cost per participant for 2025 was \$3,999.) Some individuals, chiefly leaders or interested outsiders, cover their own expenses. Spaces fill up very quickly once registration is opened up. As I write this in spring of 2025, PZ has funding for PZC scholarships targeted to educators working in under-resourced contexts and/or with historically marginalized students, thanks to the Saul Zaentz Charitable Foundation. In FY 2025, 51 educators received scholarships. The revenue from the PZC helps fund core Project Zero expenses.

Institutes lasting for fewer days are sometimes held either at PZ or off-site. These are smaller than the summer institute, they are often dedicated to a particular theme, and they are sometimes conducted in collaboration with a particular school district or educational institution. Examples include [Future of Learning](#), [Global Connections in the Digital Age](#), and [Zeroing in on Learning](#).

Educators participate in hands-on learning activities and small group meetings to explore PZ principles and strategies for learning and teaching. The activities consist of *plenary sessions*

(lectures by seasoned Project Zero researchers) and *participatory mini-courses* (2-3 hours). *Study groups* meet daily and allow participants to develop, share, and critique each others' efforts to personalize uses of PZ ideas to fit their own contexts. There are also extra events, such as visiting lectures, special interest groups, book-signings, and Q&As with selected PZ researchers and affiliated teachers.

PZ institutes bring in public, independent, and international school K-12 teachers and administrators as well as home school educators, artists, teaching artists, museum educators, members of non-profit educational organizations, and government educational leaders from the US and abroad. Participants have come from North, Central and South America, Europe, Asia, Australia, and Africa, as well as almost every US state. The average number of countries represented by participants each year is about 20.

Those who attend the PZ institutes often continue to share their ideas and practices with one another. Many return to their home institutions and make educational changes. Some return year after year. Some schools, districts, or organizations send groups regularly over the years. Sometimes an organization has sent one educator or a pilot group of educators before committing to a long-term collaboration (e.g., Independent Schools Victoria, Columbus Museum of Art, the Northern European International Schools Consortium). And sometimes attendees invite PZ researchers to work with networks of schools at their home sites (e.g., the Bay Area Teacher Development Collaborative, a group of independent schools in San Francisco discussed in Chapter 55).

Some attendees become adept and passionate practitioners of PZ ideas. Select educators are invited to return free of charge to be trained as apprentice faculty members, chosen because of their grasp of PZ ideas. Apprentices often return as compensated faculty members for many consecutive years. These individuals become deep practitioners of PZ ideas.

Immediately after each institute, PZ collects evaluative surveys. Responses in these surveys are typically quite enthusiastic. I describe here one response from a professor of arts education from Germany, Rainer Wenrich. Rainer had become acquainted with PZ through publications by PZ researchers, and this is what drew him to the summer conference.

Power and Impact of the PZC

Lin Tucker, who coached the PZ online course on Making Learning Visible (see Chapt. 8), talked about the power of these courses, which reach people all over the world, including teachers at all grade levels and administrators who want to try out new things with their teachers. Speaking of the Making Learning Visible course, she said:

Taking it online gives you the world. It lets participants from varied circumstances glimpse themselves as part of a world-wide supportive community of educators with similar goals, dreams and frustrations. Participants who teach learners from toddlers to college students and adults leave the course having interacted with and seen work from participants living in different parts of the world, who have different experiences and beliefs about teaching and learning, yet share a common and caring goal to educate their students. While they raise different specific questions and concerns, participants usually share some of the time and practice constraints often dictated by the accountability practices of their local education systems. The on-line courses give concrete

meaning to feeling part of something bigger than oneself, to belonging to a community that learns with and from each other about things that matter.

In contrast to much professional development for teachers, where lesson plans and even curricula are handed out, PZ researchers “honor teaching as intellectual work with no quick fixes,” said David Donahue, professor of education at Mills College in Oakland, California.

Echoing David Donahue, Rainer Wenrich found the experience of the PZC to be significantly different from the kind of teacher training he had received in Bavaria. There teachers were given “prefabricated teaching models” that could be “adopted unfiltered and without reflection.” He valued how participants at the PZC become active contributors and reflect deeply on teaching and learning. The message is clearly conveyed that teaching is serious intellectual work.

As a direct result of his summer conference experience, Rainer and his team developed teacher training units based on the central principles of the PZC. He developed a Critical Art Education Research Lab to support teachers as they become “researching practitioners,” designing and trying out new teaching, learning, and research concepts. As they designed new approaches, teachers were asked to reflect on the following four questions:

- What is needed for each design idea?
- What brings you to your choice of design methods?
- How can you reflect on the process of your design?
- What ways can you develop to communicate your design process?

Based on the ideas of the Project Zero Classroom, Rainer plans to develop a Center for Responsible Art Education Studies.

In short, PZ institutes immerse participants in an active and reflective experience designed to shake up their conceptions of teaching and learning—an experience that can really change the way participants think and teach from then on.

Project Zero Online Courses

Since the early 2000s, PZ has offered online courses for educators to learn about PZ’s various frameworks. These courses were first developed when interactive online courses were just beginning, and hence were pioneering. Currently there are two kinds of courses: in-depth ones that consist of six two-week sessions (followed by a one-week orientation), providing 30 hours of professional development; and mini-courses, consisting of four one-week sessions (followed by a two-day orientation) for 12 hours of professional development.

The online courses have the following characteristics:

- **Interactive.** The courses involve hands-on learning for teachers to practice the strategies and frameworks they want to use in their classrooms, and to reflect with others in the course about what is working, what is not and why.
- **Coached.** Participants meet with coaches frequently during the course.

- **Collaborative.** Participants meet in teams of 3-6 individuals to collaborate on assignments and share insights and feedback.
- **Asynchronous.** To provide flexibility, the courses are run asynchronously. However, the teams meet synchronously, and participants meet in real time with their coaches.

Appendix 5 lists the 2025 online PZ course offerings.

Harvard Graduate School of Education's Course on Project Zero

Between 2013 and 2017, a course about Project Zero was offered five times. The course was taught by a pair of PZ researchers and was open to HGSE students as well as other Harvard students. (In the late 60s, a PZ course at HGSE focused on the arts.) Many of the HGSE students are teachers or hope to become teachers, though the school does not offer teaching certificates.

The course descriptions for the PZ course over the years are listed in Appendix 6. PZ members also often teach courses at Harvard Graduate School of Education on topics related to their research.

International Conference on Thinking

Another way in which people have learned about PZ research is through the International Conference on Thinking, founded in 1984 by David Perkins and other researchers, and convened every two or three years in many parts of the world. The conference began with an attendance of 250, and by now has over 3,000 attendees at each conference.

At this conference, researchers in education and in business from around the world, who focus on developing thinking and understanding, convene, and there is always a presence from PZ. This conference is quite different from the PZ institutes. The institutes introduce educators to usable tools and frameworks, while the International Conference on Thinking presents work at a more theoretical level.

At the 2015 conference, David listed these provocative statements to stimulate reflection among participants:

- Normal education does not improve general reasoning.
- In programs that target reasoning with specific strategies, reasoning is improved.
- Good thinking is as much about dispositions as it is about ability and strategies. People are not alert to the need for reasoning, and they need to care about and have positive attitudes towards good thinking. It's dispositions towards thinking, not just ability.
- Dispositions for thinking are independent of IQ—this also applies to creativity—a lot of the parts of thinking have nothing to do with IQ.
- Students have impoverished models of what good thinking is like—students have an achievement or a talent-oriented image of thinking and do not have a process oriented model of thinking.

Part II of this report presents the three foundational areas of PZ's educational research.

Accompanying Appendices

Appendix 5. Online Courses Offered by PZ Over the Years

Appendix 6. HGSE Courses on Project Zero or by Project Zero Members

PART II

THREE FOUNDATIONAL AREAS

In my view, the three foundational areas of PZ's research are Thinking and Understanding, the Arts, and Ethics. By foundational, I mean areas with early and long-lasting roots. Part II describes a number of additional areas of research, many (but not all) of which can be seen as growing out of the three foundational areas.

THINKING AND UNDERSTANDING (begins in late 1970s)

The first of the three foundational areas reviewed here focuses on developing thinking and understanding across subject areas. Four projects are subsumed under this area: Multiple Intelligences, Teaching for Understanding, Visible Thinking/Cultures of Thinking, and Making Learning Visible. The first chapter describes all four projects, followed by separate chapters on the impact of each project.

Chapter 4

Multiple Intelligences, Teaching for Understanding, Visible Thinking/Cultures of Thinking, and Making Learning Visible

This chapter features the four PZ frameworks that I consider fundamental to the “PZ mindset.” Many of PZ’s other frameworks build upon these. Unlike the rest of this report, in this chapter I first describe these four frameworks without discussing their impact, so that readers can keep all four in mind as forming the PZ mindset. Following this are separate chapters on the impact of each framework.

- **The Theory of Multiple Intelligences:** Humans have at least eight kinds of intelligence, but schools typically focus on only two of these – linguistic and logical-mathematical intelligences.
- **Teaching for Understanding:** Understanding is more than acquiring knowledge and skills, and it can only be demonstrated by a *performance* – applying what one has learned to new contexts.
- **Visible Thinking and Cultures of Thinking:** Thinking routines, the most often used component of Cultures of Thinking, are ways of creating a culture of active and engaging learning in the classroom and are used in many of the projects described in this report.
- **Making Learning Visible:** Students often learn best in small groups with teachers asking provocative questions and then listening and documenting the processes of student learning. These documentations are then used for teacher planning as well to promote reflection in students.

This chapter lays out the history and core ideas of each of these frameworks. Following this chapter are separate chapters on the impact of each of these approaches.

The Theory of Multiple Intelligences (MI)

The theory of multiple intelligences (MI) theory was developed by Howard Gardner at PZ in the late 1970s and early 1980s as part of the Project on Human Potential. According to MI theory, first described in Howard’s 1983 book, [Frames of Mind](#), intelligence is not a unitary construct and is thus not adequately captured by an IQ score. IQ tests primarily [M1] assess only two kinds of intelligence—linguistic and logical-mathematical, and these are combined to yield a single score said to represent *g*, or *general intelligence*.

Instead, Howard posited that humans have at least seven intelligences (later an eighth was added) that operate fairly independently of one another. That is, an individual can be strong or weak in a candidate intelligence (e.g., musical) without revealing strength or weakness in another candidate intelligence (e.g., interpersonal intelligence). He reviewed evidence from a number of different areas to determine whether a particular ability seems to operate largely independently of other abilities. Specifically, in evaluating a candidate intelligence, he looked at what we know about:

- development in typical and gifted individuals;
- breakdown under conditions of brain damage;
- prodigies, savants and autistic children (who show jagged cognitive profiles);
- findings about the evolution of a candidate form of cognition over the millennia;
- cross-cultural accounts of cognitive strengths and weaknesses;
- psychometric studies assessing correlations among tests;
- psychological training studies looking at transfer and generalization across tasks.

Information from these sources limits what can and cannot count as an intelligence. Often people write to Howard suggesting some new intelligence (e.g., humor intelligence, cooking intelligence, financial intelligence), but these have not adequately met any or even some of these criteria for independence.

These criteria initially led him to posit seven intelligences, listed here alphabetically:

- Bodily-kinesthetic
- Interpersonal
- Intrapersonal
- Linguistic
- Logical-mathematical
- Musical
- Naturalist (added in *Intelligence Reframed* [Gardner, 1999a])
- Visual-Spatial

The theory drew criticism from academic psychologists, particularly psychometricians, because the concept of IQ and the IQ test have a long and honored history in psychology. (For a variety of critiques and evaluations, see Shaler, 2006). Some psychologists suggested that all but linguistic and mathematical intelligences should be called “talents.” But Howard argued that there is no principled distinction between a talent and an intelligence, and he did not relent.

In contrast to academic psychologists, educators were inspired by the theory, realizing that it fit what they had already noticed about their students. Parents of children not strong in linguistic or logical-mathematical intelligences but with strengths in other intelligences accepted the theory because it accorded with what they observed in their children. Adults with such profiles also found the theory validating.

MI theory was not developed as a way to alter educational practice, but rather as a critique of the standard IQ account of intelligence in the field of psychology. Very little of *Frames of Mind* laid out direct educational applications of the theory. Sometimes the theory was misunderstood or misused, as when an Australian educational program paired each ethnic group in Australia with intelligences putatively present and lacking, or when in India fingerprints were deemed to reveal a person’s intelligences profile (both cases of pseudoscience which Howard has denounced). Other misunderstandings included the idea that all children are gifted in at least one intelligence, or that parents should nurture their children in all eight intelligences (an idea that took hold in China).

In later books, Gardner updated the theory and included his thoughts on its educational applications: [The Unschooled Mind](#) (1991); [Multiple Intelligences: The Theory in Practice](#) (1993); [Intelligence Reframed](#) (1999a); [The Disciplined Mind](#) (1999b); [Multiple Intelligences: New Horizons](#) (2006), and [The Essential Howard Gardner on Education](#) (2024).

Howard proposed two broad educational implications of the theory:

- **Individuation:** Teaching should be tailored to the individual intelligences profile of each student. In the past, this was accomplished by tutors hired by affluent families. With the use of computers (and now AI), this can now be accomplished widely and democratically.
- **Pluralization:** Topics should be taught in several ways, each way engaging a different intelligence or combination of intelligences. A plurality of approaches means teachers will reach more children. In addition, children should learn to think about a concept in more than one way, as this fosters a deeper understanding than when one can only think about a concept in one way. The same holds for teachers: teachers need to understand a concept in more than one way to exhibit and nurture genuine understanding. One way to achieve this is through using different *entry points* to a concept. Howard proposed five entry points. I list them here, showing how they could be used to teach about democracy:

Narrational: telling the story of democracy's origins in ancient Greece.

Logical-quantitative: approaching democracy by studying voting patterns over time.

Foundational: examining the philosophical aspects of the idea of democracy, comparing it to other forms of government.

Aesthetic: analogizing democracy to a string quartet, where all four players make decisions cooperatively, vs. an orchestra led by the conductor.

Experiential: assigning students to groups that make decisions either democratically or by obeying a leader and having them compare the pros and cons of both kinds of government.

The theory says nothing about whether teaching should aim to strengthen an individual's intelligences that are weak or build on those in which an individual is strong. This was to be left up to the educator.

Howard maintains an active website on MI called [MI Oasis](#), where his many blogs on MI can be found. His more recent thinking about the need to expand the concept of intelligence is captured in this brief [video](#).

Teaching for Understanding (TfU) 1988-1995

The idea of *teaching for understanding* has been around since the advent of progressive education in the first half of the 20th century. However, while all educators would probably agree that they want their students to understand what they are teaching, most have no clear way of determining whether students understand—since what they test for is students' memory for information. Nor do they have a worked-out method for teaching for understanding rather than for information uptake. These components are what PZ's framework, Teaching for Understanding (TfU), provides (as originally laid out in Blythe, 2004 and Wiske, 1998a,b).

The TfU project was funded from 1988 through 1995 and led by Howard Gardner, David Perkins, and Vito Perrone. It was soon joined by Tina Blythe, Stone Wiske, and many others. The TfU framework offers a clear definition of understanding, a roadmap for *teaching* for understanding, and a way to *assess* whether students have achieved genuine understanding.

Some key features of TfU:

- The TfU framework is in tension with the back-to-basics approach.
- It is in tension with a model of teaching in which the teacher imparts knowledge to the listening student. It is in tension with a fixed curriculum.
- This framework depends upon teacher autonomy and an open-ended curriculum, one that connects to student interests and experiences while honoring disciplinary centrality.
- TfU therefore offers no set curriculum, but rather a way of designing curriculum and a way of assessing.
- TfU calls for a willingness to aim for depth at the expense of coverage. Less can be more.

What actually *is* understanding? It is more than knowledge and more than skills. Understanding is the ability to use what you know and think flexibly with one's knowledge and skills. When students really understand a concept or a theory, they can explain it in their own words, find new examples of the topic in everyday life, make analogies to other concepts similar in some way, think of evidence for or against it, or even represent the concept in a new way, e.g., going from words to a graph or from a graph to a verbal explanation. The core idea is that students need to internalize learning in a way that allows them to use what they have learned flexibly. Flexibly means that they can *apply* what they have learned to new contexts, both those encountered inside and outside of school. Applying what they have learned to new contexts, going beyond what has been explicitly taught, is a *performance of understanding*. The performance view of understanding is probably the most important part of the TfU framework.

There are four key components to the TfU framework (Perkins & Blythe, 1994; Wiske (1998a):

- **Generative topics**
Teachers select generative topics that are worth understanding. Such topics are typically central to a domain. They are accessible and interesting to students and teachers, and they are readily linked to students' experiences. Such topics generate questions that are not quickly answered and are ones for which inquiry leads to deeper questions. Some examples from Tina Blythe's *Teaching for Understanding Guide* (1998): definition of life (biology); concept of zero (math), revolution (history), and multiple perspectives (literature). In this six minute [video](#), David Perkins makes the case for generative topics as topics worth learning.
- **Understanding goals**
Teachers decide what students should understand about each topic. These become the "understanding goals." Overarching understanding goals are sometimes referred to as "throughlines." Some examples from the *TfU Guide*:
 - How does our historical past make us who we are today? (history)
 - Doing science is not the process of finding facts but of constructing and testing theories. (science)
 - How can we use what we know to figure out what we don't know? (algebra)

What makes an interpretation a good one?" (literature)

Teachers develop more specific understanding goals for units or lessons within each overarching goal. These kinds of goals contrast with behavioral objectives, such as memorizing, completing assignments, neatness, appropriate behavior, and even having fun learning—none of which necessarily develop student understanding.

- **Performances of understanding as a form of deepening understanding**

Students are asked to *show* their understanding in ways that do not merely regurgitate what was taught. They are asked to apply what they know to unfamiliar contexts. Performances not only demonstrate understanding but also *advance* understanding because they require stretching.

The criteria for assessment of performances are made explicit to students. Here is an example from the *TfU Guide* of a performance of understanding linked to the social studies goal of understanding that history is always told from a particular perspective and thus understanding a historical text means understanding who wrote it, when, and where:

Students compare two accounts of the beginning of the Revolutionary War that conflict, and discuss why these reports might be different and how they could find out what really happened, and which account is the most plausible and why (Blythe, 1998)

The performance view of understanding stands in contrast to the representational view of understanding, in which a student has a correct (and typically singular) mental representation of something (Perkins, 1977). One can have a mental model without fully understanding it. A performance of understanding interrogates the representational model and makes inferences from it, demonstrating genuine understanding rather than regurgitation. (Of course, there are many kinds of performances that do not necessarily indicate understanding, such as following directions, answering questions reported in the textbook, true-false tests, and so on.)

In this three and a half minute [video](#), David explains why assessing for understanding allows us to educate for the unknown—meaning educating students so that they can make sense of entirely new problems they will confront in the future (and today we know that the future will be an AI future).

Lois Hetland explained why performances of education are difficult to design well:

It's because they require you to combine everything in the framework. They have to have all the qualities of generative topics—disciplinary centrality, student and teacher engagement, accessible resources, and broad connections to other disciplines and topics. They also have to be aimed directly at one or more understanding goals, and they have to make thinking visible so it can be seen and evaluated. So, it's a heavy lift!

- **Ongoing assessment**

Performances continue throughout the learning process, advancing in level of challenge, teachers and students, and sometimes outside experts, keep checking the quality of students' understanding. They do so in many ways, from developing criteria, self-assessing with them, open-ended reflections, tests and quizzes, and many other formal and informal

forms. The central point is to look at and through the performances to see how well understanding the goals is advancing and where teachers need to intervene to support students developing the intended understanding.

These four features of TfU reveal why TfU is more complex than other progressive approaches. At the end of the *TfU Guide*, TfU is compared to progressive approaches such as cooperative learning, essential questions, exhibitions, hands-on learning, project-based learning, interdisciplinary curricula, and portfolios. While each of these approaches may be used as part of TfU, they do not by themselves ensure that the goal and the outcome is deep and flexible understanding. For more information on the TfU project, see [here](#), [here](#), and [here](#). A comparison of a traditional approach and a TfU approach on a similar topic can be found [here](#). A template for designing a TfU unit can be found [here](#).

A later addition to the TfU framework are the four Dimensions and four Levels of understanding (Hetland, et al., 1998). The dimensions are Knowledge (what), Purposes (why), Methods (how), and Forms (what it looks like). The levels are Naive, Novice, Apprentice, and Master. The levels illuminate what understanding looks like at different stages of expertise and help with assessment. This aspect of TfU is less well-known than TfU itself, and its impact is impossible to assess. However, Lois Hetland told me that a devout following continues to find the dimensions useful, both in defining the kinds of understanding that can be emphasized in understanding goals and in designing non-trivial ways to combine disciplines into interdisciplinary projects.

Like many PZ frameworks, TfU was developed collaboratively by both researchers and teachers. The PZ team worked intensively with teachers of English, mathematics, history, social studies, and science from many schools. Schools involved included four schools in Massachusetts (Cambridge Rindge and Latin School, Shady Hill School in Cambridge, the Winchester Public Schools, Wynn Middle School in Tewksbury), three schools in Norfolk, Virginia (Tanner Creek Elementary School, Rosemont Middle School, Norview High School), and a consortium of schools in Bogotá, Colombia. The network of ATLAS schools made TfU one of its central components, as discussed in Chapter 30.

Teachers in these schools developed TfU projects. For example, Joan Soble, a high school English teacher at Cambridge Rindge and Latin, built a writing unit around the concept of place as a geographical, social, and metaphorical concept. Eric Buchovecky, a physics teacher at Belmont High School, focused on simple machines (like corkscrews and garbage cans with step-on lids) which encompassed central concepts in mechanics. Lois Hetland, then an elementary school teacher at the Shady Hill School, built one based on “What picture of Colonial history do we perceive through the lens of biography?”

Researchers regularly sat in on classes taught by collaborating teachers. For example, Lois wrote a reflection on Fridays about how she had tried to use TfU that week. Stone read it and came in on Wednesdays to go over it with her in a 90-minute interview. She also observed periodically. The two of them reflected together, trying to distill the essential ingredients of TfU. The constant fertilization from strong teachers across grades and subject areas was essential to the development of TfU, Stone told me. As the framework was being developed, the team had requests from many schools wanting to hear about the project. As a result, the framework was introduced to over 200 educators around the US and in several other countries.

I have sometimes been asked to explain the difference between TfU and Understanding by Design (Wiggins & McTighe, 2005). I turned to Stone Wiske, one of the original developers of TfU, to address this question. She offered this closely reasoned account, which I reprint here in its entirety:

There are many similarities in these two educational frameworks and some significant differences. The authors of both frameworks conversed as they worked on these ideas; both frameworks evolved over time from initial publications in 1998 as their authors learned from experience. Certainly, educators can benefit from applying these and other related ideas to their own practice, rather than treating them as competing alternatives.

Similarities in Understanding by Design (as presented by Wiggins and McTighe in the 2nd edition, 2005) and Teaching for Understanding are notable. Both frameworks emphasize the importance of understanding as a capability to apply one's knowledge flexibly and creatively in various contexts, not simply an ability to recall knowledge or information. Both advise teachers to define clear goals that focus on desired results in terms of students' ability to perform with their understanding. Both stress the importance of aligning goals with learning activities, so that students' performances of understanding are central to both. Finally, both frameworks highlight assessment using criteria that explicitly relate to goals.

The Teaching for Understanding (TfU) framework also differs from Understanding by Design (UbD) in ways that can affect the culture of the learning community where they are applied. For example, the TfU framework includes an element called Generative Topics which helps teachers formulate curriculum units around topics worth understanding. It emphasizes that generative topics are not only related to content standards and key ideas in subject matters (as UbD does) but are also interesting to students and teachers and accessible to diverse target learners through multiple entry points, media, and learning strategies. Thus TfU draws attention to students' own interests and their varied learning capabilities as key considerations in effective teaching.

Assessment is also conceived somewhat differently in the two frameworks. UbD emphasizes the value of "backward design" by which teachers define desired student outcomes first and then devise or revise plans for learning activities. To think like an assessor, UbD urges teachers to define the evidence of successful outcomes and the criteria for determining levels of quality. Like UbD, the TfU element called Ongoing Assessment also underscores the importance of aligning understanding goals with assessment criteria. However, TfU also emphasizes the educative potential of Ongoing Assessment that engages students as active participants.

TfU urges teachers to make assessment criteria explicit and to share them with students at the beginning of a learning activity. Ongoing assessments are conducted frequently throughout a unit, and they not only evaluate students' work against public criteria but also provide feedback for students to progressively improve their performance. The TfU framework also highlights the value of assessment from various perspectives, including from students themselves through reflection on their own work, peers, and teacher. When students are clear about the criteria for high quality work and are encouraged to examine draft work of their own and of fellow learners in relation to these criteria, they are positioned to become effective agents for their own ongoing learning. Ongoing assessment emphasizes that learning is not linear but iterative, and that both students and teachers actively promote understanding in effective learning communities.

The culture of a learning community became an additional framework component in Teaching for Understanding with Technology (Wiske et al., 2005). New technologies may facilitate revision of

work, they amplify the variety of ways to develop and perform understanding, they can make student work visible across distance and over time, and they can promote reflection when networked technologies allow learners to view and comment on their own and peers' performances. These advantages of new technologies helped to make explicit the importance of reflective, collaborative learning communities for TfU, a component that was only implicit in the original TfU framework. Overall, perhaps the most important difference from UbD is TfU's attention to the power of learners as agents in the iterative process of teaching and learning for understanding.

After the TfU project ended, David Perkins along with Chris Unger ran a 1.5-year project from 1997 to 1998 to apply this model to organizational development in Bogotá, Colombia. A change in the presidency of the university they were working with led to the end of this project—as, regrettably, so often happens when leadership changes hands.

David Cohen and colleagues (1993) have written about the general concept of teaching for understanding, and what they say applies to PZ's TfU framework. Such an approach asks a lot of teachers. They must grasp students' existing understanding. They must themselves have an in-depth knowledge of the relevant subject matter and knowledge flexible enough to be able to develop strong understanding goals, appropriate learning activities, and good performances of understanding. Teaching in this way must not be constrained by mandated curricula and fact-based tests. And finally, teaching in this way requires ongoing learning and reflection.

Visible Thinking/ Cultures of Thinking 1994-1999; 2005-2024

Educators in the progressive tradition have written about the importance of students taking agency over their own learning. Some of the ways to achieve this include (1) “teacher talk moves” to encourage students to listen to one another (e.g., O'Connor & Michaels, 2017), and (2) “critical exploration in the classroom,” which encourages students to look closely, talk about what they have noticed, elaborate and clarify, and supply evidence for their thinking (Duckworth, 2006). But this kind of exploratory pedagogy is not common. All too often, it is easier to resort to presenting information for students to absorb and hope that they store this information in memory.

The history of Visible Thinking and the broader framework of Cultures of Thinking begins in 1994, when David Perkins and Shari Tishman directed a project called Patterns of Thinking. The goal was to provide teachers with methods to develop dispositions supporting higher order thinking. The key idea was that it is not enough to *teach* thinking skills. First, students need to develop the *disposition* to think well (Perkins, Jay, & Tishman 1993).

In *The Thinking Classroom*, Tishman, Perkins, and Jay (1994) define thinking dispositions as a *tendency* toward a particular way of thinking. Five dispositions are described:

- Disposition to be curious and questioning
- Disposition to think broadly and adventurously
- Disposition to reason clearly and carefully
- Disposition to organize one's thinking by being logical and orderly
- Disposition to devote time and effort to thinking

Teachers can help students develop these dispositions by modeling them, explaining what they are and why they are important, encouraging students to be alert to their own and others' thinking dispositions, and providing feedback that supports good thinking dispositions.

A crucial insight is that a disposition consists of ability, inclination, and sensitivity. *Ability* is the basic capacity to think in a certain way. *Inclination* has to do with the motivation to think in that way. And *sensitivity* has to do with whether one notices situations in which it would be appropriate to think in that way. All three of these components are necessary for students to use thinking dispositions. As shown in a series of empirical studies (Perkins et al., 2000), when students do not think well, it is typically because they lack the sensitivity to notice when it makes sense to do so. This finding has important educational implications: cultivating awareness of when to use a thinking disposition is different from cultivating the thinking ability itself. In the words of Perkins, et al. (2000), "...dispositions concern not what abilities people have, but how people are disposed to use those abilities" (p. 269).

The dispositional view of intelligence formed the theoretical background for the Visible Thinking project led by Ron Ritchhart. (The Visible Thinking project is sometimes called Making Thinking Visible—not to be confused with the Making Learning Visible project discussed in this Chapter.)

In 1996, Ron Ritchhart joined David's and Shari's research team. Ron studied expert teachers during his doctoral research in 1998-2000 and noticed that they routinely scaffolded their students to get them to think better. These scaffolds were repeated over and over until they became part of the fabric of the classroom.

In collaboration with educators from the Lemshaga Akademi in Sweden, Ron, David, and Shari then developed a large set of thinking routines (in a project called Innovating with Intelligence, which ran from 2000-2005). These routines form the core of the Visible Thinking project. They are usable across grades and subject areas, all with the goal of cultivating thinking dispositions and developing a culture of thinking in the classroom. Each routine is associated with a particular kind of thinking, and each routine has a name. These routines *make student thinking visible*. This initial set of routines was expanded by Ron and David during the Cultures of Thinking project at Bialik College in Victoria, Australia and through the Learning to Think, Thinking to Learn project at Mandela International Magnet School in Santa Fe, New Mexico, led by Ron.

When used regularly in the classroom, thinking routines become habitual. Each routine consists of only a few steps, and thus they are easy to learn, use, and remember. Thinking routines should not be confused with teachers merely asking questions and students responding. Instead, students talk to one another when prompted by a routine and often document their developing ideas as they talk back and forth. Talking to one another helps students expand their ideas by recognizing multiple perspectives.

There is always a risk that thinking routines will be used superficially. It is important that teachers are keeping in mind the kinds of thinking dispositions they are trying to cultivate and for them to always have an "understanding goal" in mind.

Information about thinking routines can be found in a variety of places. The Thinking Routine [toolbox](#) is a compilation of routines and their basic instructions. The books *Making Thinking Visible* (Ritchhart, Church, & Morrison, 2011) and *The Power of Making Thinking Visible* (Ritchhart & Church, 2020) provide a fuller exposition of the routines and examples of their use in real classrooms. Some

routines are considered “core” (as stated in the toolbox, these are “simple routines that are applicable across disciplines, topics, and age groups, and can be used at multiple points throughout a learning experience or unit of study.”) These are the routines recommended to start with. Others are more complex or more specialized. Here are a few:

See-Think-Wonder (a core thinking routine)

This routine encourages students to make careful observations and thoughtful interpretations. It helps stimulate curiosity and sets the stage for inquiry.

What do you see?

What do you think is going on?

What does it make you wonder?

Think-Puzzle-Explore (a core thinking routine)

This routine activates prior knowledge, generates ideas and curiosity, and prepares students for deeper inquiry.

What do you think you know about this topic?

What questions or puzzles do you have?

How might you explore these puzzles?

I Used to Think____, Now I Think (a core thinking routine)

This routine helps students to reflect on their thinking about a topic or issue and explore how and why their thinking has changed. It helps consolidate new learning

Reflecting on your current understanding of a topic, respond to:

I used to think...

Now I think...

What Makes You Say That? (a core thinking routine)

This routine cultivates observation, description, explanation-building, and evidence-based reasoning. Because students share their interpretations, they are encouraged to see multiple perspectives.

What’s going on?

What do you see that makes you say that?

Claim-Support-Question (a core thinking routine)

This routine supports reasoning by having students form claims, explanations, or interpretations and support them with evidence. Questioning claims helps students see reasoning as an ongoing process.

Make a claim about a topic being explored.

Support your claim.

Raise a question related to your claim that may make you doubt the claim. What is not yet fully explained? What new issues does your claim raise?

The Explanation Game (a routine for introducing and exploring ideas)

This routine explores causal understanding.

Name it.

Explain it.

Give reasons.

Generate alternatives.

Generate-Sort-Connect-Elaborate: Concept Maps (a routine for synthesizing and organizing ideas)

This routine helps organize one's understanding of a topic through concept mapping.

Generate a list of thoughts about this topic.

Sort your ideas with central ideas near the center, more tangential ones toward the outside of the page.

Connect your ideas with lines between ideas that have something in common. Explain on the line how they are connected.

Elaborate on any ideas you have written so far.

Thinking routines are now a subset of the overall framework dubbed Cultures of Thinking (Ritchhart, 2015, 2023), which Ron contributed to after Visible Thinking. There are ten “mindsets” that Ron argues need to be in place to create a strong culture of thinking in the classroom.

For classrooms to be cultures of thinking for students, schools must be cultures of thinking for teachers. The development of a professional community in which deep and rich discussions of teaching, learning, and thinking are a fundamental part of teachers' ongoing experience provides the foundation for nurturing students' thinking and learning. When teachers are encouraged to innovate, collaborate, and inquire (instead of being told exactly how and what to teach), they will promote these same processes in their classrooms.

We can't teach dispositions. Dispositions must be part of the classroom culture. The culture of the classroom teaches. The messages sent through the culture of the classroom communicate to students what it means to think and learn well. These messages are a curriculum in themselves, teaching students how to learn and ways of thinking. The culture of the classroom must provide models of the dispositions valued, allow opportunities to put them into action, and create the expectation that dispositional development is a central, not just a peripheral, part of a well-rounded education.

The role of teacher and student must be changed. Students should be given agency, and there should be more student talk and more teacher listening. There should be more student problem solving and initiative and less teacher rescuing. In this way, the curriculum becomes co-constructed by student and teacher.

Students should feel known, valued, and respected. This leads to greater motivation, and greater well-being.

Learning is a consequence of thinking. In the words of David Perkins (1992, p. 78), "Learning is a consequence of thinking. Retention, understanding, and the active use of knowledge can be brought about only by learning experiences in which learners think about and think with what they are learning."

Learning and thinking are as much a collective enterprise as they are an individual endeavor. Students learn not by passively taking in knowledge from teacher talk or a textbook but by the active process of explaining, defending, and discussing with one another. This also provides the opportunity to understand others' thinking. When students

make use of their peers' ideas as "thinking devices," they can reflect on and transform their own thinking.

Learning occurs at the point of challenge. Students need to be challenged, not rescued. Mistakes should be seen as an opportunity to learn. Teachers should not dictate or demonstrate solutions to problems. Rather they should encourage students to grapple with problems among themselves.

Questions drive learning and thinking. Questions asking students to recall facts do not support learning. Teachers should ask **generative, essential, constructive questions** where there is no one right answer, as in these examples: Is there ever a just war? Why do people move? How do we decide what to believe about a scientific claim? What makes you say that?

Powerful learning engages and empowers students. Powerful learning engages students. Powerful learning comes from grappling with challenging problems, which then leads to new understanding.

Make thinking visible to demystify and illuminate the process. It is only by making thinking visible that we can begin to understand both what and how students are learning. Under normal conditions, a student's thinking is invisible to other students, the teacher, and even to him/herself, because people often think with little awareness of how they think. By using structures, routines, probing questions, and documentation we can make students' thinking more visible toward fostering better thinking and learning.

Eight cultural forces help to make the classroom a thinking classroom. They are listed alphabetically below:

Environment: Create visual displays of student thinking and arrange the space so that it is conducive to thinking.

Expectations: Make clear that the agenda is to develop thinking, not mere completion of work.

Interactions: Respect one another's thinking in a collaborative spirit.

Language: Provide students with the language to talk about thinking—terms such as think, believe, guess, conjecture, hypothesize, evidence, reasons, doubt, suggest, theorize, prove, and so on.

Modelling: Model the process of thinking so that it can be shared, made visible, and discussed.

Opportunities: Create purposeful activities that call for thinking and understanding.

Routines: Use of thinking routines that support and guide thinking.

Time: Allocate time for students to think deeply.

Classrooms with a culture of thinking democratize voices in the classroom. Everyone participates. And when students make their thinking visible this becomes an informal assessment tool that enables teachers to understand and further develop their students' thinking.

The period during which the thinking classroom was developed was a highly generative moment at Project Zero. Many of the subsequent frameworks developed at PZ have a strong conceptual link to the concept of cultures of thinking and thinking routines.

Making Learning Visible

1997-2010

Many people consider the preschools in the northern Italian city of Reggio Emilia to be the best preschools in the world. These are schools we would want for our children and schools that many educators have sought to emulate. The Reggio approach is multidimensional, requiring deep thinking by its teachers and provoking deep thinking in young children. Howard and I made our first of many visits to these schools in the early 1980s; Jerome Bruner began visiting these schools regularly 15 years later.

Some background: In 1963, the first of the Reggio preschools were opened in Italy, founded by early childhood pioneer educator, Loris Malaguzzi. Malaguzzi created a network of free public schools. Malaguzzi was an elementary and middle school teacher in Italy during the Second World War and later a student of educational psychology. At that time, schools were controlled by the Catholic Church. Malaguzzi derided the state-run school he had been teaching in as “sticking to its stupid and intolerable indifference toward children, its opportunistic and obsequious attention toward authority, its self-serving cleverness, pushing prepackaged knowledge” (Edwards, Gandini, & Forman, 2012, p. 29). In reaction to this, Malaguzzi conceived of a very different kind of school—progressive and democratic in which children were encouraged to think for themselves and express themselves in many modalities (which he called the 100 languages of children—language, writing, drawing, sculpture, gestures, dramatic play, music, and so on). The Municipal Preschools and Infant-Toddler Centers in Reggio Emilia now include about 30 free public preschools shaped by the leadership and philosophy of Malaguzzi.

There has been considerable interest in the Reggio schools in the US., Canada, and Mexico. Since 1987, an exhibit about the Reggio Schools called “The Hundred Languages of Children” has regularly toured these countries. In 1991, Newsweek wrote a glowing story about the Reggio schools, describing it as “a program praised by early-childhood educators around the world for its commitment to innovation.” Some preschools in the US began trying to emulate the Reggio schools, inviting Reggio leaders to work with them. These schools wanted to call themselves Reggio schools. However, leaders of the Reggio schools only allowed them to call themselves “Reggio-inspired” schools, since the Reggio leaders could know how faithfully and deeply these schools understood the method used in Reggio.

Project Zero became involved with these schools in 1997, as described in this chapter. The project had three phases.

Phase 1: 1997-1999

Thanks to the interest of an American funder, the Atlantic Philanthropies, Mara Krechevsky led a team that collaborated with the Municipal Preschools and Infant-Toddler Centers in Reggio Emilia. The Reggio team was led by Claudia Giudici and the late Carla Rinaldi.

The first phase took place from 1997-1998. The Reggio team and Mara worked to identify a research topic that PZ and Reggio would want to investigate together. They came up with the following topic: What would it mean to assess learning in a group, since almost all assessments at the time (and even now) were focused on the individual? As Mara explains it, “Our focus was on the power of the group as a learning context and the role of documentation in making that learning visible and shaping the learning that takes place. We called the project Making Learning Visible” (hereafter, MLV). Their goal was to create a document from which teachers all over the world could learn.

What it means to document learning. Reggio projects focused on deceptively simple things: bird houses, a fax machine, shadows, mirrors. The projects were documented. But what does documentation mean? The project leaders defined documentation as the practice of observing, recording, interpreting (ideally in a group), and sharing through various media the processes and products of learning in order to deepen learning (Krechevsky et al., 2013). In a Reggio classroom, teachers as well as students document by taking photographs, making audio and video recordings, and writing notes.

It is important to document learning as it is happening and not just when there is a final product. Without documentation of the learning process, much of learning remains invisible from teachers as well as students (and parents). Documentation makes this learning visible.

Why documentation is valuable for both teachers and students. Documenting the process of learning is valuable for many reasons:

- Documentation of the learning process is carried out to make the learning visible and to shape the emergent curriculum. When teachers reflect on the documentation, their knowledge is deepened. They can see what children are learning, understanding, misunderstanding, and ignoring, as well as what excites, intrigues, and motivates them. These understandings guide teachers in planning for next steps.
- Documentation grounds teacher discussions in something concrete and provides a record that teachers (as well as students) can always return to for further reflection.
- Documentation helps children become meta-cognitive. The teacher asks questions to provoke children’s thinking about what they see in the documentation.
- Documentation communicates and contributes to the knowledge of everyone in the group, reinforcing the group identity. Thus, Reggio teachers often ask children, “What can you do to remember about what you did and communicate it to others?” (MLV, p. 290).
- Documentation helps all parties realize that the ongoing learning would likely not be happening if the individual child were not continually talking and thinking with others.
- Documentation reveals the kind of learning that is not typically captured by standardized test scores—learning such as imagining, investigating, making aesthetic choices.

- Documentation makes a statement about the kind of learning a school values.
- Documentation shows children that their ideas are taken seriously.

Teachers who want to document learning need to begin by asking themselves what they want to learn from the documentation. To document is not to show what the child *has done*, but rather what the child is *learning or thinking*. Because one cannot document everything, one must figure out how to document the moments of learning that one cares most about.

It is important for teachers to meet together to discuss what they are learning from documentation. They need to be able to present problems to their peers, e.g., “this is what one child said today, showing he did not understand. What would you do to help this child?” Working with others facing the same challenges gives teachers courage to try out new things. Long-time Reggio leader Tiziana Filipini noted the value of teachers reflecting on their own learning processes. She sees this as “a strategy that allows us, despite the differences that exist between children and adults, to be closer to children's processes, in a more empathetic and profound way” (email from TF to EW May 22 2023).

Mara believes that one way to think about documentation is as a form of accountability. As stated in Krechevsky, Rivard, and Burton (2010):

Using documentation makes adult and student learning visible in and outside the classroom, supporting three forms of accountability: (a) accountability to self (looking at what one intended to teach in relation to what actually happened); (b) accountability to each other (contributing to collective learning as well as one's own); and (c) accountability to the larger community (evaluating the relationship between the school's mission and classroom practice).

What is a Reggio Learning Group? A learning group is a group of people “emotionally, intellectually, and aesthetically engaged in solving problems, creating products, and making meaning” (MLV, p 285). In a learning group, individuals learn autonomously as well as with and from others. Learning *from* others opens us to new perspectives and ways of thinking. Learning *with* others allows children and teachers to clarify and modify their thinking.

A Reggio learning group is different from what in the US we often call “cooperative learning” in these ways:

Members include both adults and children. Reggio learning groups are often no more than five or six children, along with an adult. Conversations are recorded for later use. Children are given challenging projects, for example to draw a life-size dinosaur and figure out how to build it so it would stand upright (MLV, p. 291). Challenges like these provoke questions and conversations, decisions, mistakes, corrections, delight, wonder, and laughter. Teachers are learning along with students—learning about their own teaching and their students’ learning, and the kinds of topics and projects that work, and those that do not. Teachers start to think about their learning goals and the kinds of projects that will help their students achieve these goals. Parents also get involved. For example, when teachers at the Villetta school in Reggio documented children’s experimentation with water and the theories they were developing about water movement, parents created a committee of experts to build a system of pumps and pipes to allow children to experiment further.

The learning that goes on is not only intellectual but also emotional and aesthetic. In Reggio, the environment is the third educator. It is aesthetically organized with lights, reflections, mirrors, colors. Teachers set up the environment carefully, considering how to turn the ordinary into the extraordinary and how to make children experience feelings of delight and wonder. When aesthetic delight and pleasure accompany learning, learning is more powerful.

The learning group creates a collective body of knowledge. Because each child's ideas are discussed and modified by the group, eventually a collective body of knowledge develops – often resulting in books published by Reggio focusing on a particular project. Students are involved not only in learning knowledge but also in creating knowledge. Students are always thinking about how they are a member of a community and contributing to the community's understanding, not just their own understanding. Reggio educators try to embed children's learning in a product that will contribute to public understanding (beyond the learning group).

The Reggio image of the child. The Reggio schools have an image of the child as able to be trusted to solve open-ended problems together with their peers. Presenting children with problems that have a clear right and wrong answer – giving them with pre-drawn images to color in, or giving them paper plates on which to glue pre-cut yellow rectangles to make a sun – is a practice that is fundamentally inconsistent with the Reggio image of children. Children are understood to be competent and able to construct their own understandings, always in dialogue with peers. When everything is pre-shaped for the child, no meaningful learning can take place. Reggio teachers offer children open-ended problems, and the teacher becomes a co-thinker with the children. For some examples of this approach, see the first six chapters of the *Visible Learners* book. And for a wonderful exposition of this approach, I quote the founding visionary, Loris Malaguzzi:

We need to produce situations in which children learn by themselves, in which children can take advantage of their own knowledge and resources autonomously, and in which we guarantee the intervention of the adult as little as possible. We don't want to teach children something that they can learn by themselves. We don't want to give them thoughts that they can come up with by themselves. What we want to do is activate within children the desire and will and great pleasure that comes from being the authors of their own learning (Malaguzzi, 1994, p. 52).

The Reggio image of the teacher. Reggio schools do not have a pre-set curriculum but one that evolves based on what teachers discern from documentation. This means that the teachers need to learn how to observe children closely and how to document moments of learning. It also means they need to look together at documentation to determine where to go next for each child. This moves teachers out of their comfort zone and asks them to become researchers into children's minds and researchers into curriculum development. Again, in the words of Loris Malaguzzi, from the above linked article:

This system of observing children carries you into many different feelings and thoughts, into a kind of teaching full of uncertainty and doubt, and it takes wisdom and a great deal of knowledge on the part of the teachers to be able to work within this situation of uncertainty. Observing in this way offers tremendous benefits. It requires a shift in the role of the teacher from an emphasis of teaching to an emphasis on learning, teachers learning about themselves as teachers as well as teachers learning about children (p. 52-53)

After the initial phase of MLV (1997-1999), PZ researchers worked for the next decade with teachers and teacher educators in the US to translate the project's ideas into American classrooms across pre-K-12 and across subject areas. This work is described below in "Phase 2" and "Phase 3."

Phase 2: 1999-2002

In Phase 2 of MLV (1999-2002), Mara led a group of PZ researchers working with pre-K to 8th grade public school teachers in the Boston area. Teachers came from the Cambridgeport Children's Center and the Cambridgeport School in Cambridge, Massachusetts and the Ezra H. Baker and John Simpkins schools in the Dennis Yarmouth school district in Massachusetts. The PZ researchers facilitated teachers as they studied their own attempts at group learning and documentation. This was quintessentially PZ-style professional development, where teachers engage as students in the very activities they will be carrying out later as teachers (as seen in the WIDE TfU course discussed earlier in this chapter).

Phase 3: 2003-2010

In Phase 3 (2003-2010), Mara and her team led a monthly seminar at PZ in which teachers and teacher educators explored how best to use the group and documentation to deepen and extend learning, using *Making Learning Visible* as their core text. The seminar resulted in a 2013 publication by Krechevsky, Mardell, Rivard, and Wilson, *Visible Learners: Promoting Reggio-Inspired Approaches in All Schools*. Beginning with 21 local public school educators and three teacher educators from Wheelock College and Lesley University, the seminar eventually involved over 75 schools (primarily urban and public) and over 100 teachers from these schools. (The many teachers involved in the seminar can be found in the Acknowledgments section of *Visible Learners*.) PZ researchers visited the classrooms of the participant teachers, and educators from the Reggio schools joined the seminar once or twice a year offering feedback. A number of these teachers later became coaches for the PZ online course called Making Learning Visible.

Visible Learners elaborates somewhat on the original MLV book by laying out five key principles:

- Learning should be purposeful – students should know why they are learning what they are learning.
- Learning should be social – so that students can consider other viewpoints and thereby complexify their thinking.
- Learning should be emotional – providing experiences of wonder, surprise, and delight.
- Learning should be self-directed (and thus empowering).
- Learners should translate what they learn using multiple representations – words, images, graphs, etc.

The book makes the case that two key practices, learning in groups and documentation, build on these five principles. The authors provide twenty-five tools for how to create learning groups, when and how to document, and how to interpret what is documented, noting that interpretation is a practice that often gets overlooked. The teaching strategies outlined in the book later served as the basis for professional development courses and workshops in schools in the Boston and Cambridge area.

The first six chapters of the book provide six detailed and complex “learning portraits” in different disciplines for learners of different ages. These show children working in groups and making their learning visible. They show how teachers guide student learning, and how students support each other in learning.

In 2017, the project began to implement MLV in Italian secondary schools.

In the next four chapters, I describe the impacts of each of the four frameworks just discussed.

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Chapter 5

Multiple Intelligences: Impact

The idea of multiple intelligences has spread far and wide. Here I provide evidence of impact from the most well-documented examples of how this idea has been used worldwide.

Vehicles of Impact

MI is so widespread that it has become part of the conversation in education worlds and beyond, in part because it felt consistent with what teachers often intuited about learners. Here are a few facts about MI spread:

- *Frames of Mind* as well as Howard's other later books on MI have been translated into Arabic, Chinese, Czech, French, German, Georgian, Hebrew, Italian, Japanese, Korean, Norwegian, Portuguese, Romanian, Russian, Slovenian, Spanish, Swedish, and Vietnamese.
- There have been many books about MI, with [Thomas Armstrong](#) and [Tom Hoerr](#) being among the most prolific authors. Others include [David Lazear](#), [Mindy Kornhaber](#) (a colleague of Howard's), Bruce Campbell (2007), and [Linda and Bruce Campbell](#) (1999), and numerous MI books in other languages (most often in Chinese).
- MI theory is often assigned in college and most often in education classes. For example, in 2023, Howard's *Multiple Intelligences: The Theory into Practice* (1993) appeared on 2058 syllabi. (opensyllabus.org, July 29, 2023).
- A ProQuest search revealed 315 doctoral dissertations between 1987 and 2024 with "multiple intelligences" in the title.
- As of January 29, 2025, a Google search revealed 60,600 listings of publications including "Multiple Intelligences" in their titles. (A handful of these were authored by Howard Gardner).
- Literally every day Howard sees mention of MI in the press and/or gets an email from someone he has never met asking for more information about MI, telling him how they are using the theory, or how the theory "changed my life." Here is one example from a college student:

I just wanted to tell you that I think your research on multiple intelligences is one of the most important research studies ever done. You have impacted so many people in such a positive way and it makes me so happy that I'm able to get educated in a way where I can be taught, in a way that works for me.

- Others often offer their own idea about another kind of intelligence. Here is just one example: In a [letter](#) about Donald Trump's reprehensible comments about Haitians' IQ published by the *Miami Herald*, the writer opines:

A discussion about IQ should consider the theory of Multiple Intelligences, developed by American psychologist Howard Gardner. Based on that theory, success in any aspect of life—music, for example—is predicated on an individual's capacity to excel in that particular field. This theory is so powerful that other researchers have expanded it to include emotional and political intelligence. The late Nelson Mandela and former President Bill Clinton are two examples of leaders with political intelligence. Haiti longs for this. (David Halpern, Miami Herald, September 23, 2024).

MI theory has also led other scholars to write about non-academic intelligences. The most well-known example is the concept of emotional intelligence expounded by Peter Salovey (Salovey & Mayer, 1990) and Daniel Goleman in his 1995 book, [*Emotional Intelligence: Why It Can Matter More Than IQ*](#). While not a term used by Howard, emotional intelligence maps loosely onto MI's two personal intelligences (interpersonal and intrapersonal).

MI has had a powerful impact on education in two areas: (1) on teachers and schools; and (2) on assessment..

Impact on Schools

Four Factors Predicting MI's Influence on Schools

Schools that have incorporated MI tend to see the theory as supporting progressive, child-centered, individualized education, especially since MI ideas make room for learners who do not exhibit standard scholastic intelligence profiles

In the introductory chapter to *Multiple Intelligences Around the World* (Chen, Moran, & Gardner, 2009), Howard observed that four factors predict whether MI will take hold in a school or culture:

1. **Rediscovery of traditions:** For example, the Confucian tradition in East Asia recognized various competencies in an educated person.
2. **Desire to broaden curriculum, ways of teaching, and ways of assessing to go beyond a focus on STEM or the standard academic curriculum.**
3. **Desire to reach students either with learning challenges or with unusual cognitive profiles:** MI has had a particular influence on special education and gifted education, and even, in one case, on treatment of dementia.
4. **Affirmation of democratic practices and values:** Cultures trying to move away from authoritarian models of education find MI helpful. Of course, the political situation is very different today than it was in 2009, with democracy under challenge in various ways around the world.

Educators in Western Europe (with the exception of those in Scandinavia and the UK) have had relatively little interest in the theory or in its educational implications. In contrast, some Eastern European countries have been receptive: Greece, Romania, and Turkey.

Western Europe has a long tradition of progressive education thinkers (such as Johann Heinrich Pestalozzi, Friedrich Fröbel, Rudolf Steiner, Loris Malaguzzi), and Howard has speculated that

educators in Western Europe today may thus feel less of a need to inject “MI” words and practices into their educational discourse.

MI ideas seem to have found more receptive soil in parts of Asia (China, Hong Kong, India, Korea, the Philippines, and Singapore, Thailand), in Australia, Latin America, and in the United States (including the Navajo populations). Sometimes one can see the culture’s imprint on MI in ways the theory did not intend. For example, in China, a culture interested in boosting children’s achievement, an educator remarked to Howard that with MI they now could focus on eight ways to make all children smart—hardly the intent behind MI.

In contrast to the many Asian countries interested in MI, Japan has thus far been a notable exception. Howard has commented that Japan is the least psychological, most sociological society and attention to individual differences is seen as undesirable. To be sure, there has long been a Japan MI society, and Howard has treasured relations with several of its members. But the society is very small.

MI is in the air in Israel, according to Yoram Harpaz, a leading education theorist in Israel whom I interviewed about TfU. It is widely discussed not only in education circles but also outside of education. This was echoed by Linor Hadar, a professor of education in Israel, who told me that there would be no classroom in Israel where the teacher did not know about MI.

Building on data collected from 91 educators about why they had adopted MI, Mindy Kornhaber published an article in *Teachers College Record* in 2004. She discovered five related reasons:

1. The theory validated what teachers already believed.
2. The theory complemented their progressive, constructivist approach.
3. They already used some practices consistent with the theory.
4. The theory gave them an organizing framework.
5. The theory helped them reflect on, and thereby extend, what they were already doing.

Given that teachers voluntarily chose to implement MI because it was consistent with their beliefs and practices, did adoption of MI actually *change* how they taught? To answer this, Kornhaber (1994) looked closely at three schools that varied in the extent to which they had already adopted progressive practices: two public elementary schools and one public middle school, all with experienced teachers but with no direct prior contact with Project Zero. There were changes in practice in all three settings. Teachers in the most progressive extended their existing philosophy and practice. Those in the most traditional (textbooks, teacher-centered) experienced the largest changes via forming study groups and a school within a school to adopt MI-influenced changes in curriculum, assessment, and pedagogy.

In a book called *Multiple Intelligences: Best Ideas from Research and Practice* (2004), PZ researchers Mindy Kornhaber, Edward Fierros, and Shirley Veenema described changes in practice in schools adopting MI theory. The authors conducted telephone interviews with 41 schools where MI had been implemented for at least three years. Eighty percent of the schools reported positive changes, specifically:

- 49 percent associated MI with improvements in standardized test scores
- 54 percent associated MI with improvements in student behavior
- 60 percent associated MI with increased parent participation

- 78 percent associated MI with improved learning, motivation, and social adjustment for students with learning disabilities

Six Practices

Following the interviews, the researchers visited ten schools across the US with varied student populations (most were public, elementary schools). In each, they observed classrooms and interviewed teachers over a period of several days. They discovered six practices in the schools that associated positive outcomes with MI, and they called these Compass Points.

School Culture: Teachers believed that all children have strengths and can learn and that all members of the community deserve respect. Classrooms were filled with engaged students.

Readiness: MI changes were not instituted from the top but rather affected practice gradually, over a period of 12 to 18 months.

Tool: MI was used as a tool for the production of high-quality student work. Students were helped to discover their strengths and to develop and use these in learning. The curriculum was opened up (pluralized) so that more than one intelligence was involved in any project.

Collaboration: Teachers began to collaborate more with one another on projects, complementing their own strengths with those of other teachers.

Choice: Students were given a degree of choice in how they wanted to learn and show what they had learned (e.g., drawing vs. writing), or in the kinds of topics they wanted to focus on (e.g., books about an athlete vs. a dancer vs. a leader). Some schools had pods students could choose to explore, each tied to a particular intelligence.

Arts: The arts (visual arts, music, dance, etc.) were very important both for their own sake (each involves one or more of the intelligences) and as ways to represent understanding of subject areas and were therefore integrated into subject areas.

As noted, MI theory did not include any “tools” for educators to use to address children’s multiple intelligences. The theory did not point clearly to any specific educational interventions beyond individuation and pluralization that Howard suggested. It did not suggest any specific curriculum or even curricular framework. Nonetheless, this theory has influenced schools and teachers at all grade levels and those teaching students of all kinds – typical, gifted, special needs, those in the juvenile justice system (Kornhaber, 2004), and even adult learners (Viens & Kallenbach, 2004).

Because of the widespread appeal of the theory, many educational consultants began to offer professional development in implementing the theory in the classroom, and many books were written about how to turn the theory into practice (e.g., Armstrong, 1994; Lazear, 1991, 1994). In 2014, education scholar Jack Schneider wrote, “by 1996 there were already fifty books on using multiple intelligences in the classroom. Today, there are hundreds” (p. 66). He noted that the idea of Multiple Intelligences “has taken hold in schools large and small, public and private, across disciplines, and at all grade levels” (p. 75).

In 2009, *Multiple Intelligences Around the World* appeared, edited by Jie-Qi Chen (now a professor emerita and researcher in the graduate program of child development at the Erikson Institute in Chicago), Seana Moran, and Howard. That volume built on a conference organized by Branton

Shearer in connection with the American Educational Research Association, at which several presenters wrote about MI schools around the world. The volume by Chen, Moran, and Gardner (2009) includes chapters describing MI schools on four continents: Europe (Norway, Denmark, England, Ireland, Scotland, Romania, Turkey); Asia (China, Macao, Japan, South Korea, Philippines); Australia; South America (Argentina, Colombia), and North America (United States). Below I describe a few of these.

The First Two MI Schools

To my knowledge, the first explicitly MI school to be established was the [Key School](#) in Indianapolis (later called the Key Learning Community), founded in 1987 by eight public school teachers in Indianapolis including Patricia (Pat) Bolanos who was the first school leader (Kunkel, 2009). After *Nation at Risk* was published in 1983 reporting on the poor outcomes of US education, there was a strong push towards back to basics and testing. The Key School teachers wanted something different. They read widely, including *Frames of Mind*, and when they learned that Howard was speaking at Kutztown, Pennsylvania, they drove there from Indianapolis to ask him what he thought of designing a school around MI. Howard told them that he had not developed the theory to change education practice, but he was quickly intrigued by the idea.

These teachers designed their new school (a lottery-admissions public school) so that every intelligence would have equal importance. The curriculum was organized around themes and projects, and all of the intelligences of each child were described in that child's progress report. One of the most original aspects of this school was the "Pod Class." Pod classes were electives that met four days a week. The idea was that students would choose a pod that they felt was a good fit and that interested them. The pods were designed to be challenging, allowing students to experience states of "flow," because students' abilities and curricular challenges are well-balanced (Csikszentmihalyi, 1990).

Chris Kunkel (2009, p. 293), the second principal of the school, wrote "without fully realizing it, they started the MI movement in K-12 education when they opened their doors to 150 K-6 students in 1987" (2009, p. 293). The school later expanded to a middle and a high school. A full description can be found in Chris Kunkel's chapter in the 2009 book, *Multiple Intelligences Around the World*.

When the school opened, 32 percent of the students were from families living in poverty. But this percentage later increased to 72 percent, and these students needed a great deal of support. Presumably as a result, the test scores fell during a time when there was increased pressure for score gains under the federal No Child Left Behind Act. The school was closed in 2015 due to loss of support from the educational establishment. A documentary about its history by a former teacher is now in the works, and Howard is featured. During the filming, Howard learned that the state library in Indianapolis has numerous videos of each child's projects over the years. This is a fantastic resource because it can provide evidence about whether, in Howard's words, "childhood passions cast a shadow on what kids do when they grow up."

Howard recalls that Pat Bolanos used to joke that she would not have succeeded without the opposition of five successive superintendents. The school must have left a deep imprint on teachers and students, because even today faculty, administrators, and many former students keep in touch. Interestingly, Robin Houdek, one of the two winners of the [2024 Indianapolis Teacher of the Year Award](#), had attended the Key Learning Community, which she credits for inspiring her to pursue a career in education and to keep students' interests and perspectives central to her work.

There is no documented knowledge about whether Key School ideas and practices spread to other countries. They did have summer institutes and some of the personnel came to PZ, but unlike Tom Hoerr at New City School (discussed next), they did not write books or have columns or websites.

The second explicitly MI school to emerge was the [New City School](#), an independent, pre-K to 6th grade school in St. Louis. In 1988, the head of the school, [Thomas Hoerr](#), read *Frames of Mind*, and decided to bring MI to his school, as he describes in his chapter in Chen et al. (2009). He invited teachers to meet with him regularly to read and discuss key texts, and to present what they were learning at each faculty meeting. In 1989, members of this teaching committee visited the Key School. Teachers began incorporating MI. Students kept portfolios whose contents had to include items from all of the intelligences. For each item in the portfolio, students explained the intelligences that item required. Students showed what they had learned not only with the scholastic intelligences (linguistic, logical-mathematical) but also with all of the other intelligences. Their report cards changed, and the first page focused only on interpersonal and intrapersonal intelligences. Intrapersonal intelligence, addressed: confidence, motivation, problem solving, responsibility, and effort and work habits. Interpersonal intelligence was broken down into appreciation for diversity and teamwork.

The reputation of this school grew, and the school welcomes hundreds of educator visitors a year. The faculty have written books about how to use MI in teaching and assessment (*Celebrating Multiple Intelligences* in 1994 and *Succeeding with Multiple Intelligences* in 1996), and Thomas Hoerr wrote a book about how to implement MI schoolwide (*Becoming a Multiple Intelligences School*, 2001). While Thomas Hoerr is no longer the head, it is important to note that the idea of a curriculum built around multiple intelligences continues to have a presence on the school's website. And Thomas Hoerr sends out a regular, widely circulated newsletter about MI. A sample newsletter can be accessed [here](#).

Howard had many exchanges with both the Key School and the New City School. Subsequently other schools in the US were created on the basis of MI and some even included MI and Howard Gardner in their name, e.g., the [Howard Gardner MI Charter School](#) in Howard's home town of Scranton, Pennsylvania; the [Howard Gardner School](#) in Alexandria and Sterling, Virginia; and the [Gardner School of Arts and Sciences](#) in Vancouver, Washington. There are also Howard Gardner or MI schools all over the world.

When I asked Thomas Hoerr about his observations of student impact at New City School, he told me the following:

I know first-hand that using MI benefits students. I have seen it with my own eyes, year after year after year. Of course, the metrics we use to measure growth are inadequate. While that's true in general; it's definitely true vis-à-vis MI.

I saw two kinds of phenomena happening when teachers used MI. First, all students gained when they could use their stronger intelligences to learn. That was especially obvious with those who were not particularly enamored with learning, those students who did just OK and occasionally those who didn't even do OK. They came alive when they could use "other" intelligences in learning. Sure, they needed to learn the 3 R's and we did not ignore that. But learning through one's spatial or bodily-kinesthetic, or musical intelligences gave those students different—and more appropriate—avenues to learn. More, their enthusiasm about school, their joyful learning, carried over. The fifth graders who I often describe as learning about the Civil War (learning and

showing what they learned) by creating a spatial timeline of the war—chronology on the X axis and what happened in the north versus the south being drawn above or below a horizontal line in the middle—carried that success with them throughout the day. When third graders built Native American dioramas and gave presentations about them to peers and visiting adults, using their spatial, bodily-kinesthetic, linguistic, and interpersonal intelligences, they all succeeded. Sure, some did better than others, but the success rate (and the joyful learning rate) was much higher than if they had just written reports. These students were more enthusiastic about coming to school even though they were only able to use their other intelligences during a portion of the day. (Said another way, our use of MI reduced the times when a student might feel scholastically inadequate.)

Second, our use of MI meant that our teachers began by looking at how their students learn. Ideally, that should always be the case. Realistically, however, too often (way too often) teachers begin by planning from their curriculum and the responsibility rests with the students to find out how to learn to meet expectations. That's become even more the norm as standardized tests are viewed as the measure of success. I don't mean to be critical of teachers; rather, our U.S. system doesn't take different intelligences into consideration. The default is that students learn linguistically and logically-mathematically. Neither the Key School nor the New City School accepted that premise. (Teachers liked using MI because they saw their kids succeed. Too, another important issue is that our teachers really enjoyed using MI because it enabled them to be creative and tap into their own "other" intelligences.)

In my mind, we educators should be focused on preparing students to succeed in life, not just to do well in school. With that as the outcome, it's even more obvious that we need to help students learn how to use their range of intelligences as well as to respect those whose intelligence profile is different than their own.

MI (and Teaching for Understanding [TfU]) in Ireland

The "Multiple Intelligences, Curriculum and Assessment Project" at University College Cork was led by Aine Hyland, a professor at University College Cork in Ireland, from 1995 to 1999. The project (which included teachers from all levels as well as school leaders and university professors) researched the implications of MI for curriculum and assessment in Ireland. The project expanded to include a study of the application of the Teaching for Understanding framework in Irish schools.

According to the [final report](#), the project

provided a forum for discussing and debating fundamental educational issues at a time of major change in Irish education. It sought to identify ways in which teaching and learning in this country could be improved and enhanced, and it sought to disseminate its findings on an ongoing basis. It aimed to challenge long-held educational assumptions and to influence developments in curriculum and assessment at local and national level.

The report acknowledges the importance of the PZC for inspiring the team of researchers. The final chapter of the report described how the project led to rethinking teacher professional development in Ireland, arguing for the critical role of reflective practice for teacher education. Findings were widely disseminated in the form of publications and seminars, including a series of seminars in 1998-9 that included participation by 32 schools and attended by over 400 teachers.

In terms of actual effects on the Irish educational system, the final chapter states that the National Curriculum was revised in 1999 and stressed the importance of students developing understanding and the ability to apply their learning to new contexts (showing the influence of TfU). The report goes on to describe actual effects on student learning from the group learning and projects that were spawned by the MI and TfU approach. Specifically, the report noted:

- Greater student interest and participation,
- Greater student interaction,
- Greater student sense of responsibility for their own learning,
- Greater attention, concentration, memory and understanding, which the researchers attributed to multiple representations of content (especially visual-spatial and interpersonal approaches).

MI Schools in Asia

China. In China, Zhilong Shen (see Shen, 2009), professor at Beijing Technology and Business University, has worked with Howard for over 30 years, introducing MI ideas into China, translated all 11 Chinese versions of the MI books, and has given over 200 lectures on MI theory and its application to teachers all over China. In 2003, he hosted a major MI conference in Beijing with thousands of participants resulting in hundreds of papers. The national education magazine of China, *Educator*, published an issue in 2023 with Howard on the cover and an interview with Howard by the editor of the magazine.

Tom Hatch, a professor at Teachers College, Columbia, and a former researcher at Project Zero, wrote to Howard about a recent visit to China:

While I was there I had what I can only describe as a mind-blowing visit to a "kindergarten"/early childhood center in nearby Shenzhen. Saying it was Project Spectrum on steroids doesn't begin to capture it. I tried to describe a bit of what I saw in this [blog post](#) published on [internationalednews.com/](#) (a website I started about 10 years ago to track education news and research around the world). (T. Hatch, personal correspondence, January 15, 2025)

While I cannot claim that this childhood center was influenced by Spectrum, it was definitely influenced by MI theory. In an email to Tom Hatch in response to his blog, the center's director, Wang Xiang, wrote that Howard's theory of multiple intelligences had a profound influence on the center. He went on to explain:

The learning centers in the kindergarten are based on the educational thought of multiple intelligences. [This is done] In order to realize the integration, individualization and diversification of education, meet the needs of children's multiple intelligence development, explore the interests and potential advantages of each child, provide suitable development opportunities, and drive the development of other intelligences with the dominant intelligence. (X. Wang, personal correspondence, January 13, 2025)

Hong Kong and more. [Rex Li](#), a scholar of John Dewey and a graduate of Teachers College, is a professor at GT College in Hong Kong. This school was the first in Hong Kong to espouse MI theory, and perhaps the first *research* MI school in the world. The school was rated one of the top ten IB schools in the world. Students with gifts in one or more of the intelligences are considered for admission. While Rex has been deeply interested in gifted education, he has a broad definition of giftedness and encourages research on this topic.

Rex Li has launched an impressive journal called *Research MI* (whose mission is described [here](#)) and has also founded a network of over 30 schools from 15 countries called GMISNET ([Global Multiple Intelligences School Network](#)). The network shares research and facilitates student and teacher exchanges.

In 2023, Rex orchestrated the third International MI Education Forum with over 200 educators from all over the world, including the head of the National Association for Gifted Children from the US. Rex told me that this conference was important because in Asia educators do not have opportunities to share their research experience. This was the first time that Rex Li met Zhilong Shen. It was from presentations at the 2023 conference that I learned that hundreds of schools in Thailand and in Turkey have incorporated elements of MI (as reported at Rex Li's 2023 MI Education Forum by Dr Krissanapong Kirtkikara and Dr. Ziya Selcuk, Turkey's Minister of National Education). One year later, Rex opened an MI Lab in Turkey, and the opening was attended by over 50 educators. The MI Lab has offered a three-day teacher training workshop attended by over 30 educators from all over Thailand, sponsored by the Office of Basic and Elementary Education of the Ministry of Education of Thailand. More trainings will be offered in the future, all with the goal of establishing an MI school in Thailand within a few years.

As described in the December, 2024 issue of his magazine, *Research MI*, Rex Li has founded an MI Lab in Bangkok which offers MI teacher training programs from Hong Kong to Thailand. The Lab's training manual is rooted in MI theory and includes a framework for identifying MI strengths, and designing pedagogies and curricula. One cohort of teachers has now passed through this training. That same year, Rex Li went to Thailand to explore the feasibility of setting up an MI-Gifted and Talented school in Thailand.

Rex Li wrote this to Howard:

We are working to promote MI in Asia, notably Southeast Asia, Central Asia and West Asia. The Belt Road Initiative covers most of these countries. I am not sure how much we can do, but we are slowly building up our network. I am curious about Iran: sometimes we see Iranian girls in international student exchange events, and they speak good English. Iran is among the most western countries before revolution in 1979.....We are pleased to work on this side of the Globe. Kindly pass your contact, so we can invite them to the upcoming 4th International MI Education Forum. (R. Li, personal communication, January 1, 2025)

And here is what Howard replied:

I like the idea of Multiple Intelligences spreading to Multiple Points on the Global Belt – and perhaps we can find some partners in Iran, Ireland, Israel, Iceland, just to mention a few "I" points on the global compass. (H. Gardner, personal communication, January 1, 2025)

Howard has often commented about the enduring interest in MI in Asia. He has said that the interest "comes from parents whose children cannot get into the most prestigious engineering or computer schools in China, India, Vietnam, Korea, etc. – and so this approach gives them hope that their children can still have a life and perhaps a vocation." Perhaps, he speculates, this may be the way that MI continues to endure in the world, long after *Frames of Mind* has been forgotten.

India. [St Stephens](#), an independent secondary school founded in 1985 in Ajmer, in the state of Rajasthan, India, is infused with MI as well as the ideas of Howard's 2006 book, *Five Minds for the Future*, a book informed by MI theory as well as the Good Work framework. In this book Howard posits these five minds: the disciplined, creative, synthesizing, respectful, and ethical.

In 2024, Howard received an email from Anupan Martins, whose father founded the school.. Anupan wrote that the school emphasized

...many of the principles that align with your Five Minds and Multiple Intelligences framework, even before we had the terminology to describe it. Thank you, once again, for your incredible contributions towards unleashing human potential through education for the world at large, and for St. Stephen's Ajmer in particular. As we mark our 40th year as an institution, we have adopted Five Minds for the Future as the theme for our activities throughout this academic year. (A. Martins, personal communication, October 20, 2024)

Japan. Keiko Ishiwata, President of the Japan MI Society, wrote in 2023 on her Linked-In page:

It has been 40 years since the theory of Multiple Intelligences (MI theory) was first advocated, but in Japan it has been only well known in academia, especially among psychologists. Thus, MI theory was never implemented in mainstream educational institutions in Japan. In 2003, a group of volunteers who participated in Project Zero Summer Institute, Harvard Graduate School of Education in order to study MI theory, established the Japan MI Society to promote MI theory in Japan.

There have been gradual changes in education in Japan since 1990's. It is fair to say that Japan is trying to move away from knowledge-oriented education and achieve an education that resonates with MI theory. Therefore, MI theory serves as a basic concept for educators to improve education in Japan.

At one time, the number of students who wanted to enter university in Japan exceeded its capacity. The Japanese university entrance examinations were competitive and rigorous, placing a heavy burden on students, who were required to acquire knowledge. High school teachers always trained their students to get into university. The examinations were given mainly in the form of written tests and were knowledge-based.

However, today, with the declining birthrate, universities have been struggling to recruit new students. The formats of university entrance examinations have become more diverse than they were back then. One of the reasons for diversification of entrance examinations is that universities cannot secure admission capacity with knowledge-oriented written tests alone (Kawai, 2017). In order to let their applicants pass the entrance examinations, universities now take into account not only applicants' academic capacities (linguistic intelligence and logical-mathematical intelligence) but also their special skills or abilities (musical, spatial, bodily-kinesthetic, naturalist, interpersonal and intrapersonal intelligences)...

Japanese education has shifted from an emphasis on linguistic and mathematical intelligences to a focus on a broader range of human intelligences. Again, MI is not well known to the general public and some educators are ignorant of or novice of MI theory. However, it is true that these changes in society have made the concepts of MI theory more acceptable than before.

It is my duty as an educator to facilitate the students' understanding of the subject matter, but I also strive to help them develop their intelligences. When forming groups in class, I always take into account the eight intelligences of the students. This leads to positive and active activities. By understanding learners' intelligence profiles, I need to be more creative in my teaching methods. It is essential to teach them in multiple ways, as Gardner points out.

Last year, I introduced a range of Gardner's works including Multiple Intelligences Theory. In the first class, I asked the students what kind of abilities (intelligence) they needed to be successful in society. All students in the class answered that it was not knowledge, but rather human nature, which are considered to be interpersonal intelligence or intrapersonal intelligence. Japanese youth realize what kind of intelligence they should foster to live a successful life. This might be a proof of the changes in Japanese education.

Another proof is that some educators from private education sectors such as day care centers, preschools, kindergartens, and cram schools have contacted the MI Society of Japan. They want to take on diverse populations in their school in order to develop their schools by meeting the demands of today's society. To this end, they want to learn MI theory in order to understand the intelligence profile of each student and provide an education that enhances their intelligences.

MI theory is 40 years old, but Japan has now got ready to put it into practice. I believe that MI theory is very beneficial for Japanese educators to achieve SDGs and also produce human resources for modern labor market.

Collegio Montserrat

The [Collegio Montserrat School](#) in Spain headed by [Sr. Montserrat Del Pozo](#), has also been strongly influenced by MI. For a discussion of how this network has been influenced by MI, see Chapter 56 on school networks using multiple PZ frameworks.

Teachers may use individuation and pluralization in their practice without being a part of an MI school, and without any MI curriculum, as described in [this blog](#) by Howard's colleague, Shinri Furuzawa. She notes these three examples ([here](#), [here](#), and [here](#)).

Impact on Assessment

Educators influenced by MI are typically educators who believe in progressive education and alternative forms of assessment. Here is a [blog](#) by Amber Strong Makaiau, a professor at the University of Hawaii in the College of Education describing the connections between MI theory and progressive education, and how MI theory affected how she assesses learning in her students. In the next section I first focus on the use of MI in early childhood assessment and then describe how MI has been used as an assessment tool with teens and adults.

Early Childhood Assessment

At PZ, MI theory soon led directly to Project Spectrum, a ten-year research and development project led by Howard Gardner, David Henry Feldman (then a professor at the Eliot Pearson School of Child Study and Human Development at Tufts University), and Mara Krechevsky. The overarching goal of Spectrum was to develop ways to identify and nurture relative strengths and interests in young children that recognized all of the intelligences. Spectrum is best known as an assessment tool and was later used as a curriculum intervention tool developed for at-risk children.

The project is detailed in these three 1998 volumes:

1. [*Building on Children's Strengths: The Experience of Project Spectrum*](#) (edited by Jie-Qi Chen, Mara Krechevsky, and Julie Viens), provides a full history of Spectrum.
2. [*Project Spectrum: Early Learning Activities*](#) (edited by Jie-Qi Chen, Emily Isberg, & Mara Krechevsky) describes the learning activities of Spectrum.
3. [*Project Spectrum: Preschool Assessment Handbook*](#) (edited by Mara Krechevsky) describes Spectrum's assessment tools.

Activities in Seven Areas. The original seven intelligences served as a basis for assessment. Activities relating to these seven were developed, based on observations of 4-year-olds at the Eliot-Pearson Children's School:

Movement

Creative Movement (Biweekly Movement Curriculum)
Athletic Movement (Obstacle Course)

Language

Inventive Narrative Measure (Storyboard Activity)
Descriptive Narrative Measure (Reporter Activities)

Mathematics

Counting/Strategy (Dinosaur Game)
Calculating/Notation Measure (Bus Game)

Science

Naturalist Measure (Discovery Area)
Logical Inference Measure (Treasure Hunt Game)
Hypothesis Testing Measure (Sink and Float Activity)
Mechanical Measure (Assembly Activity)

Social

Social Analysis Measure (Classroom Model)
Social Roles Measure (Peer Interaction Checklist)

Visual Arts

Art Portfolio (yearlong collection)

Music

Production Measures (Happy Birthday; New Songs)
Perception Measures (Pitch-Matching Games; Song Recognition)

A description of each of these activities is included in the appendix of the first Spectrum volume. To capture the ways in which the child related to activities in each area, e.g., confident/tentative, persistent/frustrated, impulsive/reflective, playful/serious, focused/distractible, a Working Styles Checklist was developed.

Note that all of these activities are embedded in real-world activities. They are both part of the curriculum and forms of assessment. They are “intelligence fair.” That is, they capture abilities using materials relevant to the domain being assessed, rather than an artificially introduced paper and pencil test. The materials invite children to become engaged in real-world activities rather than only asking them to respond to verbally presented questions (as in a typical IQ test). For example, story-telling is used to assess linguistic abilities, a board game with dice assesses mathematical ability, taking apart a mechanical object assesses spatial abilities. These activities can be used as part of the curriculum as well as for assessment. The end result for each child is a Spectrum Profile that describes the child’s strengths and recommended activities for home and school. Spectrum can also be used as an MI curriculum, as it requires using all of the intelligences.

The team that developed the Spectrum assessment identified distinct intellectual profiles for most of the children. Every child showed at least one strength either compared to their peer group or relative to their other abilities. Importantly for the theory itself, there was little correlation among children’s performances across activities. These performances were, as the theory would have predicted, relatively autonomous.

The Spectrum approach can be used for instruction as well as assessment, though it is not a comprehensive approach to early childhood education. But the Spectrum approach can be used to give children experience in multiple domains. It can be used to build on children’s strengths or strengthen their weaknesses.

Spectrum in Somerville, Massachusetts

In 1990, the Spectrum team began a collaboration with the Somerville public school system. (Somerville is a town next to Cambridge, Massachusetts). A majority of children in this school system at that time were at-risk for school failure. Could Spectrum be used as an intervention for these children? The team decided to focus on 1st grade given that, from a developmental perspective, early intervention is optimal. This project had three goals:

1. To introduce children to a wide range of learning areas
2. To identify and support children’s strengths
3. To use children’s strengths to improve overall academic performance

The school system introduced eight learning centers based on the seven assessment areas, with the science area divided into natural science and mechanics/construction. The research team worked closely with the classroom teachers, helping them to use the materials with their students and also to use the materials to identify strengths in their students. The research showed that children exhibited very different working styles when they were engaged in an area of strength than when engaged in a weaker area. When working in an area of strength, children seemed transformed, showing enjoyment, engagement, concentration, and self-confidence.

The next hurdle was to figure out how to improve a child’s academic performance by using their area(s) of strength. Teachers discovered that they could incorporate Spectrum activities into the math and language areas of the curriculum. For example, in the science learning center, children could be asked to sort and graph the materials. In the social learning center, children could use the puppet theater to have a puppet read a book. Teachers served as guides and coaches to challenge children’s thinking.

As reported in the first of the three Spectrum volumes, several schools adopted the Spectrum approach to curriculum on their own, without any direct outreach from the Spectrum researchers. Based on inquiries the Spectrum researchers received from educators across the United States, they estimated that over 200 schools were trying to put into practice an approach that incorporates MI and Spectrum (Chen, Krechevsky, & Viens, 1998, p. 110).

Spectrum as an intervention tool. Jie-Qi Chen studied the use of Spectrum as an intervention tool for students at-risk of school failure. She studied 119 1st graders in six classrooms. Four classrooms received the Spectrum approach; two did not, and these served as controls. In the Spectrum classrooms, children had more positive attitudes and behaviors when they worked in their areas as strength, as identified by Spectrum assessment. Children in the Spectrum classrooms also scored higher in school adjustment than did those in the control classrooms. These findings show the importance of discovering children's specific area(s) of strength and making sure they have a chance to engage in learning in this area. These findings are discussed in the first Spectrum volume. (Chen, Krechevsky, & Viens, 1998).

Some schools have adopted Spectrum without any PZ intervention (as described in Chapter 6 of the first volume of the Spectrum books), including in China, as described below.

Spectrum in China

Volumes 1, 2, and 3 of the Spectrum volumes in Chinese translation were published by Beijing Normal University Press in 2006, 2005, and 2009, respectively. Jie-Qi Chen wrote that after the translations appeared, the Chinese translator told her that "almost every single preschool teacher in Shanghai has a copy of *Spectrum Early Learning Activities*" (Chen, 2014, p. 194). In this essay, Jie-Qi also describes the powerful influence that MI and Spectrum had on her career as an early childhood educator.

In July, 2024, I corresponded with Heping Hao, a former student of David Feldman's (one of the Spectrum leaders), and now a consultant in early childhood education. Heping served as the Chinese project manager for PZ online courses. He told me that Spectrum was used in Chinese kindergartens to identify children's strengths and thus make instruction more individualized. He himself consulted with preschools in Shenzhen, Guangdong Province, and Jinan, Shandong Province on implementing Spectrum assessments into their programs. These opportunities grew from two projects he led, sponsored by companies embracing multiple intelligences theory (TLS Education Group 特蕾新教育集团, and Linghang Education 领航教育). Their aim was to use the Spectrum assessment tool to identify children's strengths and develop MI-based curricula.

Hao wrote to me as follows:

In Shenzhen, I collaborated with a team of educators from two kindergartens who translated and adapted the assessment tool for use in their classrooms. Teachers were enthusiastic about the tool's ability to identify children's unique strengths and to inform their instructional planning. Moreover, they shared their findings with parents, fostering greater parental involvement.

*I have also introduced Spectrum Assessment Tools in my book, *Early Childhood Assessment*, published by Peking University Press in 2017. Since then, several kindergartens in Shandong Province have also used the tools to identify children's strengths and provide targeted support. (H. Hao, personal correspondence, August 8, 2024).*

Heping told me that while he cannot confirm whether the preschools he worked with are still using the Spectrum assessment, he said that activities inspired by Spectrum have been integrated into their current curricula.

And the following three US schools have adopted Spectrum without any PZ intervention. When PZ heard about how they were using Spectrum, the Spectrum team visited these schools.

- Elementary school teachers at the Fuller public school in Gloucester, Massachusetts, adopted Spectrum as a curriculum intervention after the district superintendent, William Leary, learned about Spectrum. Leary saw Spectrum as an assessment tool to identify strengths in all children, and as a curricular intervention that allowed children to work on open-ended problems across a wide range of domains. By 1998, Spectrum had been used in the Fuller School for eight years. The Fuller School closed in 2008.
- The Montgomery-Knowles pre-K-2 school in Silver Spring, Maryland, included a Head Start and a preschool program for children with multiple disabilities. This school used Spectrum to develop a new definition of gifted and talented, valuing how this allowed inclusion of children with nonverbal gifts. This program also was still in effect in 1998, as reported at the time the Spectrum book was published.
- The Briarcliff Road K-1 school in the Shoreham-Wading River School District in Long Island used Spectrum to identify areas of strength in at-risk children.

Connecting Spectrum to School Abilities

One of the researchers who helped to develop the Spectrum instrument, Jie-Qi Chen (now Professor Emerita at the Erikson Institute in Chicago), developed a new way to build on Spectrum as an assessment tool. She and her colleagues created the Bridging Tool (Chen & McNamee, 2007). Bridging differs from the Spectrum assessment by focusing on cognitive abilities called for in school curricular areas—including language and literacy, math, science, performing arts, and visual arts. Why these differences, I asked Jie-Qi Chen. She explained as follows with these four points:

- Intelligences are never used in isolation but in the context of specific disciplinary tasks.
- School subject areas reflect the intellectual abilities valued by our society.
- Children apply their intellectual capacities to explore and understand subject areas.
- Most importantly, aligning assessment areas with school subject areas makes it easier for teachers to incorporate the assessment results into curriculum planning.

The name Bridging signifies its goal of connecting assessment with teaching. When Bridging was introduced at Erikson, all teacher candidates were required by the state of Illinois to take a performance-based assessment (called the edTPA). Jie-Qi Chen told me that

Bridging, with its detailed rubrics in a range of content areas, seemed a perfect fit for the state requirement. Therefore, many Erikson students incorporated the Bridging assessment into their teacher licensure application process. Until the end of the academic year 2022 when the state stopped using the edTPA, all teacher education students learned the Bridging assessment in the required assessment course. One of their assignments was to implement the Bridging activities with two children and compare their learning profiles. These teacher candidates used Bridging again during their year-long practicum to learn about the children in their internship site.

Using MI for Assessment Beyond the Preschool Years

MIDAS. In 1987, Branton Shearer created and validated the Multiple Intelligences Developmental Assessment Scales ([MIDAS](#)), a tool to assess all eight of the intelligences (Shearer, 2007, 2009). A version for children in grades K-8, the MIDAS-KIDS, was developed later..

MIDAS is an assessment instrument based on parental, teacher, or student self-report. This measure asks about individuals' skill and enjoyment of a wide variety of activities in daily life. Detailed information about how to interpret the measure is provided for teachers, students, and parents. The result is a MIDAS profile report that is both quantitative and qualitative. The questions asked and the kind of profile created can be viewed [here](#). MIDAS has been translated into Arabic, Chinese, Farsi, French, and Romanian.

Since 1987 over 750,000 profiles have been completed around the world. MIDAS has been used by teachers, counselors, and educational researchers in both primary and secondary education and in higher education. A distinctive aspect of Branton's work on MI has been his strong interest in researching the neural mechanisms underlying each of the intelligences.

ProTeen. Out of his interest in MI, an entrepreneur in India, Sunil Dalal, developed a digital career counseling system called ProTeen. He was disturbed by the pressure for teens in India to choose engineering or medicine as their only career paths. His goal was to lay out a variegated career landscape and to help parents and teens find careers that they are best suited for. He presents ProTeen [here](#) as follows:

It equips students with the awareness and skills to make smart integrated academic and career choices for the 21st century...ProTeen, addresses and resolves issues that teenagers face in their journey to success. It aims to dissolve the outdated yet largely prevalent culture that glorifies grades and overlooks multiple intelligences. It frees young adults from the social shackles of stereotypes. And it elevates parents to provide children access to this platform and encourage them, rather than micromanage their child's life. With ProTeen, Sunil shows us how parenting can be done right.

During the research phase, Sunil met on multiple occasions with Howard as well as Mindy Kornhaber at PZ. ProTeen is described in detail [here](#). As stated [here](#), ProTeen has been used by over 100,000 students and their parents.

Right to Dream. In late 2024, Howard met with a former soccer player from the UK, Tom Vernon, founder of an organization called [Right to Dream](#). Right to Dream seeks to broaden the basis on which promising young children in Ghana and West Africa are assessed and supported. Howard wrote to his colleague Jie-Qi Chen his reactions:

I believe that Richard Branson is funding this effort. I was very impressed with this academic entrepreneur's knowledge and ambition – and even if he succeeds in adding ONE additional feature to how promising youth in Africa are identified and promoted-- beyond the IQ test! – that would be a good thing. (Howard Gardner, personal communication, January 1,c2025).

Interactive Museums

In addition to influencing schools, MI has also had an effect on some interactive museums. One notable example is the Explorama at [Danfoss Universe](#) (now Universe), a science park in Denmark

based on MI ideas. The Explorama is an interactive museum for all ages, with engaging activities involving one or more of each of the intelligence (e.g., an activity in which people have to balance themselves in a group calls on bodily-kinesthetic and interpersonal intelligences); a game in which two players compete trying to move a ping-pong ball which moves when a player relaxes calls on both of the personal intelligences). Other children's museums, such as the [Connecticut Children's Museum](#) in New Haven, Connecticut, have organized exhibits around MI.

In February of 2025, Howard received an email from Silvino Netto, an educator at the Universidade Federal do Rio de Janeiro. He wrote that he is seeking funding for the construction of a Village of Multiple Intelligences, or possibly the Dr. Gardner Village, which would consist of nine houses representing the Multiple Intelligences, offering stimulating activities for visitors. These houses would be equipped with materials that encourage the development of MIs, each with its own educational resources. This village could be established on streets, as well as in schools, churches, companies, shopping centers, etc.

Howard advised Silvino to look at the Danfoss Universe's Explorama in Denmark for a similar venture.

Silvino also told him that a samba school (focused on drumming and marching) in Brazil has accepted his proposal for a parade theme centered on Multiple Intelligences. He wrote:

The parade will include sections representing each of the intelligences and we already have a musical theme: WE ARE ALL INTELLIGENT. We are confident that this initiative will be a great success and a powerful way to popularize the theory, given the immense national and international visibility of Carnival. It would be an honor to invite you to participate as a special guest at this event. We also highlight the relevance of the project with the aim of further disseminating the Theory of Multiple Intelligences, including the fact of disseminating publications on the Theory. Thank you for your invaluable support, inspiration, and research, which continues to bless and impact the world. (Silvino Netto, personal correspondence, February 18, 2025).

Television

Lift-Off was a children's television show broadcast on ABC television from 1992 until the series ended in 1995. The show was loosely based on MI in order to help develop "competent and autonomous children." [Here](#) is a recent article about the show. In 2022, there was a hit ABC television show called *Abbott Elementary* in which teachers set up a gifted program based on MI. Here is a [blog](#) about this show.

In 1985, the BBC planned a television series featuring each of the intelligences. The series was not made for a reason that might make you smile. The directors insisted that Howard get cosmetic dental work prior to filming. When Howard declined, that was the end of the project.

Dementia Care

MI has influenced Matthew Call, a dementia practitioner, and Melissa Mirabello, a teacher, who founded the Center for Holistic Dementia Care in Florida. On Matthew Call's [website](#), he writes: "We are the first to implement Dr. Howard Gardner's Theory of Multiple Intelligences to better understand people with dementia, which can significantly improve care. The Multiple Intelligence Survey for Persons with Dementia© (MISPWD*) is an initial step in our journey to care for persons with dementia."

Howard recently received the following email from Melissa about the program:

Since we last were in contact with you (June 2024) to discuss Matt's use of multiple intelligences to revolutionize care for persons with dementia, we have developed a MĪ Care Program and integrated it in a memory care facility in Florida. Our training program involved a class exclusively designed to introduce your Theory of Multiple Intelligences to caregivers at the facility and demonstrate how it could be used to garner valuable information about residents and subsequently create a personalized care plan for them. The caregivers were impressed with the applicability of multiple intelligences and immediately began using our MĪ Care Program to better the lives of the residents.

MĪ Care has been enthusiastically received by families and facility care staff and has made a profound positive effect on residents' lives. We wanted to share with you some of the feedback and testimonials that we have received and would love to continue our conversation with you about multiple intelligences and how it applies to health care. (Melissa Mirabello, personal correspondence, January 14, 2025).

Here are some family testimonials:

My wife and I are excited about the MĪ Care Program and feel that its presence will significantly benefit the facility's residents and staff. - Daniel F.

My mom suffers from severe anxiety and needs activities to keep her busy. She doesn't benefit from your typical one-size-fits-all programming that memory care facilities provide. She needs activities that cater to her wants, needs, and abilities. MĪ Care does all of this and more. I'm confident in the program's ability to better my mom's life and the lives of others who have dementia. - Stefanie B.

I think MĪ Care is a great program, as it helps care staff better understand their residents. I love how it pinpoints people's strengths, allowing caregivers to foster their abilities and help preserve them. - Ellen K.

And some staff testimonials:

The MĪ Care program improves the quality of life for residents with dementia. Its MĪ techniques foster person-centered care by tailoring activities to individuals' interests and abilities. Furthermore, MĪ Care provides caregivers with communication methods and emotional support to better manage individual residents' daily needs as well as reduce caregiver stress. Due to the MĪ Care program, we have implemented cognitive exercises, music therapy, additional group activities, and social engagement that reduces behavioral challenges and allows non-verbal individuals the opportunity to engage with others. - Andrea M., Memory Care Coordinator

I observed a resident who was having difficulty feeding herself. Knowing that she had Bodily-Kinesthetic Intelligence, I employed an Augmentative and Alternative Communication Method called tactile cueing, which reminded her of the task at hand. Ultimately, she ended up feeding herself instead of being fed, promoting independence. I also used MĪ Care strategies with another resident. There is a resident who becomes isolative at times and refuses to leave her room for

meals. I wanted to be sure that this resident received the nourishment that she needed so I used information from her MĪ Care Plan, specifically her preferences and background, to engage her in a conversation about one of her favorite activities, baking. Talking to her about our mutual interest, recipes, allowed me to garner her trust, and she followed me to the dining area. -Leyla C., Care Tech

A resident was anxious and trying to exit the unit. The staff had tried several strategies to manage her behavior, but were unsuccessful. I engaged her in a linguistic-verbal activity (a top intelligence of hers) by providing her a white board and having her copy signs that were on the wall. This calmed her and stopped her from attempting to elope. -Ana P., Care Tech

In my role as a Med Tech, caregiver, and activity coordinator, my main focus is always on ensuring that the residents feel happy and at home. I want them to experience a sense of comfort and warmth, as if they are part of a close-knit family. Recently, we were introduced to the MĪ Care program by Matt. Like most new things, I felt a bit nervous at first, but within a very short time, I found myself truly passionate about it. The program's innovative approach immediately resonated with me, and I loved how it encourages us to view each resident as an individual. Matt taught us how to recognize the unique learning styles of residents, whether they are naturalistic, visual, linguistic, or otherwise. It's been incredible to see how we can tailor our interactions and activities to meet their needs in ways that engage them more deeply. One of my favorite moments so far was when we played a fun game with a beach ball that had various words written on it. Each time the ball landed on someone, they had to act out the word. The residents had an absolute blast, and it was such a joy to see their faces light up. I truly believe that with more training and time, MĪ Care has the potential to become a game-changer for dementia care. I'm grateful for the opportunity to be part of this program and hopeful that it continues to help staff learn new and meaningful ways to support our residents. -Adjanie T.

Special Needs

Billy Ayres is a musician who founded Lifeline Theater to provide arts education and life skills for children and adults with special needs. He contacted Howard in 2025, about a documentary he is producing, called "Walking with Angels," asking Howard to provide a comment at the beginning of the film. He wrote:

*This documentary will show the 20 individuals (with many different types of special needs) out of approximately 290-300 I see each week who have perfect pitch. It will also show 16 individuals who sing, but do not speak (no sentence structure -syntax etc..) Somehow the brain will allow singing when individuals may not have the ability to speak. **This work would have no framework had it not been for your work on multiple intelligences.** The reason we can show what musical intelligence is in this population, is because you introduced the world to the theory of multiple intelligence and gave us a guideline. An understanding... this film would not be possible if not for your amazing work! To me exposing this musical intelligence in this population is groundbreaking!!! It's like discovering that a non- verbal person actually speaks a foreign language – without anyone ever knowing it! It is then incumbent on the "system" to help the person once it is revealed that the person in fact has intelligence!! (Billy Ayres, personal correspondence, February, 17, 2025).*

I conclude this chapter by quoting the final paragraphs of a [blog](#) by Howard's colleague, Shinri Furuzawa:

While scaling can be an indicator of success, it is essential to look beyond expansion metrics. Success in education requires a balance between reaching more learners and ensuring that the quality of educational experiences is maintained or enhanced. In addition to the importance of pluralization and individuation, MI theory acknowledges intelligences that are not conventionally academic, such as interpersonal; this acknowledgement has in turn led to a greater emphasis on developing skills such as collaboration and critical thinking and has provided a strong foundation for inclusive education practices. By recognizing that students have different intelligences, educators are better equipped to support learners with different strengths and weaknesses. This inclusivity helps to ensure that all students have the opportunity to succeed in their own ways and on their own terms.

The impact of MI theory is so widespread that many people accept its principles without knowing the name Howard Gardner or without having heard of the phrase "multiple intelligences." And Gardner is happy with that outcome. He once explained the enormous impact of MI theory with typical modesty as, "an idea whose time had come"

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Chapter 6

Teaching for Understanding (TfU): Impact

When people hear about Teaching for Understanding (TfU), they might wonder what's new about it. Isn't teaching always about understanding? Sometimes teachers say this is what they already do when, in fact, this is arguably not the case. Ron Ritchhart told me that he thinks this is due to what he calls the "near neighbor" problem. When teachers hear about goals, some think they already do this because they have "objectives." When they hear about generative topics, some think they already do this because they teach "themes." TfU understanding goals are not the same as standard learning objectives; nor are generative topics the same as themes.

Some teachers have, in fact, been teaching in a way that is entirely consistent with TfU, doing so before they encountered this framework. What I have learned is that such teachers feel that the framework still helped them because it gives them both a language and a philosophy to describe what they were already doing. The same point has been made by educators about MI and by art teachers about the Studio Thinking framework (discussed in Chapter 17).

Vehicles of Impact

The TfU Online Course

As the TfU framework was being developed, Stone Wiske and David Perkins recognized the internet as a promising vehicle for professional development. In fact, PZ was a pioneer in online teaching for professional development. In 1999, Stone and David founded WIDE (Wide-scale Interactive Development of Educators), a platform for the delivery of online, asynchronous courses for educators (described in Chapter 3) enrolling both US and international participants. Whether or not these courses focused on TfU, they followed the TfU model. Thus, teachers who took this course became, in effect, students in a TfU course. What better way to learn how to teach in a new way than to be introduced to this as a student? The TfU course begins by helping teachers reflect on their own understanding of understanding. Every participant walks away with a TfU designed lesson plan or unit.

Because these courses are asynchronous, participants (who live in various time zones) can log in at any time and read discussion threads and insert their own thoughts in the thread where appropriate—a practice that is possible with Microsoft Teams but not with Zoom. In short, using the internet allows ongoing reflection. While working with students is probably best face to face, using the internet for professional development when learning a complex framework like TfU works effectively, Stone believes.

Min Zeng was one of the PZ researchers working with Wide World. Her role was to help decision makers at schools interested in having teachers take Wide World courses. As a native Chinese speaker, she worked with Ministry of Education officials from several Chinese cities, including Shanghai, Zhengzhou, and Shenzhen, to identify elite teachers from a wide variety of schools who would take the TfU course. This course was translated into Chinese, with bilingual coaches

provided. (The course was also offered in Spanish. Eventually it proved too difficult to run the course in a foreign language—especially given the need for bilingual coaches—and thus these courses are now only run in English.)

A possible instance of cultural misunderstanding: WIDE researchers wanted schools to enroll in teams so that teachers could support one another. But in China, Min told me, the Ministry of Education simply picked one teacher from each of many schools who would then presumably go back and teach this method to their colleagues. It seems that the Ministry did not grasp the importance of teachers having peers with whom to reflect. Without support from colleagues using the same approach, Min said, TfU is very challenging to adopt.

For Min, the experience of working with TfU made a permanent impact on how she sees teaching and learning. TfU, she said, is an elegant and timeless framework that can be applied to any teaching and learning environment.

Impact of the TfU course. Researchers at PZ worked with eight organizations to test the impact of the TfU WIDE course (Mirny, et al., 2008): three schools in Australia, two in Singapore, three in New York City, six in Kentucky, and the Jordan Education Institute, an educational development organization in Jordan working with a network of innovative schools. A total of 251 teachers, 24 school leaders, and 969 students participated over the span of ten months.

Members of the research team participated in a threaded discussion to exchange ideas, questions, and critiques, and posted their interim and final reports on a wiki. Follow-up surveys and focus group interviews were conducted with school leaders, teachers, and students. Student work was analyzed and classroom observations conducted.

Effects on teachers. Teachers deepened their engagement with the TfU framework. As just one example, a teacher from Jordan noted that “Clarifying the understanding goals to my students helped me appreciate their role in the learning process and I now work *with* rather than *for* my students...”

Effects on leaders. School leaders said that their leadership style became more transparent and less top-down, and that they changed their focus from learning to understanding.

Effects on students. Students in classes taught by the participating teachers were asked to evaluate themselves. One school in Australia reported that students agreed with the importance of understanding learning goals and being able to flexibly apply what they had learned. In another school in Australia, student responses were compared to those in classes that were not designed by the TfU framework. In comparison to students in the non-TfU group, those in the TfU classes reported greater engagement, were more likely to say that they understood the goals of a particular lesson, and that they continued to think about the class after it was over.

Systemic effects on schools. Several schools reorganized themselves to create a common time and space for collaborative planning and online professional development. In sites where teachers and leaders had studied together for a year or more, a positive shift in educational culture was reported, including greater engagement and the emergence of a collaborative culture of ongoing inquiry.

In 2007, Stone Wiske, on a six-month sabbatical, went around the world visiting schools that were “hotbeds” of TfU activity. Having learned about these schools from educators who signed up for WIDE courses, her travels took her to Argentina, Australia, Brazil, China, India, Jordan, and Scotland. For a complex educational approach like TfU to last over time, it is essential, she said, for there to be school leaders who are passionate devotees of a particular philosophy. In addition, there must be a significant cadre of teachers all interested in the same kind of approach. There must be built-in time for teachers to meet with one another, since TfU thrives on continual reflection and improvement. And there must be school-wide presentations where culminating performances of understanding can be witnessed. A lot of “musts”—but that’s because TfU is a complex framework. In my view, it is the most complex of PZ’s frameworks.

Impact on Teacher-Collaborators

The original 1998 book, *Teaching for Understanding*, documents a number of teachers implementing TfU. These were teachers who worked with the PZ team and helped to develop this framework and/or the TfU handbook.

Joan Soble, an English teacher at Cambridge Rindge and Latin High School, used TfU to improve the introductory writing workshop for 9th graders at risk of failure. Her generative topic was “writing about place.” Her overarching understanding goal (also called a “through line”) was that students will understand how to express themselves in writing. This goal led to many sub-goals: e.g., students will understand that writing is a multiple-step process; students will understand that creating a complete piece of writing can also involve steps such as collecting data and making measurements. After many months, she began to integrate TfU into her overall teaching approach and then to use the framework in a literature course. She went on to introduce the TfU framework to her colleagues via a short course. Joan is discussed in more detail in Chapter 51.

Other teachers featured in the 1998 book are Bill Kendall, a math teacher at Braintree High School, Braintree, Massachusetts, Eric Buchovecky, a physics teacher at Belmont High School, Belmont, Massachusetts, and Lois Hetland, then a humanities teacher at the Shady Hill School in Cambridge, Massachusetts.

In order to implement TfU fully into their teaching, each of these teachers worked with a PZ member over the course of a year. TfU requires a lot of work and a lot of professional development.

Impact on Teacher Education at University of San Francisco

Judy Pace, now a Professor in the Teacher Education Department at the University of San Francisco’s School of Education, was a member of PZ from 1989-1995. While she was influenced by numerous PZ ideas – multiple intelligences, the protocol method of looking closely at student work, portfolio assessment, project-based learning, and making thinking visible—the ideas and practices of TfU have had the strongest impact on her teaching of secondary school teachers. She wants them to understand how to focus their teaching on big ideas, performances of understanding in which students work with those big ideas in a variety of ways, and ongoing assessment of students’ learning. In the past she has had the teacher candidates develop skeletons of unit plans using the TfU framework.

When I asked her whether her students actually go on to use TfU in their own teaching practice, she recognized that this does not happen easily. Her students love the idea of generative topics and project-based curriculum. But many of her students have themselves received a traditional (top

down, transmission) kind of education, and they fall back easily into using quizzes and tests rather than using ongoing and qualitative assessment. She finds that TfU asks a lot from teachers for the following reasons:

- Many student teachers have a hard time understanding what the concept of disciplinary learning means (science teachers seem to be an exception). Judy has assigned chapters from Howard's *The Disciplined Mind* (1999) to introduce this concept and the idea, for example, that in a history class, students should learn to think like historians. But many students in the US have themselves not had a robust liberal arts grounding in the discipline they are teaching. Thus, teachers who have been introduced to the TfU approach may still not go on to teach their students how to think authentically in a particular discipline.
- Teachers often equate projects with activities and do not always grasp that a TfU project must be an exploration of a particular topic that involves sustained inquiry, with cycles of drafting, feedback, and revision, and a culminating performance.
- It is challenging for teachers to understand what a performance of understanding is. It is not just a matter of standing up and speaking about what you have learned but rather entails applying concepts you have learned to new topics/problems/issues.

In short, even students who have been taught about TfU in their teacher education courses do not necessarily use the TfU framework in a non-superficial way. What I take from this is that for teachers to be able to implement TfU well, they need to be in a school with a leader who encourages—and optimally exemplifies—the use of TfU, and with a community of teachers all using this approach and meeting regularly to discuss their practice. This conclusion is likely true for teachers implementing any of the PZ frameworks, but I think it is particularly the case for TfU, given the framework's complexity.

Influence on Teacher Education and Schools in Ireland

In Chapter 5, where I discuss the influence of MI in Ireland, I also discuss the influence of TfU in Ireland, and so I do not say more about it here.

Impact on Schools

Most of the impact of TfU in schools occurs in combination with other PZ frameworks as discussed in Part IV of this report. Here I report strong examples of the use of TfU in Latin America and in Israel.

TfU in South and Central America via the L@titud Nodo Sur Network

L@titud Nodo Sur is an informal network of educators promoting TfU in Latin America. It was founded in 2001 by Veronica Boix-Mansilla with Paula Pogr  (Argentina), Patricia Leon (Colombia), and Clotilde Fonseca (Costa Rica), with David Perkins as advisor.

Stone 1998's [TfU book](#) and Tina Blythe's [TfU guide](#) were translated into Spanish. L@titud has developed long-term training and institutional support for the implementation of TfU in schools, school networks, and school districts in Latin America, as well as in university departments of education. As a result, TfU (often together with Visible Thinking) has spread widely in Latin America and Central America.

Paula Pogré, a Professor of Education at Universidad Nacional de General Sarmiento, attended the PZC in 1996 and returned each year for the next 15 years, eventually becoming a mini-course teacher. I learned from her that L@titud Nodo Sur has conducted professional development on TfU with over 100 individual schools in 19 provinces of Argentina and in ten other countries in Latin America (Brazil, Costa Rica, Chile, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay).

L@titud professional development is never mandated but is given upon request. They never work with isolated schools, but only with groups of schools who apply to them requesting professional development—such as all of the public schools in a particular city. In Chile, by working through the [Agape Education Corporation](#), they were able to work with all of the school districts in the country. Paula has written about educators' use of TfU (NOT & Lombardi, 2004).

L@titud Nodo Sur eschews short workshops on TfU in favor of multi-year collaborations with school districts, always introducing TfU in tandem with VT. When initiating work with any group of schools, they make it clear that the collaboration will take time, making a plan for one year with the expectation that the collaboration will take three years.

Although they work with both public and independent schools, the network prioritizes reaching as many public schools as possible, since the large majority of schools are public. When an independent school asks to collaborate, that school must agree to one condition, namely, to bring on board at least one or two public schools.

L@titud also works with teacher training colleges and universities. In 2006, Paula and her colleagues were able to work with all of the teacher training institutions in Argentina. The future teachers at these institutions were all introduced to the ideas behind TfU and VT, along with other pedagogical models such as those of Paulo Freire and Lev Vygotsky. TfU is also taught at the university level. Three public national universities each offered a seminar on TfU: San Luis National University in 2010, Villa Maria National University in 2012, and Tierra del Fuego National University in 2014. Participants in these seminars included not only students learning to become teachers but also university faculty in a wide variety of fields.

Javier Simon, a member of L@titud Nodo Sur since its creation, teaches at the University of the City of Buenos Aires and the University of Buenos Aires. In 1998, he attended a talk by Howard in Buenos Aires and “discovered” TfU. He saw it as a bridge between the theory and practice of teaching. He then attended the PZC, joined the L@titud network that was just starting, and began to offer teacher workshops on TfU. Taking the PZ course on TfU taught by Patricia León was “eye-opening,” he said.

Javier has carried out more than 20 projects with K-12 and upper secondary teachers, as well as university professors in Argentina, Brazil, Chile, Ecuador and Peru. These projects typically involve working with teachers on an ongoing basis over the course of 1-4 years. He tells the teachers he works with, “It’s not what I (the teacher) know, it’s what they (the students) will build.”

Javier currently works for the Ministry of Education of the City of Buenos Aires as the Manager of Innovation and Curriculum for teachers at all levels. He and his team have designed over 300 class “sequences” (TfU projects). They have also designed them for adult students who dropped out of high school and are now returning. These returning students were from low SES communities and often worked in manual and precarious jobs. He found that when given generative topics that connect with their lives, better results are achieved. Adult education values content that is

presented in social and cultural contexts that are meaningful to students, such as "the world of work" or "well-being and health."

When I asked him how TfU changed learning outcomes, he wrote the following:

To be completely honest, we never measured the learning outcomes of our TfU projects. It is true that this requires a special research design, which is not about using standardized tests. However, we have done some exploratory research on TfU and the change in teachers' thinking. In this aspect we can affirm that TfU causes changes in teachers' representations of "good teaching."

Javier uses TfU itself in the design of the courses he teaches at the university and greatly values the abilities that TfU has given him to dialogue and design projects with curriculum specialists from the disciplines and with teachers at all levels.

At the conclusion of our interview, Javier said: "I have never heard anyone say that these ideas are not good, ever...they always value the power of TfU to improve teaching and learning."

How teachers respond. I asked both Paula and Javier how teachers respond to TfU. The first thing teachers often say is "I already do that." But as they learn more about the framework, they realize that they have in fact *not* been teaching for understanding. When they begin to really teach using the TfU approach, they say that this makes teaching so much more exciting.

Importance of disciplinary knowledge. Both stressed the importance of disciplinary knowledge, not only for middle and high school teachers but also for primary school teachers.

Teacher qualifications. I asked about the challenges of working with schools in very poor communities, where teachers were also poor and often had not had solid teacher training. Teachers with a solid academic background generally come from middle- and upper-middle-class families and tend to teach in schools that serve these same populations. It has been more difficult to work with less qualified teachers and, in general, the better designed units were by teachers from middle- and upper-middle-class communities.

However, when choosing meaningful topics for less educated teachers, Javier stressed it was possible to generate teaching proposals that worked in vulnerable contexts. Education students attending the University of Buenos Aires, an important free public university in Argentina serving middle and lower-class students, reported to him that three innovations allowed them to "change their minds" about the importance of teaching how to plan courses: (1) generative topics,

(2) performances of understanding (which they call "activities"), and (3) the idea of continuous feedback (i.e., formative assessment). Javier said that these components "expand their imagination about how to design classes." Some teachers from socioeconomically disadvantaged environments who attended a public university for their teacher training said of TfU that "with this kind of ideas and teaching, we could help students grow" and even realize that they can get a university education.

Using thinking routines well. Thinking routines are also used along with TfU, and teachers understand them much more easily than TfU (for example, comprehension performances and dimensions of understanding are complex topics for teachers). But thinking routines are not always used well. For example, teachers may use them to begin a dialogue on a generative topic but do not then use how students respond to assess their level of understanding.

Effects on students. Effects on students were not systematically measured in the initiatives described by Javier.

Long-term effects on schools. There has also been no systematic attempt to track whether schools that have worked with L@titud continue to use TfU and VT after the collaboration has ended (though Paula said that this would be a wonderful research project). She only had anecdotal evidence, e.g., recalling visits to schools involved with L@titud many years earlier who said they were still using TfU.

One of the schools affected by working with Latitude is the K-12 Instituto Modelo Bilingue Michelangelo in the city of Paraná in Brazil. Leda Losi (president of the foundation that supports this school) told me about the school's commitment to use TfU at all levels even in kindergarten. Argentina has a mandatory curriculum set by the Ministry of Education, but this curriculum allows freedom about how to teach and learn.

Every year before the school year begins, two days are set aside for TfU workshops for both old and new teachers. One-day workshops are held three times during the school year. TfU is used at all grade levels, and takes the form of projects. At the high school level, certain projects are required, and these are interdisciplinary – that is, teachers have to develop projects for TfU with a teacher from another discipline (e.g., biology and chemistry, or history with geography). Each year teachers propose projects, and the school leaders decide which ones will be taught that year. At the early childhood and early primary grades, teachers work in pairs and develop their own interdisciplinary projects. Examples of projects at this school are presented in Appendix 7.

Asked what happens when a teacher resists using TfU. Leda told me what Monserrat Del Pozo, a teacher from the Montserrat School (discussed in Chapter 56), said in a public conference:

There will always be three kinds of teachers: Those who are very excited by a new approach, some who are not so excited but are making an effort, and a few who do not want to learn anything about it. Don't worry about that final group and just work with the first two kinds. Those in the middle might become more passionate when they see what happens in a class using the framework. Those who are resistant will eventually leave the school—that is just a matter of time.

Leda said that the easy part about TfU is getting teachers to like the idea. In fact, when teachers first hear about TfU, typically say of course, we know this and we do this. But when they go deeper into the framework they realize that they had not really understood the idea of understanding – and that now they know how to make this possible.

Leda mentioned four aspects of TfU that are difficult for teachers:

- One difficulty is getting high school teachers (who are called professors) to come up with projects that cut across disciplines. They teach their own discipline, and all have a mandatory curriculum to get through. They are not trained to make connections across disciplines, which is often called for in a broad understanding goal. In contrast, teachers at the early childhood and primary levels are not specialists in a particular subject. They teach the whole curriculum and thus have no problem developing projects that are interdisciplinary. They are able to see all knowledge as one, Leda said.
- Another difficulty is coming up with good generative questions.

- Another is figuring out what makes a good performance of understanding.
- And finally, the idea of formative assessment is tricky because teachers have to overcome the idea of a final test. This is also difficult for students and parents to grasp.

TfU and Art Education in Venezuela

Pia Landro, an art educator from Buenos Aires, is the Director of Education at [Malba Puertos](#), a museum in Escobar, Argentina. She uses TfU (which she first learned about at a workshop by Paula Pogr ) in her teaching of art to students in a very poor, rural community in Argentina.

In 2006, Pia was asked to develop an art education program for the children in the 48 primary schools in Mendoza. Pia began to work with the teachers. Most were classroom teachers who taught a specific grade; a few were art teachers who taught all grades. The teachers had attended high school followed by the five years required in Argentina to become a teacher. Very few had gone on to a university education which would mean four additional years.

Pia's goal was to help teachers develop units that integrated art with one of the school subjects using the TfU framework and the "[Piensa en Arte](#)" (Thinking about Art) program developed in Venezuela and inspired by the Visual Thinking Curriculum at the Museum of Modern Art in New York and evaluated by PZ (as described in Chapt. 12).

Pia and her team worked with 4th through 7th grade teachers for five years in developing art integration units based on TfU, visiting each of the 48 schools. The units were quite specific, linking a theme in visual art with a theme in one other school subject. In some schools the team worked with art teachers and classroom teachers, but in schools lacking art teachers, the team worked just with the classroom teachers. The team worked with the 4th grade teachers and then moved up a grade each year. However, the teachers continued to develop and teach these units even after the team had moved on to a higher grade. Often a practicing artist was invited to work with the teachers on a particular unit. The art teachers used this approach in all of the grades, not just in these four grades, Pia said. Thus, the students in the Mendoza schools ended up with four or more years of this approach. The art teachers in other schools outside of the ones Pia was working with began to use this approach as well. "All art teachers wanted to do this."

Teacher change. Teachers had to radically change their teaching. No longer could they just assign activities they thought would be engaging. They had to create TfU units organized around generative topics, understanding goals, and performances of understanding. The biggest challenge was to maintain coherence between what the teachers wanted students to understand and what they were going to do to get students to understand. All teachers included performances of understanding that involved conversations about artworks prompted by *Piensa en Arte*. These performances were expected to be activities where students use knowledge in new ways.

This approach was a big change for teachers because they had to become much more intentional and reflective about their planning and their practice. Teachers realized that they needed to do research for each unit, including learning about a particular artist, and looking for relationships between art and a school subject such as math. Teachers realized that they are never finished learning.

Effects on students. The children who had been involved with this program over their primary school years were more likely to attend high school than those who did not have this program. Pia said that the students in the program felt empowered, realizing that they were capable of thinking and were ready to study the more complex classes offered in high school.

Long-term effects. After the program had been in effect for five years, the Minister of Culture visited. He was impressed by how organized, disciplined, deep, and interesting the work was. He told the team that he now realized the importance of every school having an art teacher, because art was important in the development of thinking. The Mendoza Ministry of Education then decided to create more space for art teachers and to invite the teachers in this program to teach other teachers about this approach. At this point, Pia and the team stepped aside, realizing that they had set something in motion that could now proceed without them.

When I asked her if this kind of art integration based on TfU was still continuing in the Mendoza county, she said “Yes, but in a very different way, not with the structure we used, but there is still something going on.” What she meant was that teachers were still very intentional about their planning, deciding first what they wanted their students to learn.

Challenges. Pia said TfU is difficult for teachers to understand, no matter what kind of community or what kind of school, public or independent. In all cases, teachers need professional development. In her words:

You have to work with the teachers for them to really understand TfU. You may think you understand, but it's difficult to know how to apply the framework.

Teacher Training in Argentina

Micaela Manso teaches in the Department of Education at the Universidad Católica Argentina. She has been deeply influenced by the TfU framework. She learned about TfU as a master's student at HGSE in 1996-97 working with Veronica Boix-Mansilla and later attended several PZCs.

All of the faculty in Micaela's department train teachers to use the TfU framework. They do so by designing teacher education courses based on TfU, which they also combine with VT thinking routines. She said that teaching future teachers using the TfU framework was an “institutional decision” of her department. She was unaware of any other teacher training programs in Argentina teaching according to the TfU framework.

Challenges. TfU is challenging to get right, but “PZ makes difficult things easy” by providing the scaffolding needed, she said. But designing a genuine performance of understanding remains difficult. Often, she said, teachers think that just having their students explain what they learned constitutes a performance of understanding.

Long-term effects on teachers. TfU challenges and reframes teachers' beliefs about intelligence and understanding, Micaela said. However, there are no data on whether these student teachers go on to use TfU in their classrooms.

TfU in Israel

Yoram Harpaz is a leading educational theorist in Israel and has served as editor of *Educational Echo*, the largest education magazine in Israel. He spent the academic year 2000-2001 as a visiting

fellow at Project Zero, writing his dissertation with David Perkins as advisor. He has published ten books and many articles (most of them in Hebrew) dealing with the aims of education. His work is widely read by educators in Israel, and he has had a strong impact on education thinking and practice in Israel today.

He is a proponent of TfU and reported that many of the 150,000 teachers in Israel regularly use TfU, including performances of understanding. He has discussed teaching for understanding in two of his books: *Teaching and Learning in a Community of Thinking* (Springer, 2014) and *Educational Design in Six Steps* (Routledge, 2020).

Five of David Perkins' books and two of Howard Gardner's have been translated into Hebrew, and Yoram reported that the ideas of Project Zero, particularly Teaching for Understanding and Multiple Intelligences, are well known in Israel. PZ's VT and TfU materials have been translated into Hebrew by the Branco Weiss Institute (an education organization that develops and distributes innovative pedagogical models) and are stored in the Branco Weiss library of resources.

Yoram contrasted three kinds of educational goals: teaching to instill thinking skills, thinking dispositions, and understanding. Teaching children thinking skills is important but is of no use unless children have the disposition (motivation and sensitivity to know when) to use these skills. So one must also teach children to want to think and to enjoy the process of thinking. The understanding approach goes a step further. Because understanding is always situated in a particular discipline, children need a strong foundation in the disciplines (science, history, mathematics, art, etc.) before they can display significant understandings in these disciplines. In short, and consistent with an MI approach, he believes there is no such thing as the generally good thinker. People think well in domains they understand.

This way of thinking could have grown right out of PZ. Yoram told me that when he met David and Howard, "I had a wow feeling, they think just like me!"

For Yoram, the most important—and most practical—component of TfU is the concept of understanding as a performance.

When I asked him whether the spread of TfU is due to his own influence or to that of PZ, he said that it comes from his work but that he "stole" the basic idea from PZ. He quipped, "We say in Israel that if you steal one idea, it's plagiarism. But if you steal many ideas, then you are an expert."

I asked him whether asking questions, stretching, arguing, and searching for deep understanding — essential aspects of TfU—are akin in spirit to Talmudic study. Perhaps as the Jewish state, Israel is particularly fertile soil for TfU. He thought for a bit and then said that one of the seven thinking dispositions that David Perkins writes about is the joy of thinking. And in Jewish as well as Israeli culture (the latter, of course, influenced by Talmudic thinking), many people love thinking, analyzing, and arguing. And then he told me that a computer scientist friend of his is now putting Talmudic thinking into an algorithm—software that cannot only solve complex problems posed to it, but can also create performances of understanding. These performances could then be used by teachers. Given that one of the most difficult parts of TfU (in my opinion) is coming up with good performances of understanding, this could prove to be a very valuable tool.

Yoram put me in touch with Linor Hadar, a professor of education at the University of Haifa, where she is also the director of teacher training. The University of Haifa's faculty of education is

considered the best in Israel due to the level of faculty research. Linor is the head of the BA and teacher training programs.

Linor did her doctoral work with Gavriel Salamon, a long-time collaborator of David Perkins. She was a post-doctoral fellow at PZ in 2006-7 with David Perkins on the Cultures of Thinking framework. In her work teaching future teachers (both at Beit Berl College and University of Haifa), she focuses on higher order thinking skills and has trained all of her students (who will go on to become teachers) to integrate Visible Thinking and TfU into content areas. Their training is similar to the PZC, in that teachers generally don't just learn about these frameworks but actually practice them.

An interesting cultural note: Linor told me that in Arab society, teaching is considered a prestigious profession, but in the Jewish culture, not so much—parents want their children to be doctors or lawyers. Thus, there is a teacher shortage, and over 50 percent of the teachers she trains are Arab Israelis.

Another interesting cultural note. Israeli Jews love to argue. In contrast, while Arab society is patriarchal and hierarchical, and children generally do not ask questions. So the Visible Thinking framework is very new to Arab teachers.

When Linor was at PZ in 2007, Anat Zohar, the head of the Pedagogical Secretariat in Israel (analogous to the US Secretary of Education), came to PZ to try to set up a collaboration with PZ on integrating higher order thinking into all Israeli curricula. Unfortunately, due to financial limitations, the partnership with PZ did not proceed. Nonetheless, in 2009, a recommendation was made by the Pedagogical Secretariat in the Ministry of Education to involve VT and TfU in the curriculum. Consequently, a great deal of funding went into training education professors to use these frameworks in content areas. Linor considers these two frameworks to be integrated: understanding is the product of higher order thinking. She also said that the concept of performances of understanding is very widespread: "There is no teacher in Israel who has not at least heard of this concept...and this is in part due to the publications of Yoram Harpaz and Anat Zohar." I was unable to arrange an interview with Anat Zohar, but Odelia Vardi, the Head of Professional Development at the Branco Weiss Institute, whom I also interviewed, told me that Anat made a strong effort to spread TfU and achieved "partial" national success.

Linor told me there was no way to track down the number of teachers actually using TfU, given that there is always a gap between training and practice. But she mentioned the following: a high school course in civics (called Civil Service) is mandated, and the final exam consists of items in the spirit of PZ thinking routines, even though they are not actually PZ routines. Half of the test items require students to make a claim, support the claim with evidence, then make an opposing claim also supported with evidence. For example:

The French Ministry of Education has banned students from using mobile phones during all school hours—in classes and during breaks alike. Some argue that the Ministry of Education in Israel should also prohibit students from bringing mobile phones to school and using them, while others oppose this and seek to encourage the use of phones in school and in learning.

Express your stance on this matter. Present two arguments based on concepts from the field of civics—one argument for your stance and one argument (different) for the opposing stance. When writing, make sure to include the following components:

A. Argument: Clearly present your stance.

B. Justification of your stance: Present an argument for your stance based on concepts and knowledge from civics studies.

C. Justification of the opposing stance: Present an argument for the stance opposing yours, based on concepts and knowledge from civics studies.

As mentioned above, Israel has a centralized national curriculum, and this is now focused on “learning for understanding.” In a 2019 article, Linor wrote:

The concept of understanding as a performance defined in the TfU framework (Perkins & Blythe, 1994) has been absorbed into the language and culture of Israeli education; textbook tasks in Israel are developed in an educational context in which understanding is construed as a series of performances (Hadar & Ruby, 2019, p. 61).

This understanding focus replaced an earlier focus on technical proficiency. She pointed out that the specified goals for the national mathematics curricula in a 2006 Ministry of Education document include identifying ideas and generalizing from ideas, building models, refining math problems, justifying mathematical ideas, developing arguments and critically assessing their implementation, critically analyzing different solutions to math problems. In the 8th grade curriculum, she told me that the understanding goals for ratios and proportion include being able to apply ratios and proportion in scaled drawings, and being able to determine distances between cities by measuring on a map drawn to scale.

Linor analyzed the levels of understanding in several of the authorized mathematics textbooks using Yoram Harpaz’ (2011) three levels of understanding. The textbooks she used were ones used in Arab schools in Israel. She was able to show that the two most popular textbooks at the 4th and 8th grade levels differed in the level of understanding required by the performance of understanding tasks in the textbooks. In addition, in the analysis of the two 8th grade math textbooks, she showed that students who were assigned the higher level of understanding text scored higher on national math exams than those assigned the lower level text, though this held only for the upper SES students.

Yoram also put me in touch with Odelia Vardi, the head of professional development at the Branco Weiss Institute. This institute leads a network of 17 comprehensive high schools (grades 7-12), with the goal of promoting “learning competencies and thinking abilities.” These schools have joined the network voluntarily. When the network was first formed, around 2000 or 2002, the network schools learned about multiple intelligences. This led to school changes in the planning of several learning paths in each lesson and in celebrating learning in all intelligences. Today, Odelia told me, the MI influence is fully implemented in all schools through alternative assessment methods. Sometime after the network of schools was formed, TfU and Visible Thinking routines began to be incorporated.

Each school is visited every two weeks by a member of the professional development team at Branco Weiss. Teachers of all content areas are introduced to TfU. However, as I learned from the professional development leader that I interviewed, TfU is implemented mostly in subjects that are rich in language, e.g., literature (including the study of the Bible as a historical text) and history, and

also in science classes. TfU, she said, feels natural in such subjects, but less so in subjects like math, physics, technology, and foreign languages, and teachers of these subjects do not use TfU. (I note that TfU is designed to be applicable in any subject area.)

Four of the 17 schools in the network are implementing TfU more intensively by creating Communities of Thinking (a project led by Yoram). Classes are divided into small groups (communities), with each group working together, researching a big question and eventually demonstrating what they learned. I asked why all of the network schools are not using this approach. The answer, I was told, is that teachers using this method have to let go of their control of the classroom. Not many teachers are able to do this, wondering what their role would become, worrying about the noise in the classroom, or even worrying that students might ask questions which they would not know how to answer.

Challenges. About half of the teachers of language-rich subject areas are implementing TfU. The others resist, sometimes saying that TfU is too time consuming, other times simply saying they do not wish to change how they have been teaching for many years. Odelia speculated that teachers resist when they do not know enough about their subject area to teach in this way. This is particularly true of teachers who only have a BA in education coupled with a BA in their subject area. Teachers with a master's degree in a subject area coupled with one in education are more likely to use TfU because they are more deeply educated in their subject area. However, when initially resistant teachers join a webinar where others are demonstrating their use of TfU, some get inspired. This community of practitioners gives others the courage to try.

Sometimes students themselves resist a TfU approach. For example, teachers sometimes ask students to come up with a journalist's headline for what a class was all about. Students readily engage in this, but then they are likely to ask the teacher "What is the CORRECT headline for this class? Tell us, we need to know your words for the exam."

Lois Hetland commented to me that this is an example of one of the levels of understanding from the dimensions of understanding framework (described in Chapter 4). She went on to say:

It is the novice or rote and ritual level. Teachers can think at this level, just as students can. This is the most common level we see in schools—especially "good" schools. Kids (and teachers) get the idea that they just need to spit back what they're told, and then the teacher will give them an A, and they'll say he was a good teacher. There's a chasm between that level of understanding and the next level, the "thinking with support" or apprentice level. At that level, kids are deeply inclined/motivated, and they also usually have a good bit of synthesized information to apply to new questions. So the task at that level is to expand their sensitivity... so they apply what they know to increasingly complex issues and questions and problems...that level is where we want everyone to be. Some may be higher (the Autonomous thinking level...and some may be lower (the Naive or pre-engagement level, where students tune out)...But the main challenge is moving them from the "rote and ritual" level to the "thinking with support" level.

For examples of TfU in the classroom provided to me by Odelia, see Appendix 8, Sample TfU Projects in Israel.

This chapter has described schools and educators who have made use of TfU. Note that most of the impact of TfU that I have uncovered has occurred when TfU is used in combination with one or more other PZ frameworks—as described in Part IV of this report (for example, Chapter 55

describes Louise Music's work with TfU in the Integrated Arts Learning Specialist Program that she created in California).

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Accompanying Appendices

Appendix 7. Sample TfU Projects from Instituto Modelo Bilingue Michelangelo in Brazil

Appendix 8. Sample TfU Projects in Israel

Chapter 7

Visible Thinking/Cultures of Thinking: Impact

Vehicles of Impact

The Visible Thinking and Cultures of Thinking (VT/CoT) frameworks have spread widely, second (among PZ frameworks) only to Multiple Intelligences theory.

The VT/CoT frameworks have been disseminated not only via our usual vehicles, e.g., the PZC summer institute and several online PZ courses, but also by its Cultures of Thinking [website](#), a [Facebook page](#) for Making Thinking Visible (48,000 followers) and [YouTube](#) channel, The Power of Making Thinking Visible (3,500 subscribers).

In addition, Ron Ritchhart has published multiple books for teachers about these frameworks. . He is also engaged in a great deal of professional development work. Currently, he works directly with school leaders and teachers for about 80 days a year. Mark Church, a longtime colleague of Ron's, also often conducts professional development in schools. Jim Reese does so as well.

These frameworks are also used in three PZ-spinoffs:

- [DCPZ](#) is a network of over 2,400 educators in Washington, DC, directed by Elise Heil (and previously by Jim Reese). DCPZ is part of Jim Reese's [Professional Development Collaborative](#) which is discussed in Chapter 55.
- [PZAustralia](#), a network of schools in Australia.
- #PZPGH is a conference series in Pittsburgh, Pennsylvania, directed by Jeffrey Evancho. Since 2014, Jeff has been hosting a two-day conference in Pittsburgh twice a year in which PZ frameworks are introduced, including VT/CoT. The conferences operate like a mini PZC, including mini-courses. [Here](#) is a description of one of the conferences. The participants and minicourse facilitators represent a local network of schools and organizations.

Thinking routines are easy to grasp and to use, and teachers see immediate results in the form of student engagement and depth of understanding. Shari Tishman describes them as mini performances of understanding. She explains why, below:

...because they engage people in thinking with what they know in order to generate new ideas...they have functioned in the field of education kind of like a Trojan Horse: It's relatively simple to wheel them into the classroom and use them right away. But once they start infiltrating classroom practice, they start shaping the way teachers think about pedagogy...they were designed with this intention. (S. Tishman, personal communication, March 27, 2023)

The idea of thinking routines has spread so widely that it is sometimes presented at workshops and conferences without being credited to Project Zero—and we welcome this as evidence that the ideas behind VT/CoT have become part of the conversation among progressive educators.

Ron Ritchhart has published multiple books for teachers about these frameworks. He is also engaged in a great deal of professional development. Currently, he works directly with school leaders and teachers for about 80 days a year. Mark Church, a longtime colleague of Ron's, also often conducts professional development in schools, as does Jim Reese

Ron typically works with schools for three years, but he says five years is even better to get VT/CoT going in schools. Each year, Ron typically spends from four to eight days at each participating school, giving keynote addresses, workshops for faculty and school leaders, and observing classes and providing feedback. Schools with strong buy-in from their leaders and a group of teachers (he calls these teacher leaders "champions") require fewer visits from Ron than those without such leadership support. Champions are very important for longevity, depth, and breadth across a system and are crucial when professional development from Ron or his colleagues ceases. Often a champion will leave one school for another, bringing these frameworks with them and spreading them in their new schools. Ron has documented ten such instances. VT/CoT has achieved considerable longevity after professional development from Ron has ceased.

Thinking routines are often used along other PZ frameworks, though without the umbrella framework of CoT, as readers will see in later chapters (e.g., *Artful Thinking*, Chapter 14; *Agency by Design*, Chapter 49). Sometimes thinking routines (which are just one tool for making thinking visible and one of the eight cultural forces) are picked up by educators without having the whole CoT framework. Ron cautions that the use of thinking routines without the larger ecosystem of building a culture of thinking may be less robust and lasting. In almost all of the sites where Ron and Mark have worked intensively, the entire CoT framework is introduced.

VT/CoT has also been widely incorporated into many of the museums in the DC area, including the Smithsonian, National Portrait Gallery, Museum of Women in the Arts, and Library of Congress. They have also been used in museums outside of the US, among them The Tate (in London), the Van Gogh Museum, and the Tropenmuseum (the latter two in Amsterdam). Here is [a link](#) to an article by Ron about developing a CoT in museums.

Appendix 9 lists sites where Ron is aware that a CoT has developed. Some of these are discussed in this chapter; some are discussed in chapters describing educators/schools using multiple PZ frameworks in Part IV of this report. There are simply too many sites for me to have covered them all.

Impact in the US

In this section, I profile five schools or districts in the US where VT/CoT has taken root.

Del Mar Union District, California

The Del Mar Union School District in California serves about 4,000 students in nine K-6 schools. This is the site where Ron has had the most intensive relationships, having spent a total of 20 days a year there since 2018, including three years with the school leadership, with the work continuing today (as of 2025). This is also where he had one of the deepest relationships, with an entire district being on board and with CoT written into their master plan. This district demonstrates the importance of champions. Both the Superintendent and Assistant Superintendent for Instructional Services are deeply committed to CoT. In 2025, Del Mar hosted the first Cultures of Thinking Summit, bringing together experienced educators from around North America.

Alison Fieberg, Assistant Superintendent of Instructional Services for the district, told me that work with Ron influenced how they define high quality instruction. The work with Ron came about after the Del Mar district sent a small group of administrators to attend the PZC summer institute in 2018. The goal was to learn from PZ because, she said, “PZ is known to be a leader in educational research globally,” and they wanted “to be connected to the very best.”

They recognized the importance of critical thinking and moving to a more student-centered structure but were not sure what shape this would take. But learning about Visible Thinking and creating a Culture of Thinking at the summer institute lit a spark. Teachers embraced the eight cultural forces as ways to create a culture of thinking. Having the administrators learning about this too has ensured that all schools in the district adopt this framework. There is now a “CoT fellows group” of teachers who want to take on a leadership role. “Having a long-term, articulated professional learning model is how the school sustains the learning for all staff in our district,” Alison said.

Changes in the classrooms. According to Alison, what one would see on walking into one of the Del Mar schools is a consistent use of thinking routines throughout the school day in a variety of subject areas. Students are doing the majority of the talking; teachers are guides and questioners. Students feel more motivated, more interested, and more valued by their school. Alison’s observations are borne out by the reflections of numerous “CoT fellows” about what someone would notice if they visited one of their classrooms

Alison and her colleagues are now thinking with Ron about how to bring this approach to the middle and high schools that Del Mar feeds into. She hopes that if these schools adopt this student-centered, reflective approach, the disconnection from school often felt by students at these older levels will be mitigated.

Northgate High School, Pittsburgh, Pennsylvania

For the past three years, Nicole Smith has been principal of Northgate High School in Pittsburgh, Pennsylvania, a school that has incorporated CoT school-wide and that has been part of Jef Evancho’s PZ-PGH school network (see Appendix 21) since approximately 2018. When Nicole became principal in 2021, she wanted to redesign the high school experience to promote greater student engagement.

Northgate teachers learned about the CoT framework in multiple ways: through a PZ online course, through the PZC, through PZ-Pitt network conferences, and through publications by Ron and Mark Church.

Teachers readily adopted the CoT framework, because they recognized the need for students to be more engaged and for thinking to be made visible so that everyone’s participation is captured. Nicole talked about how PZ has made this accessible to them since the tools are easy to use and experiment with. As a result, teachers feel safe about taking risks.

Example of an adaptation. Teachers felt that they could adapt thinking routines to their own classrooms. Nicole cited an example of a math teacher adapting the +1 routine. The original routine asks students to look at an image or read something and then list all the key points or details that they remember. Each list is then passed to a neighbor, who either adds an idea, or elaborates on the first idea, and then this is passed to another neighbor, and so on. The math teacher adapted this

into a multi-step math problem, where students added steps one by one to a math problem that the teacher had begun.

Importance of teachers reflecting together. When asked what keeps CoT going at Northgate, Nicole stressed the importance of the expectation that teachers will observe one another's classes and meet regularly to discuss their uses of CoT—what is working, what is not, and why.

From theory to practice. The teachers already had the belief in the importance of student engagement, but what Ron's and Mark's work has done is to allow them to go from theory to practice.

Mandela International Magnet School, Santa Fe, New Mexico

Randy Grillo is principal of the Mandela Magnet School in Santa Fe, New Mexico, a public school for grades 7-12 that admits students by lottery. It is both an IB school and thoroughly steeped in CoT. CoT was part of this school's start up plan, and Ron's 2023 book, *Cultures of Thinking in Action*, grew out of his work with Mandela.

As stated on the school website:

Learning to Think, Thinking to Learn is part of the Worldwide Cultures of Thinking PZ Project and aims to develop the ability of students at Mandela International Magnet School in Santa Fe, New Mexico as thinkers and learners. To accomplish this, the project draws on the extensive research of Project Zero related to thinking, learning, and teaching for understanding. This includes promoting thinking through the use of "thinking routines" and by helping teachers to establish a classroom culture that supports thinking. The project provides a unique forum for the further development and refinement of these approaches by combining them at a new school and tracking students' development over time.

Ron and Mark have worked with the educators at Mandela since the school was founded in 2014, and the work is still ongoing, funded by a grant to the school from the Melville Hankins Family Foundation. As long as funding continues, Mandela will continue to work with Ron and Mark. When the funding ends, Randy said, the school will have to keep this alive internally. And it will do so, he said. All of the Mandela teachers have created a culture of thinking in their classroom. "Once you've gotten onto a bicycle," Randy said, "you just keep peddling. Our school is like this. We just keep going on, and we bring new staff into this."

Every year Mandela runs a two-day overnight retreat in the mountains just before the school year begins, with Mark and Ron in attendance. Every full-time staff member attends voluntarily and receives a stipend. After the retreat, monthly evening meetings with Ron are held. One year, the agenda of these meetings was to discuss each chapter of Ron's 2019 book about the eight cultural forces needed for a culture of thinking. In between the meetings, staff had study groups and homework. This intense kind of training, Randy said, "is just unheard of in public schools" and he was "blown away."

At the end of his first year as principal, Randy attended the PZC summer institute along with five other Mandela staff.

Ron formed a CoT fellows group consisting of the principal and 3-5 teachers not only from Mandela but also from other schools (public and private) in Santa Fe and Durango, Colorado. Ron and Mark

work once a month with this fellows group.. Every six weeks, the fellows do “share outs” with the staff at their schools about what they have learned. This fellows group holds yearly conferences hosted most often at Mandela but sometimes at the other schools, and during these conferences, teachers are free to visit classrooms at the host school. Every year in April, Mandela invites members of the community to come and hear about what the school has been doing with CoT.

Classroom change. Randy goes into many public school classrooms where he observes students sitting quietly taking notes, with a teacher in front of the room speaking, using slides on a screen. Mandela classrooms look very different: students are sitting in groups, working together on something. It's a little loud and a little messy. But it is very social and thinking oriented, and the students are all talking about ideas. In 2025, Mandela was ranked the third best high school in the state.

Rio Grande School, New Mexico

The Rio Grande School is an independent school in Santa Fe, New Mexico. I spoke to Ahlum Scarola, who became the head of the school in 2019. Ahlum already knew about VT/CoT from when he was principal of the Mandela International Magnet School in Santa Fe in 2017-2019 and where Ron and Mark were working with the teachers. When Ahlum went to Rio, he brought the Visible Thinking with him.

All faculty at Rio Grande participate in VT/CoT. Ahlum thinks of his teachers as his students. One summer they read Ron and colleagues' 2011 book, *Making Thinking*; in summer of 2024 they read *Cultures of Thinking in Action*. He said that his teachers are “all over this book and Ron's [website](#).”

Ron comes regularly to work with Rio's teachers. He models thinking routines to get teachers to think more deeply about their practice. He asks teachers to look at “street data”—evidence from their classrooms about the mindsets and then bring them back to the group to share. Over the years, the teachers have collected street data for all of the mindsets. Most recently, teachers have chosen this mindset: Learning is as much a collective enterprise as they are an individual endeavor.

Ahlum makes it clear to teachers that thinking routines should be part of the bigger picture. They should use the [Understanding Map](#) to decide on which routines to use depending on the kind of thinking they want to foster.

Changes seen. Ahlum said that teachers have grown a great deal from the work they have done with Ron. Students also have been changed: more student voice, more student collaboration and dialogue, students, feeling more integrated into the classroom, and greater ability by students to make their thinking visible without it feeling scary.

Challenges. It has not always been easy to get everyone on board. Teachers need the freedom to play with these practices and experience them. As Ahlum explained, “Getting all teachers to buy into any theory or shift in theory is difficult. Some teachers are just stuck in their ways, and others prefer to focus their growth in other areas.”

Oxnard School District, Ventura County, California

Long-time science educator Debra West was hired by the Oxnard School District in Ventura County, California, to write a grant to the US Department of Education to support the transformation of the three Oxnard middle schools (grades 6-8) into STEAM academies, integrating art with science. The Oxnard schools serve primarily low SES students. Debbie knew of

Ron. A grant of \$12 million was awarded, with Ron written into the grant for five years. The goal of the program was to improve student outcomes through the use of project-based learning and Renzulli-style enrichment, both supported by thinking routines. About 40 Oxnard teachers were trained by Ron in thinking routines (and many attended the PZC).

Debra described the following example of thinking routines in action at Oxnard. High school students were tasked with coming up with projects related to energy and the environment and then guiding 6th graders in these projects. The high school students worked in small teams. They had to first come up with a problem that they believed needed to be solved, research it, and then design and teach a lesson about this to 6th graders in all six of the middle schools. The high schoolers used thinking routines as they were developing the project. To do this, they had to think first about the kind of thinking they wanted their students to do, and then find the right routine. Many teachers thought this was asking too much of high schoolers. “Our students can’t do this,” they said. But they were proved wrong. Here are three examples of projects the high school students developed and then taught to 6th graders.

One team designed a lesson on how to build a solar car, which involved teaching students about circuits, and solar cells, then designing, testing, and ultimately racing the car. In designing the project, students used [Generate-Sort-Connect-Elaborate](#) to help them in design thinking. In both designing and teaching the project, they used many other thinking routines to promote reflection, such as “See-Think-Wonder and Explain.”

A second team designed a project around understanding what went wrong with the Titan submersible designed for people to view the Titanic wreck, which imploded in 2023. The project involved designing the submersible in such a way that it would not have failed. Here they used tools from Agency by Design to figure out what went wrong with the system. They used the [Beauty and Truth](#) routine to think about how the exploration to uncover the submersible could also reveal the beauty of the undersea world.

A third team designed a lesson around a real problem that developed—the devastating Thomas Fire in 2017 in Ventura County. Students designed and taught a project for restoring the land that had been burned. Teachers who thought their students could not develop projects like these were amazed. The lesson in this, said Debby, is to have high expectations, and to “allow yourself to be surprised.” Creating a culture of thinking and using thinking routines, she said, helps create environments where surprising things can take place.

Benefits. Debra reported many benefits in the use of thinking routines: They are easy to use and can be tried out the day after learning about them; they can be used with any content; they help students gain a sense of purpose in what they are studying; they lead to powerful learning that sticks over time and they help students learn about themselves as learners.

Impact in Australia

Kambala and Wilderness Schools, Australia

Jane Danvers has served as principal of two independent schools for girls in Australia, and she has infused a culture of thinking in both. She has led the [Kambala](#) school since 2022. Prior to that she was principal of the [Wilderness](#) school in Adelaide. Both schools have pre-kindergarten programs and extend through senior year in high school.

While attending the International Conference on Thinking in Bilbao in 2015, Jane approached Ron and invited him to Wilderness. Ron then served as academic in residence in Wilderness, visiting the school four times a year, working with the entire staff to help embed a culture of thinking throughout the school, and meeting as well with parents. He began the same position at Kambala in 2024.

In these two schools, thinking routines are used across grades and in all subject areas. Thinking routines like See-Think-Wonder are also used in faculty meetings to provoke thinking and discussion, even when these meetings are not about thinking routines.

Jane has established the Kambala Institute of Teaching Excellence whose mission, according to the website, is “to attract, retain and develop outstanding teachers and to create the framework and conditions for teachers to reach new heights in their professional practice and career development.” Parents are very supportive of the changes Jane has brought about and often contribute funds to this institute. These support sending faculty to the PZC and having Ron in residence.

Lasting effects. There has been no problem in keeping a culture of thinking going at Wilderness in between Ron’s visits or after he no longer was in residence. Both schools have strong professional learning programs and faculty are expected to create a culture of thinking in their classrooms. Jane described Ron’s taking teachers from where they are and moving them to something new. Teachers try out practices that are new to them, get feedback and try them out again, until eventually new practices become second nature.

Penleigh and Essendon Grammar School, Victoria, Australia

Kate Dullard is the principal of Penleigh and Essendon Grammar School in Victoria, Australia, a highly ranked K-12 school with approximately 3,000 students and 300 teachers. In 2010, the leadership team decided to build a culture of thinking at the school. Kate had learned about PZ while in graduate school, and the Vice-Principal had been at a school that had engaged with PZ and knew about thinking routines. The school formed a subcommittee of teachers and administrators to work on what they saw as good thinking. They decided that PZ’s thinking routines would be a good place to start and liked the fact that they could be used with any age and with any subject area. Teachers tried these out in their classrooms and reported small but immediate benefits right away. They recognized that these routines could scaffold the kinds of thinking they wanted their students to develop.

Ron was invited to the school around 2012 and has had an ongoing relationship with it. When Ron comes, he presents a keynote to all of the teachers (with a different focus each year). Teachers then break out into workshops as Ron circles through to observe and coach. Between visits from Ron, teachers work in small groups applying what they learned in their classrooms, observing each other’s classes, and meeting together regularly to discuss. In addition, teachers can apply to do a specific year-long project with Ron, including 4-5 days with Ron throughout the year and working in teams between those sessions. The program might be on how thinking routines promote engagement, for example, or on one of the cultural forces.

Kate recently presented about the use of thinking routines at a conference for senior English teachers. She demonstrated the Give One, Get One routine. She asked the teachers at the conference to each list characters from literature who would make a better prime minister than the current one. They were then asked to give one of their ideas to a colleague, with each of them

attempting to justify their choice. Each educator, by the end of this exercise, had a much longer list than the one they started with and had heard different ideas and opinions from others in the room. Kate believes this routine promotes engagement, and she wanted to make the point that high achieving students like those at Penleigh do not need to just memorize and regurgitate facts. She showed us a video to demonstrate how engaged students were in this routine, with many more students offering ideas and opinions through the use of this structure than what would have otherwise been the case.

At the conference, she also demonstrated the use of the 'Give One, Get One' routine to improve students' argument analysis skills (this is described on p. 45 of [The Power of Making Thinking Visible](#)). Students were asked to annotate a text using a persuasive rhetorical device, then 'give' and 'get' another device to/from a partner, and then make further annotations, in a different colored pen. A comparison of the before and after annotations showed how much richer they became after the use of the routine. Students were asked to reflect on what they had not at first included by noting what had been added in a different color—a lesson in metacognition. Sharing with a partner also shows students how they can learn from students who think differently from them.

Kate gave an example to show how strongly embedded thinking routines have become in the students: One Year 11 Legal Studies student faced a test question calling for an extended response, and he planned his response by annotating the question using the See-Think-Wonder routine even though the test did not ask for this.

Kate has used thinking routines when meeting with her school leaders. When things are not going well in a classroom, the school uses the Cultural Forces as a diagnostic tool and a way of helping the teacher improve. Teachers are encouraged to think about which of the cultural forces might be better employed.

Changes in student learning. When asked how the use of thinking routines has affected student learning, Kate said that it has improved metacognition. It has made students more aware of how they think, help them notice gaps in their thinking, and in general supported their thinking. Thinking routines have helped to create the habit of thinking more slowly, rather than jumping to conclusions, and of appreciating others' perspectives. Perhaps the most concrete and powerful example of the effects on student learning at Penleigh and Essendon School concerns two 12th grade accounting teachers, Steve and Darrel, using a routine called Main-Side-Hidden. Here is Ron's account,

Both Steve and Darrel continue to use the Main-Side-Hidden routine with each of the concept areas in the accounting course, seeing gradual improvement and success by the students. Although initially they thought the routine was of most help to their weaker students, over time Steve and Darrel noticed that improvement was happening across the board. "As Victoria Curriculum assessors of external examinations, we would be lucky to mark one or two student papers at the level of a 100% response out of the 300 odd papers we mark each year," Steve notes. "However, in our classes now we have at least 2–3 students per assessment task reaching that level out of our combined group of 55 students, which is astounding. We are also seeing significant increases for our lower to middle range who are now averaging scores in the 60–75% range rather than the previous averages of 40–55%." (Ritchard, 2020, p. 123)

Parents' response. At first some parents were a little worried about the shift towards a thinking school, because this involved students being more independent. But that was a long time ago, and this concern evaporated when they saw how their children were still learning and doing so in an intense way.

PZ-Australia Network

Cameron Paterson is an award-winning teacher in Australia who received the 21st Century International Global Innovation Award. He is the co-editor of [*Flip the System Australia: What Matters in Education*](#), and is currently editing a book called *Cultivating Cultures of Thinking in Australian Schools: From Control to Curiosity*, with chapters written by skilled practitioners about how they have implemented CoT. Cameron believes this is the first book with chapters from individual teachers' voices about their practices with CoT.

From 1993-2020, Cameron taught at the Shore School in Sydney, which became heavily imbued with PZ ideas. Cameron is now Director of Learning at Wesley College, a K-12 school, in Melbourne, Australia, where Ron has been working for many years. Cameron is also the co-founder of the PZ-Australia Network.

Somewhere around 2004, Cameron attended a conference on TfU at the A.B. Paterson College (In Australia, "college" means a K-12 school. in Queensland, where Ron, along with David Perkins and Mark Church, were featured. Cameron, who had already been teaching for ten years, said he felt like he'd been electrocuted. "These were the ideas I had been looking for, and this is why I became a teacher." These ideas, he continued, helped him see teaching as a creative act.

The conference prompted Cameron to become deeply knowledgeable about many of PZ's frameworks. He took all of PZ's online courses and attended the PZC summer institute in 2007, where he said he was "absolutely blown away by the ideas and the people." He took a leave from teaching to get his master's degree at HGSE and got to know many PZ leaders. He was then invited to be a Fellow at the Future of Learning Conference in 2013 as well as at the next PZC. He became an online coach for Ron's Creating Cultures of Thinking course and then became the course instructor. Now he is a facilitator for various PZ online courses.

In 2016, PZ hosted two conferences (in Sydney and Melbourne). Cameron asked Daniel Wilson, then the PZ Director, what he should do when PZ went home. Daniel's reply: "You have to start your own network." And so, Cameron founded the PZ-Sydney Network (along with Simon Brooks) that same year, with seven schools and seven teachers. This teacher network (now called PZ Australia) provides free professional development to teachers in Australia. Once a year, the network hosts a free conference, and crowds of up to 500 educators attend, including teachers from small, rural and under-resourced schools in Western New South Wales that have flown in their entire staff. The network also puts on other kinds of events each year—Teach Meets and Puzzlements for teachers to share problems of practice using protocols. Now the network has expanded to become the PZ-Australia Network, with the teachers in three of Australia's six states involved. Someday, Cameron hopes this will become the PZ-Asia Pacific network.

A new book, *Cultivating Cultures of Thinking in Australian Schools*, is due out in late 2025, edited by Cameron Paterson and Simon Brooks. The editors have also begun work on a similar book that takes a worldwide perspective.

According to their website:

A central aim of PZ-Australia is to share our passion for Project Zero ideas with others by providing free professional learning opportunities for Australian educators. Drawing on Project Zero pedagogy and practice, we believe that:

- *Learning is a consequence of thinking.*
- *Understanding is not only something you have, but something you do.*
- *Intelligence is not one thing, but many, and is something that can be learned.*
- *Thinking skills alone are not sufficient; we must also have the disposition to use them.*
- *Thinking and learning are processes that are deepened when we make them visible.*
- *Collaboration is the stuff of learning.*

The network's steering committee consists of educators with a strong understanding of PZ ideas. They must have attended the PZC summer institute, taken multiple PZ courses, and either have worked extensively with a PZ researcher or have had their school involved with PZ over a long period of time.

There is also a Teacher Inquiry group focusing on the ten mindsets of cultures of thinking. This group meets three times a year with Ron, each time at a different network member school. Each school has a ten-member team that meets with the network online four times a year.

The network focuses primarily on Cultures of Thinking, with thinking routines as an entry point. CoT and MTV have "huge" visibility in Australia, Cameron said.

Challenges. Both Ron and Cameron are sometimes made uneasy by teachers who start using thinking routines superficially without any understanding of the CoT principles, values, mindsets, and beliefs. Teachers also need to choose a thinking routine thoughtfully—in terms of the kind of thinking they are trying to develop in their students. For example, Jessica Ross, a PZ member and also a history teacher at the Global Learning Charter school in Massachusetts, focuses only on Claim-Support-Question because she wants her students to become expert at backing up historical claims with evidence.

The goal, Cameron said, is for the thinking routines to simply become part of the culture. For example, instead of "doing a See-Think-Wonder," teachers will just be talking to their students about looking closely and puzzling about what they are seeing.

Parents also can be challenging. Some parents love this new approach, but others ask why students can't just be told what they need to know for their exams. Cameron said that we tell such parents that good teachers who adopt these ideas are thinking beyond exams, focusing on producing good human beings.

Getting teachers on board. Cameron discussed getting teachers on-board in network schools. Developing a culture of thinking is never made compulsory—teachers are invited to become involved. In his previous position at the Shore School, the principal was very supportive of PZ ideas, and a large group of teachers were on board: They read PZ books together, hosted visitors from the US and Australia, and jumped at the chance to host a PZ conference in 2015. At Wesley College, Cameron has a teaching staff of 500 spread across three geographically separate campuses, and every year he gets about ten new teachers on board.

Building a core group of teachers is crucial, Cameron said, but in a big school like his, a sea change is going to take a long time. He said that to develop a culture of thinking in a school, it is important to first change how teacher staff meetings are conducted. These meetings should be more question-than answer-centered, and they should involve getting teachers to slow down and look more closely. In short, he said, “teachers need to become students of their students and be fascinated by their students’ thinking.”

For those who come to the conferences and then return to a school where they are the only teacher using PZ ideas, Cameron provides encouragement by saying that we can all make changes even just within our own classrooms. He tells them that the best way to get other teachers involved is to invite them into your classroom and ask them for help with using a thinking routine. An important role of the PZ-Australia Network is to provide informal mentors for teachers who want support.

Effects on teachers and students. Cameron believes that teachers engaged with CoT/VT and other PZ ideas are happier, they slow down and think more deeply, and they are more comfortable wondering and puzzling rather than feeling the need for immediate answers. Students notice that they are not being given information but instead are asked to do something with information. They notice that more power has been put into their hands. They are happier, there is a more positive vibe in the classroom, and they see that teachers value their thinking and are genuinely interested in their ideas.

In 2021, Cameron wrote a report based on a survey of educators from around the world who have led change in their schools or museums by creating a culture of thinking in their classroom or school. Some of the questions he asked were about how their teaching had changed as a result of CoT, to describe a best practice they were proud of, what they had learned about leading change, and how to make the change survive beyond “us.” There is considerable overlap between what his interviewees said and what I report here from my interviews.

Cameron offered two general thoughts at the end of the interview:

- He values PZ frameworks because they are “curricularly agnostic:” They work for IB schools, schools in New South Wales, and the Victorian Certificate of Education. “It’s just good practice.”
- believes that PZ undervalues its influence on the global debate about the kind of education we want for young people. PZ’s ideas are needed for us to thrive as a human species in this world of AI and climate change, he concluded.

Impact in China

Xuedao. Xuedao is a professional development organization in Guangzhou, China that provides online professional development for elementary and middle school teachers in China.

Aiqin Li, with a background as an elementary school teacher, co-founded Xuedao. While searching for the best “practical and research-based” professional development, Aiqin discovered Ron from his website and invited him to lead on-line professional development for Xuedao teachers on Visible Thinking. Ron has had an ongoing relationship with this organization since 2021.

The workshops Ron runs usually have 70-90 Xuedao teacher-participants, with breakouts into smaller groups. Workshops are run in English, with Chinese translations. Schools are encouraged to send groups of teachers because, Aiqin explained, if you want to start a “thinking school,” you don’t want one teacher trying to go it alone. The school leaders attend this professional development along with their teachers, which Aiqin sees as very important.

Aiqin has considered other PZ frameworks but finds them less structured than the VT framework. Thinking routines are very popular, she said, and even teachers who just hear about a routine without attending a workshop know what to do, although teachers who attend the workshops of course have a deeper understanding. Teachers love the routines, she said, because they can immediately see how they can help them organize their lessons. And when teachers start using the routines, they see student engagement immediately rise.

Impact in India

EuroKids preschools. Via a September 19, 2024 [news report](#) (and another [here](#)), Ron became aware of EuroKids, described as “India’s leading preschool network.” The article stated that this network has “launched its innovative ‘Heureka’ curriculum, inspired by Harvard University’s Project Zero.” EuroKids has over 23 years of experience and operates over 1600 preschools in 400 cities in India. In 2024, this network ran 67 preschool “centres” in Gujarat with 38 of these in the city of Ahmedabad. This latest version of the curriculum is designed to foster critical and creative thinking in young learners and aligns with the National Education Policy 2020’s vision for holistic development.” The network plans to open 150 new preschools in the state of Gujarat over the next five years, and eventually to open 200 preschools. “Developed over 18 months, it introduces 20 Harvard-inspired Thinking Routines that encourage curiosity and critical thinking. The curriculum emphasizes teaching children “how” to think rather than just “what” to think.”

Impact in Italy

American School of Milan. CoT is part of the accreditation plan of the American School of Milan for the next five years. In 2021, this school decided to investigate how the use of CoT might affect students’ curiosity and critical thinking. Jane Segre, Director of Teaching and Learning, instigated this initiative and brought Ron on board to work with the school. She had attended the PZC summer institute in about 2004, heard Ron present, and then read all of his books. This experience made her much more aware of the importance of getting students to think and to show where they are in their thinking and the importance of students being active in the classroom rather than just passively listening to the teacher.

The teachers are divided into 11 teams, and each team has chosen a different aspect of CoT to focus on. At the beginning of each year, Jane conducts a teacher workshop on an aspect of CoT. In the academic year 2023-24, the focus was on getting teachers to address the kind of thinking they wanted students to engage in, and then to choose the appropriate thinking routine. Jane feels this is important so that teachers do not just use thinking routines as an activity without thinking about the reason for using a particular routine.

During the first year, adopting a CoT approach was voluntary for teachers. After that it became mandatory, and teachers now need to demonstrate through photographs and/or reflections how they are using CoT. Meeting time is carved out so that teachers can come together to share their practices. This occurs five times a year for one hour. “Not enough,” Jane said, but it is what is

feasible. To keep teachers informed about what others are doing, Jane sends a weekly notification to all teachers that includes classroom examples of uses of MTV.

Jane described how Ron and Mark integrate thinking routines into their workshops so that teachers experience thinking routines as students. This has, she said, been inspirational for many of the teachers. Teachers also realize that they can adapt thinking routines to their discipline and for any age group. When teachers are able to adapt a thinking routine, this demonstrates confidence. It does not matter whether they follow every step.

One example of the use of a thinking routine Jane gave was that of David Camp, a 12th grade English teacher in the IB program at Emanuel School in Sydney, Australia. When he gives an exam to his 12th graders, he tells them not to plunge right in to answer a question but instead to use the See-Think-Wonder routine to unpack the question before writing. In interviews with the students that Jane carried out, she found that students said that this practice made their answers more thoughtful.

The school is assessing the impact of CoT on their students. At the beginning of year 1, students were assessed on their critical thinking using a measure developed by OECD. Teachers are working on a measure of curiosity. In addition, all students created a concept map about thinking (which was then coded using Ron's scoring method). Assessment measures will be readministered at the end of 2026.

Impact in Japan

Canadian Academy Kobe, Japan

Canadian Academy Kobe is an international K-12 IB school in Japan, conducted in English, that includes native speakers of Japanese, Chinese, and English. Trevor Rehel and Erin Boutitie are Elementary School Learning Leaders at Kobe. Ron Ritchhart has had a strong impact on this school through an ongoing relationship starting in 2017.

Thinking routines were already in use before Ron came to the school. Trevor knew about them because he knew about PZ. "We all knew about it. We had teachers who had taken courses. It was just in the culture of the school. It's quite famous in our circle [international schools circle], everybody kind of talks about it." Erin did not know of PZ, but she had used thinking routines at a previous position without knowing their origin.

When Ron visits, he works with teachers from pre-K to grade 10. He conducts a weekend workshop on cultures of thinking and then stays a few more days to meet with the teachers and parents and to visit classrooms. He meets with the leadership team to discuss the best ways to implement cultures of thinking and thinking routines. He conducts a "lab site" where one teacher volunteers to teach a lesson with the other teachers as students, followed by group reflection. It is in these days following the workshop that the learning is really brought to life.

Commonly used routines are: Think-Pair-Share; I used to think. Now I think; See-Think-Wonder; Think-Puzzle-Explore; Chalk Talk; What makes you say that? (which gets students to go deeper, explain their thinking, and not jump to conclusions); Compass Points (which is not only about thinking but also about feeling); Name-Describe-Act; Turning and Talking; and Peel the Fruit. Teachers may use one routine more than another, depending on their comfort level.

Effects on students. Many thinking routines have now become habitual. Sometimes students automatically use a routine to start unpacking what they are learning about, or they turn spontaneously to their partner to discuss what something means. These routines are good for all students, said Trevor and Erin, but are especially helpful for students not confident about talking in front of the class: Speaking to their partner provides a rehearsal for something they feel they can then say to the whole class.

Effects on teachers. During the school year, all teachers participate in a research group of their choice, meeting every week for two hours on an early release day. Every year there is a group working on cultures of thinking, where they choose one cultural force, do a deep dive into it, and visit each others' classrooms. Teachers' reflections in these research groups, and their changes in classroom practice, form part of the basis on which teachers are evaluated.

Thinking routines are also used in weekly professional development sessions run by the school leadership, in team meetings with teachers, and in team meetings when Erin and Trevor are helping teachers plan.

Erin and Trevor meet weekly with each grade level team to plan units of inquiry and discuss the data from thinking routines. This is followed by the teams meeting on their own with their grade level teachers to continue their planning sessions. At the end of the academic year, teachers reflect together to plan their teaching for the upcoming year.

Effects on parents. Thinking routines are used in parent workshops, with parents happy to engage in these and supportive of their use in the school.

Impact in Latin America

Avenues The World School, São Paulo, Brazil

[Avenues The World School in São Paulo](#) was founded in 2018, and Anne Baldisseri has been its head since August 2023. Avenues is a progressive, for-profit family of schools with locations in New York and São Paulo, and previously in China, Silicon Valley, and online. Avenues Schools are project-based with no exams. Avenues teachers make use of essential questions (but not the TfU framework), ongoing assessment, and performances where students demonstrate what they have learned.

Anne is deeply familiar with PZ approaches, having attended the PZ Classroom as a “student” and then later as a facilitator. She took PZ’s TfU course as a student and later became a coach for the course. She also took the Making Thinking Visible course and [Leading for Understanding](#), an early PZ course that was only offered a few times. For this course, participants read a 2005 book by multiple authors including three from PZ, [Learning at Work](#) (Bonnet, Miani, Perkins, Unger, & Wilson, 2005).

Prior to directing the Avenues School in São Paulo, Anne started working at Avenues in 2016 as the Head of the Primary Division. Before that she headed the early years program at [St. Paul's School](#), a British school in São Paulo. Anne told me that she made many changes to the early years program because of the influence of PZ, including thinking routines, playful learning, documentation, and implementing an emergent curriculum. In her role as head of early years, she also organized yearly conferences at St. Paul's School for Brazilian educators. She invited Ron Ron, Mark, and Tina Blythe to present at these learning conferences and introduced thinking routines as well as protocols for looking at student work in her own work with teachers. Unfortunately, there may be no traces left

of her innovations at St. Paul's because new leadership came in and changed the curriculum to reflect a more British educational framework.

When Anne came to Avenues, she found that many of the teachers there were already using thinking routines, having previously taught in schools where thinking routines were common. Some thinking routines, she said, like See-Think-Wonder, "are probably known by almost all teachers in the world." When she runs meetings with Avenues teachers and parents, Anne uses thinking routines as well as PZ protocols. She mentioned particularly using Connect-Extend-Challenge and Think-Puzzle-Explore, as well as the ladder of feedback any time there is a presentation or performance.

In October, 2023, Avenues was bought by Nord Anglia Education, an international school organization that embraces many PZ ideas. Anne told me that after Nord Anglia took over she was freer to make curricular choices as long as they maintained the core [Avenues World Elements curriculum](#), which reminds her of David Perkins' idea of [what's worth learning](#). Today in 2025, Avenues teachers are involved with a project at PZ called [Project Delta](#) (Dispositions for Engaging Learning Today), directed by Flossie Chua and David Perkins. This is a year-long collaboration between PZ and Nord Anglia Education, which ends with a meeting at PZ in August, 2025. This [page](#) on Nord Anglia's website describes their push to develop meta-cognitive skills in even the younger learners using PZ thinking routines in 27 Nord Anglia schools.

Northlands, IB School in Argentina

Marcela Danowsky, an educator in Argentina, is unusual in that she has implemented thinking routines without any contact with PZ or any contact with others who were experienced in using these approaches. And she was the only teacher in her school using this framework.

She first heard about PZ in 2017 when the head of the secondary school where she was teaching introduced some of the PZ approaches. She was intrigued, and when she began teaching 3rd and 6th graders at Northlands, an IB International School in Argentina, she researched information about thinking routines on the PZ website as well as information on [this website](#) created by educator Alice Vigors. She experimented with thinking routines, sometimes combining them with slow looking. She said it was a matter of trial and error; she put these approaches into practice while continually checking what worked with her students. She uses See-Think-Wonder, for example, and finds that her students love it. They know it by heart and understand how it works, she said.

Marcela uses slow looking not just for art but for any kind of image – sometimes ones she creates via AI. For example, when starting a new book, her 6th graders spend time looking carefully at the cover and then using See-Think-Wonder to think about what the book is going to be about. Sometimes she uses the Zoom-in routine, getting students to observe an image part by part, revising their hypotheses about what the whole image will look like the more parts that are revealed.

Challenges. Marcela is also a faculty member at two teacher training colleges. In contrast to the children she teaches, she finds it more difficult to get her teachers in training to open up to thinking routines. She said it was like introducing them to a new world. But after a while they grasped the idea, tried it out, and were surprised by the positive results. Her department head was supportive of her approach, but no other faculty used thinking routines, and Marcela does not think it likely that her teachers in training went on to use these in their own teaching.

A Teacher Professional Development Organization in Brazil

Triade Educacional is a professional development organization working with teachers in Brazil, was founded in 2017 by Lilian Bacich and Leandro Holanda. They work primarily with public schools at the high school level, making abundant use of Project Zero's thinking routines, which they see as a way for teachers to engage students in meaningful and deep learning with STEAM (Science, Technology, Engineering, Arts, Math) content. Although neither Lilian nor Leandro had visited PZ or had direct contact with a PZ researcher, they familiarized themselves with thinking routines via the PZ website. In addition, *The Power of Making Thinking Visible* (2020) is now available in Portuguese. In this [blog](#), Lilian clearly explains the benefits of thinking routines:

Thinking routines provide a set of clear, structurally repeatable steps for students to explore ideas, make connections, ask questions, and build understanding around a variety of concepts and topics.

One of the main benefits of thinking routines is that they help students make their thinking visible. By following a routine, students are encouraged to express their ideas, argue their points of view, and justify their answers. This not only allows teachers to assess students' understanding, but also promotes metacognition, or the ability of students to reflect on their own thought processes.

Furthermore, thinking routines are flexible and can be adapted to fit a wide range of subject areas, curriculum components, and segments. From the math classroom to the science classroom to the literature classroom, thinking routines can be used in any educational context to promote deeper, more meaningful learning.

Teachers see right away how useful thinking routines can be and feel empowered by them. Lilian and Leandro told me that they have never encountered teachers who resist using these routines.

Impact on International Networks of Schools

Below I describe two international school networks using VT/CoT.

International Thinking Schools Network

[Thinking Schools](#) are part of a professional development organization ([Thinking Matters](#)) that makes use of Visible Thinking. The organization focuses on whole school change, with a mission of improving metacognition. Thinking Matters works with schools all over the world. Their website states:

Since our inception 15 years ago we have worked with schools across the globe and through them have reached over 400,000 pupils. Our goal is to have positively influenced over a million learners by 2025.

Some schools go through a multi-year process of accreditation, which is quite expensive; a larger group joins a world-wide network of schools that takes a whole school approach to the teaching of thinking. Being a part of the network means that schools are given training and access to webinars, and they can share ideas through conferences and webinars. Thinking Matters works mostly with independent schools, since they can create their own curricula and can afford the costs.

Accredited by the University of Exeter in the UK, Thinking Schools focus on integrating metacognitive strategies into their teaching across all subject areas. To become accredited, educators are trained to use various metacognitive approaches. These include Project Zero's

Visible Thinking, De Bono's Six Thinking Hats, Lipman's Philosophy for Children, Growth Mindset, Thinker's Keys, and Costa and Kallick's Habits of Mind. School leaders need to implement two or more of these approaches to become accredited (and thus we cannot know how many of these schools use Visible Thinking).

Challenges. The problem of mandating from above was illustrated to me by a teacher at a Thinking School in a non-Western country who asked to remain anonymous.

Some teachers were using these approaches in a superficial, cosmetic way.

Teachers at his school were asked to show evidence that they were implementing a Thinking School approach. He was concerned that instead of thinking prospectively about what they could achieve with a particular framework and why they might *want* to use it, teachers thought retroactively: They identified things they had done that would fit into a particular framework and then checked off a box indicating that they had used that framework.

He speculated that teachers in this non-western school also felt that the values embedded in the frameworks they were asked to use were not always well-aligned with their view of what a teacher should do and be and what a student should do and be. (Ron notes that this was why he wrote *Cultures of Thinking in Action*—to lay out the core beliefs about teaching and learning that need to be in place for optimal progress.) Even though this was a very progressive school, many of the teachers had themselves been educated in teacher centered, authoritarian schools. In addition, teachers of foreign languages, who were expected to use thinking routines in their classes, felt that translating the routines into another language did not work well.

Sonja Vandeleur, an educator teaching at the Rodean School in South Africa (a Thinking School), also pointed out some of the weaknesses that she has observed.

- There is a lack of follow-up after training. This is a problem because one cannot assume that things will go well after one training session.
- Teachers need to have taken the Visible Thinking course in order to implement thinking routines well. She told me that the PZ online courses are “fantastic,” especially because coaches communicate regularly with each student. Unfortunately, the course is expensive, especially given the current exchange rate.
- Teachers do not have regularly scheduled meetings to reflect together, because they have so many department meetings.
- There was not enough peer observation. Teachers felt threatened by being observed, and Sonja stressed to me the importance of teachers learning to observe and give feedback in a constructive way so that both the teacher and the observer learn from it.

Without a felt need for the use of metacognitive frameworks, and with only several days of training, it is very difficult, if not impossible, to create institutional change.

In speaking to the teacher who asked that his name not be used, I learned about two exceptions to the picture I have painted. First, there were a few teachers who saw themselves as experimenters

and innovators. These teachers readily incorporated the various frameworks into their teaching, unlike the majority who felt they simply did not have the bandwidth or the motivation, or both.

And second, there was one approach that had immediate appeal—the ethical dilemmas developed by the Good Project, discussed in Chapter 18. Students were highly engaged and often came up with quite sophisticated ideas, stimulated by the concept of the “rings of responsibility.” “While it may be possible to use thinking routines in a superficial manner,” he said, “once students get involved in an ethical issue they care about, the discussion is unlikely to remain superficial.” Unfortunately, this topic was only taught for one year.

He also told me that he is now embarking on a new project—putting Teaching for Understanding at the center of his school’s curriculum.

Nord Anglia Education

[Nord Anglia Education](#) is a company in the United Kingdom that operates private, for-profit schools around the world. Currently they have over 80 schools spread over 30 countries in the Americas, Europe, China, Southeast Asia, India, and the Middle East, with over 80,000 students enrolled.

One of Nord Anglia’s foci is metacognition, and Project Zero’s thinking routines are one of the tools used to promote metacognition. Damian Bebell, a researcher at Boston College, is conducting a [longitudinal study](#) of the effect of PZ thinking routines on student outcomes.

Another one of their foci is “Learner Ambitions,” or life skills. They promote six of these: Creativity, Commitment, Collaboration, Curiosity, Compassion, and Critical Thinking. They have teamed up with Project Zero, in the [Project Delta](#). In this project, teachers are working with PZ to identify thinking routines (or develop new ones) that speak to each of these six life skills, spending six weeks on each of these life skills.

Impact on Student Learning

Three studies have assessed impact of thinking routines on student learning outcomes:

Ron and Mark carried out a study at Washington International School that showed improvement in academic performance from the use of thinking routines (Ritchhart & Church 2020). They reported similar findings in schools in Australia, California, and Michigan. The study conducted in Australia showed that the use of thinking routines improved not only the top performing students but also those in the lower quartile.

A study in Chile showed improved academic performance in business students taught with thinking routines, compared to those taught using traditional methods (Sepulveda & Venegas-Muggli (2019).

Philippe John Sipacio was a university professor in the Philippines teaching academic and technical writing who changed careers after 20 years to become an educator of English Language Learners in the East Robeson Primary School in North Carolina, a school where Ron has never worked.

Philippe learned about Project Zero through a Google search online. He read about Visible Thinking, including reading one of Ron’s books, and took a PZ online course on Visible Thinking.

Philippe works once or twice a week for 45 minutes with K-3 students who are native speakers of Spanish, Arabic, Creole, and Mandarin. He uses thinking routines with these students.

The main routine he uses is the See-Think-Wonder routine. He uses this, for example, when he shows his students the cover of a book they are about to read, first translating the questions into each child's first language. Other routines he uses include Chalk Talk, I used to think...Now I think, and What Makes You Say That. He uses the routines, "to open and explore ideas, activate prior experience, create experience, and organize ideas" as well as for "formative assessment and to document learning."

Philippe feels that his students are excited and engaged by this new approach, one that is so different from what they experience in their classroom. While his principal was welcoming of this new approach, Philippe found it difficult to convince his colleagues to use thinking routines. They felt comfortable with what they were already doing and did not want to leave their comfort zone. The school, he said, is not a high performing district, and thus there is an emphasis on traditional teaching and standardized testing

A small pilot study on this question was conducted by Phillippe Sipacio. In an unpublished study, he compared a thinking routine group of 1st and 2nd graders with a group not receiving thinking routines (with six in each group in the 1st grade, and seven in each group in the 2nd grade). The outcome measure was the reading part of a [standardized test](#) assessing progress in English language proficiency. At both ages, the thinking routines group achieved significantly higher scores than the comparison group, and he presented a poster about this at the 2024 meeting of the National Council of Teachers of English.

A Project with Conceptual Ties to VT/CoT: Project Intelligence in Venezuela

Sometimes a PI from PZ works with another organization on a project that has conceptual ties to work at PZ. This is how I would describe David Perkins' work on "Project Intelligence" –an attempt to teach thinking skills in Venezuela. True, this project did not involve VT/CoT, but it was also aimed at deepening thinking in students. David wrote to me about this project, and he included some thoughts on the challenge of achieving lasting impact in education:

The short story about Project Intelligence itself is this. The project, with Richard Herrnstein from the Harvard Department of Psychology directing for the university, ran from 1979 to 1983. Virtually all this was done under subcontract at the consulting firm Bolt, Beranek, and Newman, a high-tech organization located near Fresh Pond circle, with many military and other contracts and initiatives. Some years ago, it was absorbed into another firm. In practical terms, Project Intelligence was directed by Raymond Nickerson of Bolt, Beranek, and Newman. Herrnstein did not contribute much substance, and indeed was skeptical, in keeping with his hardline position on IQ, about whether an intervention could enhance general intelligence...although it certainly might improve some intellectual skills.

A thinking skills course was developed, targeting seventh grade for testing purposes, although it could easily be used a couple of grades earlier or later. The course was stand-alone, not integrated into subject-matter instruction. There were six major themes – foundations of reasoning, understanding language, verbal reasoning, problem solving, decision making, and inventive thinking. I directed development of the inventive thinking component and visited Venezuela several times as part of the process. I continued to be active at Project Zero, with Project

Intelligence an engagement on the side. No formal relationship existed between the two, but there were many spillover effects in both directions.

The Project Intelligence course program was implemented in Venezuela in several schools on a pilot basis, with control sites. An elaborate evaluation after a year of application demonstrated substantial and highly statistically significant improvements on almost all measures and much greater improvement than in the control schools, which also showed some gains – after all, the control students experienced a year of maturation and conventional education.

We wanted to refine and test the model further. However, there was a regime change in Venezuela, and the new government had less interest. The course continued to be available and used here and there.

Also, in the years after, a group in Spain produced and disseminated a version. That initiative continued for several years, but I know hardly anything about the details.

Another development occurred in Venezuela. Beatriz Capdevielle, a Venezuelan friend and colleague who was involved in Project Intelligence, subsequently crafted a thinking skills program using some of the ideas from Project Intelligence and some others, a program that became quite widespread in the state of Miranda, which includes Caracas. This program also was formally evaluated with good results, including impact on subject matter learning, which was not part of the Project Intelligence assessment. I consulted some for this program.

Then what? In 1999, Hugo Chavez, a populist socialist politician, assumed the presidency of Venezuela at a high point of the oil boom. Chavez managed to improve the economy some for a little while, after which severe economic difficulties developed. These and various political problems continue under the current authoritarian president Maduro.

An early step of Chavez was to stifle all initiatives that did not emanate directly from the Ministry of Education of Venezuela. This included activities based on the materials of Project Intelligence and also the program led by Beatriz Capdevielle. Never mind that they worked! After a while, Beatriz and her entire family left Venezuela to live in Guatemala, and many others departed Venezuela as well.

I learned a lot from my participation in Project Intelligence toward fostering thinking. And I learned a further lesson from it and related endeavors, a lesson I rarely foreground in presentations, because it's a downer. Programs in specific settings, even effective programs, usually do not last. That is why it's so important to have frameworks and data and materials that can carry forward. Those will not last forever either, but they have a longer lifespan, and they can inform future endeavors.

So, what goes wrong with programs in specific settings? Usually it has little to do with effectiveness. Events at a different level intervene, like Chavez taking power in Venezuela. Or, thinking of a project Daniel Wilson and I and Chris Unger had in Bogotá, Colombia, a change in the presidency of the university we were working with. Or I also remember a project Shari Tishman and I and others had in South Africa years ago, crafting another thinking skills program, in association with an NGO focusing on schools for non-white populations. The program lasted for quite a while after the development phase. Eventually, though, the head of the NGO retired and the patterns of activity dissipated.

At a more local level, school leadership changes and shifts in key personnel often lead to a good program disappearing. That is why, in Flossie Chua's and my model for launching, spreading, and sustaining programs in schools (which is a general model, not just about thinking skills or any specific intervention), we include long-term planning to institutionalize programs.

Institutionalizing can help a great deal, but no guarantees. For one thing, people have to pay attention to deliberate institutionalization...a step easily neglected, because, when a program runs effectively for a while, this nourishes a sense that the program is simply going to last. Also, even institutionalization will not always defend a program against new leaders eager to make their mark with different values and visions.

So, to the moral of these tales: always try to ensure “portable” outcomes – findings, frameworks, and examples that can inform similar or related endeavors.

It may be that, in the big picture, what has the greatest spread and staying power for fostering better thinking (and other ambitious innovations) are broad flexible ideas and contributing tools, which function as “memes” in the culture. There are numerous programs for developing thinking, many rarely seen now... not because they didn’t work but because the people and institutions supporting them have passed from the scene. However, there is a big plus: the current educational scene includes far more toward the development of thinking than in 1980.

Today, attention to thinking is a presence, one to which Project Intelligence and many endeavors at Project Zero and elsewhere have contributed. Degree and quality of attention range widely, from hardly any in some settings to serious, informed, and sustained initiatives in others. Such a sprawl is natural, given the many complexities of education. For sure though, the development of thinking is in the air, informed by various approaches, written into many educational frameworks, appearing in official government goals around the world, and often pursued quite seriously.

This is a tale of caution, or realism maybe. Perhaps one needs 20+ years to judge impact—and even then, the impact may only be in the form of the general idea of a project (in this case, the development of thinking; in other cases understanding rather than memorization, or student agency, or the importance of time for teachers to reflect together, for example). But changing what is “in the air” is an important and perhaps lasting kind of impact.

The schools featured in this chapter are only some of the schools that I learned had used (or are currently using) CoT/VT. So many schools are using these frameworks that it was not possible to interview educators from all of them.

Many educators, school leaders, and schools have made use of the frameworks of CoT/VT in tandem with other PZ frameworks, and as will be seen in a number of the chapters that follow.

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Accompanying Appendix

Appendix 9. Sites Using Cultures of Thinking

Chapter 8

Making Learning Visible: Impact

Vehicles of Impact

The MLV project has had impact through a wide variety of vehicles.

Publications. *The Making Learning Visible* book (Project Zero & Reggio Children, 2001), which focuses on Reggio children, and the *Visible Learners* book (Krechevsky, Mardell, Rivard, & Wilson, 2013), which focuses on US children, have been widely used, as documented in this chapter.

PZ conferences. The MLV researchers and teacher-collaborators have often presented at the PZCs hosted at PZ and at other sites, including [this one](#) at the Boston Children's Museum. Two institutes entirely devoted to MLV were held at Harvard in the early 2000s.

Other conferences and school workshops. The MLV team has presented at the Boston Area Reggio-Inspired Network ([BARIN](#)) conferences and the National Association for the Education of Young Children. They have also given talks and run workshops at numerous schools and school districts across the US as well as in other countries including Australia, Canada, Mexico, Chile, Colombia, Croatia, Denmark, Italy, the Netherlands, Singapore, and Spain. There are numerous videos of talks given by Mara Krechevsky and/or Ben Mardell available online. [Here](#) is just one example.

Online courses. A Harvard online course called Making Learning Visible, developed by Mara Krechevsky, has been offered every year since 2015 with the exception of 2021-2022 during the Covid-19 pandemic. In addition, Mara, Marina Boni, and Melissa Rivard have taught several MLV courses (between 2011 and 2014) as part of the Boston Public Schools (BPS) professional development offerings.

Three websites. The initial MLV website can be viewed [here](#). Even though it is a bit outdated, Jean Marie Iorio, an educator now at the University of Melbourne in Australia (discussed later in this chapter), told Mara that she often uses examples of documentation from the original site in her course and begged her not to shut it down. Another early website, created primarily by Gina Stefanini (a special education teacher in Brookline, Massachusetts) can be viewed [here](#). The current website can be viewed [here](#). It contains downloadable tools, readings, and other resources.

Other online free resources. A widely viewed video created by Melissa Rivard documenting MLV's use in two classrooms at Gardner Pilot Academy in Boston can be found [here](#). Examples of how BPS teachers use this approach in their classrooms and confer with one another can be seen [here](#). Ben Mardell's 32-minute documentary about teachers' and kindergarten students' learning while engaged in an MLV-inspired study of the Boston Marathon can be seen [here](#). Melissa Rivard's conversation with leaders from Reggio about the practice of documentation and its role in teaching and learning can be seen [here](#). A video animation of a visual essay about a high school math class from the VL book can be seen [here](#). An interview with Mara by Louisa Penfold, Co-Director of the Arts and Learning Concentration at HGSE, can be read [here](#).

Impact on Teacher Training in the Boston Area

Both the MLV and VL books have had a strong influence on the training of preservice early childhood education teachers. In the Boston area, teacher-educators Megina Baker, Yvonne Liu-Constant, Lisa Fiore, Ben Mardell, Barbara Rosenquest, and Stephanie Cox Suarez have all used MLV ideas and practices in their courses at Lesley University, Boston University, and Wheelock College (BU and Wheelock are now merged). Lisa, Stephanie, and Barbara were educators who were also part of the MLV team at PZ.

Some preservice early childhood educators learned about Reggio independently of PZ but then used the two PZ books in their own teaching of preservice teachers. Many Boston-area early childhood professors of education were first introduced to Reggio principles when they joined the Democracy Inquiry Group (DIG), a group started by the three educators mentioned above, Lisa, Stephanie, and Barbara. These three had worked with Mara during the 2003-2006 phase of the project. DIG began after the MLV funding ran out because the group felt so strongly about continuing the work. (Mara recalls Barbara saying, "We shall not be denied.") DIG hired PZ member Terri Turner to facilitate the group, and Mara and Ben were members for a while. The group typically met at Wheelock College, where Barbara and Stephanie were professors. They met monthly, sometimes more, and read chapters of the MLV book. Participants brought samples of documentations of their students to discuss and dissect. Twice, Tiziana Filippini from Reggio came to the group and critiqued their documentation, critiques which some of the US educators told me they found eye-opening.

In 2019, Stephanie and Megina formed a second learning group, the Early Childhood Documentation Inquiry Group, as reported [here](#). This group now meets monthly on Zoom and includes educators from across Massachusetts, including those in public and private programs, community programs, and family day care centers. The Boston Area Reggio Inspired Network (BARIN) provides small grants (\$1,000) to help other teachers form similar inquiry groups. BARIN also spreads understanding of documentation with a workshop series for teachers who log on from anywhere in the world. These workshops are recorded and can be used later for professional development. Several of these educators told me that participating in these learning groups led to their thinking about the idea of children loaning knowledge to one another. It also led to their focusing on the big question of what teaching is all about.

Teacher educators involved with these learning groups have written and presented about the MLV approach. For example, in a 2006 [article](#), Stephanie described her graduate seminar for preservice elementary teachers as "the most powerful learning I had ever experienced in a graduate seminar for pre-service teachers" (p. 35). Stephanie and Lisa curated a special issue of *Theory into Practice* on [documentation](#) (2009-2010). Stephanie also started the [Documentation Studio](#) at Wheelock (see more about this below), which has hosted a number of events and had ongoing exhibits of documentation from local and regional educators.

The educators profiled below have all incorporated MLV into their teaching and have introduced their students to either or both of the two PZ books, *Making Learning Visible* and *Visible Learners*.

Yvonne Liu-Constant received a doctorate in child development from Tufts University, after which she taught in public and independent schools and then as a professor of education at Lesley University in Cambridge, MA. She is now at PZ as the practitioner specialist in the Pedagogy of Play project (Chapter 48).

Yvonne's first exposure to PZ ideas came in the early 2000s when she joined Steve Seidel's Saturday Morning ROUNDS (Chapter 26), where teachers met monthly to look closely at student work. She loved the idea of teachers reflecting together. Public school teachers, she said, are not respected as thinking people. In ROUNDS, she encountered just the opposite. She said that for her ROUNDS, was like a yoga stretch for the mind.

In 2006, a group of teachers from the Eliot-Pearson's Children's School at Tufts University (where Yvonne was teaching) went on a study trip to Reggio, and Yvonne was one of these teachers. She recalls the moment she was bitten by the Reggio bug. She was sitting in a university study group at Modena University with teachers from the Reggio preschools and professors from Modena University. The professors were lecturing the teachers about best practices. The teachers responded to the professors by saying that they know what they are doing, they document what they do, and if the professors had questions, they would be glad to explain more. Yvonne was struck by seeing these teachers respecting themselves as professionals.

Yvonne used the VL book in her classes at Lesley instead of the MLV book. Students attributed the strong work shown in the MLV book to the Reggio school structure and to Italian culture, and they felt that they could not aspire to this kind of work in their own classrooms. But with the VL book, the teachers saw student work from US classrooms just like theirs. This feeling of connection sparked more willingness to change their teaching practices.

In her teacher education classes at Lesley, Yvonne conveyed information about the following practices that the MLV and VL books underscored:

- Children work in small learning groups.
- Teachers learn to document the process of learning, and this is then used as a form of assessment of student learning.
- Teachers use PZ protocols such as the [ladder of feedback](#) (Perkins, 2003) when discussing documentation. Teachers first raise clarifying questions, then express what they value about the work presented, then raise concerns, and finally, make suggestions.

Lisa Fiore, a professor of education at Lesley University, first heard about PZ's MLV project in about 2002. As mentioned above, she joined the MLV seminar at PZ, and later joined the Democracy Inquiry Group. She called her experience in these groups "transformative." She remembers Steve Seidel (a member of the group) saying that every question reveals a dissatisfaction—a need to know something more, and this has stuck with her. She recounted how the group members had to unlearn the prevalent view that students should keep their eyes on their own work and work independently. It was a novel idea to think about how students could make their work stronger by collaborating and that collaborating did not mean cheating.

The group often used the See-Think-Wonder thinking routine in their meetings, as well as PZ conversation protocols. These practices are now tightly woven into what Lisa does, along with documentation and collaborative learning groups. She noted that her preservice teachers experienced a dispositional shift and believes these practices "must" shape how they teach young children (though this has not been tracked).

When I asked Lisa how MLV changed her view of children, she said that this approach underscores children's competency and curiosity. She loves trusting children's capacities and looking at them through a strength rather than a deficit lens.

Barbara Rosenquest is a professor of education at BU Wheelock College of Education and Human Development and was another member of DIG. She said that MLV has influenced her teaching of undergraduates preparing to become early childhood educators for over 20 years. After the DIG disbanded, Barbara was part of a Wheelock group of teachers that met regularly to discuss MLV ideas such as choice, respecting others as they are learning, learning in groups, and the idea of children loaning knowledge to one another.

Challenges. Barbara does not know whether her students use MLV in their own practice as teachers. But she was confident in saying that unless there was support for this approach from the principal, and enough unscheduled time to carry this out, MLV would not be practiced. Of course, in the Reggio schools, teachers have full support, and they discuss issues that arise across the Reggio schools and within each school. Barbara said that the Boston Public Schools were very regimented when she was first teaching the MLV approach, but that things have loosened up a lot. Marina Boni and others are now providing much needed coaching support to the BPS teachers

Stephanie Cox Suarez, currently the co-chair of BARIN, is Professor Emerita of special education at the BU Wheelock College of Education and Human Development. Stephanie was deeply influenced by the MLV project. As a result, Stephanie changed how she taught preservice teachers, making learning from documentation central. In her classes, she and her preservice teachers co-constructed meaning in the documentations of learning brought to the seminar, modeling what these teachers would do with the children in their own classrooms.

As mentioned, in 2008 Stephanie created a [documentation studio](#) at Wheelock (now BU Wheelock). This provided an invaluable resource for teacher education, with its materials revealing the many ways and contexts in which documentation can be carried out. A [video](#) introducing the documentation studio and including educators from the Reggio schools was created by Stephanie and PZ's Melissa Rivard. This video has been translated into several languages and, according to Vimeo, has had 90,500 views.

As announced [here](#), BU Wheelock donated the documentation studio to the Early Childhood Department of Bunker Hill Community College in 2021. As discussed in Chapter 52, Stephanie also founded a documentation studio in the Bilkent Laboratory and International School in Ankara, Turkey. Stephanie believes every school needs a documentation center. And this is why, in 2021, she created a global digital documentation consortium – now bringing together the documentation studios at Bunker Hill, BLIS, Worcester Head Start, and Greenfield Community College. Educators from these schools can share questions and ideas and post new documentations and plans.

As reported [here](#), Stephanie has also used documentation in special education. Children with special needs do not usually show what they know verbally, and one needs other ways of finding out what they know. The use of videos and photos can reveal a great deal. For example, when working with a set of twin boys who did not initiate speech, documentation uncovered nonverbal communicative strengths. This helped inform instruction and allowed the boys to remain mainstreamed in a regular classroom – showing the very real power of documentation for supporting both educators and students.

Yvonne, Barbara, and Stephanie talked to me about some of the challenges they faced in getting their preservice teachers to use documentation well in their classrooms.

Confusing documentation with display. Yvonne mentioned that teachers can get stuck on taking pretty pictures.

Taking too many pictures. Yvonne said that too often teachers want to take pictures of everything. Instead, they should have a question in mind and what they document should address that question.

Need for careful observation. Good documentation depends on good observation. Barbara mentioned that her students had to learn how to break down what they observed into small pieces, for example what a child says to another child or the way a child uses materials. It was not enough to say that children were working together; they needed to observe what children said and did as they worked together. It was not enough to say that a child was painting with tempera paints; they should describe how a child was painting. Documentation, she said, raised observation to a whole new level. Barbara found the examples in the MLV book (her primary text) very helpful for teaching detailed observation.

Not enough time for play, which is where documentation takes place. Yvonne told me about a workshop on MLV that she gave for five public schools in Wakefield, Massachusetts, where the teachers hit a wall: The principals had mandated a class schedule leaving only 30 minutes of free time for the children. Documentation has to be carried out in non-blocked time when children are playing and exploring. Thirty minutes is just not enough.

Not enough time for children to reflect on what has been documented. Teachers need to use documentation to get children to reflect on their own learning. Yvonne told me there is not always enough time for this.,

Not enough time for teachers to reflect together. Teachers need time to reflect together on what they are seeing. There needs to be a system in place to support this. Yvonne said finding this time was even difficult at the progressive independent Advent School where she had taught. She noted the contrast case of the Charlestown Nursery School in Charlestown, Massachusetts, where teachers are with the children for four hours and then have four more hours to meet and reflect together (as discussed in more detail later in this chapter).

Believing there is no time to document. Stephanie told me about another stumbling block: Teachers think that the act of documenting takes too much time. How, teachers ask, can they create the beautifully artfully curated documentations (helped by Reggio-hired graphic artists) seen in Reggio and in the MLV book? But Stephanie shows them examples from the Visible Learners book, with ordinary schools, large classrooms, and overworked teachers. The book lists questions teachers can ask themselves to determine whether they are creating displays or documentations. She tells them if a Boston Public School teacher can do the kind of documentation shown in this book, they can do it too. Stephanie also shows teachers that documentation need not be long: She teaches them how to whittle down a single documentation into its essence.

Working in groups is challenging. Barbara had her students work on a long-term project in which they had to work in groups (mirroring the collaborative learning of a Reggio classroom) to understand phenomena such as nest building, bubbles, and kites. They had to decide together what

they wanted to know about each phenomenon. When investigating nest building, they had to construct a nest that would work, and they could not look up the information (because the children they would be working with would not be able to look up information). They also had to learn to document their own learning. What they found particularly challenging was working in groups. They wanted to know who was in charge, and they were worried about coming up with the “wrong answer.” They also had a hard time trying not to teach children “the right answer.”

Challenge of using documentation to plan next steps. Barbara described another challenge: Teachers had to figure out how to use documentation to plan for the next class. Preservice teachers are often used to having a set sequence in a textbook to follow, but now they were being asked to decide for themselves what the documentation showed about learning and what they should do next to deepen understanding. This wide-open approach made them nervous.

Impact on Teacher Training in Canada

Here are three professors of education in Canada deeply influenced by the MLV approach:

Patricia Tarr, a professor of education at the University of Calgary, told me that the MLV book “has been one of the most important resources for us in studying and teaching about pedagogical documentation and the Reggio approach ... I used it my graduate education courses at the University of Calgary, and a friend said she used it ... in teaching undergraduate education students five years ago. We used it, or ideas from it, in Calgary Reggio Network workshops.”

Carol Anne Wein, a professor emerita of education at York University in Ontario, echoed Patricia’s statements, emphasizing the importance of the MLV book in Ontario and, to some extent, in Canada’s eastern regions. In an email to me on March 26, 2023, she wrote:

The book caused considerable excitement when it came out, because it combined two sources of great interest to us—the inspiration of the Reggio Emilia approach as a catalyst for rethinking our own practice, and the PZ work at Harvard undergirded by Howard’s theory of multiple intelligences. Many of us saw these two sources as offering the most compelling approaches in counterpoint to traditional assessment and evaluation in schools. The fact these two sources had produced a work together gave us great hope.

Susa Stacey, an early childhood education consultant in Nova Scotia wrote (email to Ellen Winner March 28, 2023):

Over the years, I have been an instructor at all of our educational institutions here in N.S. (mostly the College of Early Childhood Education, but also occasionally at Mount St. Vincent University, and the N.S. Community College). At the moment I am semi-retired, but am doing course development for a couple of these places, and teaching a new Pedagogical Leadership course for an advanced professional certification. And of course I also write - particularly about inquiry-based practices and pedagogical documentation.

So you can understand why Making Learning Visible has been a hugely important book for me over the years. No matter which level of student I am working with, or where in their professional learning seasoned educators are, I constantly refer to it. When I received your email, I went back to my copy once again, and browsed through all my notations in the margins, and the sticky-notes all over it. Obviously it has kept striking a chord with me over the years!

Although I have never used it as an assigned text, I always share with students the provocative ideas and innovations from [the publication] Making Learning Visible and I create discussions around the philosophical base made evident within the book. Looking at my notations, I see that I have particularly expanded upon:

- *The role of pedagogical documentation as a tool for thinking, learning and decision-making*
- *School as a place of group learning for, and collaboration with, parents*
- *Discussions around rationale; i.e. why are we doing this?*
- *Creating a reflective space*
- *Innovations from Reggio Emilia*

I believe that [the publication] Making Learning Visible is a seminal work that is respected and still widely referred to by faculty in our places of learning in N.S. - we quote from it in our presentations, discuss the ideas within it, and use it for our own reference when developing courses.

Impact on Teacher Training in Australia

Jeanne-Marie Iorio is an Associate Professor of Early Childhood at the University of Melbourne, Australia. She is deeply familiar with a number of PZ frameworks and uses Spectrum, MLV, and Children are Citizens (Chapter 36) in her early childhood teaching.

She first learned about the Reggio approach as an undergraduate in the late 1980s and early 1990s at the University of Maryland, where she was majoring in early childhood education and in dance. There she read the original Reggio book, *The 100 Languages of Children*, and there she also learned about the theory of multiple intelligences.

Jeanne-Marie has used the MLV book from the time it was published, both when she was an early childhood teacher and later, in her role as a professor training future teachers first at the University of Hawaii in 2007 and now at the University of Melbourne in her courses on early childhood. Her research in Australia involves several primary schools, where she has introduced the MLV book as well as the *Visible Learners* book. She said MLV is a seminal text for her and gave her “a foundation to continually build and evolve.”

Challenges. Jeanne-Marie has not tracked all of her former teachers to find out if they teach in the way she trained them, but she knows that some are using MLV. She realizes that when new teachers go into schools with very different approaches, all of this training might fall away. It is important to have a school leader who believes in these approaches.

Impact on Early Childhood Education in the Boston Public Schools

The following section is based on combined information from Megina Baker, Marina Boni, Mara Krechevsky, Tavia Mead, Melissa Tonachel, and an anonymous veteran BPS teacher.

There are networks all over the country connecting teachers interested in the Reggio approach, including the [North American Reggio Education Association](#) and the [Boston Area Reggio Inspired](#)

[Network](#) (BARIN) with its [newsletter](#) filled with information and learning opportunities. I describe some of the influence of Reggio on early childhood education in what follows, but what I report below is surely only a small piece of the widespread impact Reggio has actually had. Without investigating the hundreds of Reggio-inspired schools all over the world, I cannot know which schools learned about Reggio from other Reggio schools, and/or from local area Reggio schools networks, and/or from the PZ books about the Reggio method.

Early childhood education programming in the Boston Public Schools has changed as a result of the influence of Making Learning Visible. Jason Sachs, Executive Director of Early Childhood Education in the Boston Public Schools (2005-2023), was inspired by Reggio education methods. As a result of his sustained leadership and collaboration with PZ researchers Mara Krechevsky, Ben Mardell, and Melissa Rivard, some of the principles of MLV can be seen in BPS' early childhood program for pre-K and kindergarten children and in the community-based programs for pre-K children affiliated with the BPS. The influence of MLV in the BPS is documented on the BPS website [here](#) and in a 2018 book, *Children at the Center: Transforming Early Childhood Education in the Boston Public Schools* (Bardige, Baker, & Mardell, 2018). The influence of the PZ-Reggio collaboration is evident in descriptions of documentation of student learning and in some of the thinking routines (discussed in Chapter 7). And [this](#) 2016 article in *The Atlantic* clearly shows the influence of the PZ-Reggio work on the kind of group learning taking place

Before Jason arrived, early childhood education was in deep trouble, as relayed to me by a retired, veteran early childhood educator at BPS (who requested anonymity). When Jason came to head the early childhood program in 2005, many new teachers were hired, and professional development programs were expanded. Because of Jason's interest in the Reggio approach, he brought in Marina Boni (then a lead teacher in a Cambridge preschool) to conduct professional development seminars on the use of an emergent curriculum based on documentation of student learning. Mara and Melissa from PZ often co-led these sessions. All of this opened up the curriculum and gave teachers more agency and license to be more creative.

In the 2011-2012 school year, 30 BPS early childhood teachers and eight Head Start teachers in Boston participated in a seminar at the BPS called Making Learning Visible: Kids are the Experts!, co-facilitated by Marina of BPS and Mara and Melissa of PZ. The seminar included not only teachers from BPS but sometimes teachers from community-based programs affiliated with BPS. The seminar used various sections of the MLV book and the *Visible Learners* book and emphasized the definition of documentation in MLV. Over the seminar's duration, more than 300 children were introduced to the MLV methods of group work, documentation, and reflection. This co-facilitated seminar was held again in the two following years, and BPS ran this seminar independently for at least four more years.

While the MLV seminar was going on, Ben and Megina were collaborating with the BPS Early Childhood Department staff (including Chris Bucco) to develop a new kindergarten curriculum, Focus on K2. MLV influenced the new kindergarten curriculum and continued to be influential as the curriculum expanded to the 1st and 2nd grades. The Children are Citizens framework (Chapter 40) was also introduced into this curriculum.

As of this 2025 writing, the BPS uses a curriculum called [Focus on Early Learning](#), with a separate curriculum for each grade (Focus on First, etc.). These curricula include a daily practice right out of MLV called Thinking and Feedback. During Thinking and Feedback, the teacher presents some piece of documentation of learning to students for discussion. Discussion is guided by a protocol:

First look. Then talk about what you notice. Then the child whose work is shown talks about the work. Then the students wonder. And the final step is for students to talk about what inspired them, with suggestions for next steps.

While I was unable to determine how many BPS teachers use this practice, it is the case that the practice is codified in the curriculum, and professional development sessions encourage teachers to build this into their practice in authentic ways. This BPS curriculum is free and is also used in Massachusetts (Woburn Public Schools, Pioneer Valley Regional Schools, Sharon Public Schools, Beverly Public Schools and in some of the Cambridge Public Schools) as well as by pre-K teachers in Rhode Island, Maine, and Mississippi..

An example of documentation and reflection can be found in Chapter 2 of *Children at the Center* (Bardige, Baker, & Mardell, 2018), which details student learning in color mixing and the group reflection that the documentation inspired. One of the videos that form part of this documentation project can be found [here](#), and a detailed teacher study guide can be found [here](#). Chapter 8 of this book describes professional development work led by Melissa Tonachel that supports these innovations, including fostering of ongoing collaborative learning among teachers (just as is done in the Reggio schools in Italy).

Melissa Tonachel, one of the educators who has been developing the Focus on Early Learning curriculum, described to me her journey from using the MLV approach in Brookline, a fairly privileged suburban public school, to using that same approach in the Boston Public Schools. Her story showed me how difficult it is to effect deep change in schools with struggling children and families.

Melissa T. first encountered the ideas of MLV when she joined Mara’s seminar. She felt it was an ‘immediate match’ for her, and that this approach gave language to ways that she had already been thinking. She did not need to ask herself why MLV might be a good idea. She was ready. And soon thereafter she was selected as one of the teachers to go to visit the Reggio schools. In her words, “[T]he straw couldn’t be big enough for me to be slurping it up.” Later, she attended and became a fellow at the PZC, which she said both expanded and solidified her interest in MLV.

Brookline was a welcoming place to try out what felt like lofty ideas. Many families were open to new ideas and intellectually poised to engage. Melissa T. created a large board right outside her classroom with the question “How do you see your child’s learning influenced by the work of another child?” Parents wrote their responses on the board. Tizianna Filippini from Reggio came three times to visit, observe, and comment, sometimes pointing out practices that she felt could be made more true to the Reggio model. Melissa had the full support of her principal, while others in the seminar were more constrained by their principals. Some of her documentation of student thinking and dialogue about each others’ work can be seen [here](#).

After ten years in Brookline, Melissa T. took on a new challenge—teaching a combined K-1 class in the Mission Hill School in Boston. Here children were far needier than those in Brookline and often came from struggling families. Children arrived hungry on a school bus, and the first thing they did was to eat the free breakfast provided. For many children, English was not their first language. There was less interaction between teachers and parents, as parents did not bring their children to school or pick them up. Some children acted out a lot, communicating distress through behavior. It was occasionally difficult for children who came from an environment with a scarcity of resources to work collaboratively.

Nonetheless, Melissa held on to the practices of documenting children's working processes by photographing and interviewing children about their work. Every day the whole class sat in a circle and looked at each other's work. She brought in an eight-foot-wide easel that could fit three separate large sheets of paper, enabling children to paint side by side and making it easy to facilitate conversations about what a child thought about what the child next to him/her was doing. This easel, she said, was the single classroom structure with the largest impact on teaching and learning.

Tavia Mead, told me about the implementation of MLV in BPS' Baldwin Early Learning Pilot Academy, which serves kindergarten through first grade. Under Tavia's leadership, MLV was implemented across the school. The first step was to organize the staff into learning groups (including both licensed teachers and "surround care" teachers, thus breaking down the hierarchy) to help teachers reflect together as they began to integrate MLV into their practices. These groups met once a week for three hours on the day that children had early dismissal, something they could do as a pilot school, in contrast to the other Boston schools involved. Baldwin provided digital cameras for documentation, and PZ worked closely with the school offering professional development for two years.

To enhance parental involvement, Mara shared a "refrigerator magnet" created by a study group of parents at the Wickliffe Progressive Community School in Upper Arlington, Ohio. It offered practical ways for parents to integrate MLV principles at home, for example encouraging parents to listen to their children, document their activities, and engage in conversations about their interests. These efforts were supplemented by parent sessions where families could learn more about MLV and explore ways to apply it in their interactions with their children. Most families found at least one successful way to connect with MLV.

Tavia reported that the impact on students was immediate and profound. Children were intrigued by the teachers' interests in documenting their words and actions, and they became active participants in the process, often encouraging teachers to photograph their creations and activities. The concept of documentation became a shared endeavor between teachers and students, fostering in the children a sense of ownership over their learning environment. The traditional notion of bulletin boards solely belonging to teachers was replaced by a collaborative approach, where the space evolved organically from the children's engagement and exploration.

Benefits of long-term professional development. Because PZ worked with the Baldwin Learning Academy for two years, the impact was strong. In Tavia's words, "you know, people come in, they do something with you for six weeks, six months, and they're gone. And it doesn't have an impact when it's that short. So, the two years had a tremendous impact on the way teachers work together."

Tavia retired as principal in about 2019 and, as so often happens, the new principal introduced a different vision. Nonetheless, four of the twelve classrooms continue to use MLV in their classroom.

I heard about various challenges to the implementation of MLV.

Documentation is intermittent. Teachers in the Boston Public Schools are not documenting all of the time, as they do in Reggio. They do "bits of it here and there," said a teacher who requested anonymity. When I asked why not more, she reminded me of the time-consuming reams of

paperwork that BPS teachers have to complete (e.g., lesson plans, lesson plans for IEP and ESL students, preparing documents to be used in teacher evaluations), none of which are required for Reggio teachers in Italy.

No idea how many classrooms are using MLV. Melissa T. told me that the Boston Public Schools' Early Childhood Department has no handle on how many classrooms are actually following MLV practices. There are certainly individual teachers who do some observation and documentation, and there are others who do a great deal of documentation as in the color mixing video discussed earlier. But there are not really any "MLV classrooms." Teachers move from classroom to classroom and school to school. When they move to a new school they must meet demands from a new principal, and they have new colleagues who may not know much about MLV—unlike in Reggio where teachers spend their entire lives there and take part in an ongoing conversation each day they convene.

Need for careful scripting. After five years of teaching in the Mission Hill School, Melissa T. began to write the Focus on Early Learning curriculum mentioned above. When she writes curriculum, she knows the difficulties that the teachers face, for example distressed children and little or no parent-teacher communication. And so she carefully scripts the curriculum, providing clear instructions about what children should read, what questions teachers should ask, and what activities they should organize.

For example, teachers are reminded to ask questions to children such as: "What do you notice about what X (another child) is doing?" "Do you see how X (another child) is having trouble making her tower stand up? What do we think about how she could make the tower taller and still stand up?" And teachers are reminded to then try to bring these mini-conversations to the whole group.

The scripted curriculum offers specific practices, such as: ask students to turn around and talk with one another about an idea or a question; have children sit in a circle rather than all facing the teacher so that they make eye contact with one another; pass a ball of yarn around with the questioner child holding the end of the yarn while another child gets the ball and responds to create visible connections among children.

The curriculum must be scripted because the teachers Melissa T. is writing for do not have the Reggio collaborative learning environment. She knows that teachers do not always comply with the curriculum practices. Teachers can't be forced. They already have long lists of things they are supposed to do every day. While the early childhood department sends in coaches to observe classroom practice (and Melissa T. is one of these coaches), thus allowing a coach-teacher relationships, what has often been lacking (though not in the past few years) is teachers meeting together to discuss pedagogical ideas.

Lack of buy-in by some. Tavia noted some teachers found MLV to be exhausting, and some were resistant or intimidated, worrying about how they would be able to fulfill assessment mandates. Ultimately, she said that MLV had less of an impact on some teachers' pedagogy than she had hoped. Something did not quite take hold long term.

The good news is that the curriculum Melissa T. and her colleagues developed is now the official curriculum for pre-K through grade 2 in the Boston Public Schools. No externally produced curricula are purchased. Teachers new to this curriculum are trained in this approach over three days every August. While teachers may not be carrying out full scale MLV, what Melissa T. and her

colleagues have been able to give early childhood education in the Boston Public Schools a nudge in the direction of the Reggio practices of MLV.

An aside. One first grade teacher in the Dennis-Yarmouth School District in Massachusetts (note, not part of the BPS), Maggie Donovan, declared that the conversations and sharing of documentation were so central to her work that "We won't stop. We are Renegades!" And so started the MLV Renegades group. It ran from 2004 to about 2013, led by Megina along with Mara and Ben Mardell. The group met monthly at different schools in the Boston area to look at student work and discuss making learning visible in classrooms and school.

Impact on Early Childhood Education In and Around Boston

In this section I profile two early childhood education centers in the Boston area, one a Head Start program and one an independent school program. Both are imbued with MLV.

Worcester Head Start, Worcester, Massachusetts

The Worcester Head Start program in Massachusetts is directed by Carlene Sherbourne. Head Start is a federally-funded, free preschool program for low-income families. Head Start teachers earn lower salaries than teachers in public preschool and kindergarten programs. Thus, choosing to teach in a Head Start program requires a real commitment and desire to serve low-income families.

I suspect that it is quite unusual to have a Head Start program based on Reggio principles. But thanks to Carlene and her dedicated staff, every one of her Head Start classrooms is Reggio-inspired, and Project Zero served as a key resource to make this possible. The classroom teachers are supported by two kinds of coaches: a "pedagogista" (an educator with additional training in the Reggio method) and an "atelierista" (an educator with a background in the arts and early childhood education). Both coaches meet with teaching teams during weekly or bi-weekly meetings to discuss documentation and curriculum development. Pedagogistas also work with teaching teams during the week, providing support with documentation and lesson planning, discussing reflective practice, modelling specific teaching skills, or helping the educators go deeper with the children.

Carlene started with a pilot program in one school. She needed teachers who really wanted to try something new. "This is not a boxed curriculum," she said. "You have to feel it with your heart. It's about respect, the image of human beings as competent and worthy of our time and attention." She started by getting teachers to think about their image of the child, though she now thinks she should have started by asking them about their image of themselves as educators. She also realized that if she asked educators to make children's learning visible, they would have to reflect on and make their own learning visible.

Carlene's Head Start program had very limited funds to support teacher training, but the high-quality professional development offered by BARIN was provided at a reduced cost and was a huge resource to her and her teachers. Megina Baker (discussed above) was an important resource for her in developing her program, and Carlene said that Project Zero's *MLV* book was a foundational resource.

In November of 2023, I visited the impressive documentation space that Carlene created. Documentations of children's works are posted, with audio recordings giving context "behind the scenes" provided by a scannable QR code. For examples, see Appendix 10, Sample Documentations from Worcester Head Start.

Teachers also keep a portfolio documenting their changing images of themselves as educators as they become adept at documentation. I saw this posted in the Documentation Center:

Keeping in mind an image of the child (teacher) that rejects the notion of returning to normal. The realization is that, for our program to develop a cohesive image of the child, we must first understand our teachers' own images of themselves as educators and make space for new ways of thinking. How do we shift teachers' images of themselves as educators in a way that positively impacts practice?

Importance of trust. Carlene noted the challenge of needing to build trust in teachers so that they could explore observing and documenting without feeling someone watching over them and critiquing them harshly. The program has addressed this through developing a coaching model focused on teachers' strengths and needs.

Lasting change in teachers' practice. Carlene said that rejecting the idea of returning to normal is a very powerful way of describing what teachers must do as they become noticers and documenters of student thinking. Teachers do not return to normal once they realize that their old ways of thinking about the child are replaced by a recognition of the child as a far deeper thinker than they had previously realized.

Charlestown Nursery School, Charlestown, Massachusetts

The Charlestown Nursery School (CNS) in Massachusetts was founded in 2007 by Kelly Pellagrini along with Krisstin Valdmanis and a group of parents. In 2012, Cady Audette joined the team as a co-director with Pellagrini. CNS is a Reggio-inspired school for children ages 20 months through five years. I visited this school in December, 2023 and spoke to the directors and a number of the teachers.

CNS started with eight children (with the founders fundraising via car washes and bake sales) and now has as many as 100 students a year. With support from Project Zero, [NAREA](#) (North American Reggio Emilia Alliance), and Reggio Children, CNS explored the principles of emergent curriculum through documentation. With polaroid cameras and limited resources, they documented the work of children.

They participated in professional development with PZ researchers Melissa R., Ben, Mara, Megina, and Steve Seidel. Soon after the school was founded, the teachers entered into a study group with Lesley University and NAREA focusing on the Reggio approach, and they joined BARIN. They visited local Reggio-inspired schools like Advent, Lincoln Nursery School, Newtowne, and many of the Harvard preschool centers. They also attended NAREA conferences, including a full faculty trip to the Wonder of Learning conference in New York City. They sent many teachers to Reggio Emilia, Boulder Journey School, and Opal School.

Ultimately, CNS served as the lead sponsor and organizer for BARIN's Wonder of Learning Boston conference in 2018 at Boston University Wheelock. The conference included an exhibit from the schools in Reggio Emilia which was shown for six months. This exhibit attracted countless educators to workshops, seminars, and professional opportunities. Today, through BARIN, CNS continues its dialogue with Tiziana Filipini and many collaborators from Project Zero.

The unusual schedule. For every hour they teach, CNS teachers spend an hour of research and development. Classes are held only in the morning; from noon to four, teachers meet to engage in reflection and conversation about what they have documented for each individual child (often using PZ protocols). Documentation is used to inform next steps – the curriculum is emergent. They then craft a daily report (words plus pictures) to send to the family of each child about one thing that their child discovered that day, something parents can ask their child about at home. Unlike summative newsletters, daily reports are designed to be conversation starters to allow children the chance to revisit and extend their learning at home with their parents. Here is one daily report:

Today in the Light Studio, she encountered a variety of natural materials: branches, leaves, eucalyptus, and tiny pinecones. She had many observations and questions! She wondered which tree the yellow leaves came from and compared them to the photo of a tree to find a match. Then, she investigated the leaves and the branch, wondering if the leaves were once attached at the end. She was excited to find the jar of pinecones and took a close look. She mentioned that she didn't see any leaves when she went to her grandparents' house for cake. Maybe she will find some as she explores her neighborhood!

We wonder if she will continue to notice leaves in her changing neighborhood environment!

Conversation starters for her parents:

- Are some leaves still up in the trees?
- Can you find leaves on the sidewalk or in the grass?
- What colors do you notice?

How is it feasible for teachers to have four hours to think? When I noted how extraordinary it was for teachers to have time for four hours of research and reflection for documentation, Kelly noted that instructional time in most Pre-K programs is typically four hours or less (when days are longer, there is often coverage for naps, lunch, recess, and specials), and most teachers spend just as much time outside of school working; however, how that time is spent varies as does how work outside the class is integrated in the day. While many teachers use the planning time preparing a canned curriculum and copying and gathering materials, at CNS, the time is spent on discussion of teaching and learning. At CNS, the non-instructional time is all in-school, always with another teacher, and always a form of research and planning, mostly to make learning visible. In a class of 18, talking about each child for ten minutes takes three hours. To do this kind of personalized and reflective emergent curriculum, teachers need time.

Not only is the time of the day comparable to other schools, the cost is also consistent. Although CNS is tuition-based, their tuition is less than the government funding of Head Start. It is also less than the \$37,000 government funding allocated per student in the Boston Public Schools. Moreover, the starting salary at CNS matches public programs rather than the low wages of the early childhood field. CNS has the same or fewer resources; however, they use what they have strategically and focus on educators. Cutbacks at CNS are made on nonessentials: none of the teachers or administrators have offices. Kelly spoke to me from the small kitchen.

Unusual teacher backgrounds. CNS teachers are seen as teacher-researchers. They are paid on the same salary scale as administrators, and each teacher is paired with a co-teacher with

equivalent qualifications. As stated on the CNS [Instagram account](#), the teachers are professors, authors, scientists, artists, and architects (click [here](#) for their unusually impressive bios). The teachers are intellectuals who know a great deal about child development. They also know how to go deep with children: For example, if they are going to have children investigate photography, they know that they first need to study photography themselves so they understand in detail how a camera actually works. When they created a roller coaster, as described below, one teacher immersed herself in engineering—and one had already taken a course on design thinking. These teachers learn along with their students.

With salaries that match those in the Boston public schools (some of the highest salaries nationally) and a strong culture of growth, there is very little teacher turnover at CNS (similar to Reggio and to PZ). Many of the faculty members are also teaching university classes, providing workshops, presenting documentation, and advocating for policy. Teacher development as well as low turnover creates a thriving organization and sustainable culture.

Learning opportunities. CNS teachers have extensive learning opportunities. They spend one month on research and reflection in August before the school year begins. They discuss the importance of “living documentation” rather than “after the fact documentation.” They discuss children’s rights (like the right of children to see documentation of their thinking so that their metacognition can develop). They consider their responsibilities to children. They talk about how space should be organized, the role of the outdoors, the role of literacy, the differing approaches of Montessori, Froebel, and Reggio. And in the end, they reach a shared understanding of the holistic approach at CNS.

For the last decade, CNS has sent most of their teachers to Reggio Emilia. CNS teachers have learned from PZ in their workshops, readings, and from the open-source MLV website. Every

teacher gets a copy of the two main books written by PZ about the Reggio approach, MLV and VL. Many also attend Rounds with Steve Seidel at PZ (see Chapt. 26).

This is not an approach only for independent schools or for only some children. The school directors reject the idea that public programs cannot do what CNS does. Not only do they argue that the time and cost is comparable, they also point out that most of the principles that they are implementing are just about vision and commitment. They believe anyone can make the environment be “the third teacher: simply paint the walls white (and not the all-too-often yellow), take down all the worksheets on the bulletin boards, and use them [the walls] for documentation.” More importantly, they believe that any school can commit to all children as capable. They reject the argument that the CNS approach might work for privileged children but not for public school children who come from low-income families experiencing all kinds of difficulties. They point out that Reggio schools are public schools.

CNS as a marketer of MLV. CNS has become a place for early childhood educators to visit and learn from—with 1,000 visitors a year from around the world. Some come in groups and come multiple times a year, participating in workshops run by CNS. CNS has a fellowship and internship program. They also make videos, and they are followed around the world on Instagram. They have worked closely with many schools, including Epiphany and Nurtury early childhood education programs. These partnerships allow them to continue to reflect, learn, and grow.

For a typical day at CNS, along with sample documentations, see Appendix 11.

Impact on Early Childhood Education in Latin America

Maria Adelaida López became the atelierista in 2001 for Joy of Learning, a Reggio-inspired school, in Miami. Maria had a visual arts background (She had been in the Art Department of St. Johns University in Minnesota) and had not previously worked in early childhood education. She told me that she fell in love with the Reggio style of teaching, and that this position changed her whole life.

Maria attended one of the two MLV institutes held at PZ in the early 2000s (mentioned above). There she showed some of her documentation and learned a great deal from the kinds of questions people asked her about documentation as well as group learning. In 2006, Maria along with Angela Salmon co-founded Visible Thinking Miami (which later became [Visible Thinking South Florida](#)), affiliated with Florida International University. This is a learning community of early childhood educators from schools in Miami-Dade and Broward counties providing professional development in the Reggio approach to educators around the world. South Florida became a leader in Making Learning Visible.

In 2008, Maria left Miami to cofound and become the executive director of a nonprofit organization in Bogotá, Colombia, called aeioTU. The mission of this organization is the improvement of early childhood education in Colombia, Mexico, and Panama via the implementation of the Reggio philosophy (described in Chapter 4) and the Pedagogy of Play (described in Chapter 48). This organization developed a Reggio inspired early childhood curriculum called aeioTU Educational Experience. According to their [website](#), this curriculum has had a broad impact on children, educators, and families.

This curriculum was recognized by [HendrED](#) and the Inter-American Development Bank as one of the 15 main innovations in education in Latin America and the Caribbean fostering 21st century

skills. In 2022, Maria Adelaida received the 2022 LEGO® Prize from the LEGO Foundation for her work advocating and championing learning through play in early childhood development in Colombia and Latin America.

Impact on Elementary School Education in Massachusetts

MLV has also had an influence on elementary and middle school education across the state of Massachusetts, as shown in these four examples below.

Benjamin Banneker School in Cambridge, Massachusetts

Lin Tucker, who has coached Project Zero's online course on MLV for a number of years, began working at the Benjamin Banneker School in Massachusetts in 2004 as the Coordinator of Science (and later also Math). In the fall of 2005, the school began to participate in the MLV Seminars, sending a team of teachers and administrators to monthly meetings at PZ. PZ researchers also conducted whole school professional development on MLV.

Amanda van Vleck, a 4th grade math teacher at Banneker and part of the MLV group, said that "documentation became my third hand. When I teach, or even parent my own kids, I document. It became a natural way through which I interact with children. Now, as I capture moments, I can see the documentation in my mind."

Challenges. When asked about challenges faced by teachers beginning to learn about documentation, Lin reported that some struggled to identify what they were curious about – which was supposed to be the focus of their documentation. She added that sometimes they raised questions that were too broad and overarching. But with coaching, they were able to modify their initial questions to become more specific and engaging.

But here is an example of a teacher in the course who really "got it:" She said that documenting was like developing a research question:

...noticing and observing first, discovering something that surprises or puzzles you, and formulating a question about which you can gather data. I think that sometimes we document to explore (what do we see going on here, and in the noticing, we spark questions), and sometimes we document with a focus to shed light on a particular question. When the teacher steps back, what do students do to support their own learning, in groups and/or individually? How do teachers develop more self-sufficient learning groups?

Impact on students. When asked about her perception of how MLV impacts student learning, Amanda commented that when children see someone pausing to capture their learning, they feel a sense of pride. It's unusual for them to have someone caring deeply about the exact words they said or the exact things they did to solve a problem. And the more she documented, the more attuned the children were to the learning that was happening. She observed that her students became increasingly comfortable in talking about what is happening in learning and even started asking her to take pictures during moments they deemed important. The children shifted their focus from the outcome to the process, and they themselves were starting to notice moments worthy of documentation.

Lasting effects. According to Lin, Banneker still uses many ideas from MLV but not in a formal way or with specific attribution. Teachers collect and discuss student work regularly (also a feature of

other programs in the school such as Literacy Collaborative, math and science talk, etc.), use documentation to shape learning, use practices that support group learning, have professional learning communities around common themes, and collaborate really well with all the specialists. Still, Lin noted, the bulletin boards look very traditional showing little of the work that goes on in the classrooms.

Graham and Parks Alternative Public School in Cambridge, Massachusetts

Sarah Fiarman taught 5th and 6th grade at the Graham and Parks Alternative Public School in Massachusetts, and also served as principal. She began to collaborate with Mara and Ben at PZ on applying Reggio concepts to older grades and became part of a team of teachers applying Reggio concepts in 5th through 8th grade classrooms. Project Zero provided support through intensive, ongoing involvement with Sarah and other educators. Teachers engaged in ongoing cycles of inquiry as they looked at student work and discussed how to improve instruction. Documentation practices, however, were not instituted.

Effects on teachers. Working with PZ had a transformative impact on her and other teachers, said Sarah. The emphasis on collaboration and shared responsibility for all students was communicated as a school value, shifting teachers away from the notion of an individual teacher as a "rock star" in his or her own classroom. Fiarman said that she developed greater agency, and the responsibility to reflect deeply on each action and its potential impact, both in the moment and downstream, became a central tenet of her teaching philosophy. Engaging in experiments in instruction based on what she observed allowed her to recognize ripple effects on students over time, reinforcing the idea that every decision carried significance.

Teachers' beliefs about children's minds also changed, she said. They developed a deep respect for children's agency, seeing them as independent thinkers and learners—and as meaning makers. And in turn students felt deeply respected.

Challenges. Bringing these new approaches to Graham and Parks School was challenging. Teachers were used to working independently rather than collaboratively, and some felt reluctant to participate. They felt they did not have the time to work in this way. But Sarah was able to win over these teachers by listening carefully to their concerns and presenting a compelling case that collaboration could enhance the learning experience of all students. She offered them more planning time and adjusted meeting schedules to accommodate collaborative efforts, which was possible because this was a pilot school. Gradually, the positive responses from the more engaged teachers influenced those who were initially reluctant, pulling them along the path of collaboration over several years.

Acera School in Winchester, Massachusetts

George Papayannis directs the [Acera School](#), an independent K-8 school in Massachusetts for gifted children influenced by a multiple intelligences approach to giftedness. George was part of an MLV professional development group led by Marina, Melissa T., and Jodi Kraus. Although he was at that time a high school science educator in the Boston Public Schools, he felt he had a lot to learn from the Reggio early childhood education practices.

Documentation. Acera has always documented student learning, George told us, though they do not say they are using MLV. Students and teachers are constantly reflecting on each other's work. Students give each other feedback on shared google documents. In science classes students keep

lab notebooks. Student work is all over the walls along with comments, and that work generates conversations with other students and with teachers. Students keep digital portfolios. And a part-time teacher regularly takes photos and videos and conducts interviews; all these get posted on the school's Slack internal channel called Acerapics. All of this documentation is about process as well as product and is used by teachers to generate next steps much like the kind of emergent curriculum championed by Reggio.

Brookline Public Schools in Brookline, Massachusetts

Gina Estefani is a special education teacher in the Brookline Public Schools, teaching pre-K through 8th grade at the Devotion School. She has found MLV to be a powerful tool for fostering inclusivity and amplifying student voices. She worked closely with Project Zero when she joined Mara Krechevsky's seminar, and she worked with 16 teachers in developing MLV practices. Gina stressed MLV's impact on special education. For example, she pointed to the importance of videos of students participating in the classroom. These allowed teachers to look closely and see what they had not seen in the busy atmosphere of the classroom. Students, initially unnoticed, became visible through MLV practices. She saw MLV as a powerful tool for fostering inclusivity and amplifying student voices.

Impact on Wickliffe Progressive Community School, Upper Arlington, Ohio

Fred Burton served as the principal of Wickliffe Progressive Community School from 1996-2008. Wickliffe is a K-5 public elementary school in Ohio. During that time, he initiated a school wide Making Learning Visible transformation, as documented in a 2001 book that Fred co-edited with PZ researchers, *The Ohio Visible Learning Project* (2011).

Fred has always been a progressive educator and told us that he has been inspired by the writings of Howard and David, and by the many ideas coming out of Project Zero since his early days as a teacher. In 1998, he visited the Reggio Emilia schools and was impressed by their innovative educational approach. Subsequently, he reached out to Mara and Melissa R. at PZ to help bring MLV to Wickliffe through a grant from the Ohio Department of Education.

The Ohio Visible Learning Project was a collaborative partnership that spanned 2002-2006, during which time the MLV team from Project Zero provided professional development and consultancy for the teachers and administrators at Wickliffe. Fred said that working with Mara and other Project Zero researchers was a wonderful co-learning experience that ultimately led to school-wide transformation. Fred described Mara and her colleagues as "critical friends," highlighting their role in providing an outsider perspective: They consistently posed thought-provoking questions that prompted teachers and staff to think more deeply about their practices.

Benefits. In Fred's view, documentation of student learning improves interpersonal and intrapersonal intelligences and helps teachers and students understand the value of the group in creating knowledge. He observed that MLV creates an environment in which children feel seen, heard, and acknowledged. "Documentation is an act of love that conveys to students: I see you, and I value what you express and how you learn," he said. MLV brought joy, passion, and imagination to children, parents, and teachers at Wickliffe.

When we asked about the impact of MLV on children, Fred told us that in his view, children became better thinkers. Moreover, contrary to some teachers' early worries, spending time with children

on documentation and reflection did not result in lower standardized test scores. He told us that students said that documentation helped them recall what they had learned.

Challenges. The biggest hurdle Fred reported was overcoming teachers' perception that documentation took too much time from their already pressed daily practice. It took almost three years for teachers to gradually come to a mindset shift, recognizing that documentation was not adding to the teaching load. Rather, "documentation itself was teaching." The teachers made a shift from "learning to document" to "documenting to learn."

Wickliffe Progressive elementary school was recognized as an excellent example of progressive education. However, Fred cautioned Wickliffe teachers that this recognition should not lead to a sense of complacency and believed that the school could take steps forward through a partnership with PZ. He stressed that failure is not bad but is rather something to learn from, and he encouraged teachers not only to share their successes but also their "miserable failures." This instilled a culture of continuous learning and risk-taking. Fred also believed in this essential question: "Have we failed enough to make this good?"

Impact on Wickliffe Teachers

Maureen Reedy taught at Wickliffe and also served as the Elementary Instructional Specialist until 2012. In the latter role, she provided professional development to Wickliffe teachers in the implementation of MLV (as well as the use of some thinking routines).

Maureen described the introduction of MLV to Wickliffe as "a wonderful invitation." The collaboration with Project Zero was "rejuvenating," and as a result, Wickliffe became an institution actively seeking to grow and improve. She was able to get teachers to see that implementing MLV would not add to their workload but would serve to deepen learning.

The teachers identified "How do we teach and learn for deeper understanding?" as a throughline. The ideas that stood out to teachers about MLV were group learning, the power of children's thinking, documenting thinking, and using children's ideas to guide the curriculum.

As a classroom teacher at the time, Maureen asked her students what group learning is, to which her students responded:

- *Group learning is more thinkers thinking. So our learning is deeper.*
- *Group thinking is group listening. When we're all thinking, we have to listen to each other's thinking, and it helps us learn more.*
- *Group thinking is learning to be patient with each other because when other people are talking, we have to listen.*

She was constantly amazed by the profound statements and deep questions posed by her students.

[We] would also always talk to the students about what we were learning through their thinking. ... We were struck many times over in the course of each day how fresh and powerful the voices of children truly are. Our students are continually teaching us as we teach them. Together we are exploring deeper learning and deeper understanding...By lifting up students' thinking, we are honoring the power of their words, and using their quotes in group discussions together to plan the next steps in our study. Our students' voices are central to their learning. By listening to their words..., we are capturing their thinking to inform our instruction.

Maureen provided an example of how she incorporated MLV into the classroom. While teaching a lesson on the Revolutionary War, a student inquired about the difference between the Constitution and the Declaration of Independence. She presented this question to the class, collected the students' ideas, and typed out their thoughts. She then pasted strips containing the students' thinking into a Venn diagram. This exercise of documentation helped her students learn about the power of comparing and contrasting.

Maureen used documentation as well as thinking routines with teachers during staff meetings when she was a teacher leader. The staff used thinking routines to look at the children's work, documenting their own thought processes to derive deeper insights from each other's comments. In this way, teachers experienced MLV first hand.

After leaving Wickliffe, Maureen joined Columbus School for Girls (CSG), an independent school in Ohio. She brought with her the MLV philosophies and practices. At CSG, she did not formally label her methods as MLV; instead, she integrated these principles into her daily teaching practices and influenced teachers around her by example. When she led third graders in exploring the school's attic for historical artifacts, she used the I See - I Think - I Wonder thinking routine. She documented the exploration process and the student-directed play that emerged from the discovery. She collected numerous sketches, photographs, and students' voices and compiled what she had documented into a book.

Sabrina Walters is one of about eight teachers left at Wickliffe from the days when Fred Burton headed the school. She has taught 4th and 5th grades at Wickliffe for the past 32 years, and she by her Italian father. Together they visited these schools and she then learned about MLV in graduate school at The Ohio State University working with David Ferny (formerly of Project Zero) and Rebecca Cantor. After that, she worked with Fred Burton at Wickliffe. Together they went to the PZ summer institute and worked closely with Mara Krechevsky and Melissa Rivard on MLV. She told us that she often went back to her bookmarked PZ website for reference.

She described her shift in mindset as she began to use MLV in her teaching as follows:

...before Project Zero, if someone came into my classroom, I wanted to be seen teaching and engaging with the students... actively in conversation and listening but speaking together about something. Now, if someone comes to visit...I would prefer to be stepping back and listening and just documenting what's going on and recording what I'm seeing in the conversations rather than feeling oh, no, I'm not doing my job...When I look like I'm not... doing anything, and I'm just observing, that is the most powerful teaching I'm doing.

Molly Hinkle taught both a 3rd-4th and a 4th-5th grade multi-age classroom at Wickliffe during the time that Wickliffe was working with PZ on the Ohio Visible Learning Project. She characterized her introduction to MLV as a stimulating balance between stress and inspiration. Among the PZ frameworks, Molly found that thinking routines, like See-Think-Wonder and What Makes You Say That, could be seamlessly integrated into the classroom. However, she noted that documentation was more demanding and required ongoing work. It took her a year to become comfortable with taking photographs, recording children's quotes, and then discussing these with the children to deepen their learning. Her confidence sharing the documented work with a wider audience or with "people outside the loop" continued to grow over the course of the MLV project.

When asked how MLV affected student learning, she said that this approach affected students' language. She noticed that students increasingly began to articulate the evidence behind their ideas, often verbalizing their thought processes spontaneously, without her asking why they thought what they thought. Students grew better at expressing their thinking and it then became part of their natural language. The MLV project was instrumental in building a culture of thinking within the classroom.

Molly noted that students also grew comfortable with ambiguity. When faced with unclear situations, their tolerance for vagueness increased significantly over two years. They were less afraid of "doing it wrong". They would often say, "*Well, that's what I thought I should do, so I tried it, and here's what happened, so now I'm going to try this.*" Molly described it as problem-solving thinking, where students began to see things in more than just black and white, becoming more comfortable with multiple strategies for tackling a problem. Students also grew more comfortable taking risks and exploring new ideas. For Molly, this growth in creativity was significant, a kind of thinking that she wanted the students to walk away with.

Molly also noted that, especially for children who were by nature introverted, making their learning visible, whether in the form of speaking, writing, or drawing, communicated to them that their thoughts and voices mattered. When she considered what she wanted students to take away from their two years in her classroom, this topped the list.

It just made such a difference, you know, in how kids worked together and how I facilitated their learning. It was a game changer for how I thought about teaching and learning. Truly, it was some of the most inspirational work I've ever gotten to do.

Elizabeth Glover was a 5th grade teacher at Wickliffe. When asked about what it was like being introduced to MLV, Elizabeth told me that long-time teachers tend to become stuck in familiar ways of teaching. When Fred Burton first talked to Wickliffe teachers about the work that was being done at Harvard, the intellectual side of her brain felt stimulated and excited. PZ promised a new way of looking at children and their learning, and she added the following:

When you've been doing something for a long time, it's exciting to have a fresh look. And the fact that the whole school was doing it and all my colleagues were doing it...we were sort of abuzz with excitement.

Confronted with the additional workload on teachers, the teaching team soon reached out for help from the community.

We brought in parents to help document students' learning. The librarian was part of it. The art teacher was part of it... the music teacher, too; all these people helped supplement our work and gave us focus. I was working in a fifth-grade classroom with a fifth-grade team. So, we would check in with each other, asking, 'Okay, how's it going?' We tried to support each other and look for throughlines that would help us.

Elizabeth asked her students what they learned when working in a group, including what they learned about themselves. She recalled one student saying, "*Well, sometimes I'd like to take control and not know it. And I can really get frustrated if I don't get my own way.*" She noted that students were beginning to understand the power of their own behaviors and how they were affecting their own way of learning.

She talked about the power of documentation in promoting higher level thinking.

So they generated questions. They were comparing. They were contrasting. They were interpreting. They were really evaluating. There seemed to be much higher level thinking than any standardized test could ever show. Here, students were working together, emotionally invested in figuring this out. Because we valued their words, they were emotionally connected. And when they knew we were listening to them, that was huge.

When asked about the role of the MLV team from PZ, Elizabeth had this to say:

You know, sometimes you can just reflect on something and think, "Oh, we're doing a really good job." But they would push us just to go a little bit further to think differently. And they came in from the outside, and they encouraged and supported, they laughed with us and, there was an incredible, an incredible collaboration. And then also, I went to Harvard, and many of us went at different times. We spent a week in Harvard in the summer at workshops with Making Learning Visible, so that again was that collegiality that came from sharing an experience with your colleagues. It's very, very rich, very, very important.

When asked about how MLV affected student learning, Elizabeth had this to say:

We aren't listening to children very much. When you listen to what they say, and when you document the words, or you photograph them, or you video them... and then you hold them up as examples, you let their words guide your future actions. That has tremendous power.

As quoted in the Ohio Visible Learning Project book (Burton, Krechevsky, & Rivard, 2011) p.77), Elizabeth said:

Documenting the students' statements revealed understandings that went far deeper than any of us could have imagined. By connecting to the students' interests at the start of our study we were able to hook into their emotional lives. The depth of understanding, the ability to analyze complex ideas, and the excitement of discovery are dynamic components of classrooms where students' words are valued and documented for group reflection and learning.

As teachers who have been through the entire cycle of the accountability movement, the documentation of our students' learning has been like a breath of fresh air: As professional educators, we have come to recognize the awesome role we play in preserving the voices of children. In our hurried world, children are listened to less and less. Their voices are often lost and forgotten. Children come into our classrooms with many different life experiences and levels of knowledge and abilities. The power of documentation lies in honoring and valuing children's words, reflecting upon them, and using them to guide instruction that deepens learning; documentation has helped us to keep the child at the center of an authentic curriculum.

When asked how PZ affected her career as a teacher, she said:

It was hugely impactful on my teaching. It was the most exciting part of my career. Because it stimulated the intellectual side of my brain, as well as the emotional. And was it work? Yes, it was work. And it was messy at times. And there were times when you were frustrated. But when you heard what came out of it, and you saw the impact of helping students, that was huge. And the

collegiality... So often as teachers we are in our rooms doing our own thing. To have somebody else share these things with other teachers is huge. That's a great feeling when you can say, 'Oh, guess what happened today? One of my students said this.' and then... it's, that's very, very, exciting.

It's important that this work continues. What do we want for our students? Are we wanting them to just parrot back a fact? Or are we wanting to make them be thinkers? Do we want them to be able to think beyond a standardized test? I hope the pendulum has swung far enough the wrong way that it looks back the right way.

Fred Burton retired, and today the new leadership at Wickliffe is no longer focused on MLV. But Sabrina wants to revive the MLV focus. She is currently working to develop a throughline to build a community of teachers and learners using MLV. The goal is to build a sense of connectedness in the community. Maureen told us that she advised Sabrina not to do too much at once, to encourage teacher engagement in the form of an invitation, and not to expect new teachers to get on board right away.

When we asked her how she thinks that MLV has affected her students' learning, she said that it created a strong sense of community in the classroom. Students learn that "their voice matters because we use their words and their words are around all over. And it makes them feel that they are respected and equal."

Lasting Effects

I asked Fred about whether MLV remains central to Wickliffe now that he is no longer the school leader. He told us that among the seasoned educators, the MLV impact can still be felt. He noted that while the momentum of the MLV initiative experienced a slowdown in recent years, due to changes in leadership and the disruptions caused by the Covid-19 pandemic, he was optimistic that the school would regain that momentum, because the current principal is deeply committed to MLV. Fred emphasized the pivotal role that leadership plays in sustaining progressive initiatives within educational institutions. School leaders serve as role models for teachers when it comes to embracing innovation and taking calculated risks.

After leaving Wickliffe, Fred was a professor at the College of Education at Ashland University in Ohio from 2008-2023. In this capacity, he drew heavily on the insights gained in implementing MLV. His students, who were studying to become teachers, were inspired by his teachings about how he implemented MLV at Wickliffe. Additionally, he had incorporated documentation into his pedagogical approach when instructing university-level courses, encouraging students to interpret and share observations in a group learning process.

Fred told us that in hiring teachers at Wickliffe, "I never tried to hire the best teachers; instead, I always hired the best *learners*, because they're the ones who ultimately become the best teachers." It is when teachers are learners that positive transformation occurs in education.

Impact on Three Early Childhood Educators in New England

Nicole Chasse, Brookline Public Schools

Nicole Chasse taught preschool and kindergarten in the Brookline Public Schools at the Florida Ruffin School (previously named the Devotion School). When Nicole first started teaching, she joined an after-school MLV learning group led by Melissa Tonachel, affiliated with PZ, and Gina Stefani. Teachers brought examples of teaching from their classrooms and discussed how to

deepen learning using the power of the group and documentation. The group continues to this day, and Nicole is an active participant. Nicole also attended the PZC, where she became a fellow, and also went to Reggio with Mara Krechevsky and Melissa Tonachel, funded by her school.

Nicole began to document student learning by including multiple drafts of students' works and having students provide feedback to each other on their work. This practice allowed her students to reflect on how they had grown as a result of peer feedback. Nicole is now coaching younger teachers on how to incorporate MLV today using technology not available when she began to teach in 2005– photographing using a smart phone, then posting these immediately to a smartboard – allowing the group to reflect together.

Challenges. Today (in 2023 when we spoke), Nicole is facing challenges trying to incorporate MLV into her teaching. This is because there is now a set curriculum that she is expected to teach – not at all the case when Nicole first began using MLV.

Vanessa Cid, Advent School

Vanessa Cid teaches after-school at the Advent School, an independent school in the Boston area. She learned about the Reggio approach when she joined a professional development seminar on making learning visible for early childhood educators, hosted by the Boston Public Schools and led by Marina Bonni and Mara Krechevsky. She was particularly excited by the idea of honoring the child and the idea of teacher-as-researcher and as-documenter, all new ideas for her. The seminar, which took place at an early time in her career, had a “huge” impact on her, and ever since then documentation has been part of her teaching.

She brings her documentation back to the students and this becomes an impetus for discussion and learning. She recalled one incident about not sharing which she carefully documented and then brought that story to the group. The children could really hear, and this helped them zoom out and think somewhat objectively because they were now outside of the situation.

Advent is a Reggio-inspired school that encourages its classroom teachers to document, and several of them do use documentation as part of their practice. However, Vanessa is the only teacher at the afterschool using this approach, probably because afterschool teachers are often very young, still in school, and may be pursuing other interests.

Vanessa's most valuable professional development experiences, she said, occurred in workshops outside of the schools in which she taught – such as the seminar led by Mara and Megina at the Boston Public Schools, or in a group sponsored by the Boston Area Reggio Inspired Network. In these workshops, particular documentations were discussed and dissected, and this feedback sparked valuable conversations about the learning process.

A Connection to Psychoanalysis. Vanessa has also studied at the Boston Graduate School of Psychoanalysis, and sees parallels between the Reggio and the psychoanalytic approaches to the child. Both are ways of seeing people with compassion without judgment; both are ways of empowering people to make decisions by themselves; both involved listening closely, normalizing difficult situations, understanding what makes someone want to learn, what gets in the way, and how to work with that resistance.

Challenges. Vanessa told me something I had not heard before – sometimes families just walk past the documentation quickly when they visited the classroom, and she strives to involve families in the documentation process to help it feel relevant to them.

Sarae Pacetta, Wayneflete School

Sarae is an early childhood teacher (3-5-year-olds) at Wayneflete, an independent school in Portland Maine. The school's [website](#) states that the early childhood program uses the Reggio Emilia approach.

Sarae learned about MLV when she joined Mara's working group on MLV around 1995, meeting monthly over dinner. There she learned about group learning and documentation. She said that the idea of documentation as a way for teachers to learn about children did not click for her until she started documenting how often her new baby ate as a way for her to learn about her child. Suddenly it clicked and she emailed Mara saying that she suddenly realized how documentation is something that "moves things forward."

Sarae first started using MLV at Lee Academy Pilot School. After that, Sarae used MLV at [Wonder School](#), a laboratory preschool in Columbus, Ohio that she co-founded. This school is connected to Columbus State Community College (where Sarae also taught) and the Columbus Museum of Art. At the Wonder School, children spend one day a week in the museum, three days a week in the classroom, and on the fifth day teachers meet to reflect together. This school uses an emergent curriculum as well as documentation. However, the documentation is used for the teachers but not for the children to reflect on.

Now, teaching at Wayneflete, Sarae uses an emergent curriculum and documentation, and she offered this example of how topics emerge. One day a child brought in a book about paper airplanes. This prompted the class to start thinking about things that move through the air. Some children made paper airplanes and then made a launch zone. Others made things that would spin, leading them to think and talk about how the shape of an object affects how it moves through the air. This led to a discussion of air resistance and parachutes.

When asked whether she has adapted MLV to her context, she replied that MLV is a set of broad ideas – documenting children's language to reflect back to them, documenting children at work through photos, having children be decision makers in the class -- and since there is no prescribed way to practice MLV it does not make sense to think about adaptation.

Effects on students. Asked about the effect of MLV on her students, she said that it is her hope that they see themselves as central to the classroom, that they feel it is *their* space, filled with their ideas and questions, and not the teacher's space. Parents, she said, really like the idea that their children have agency and decision making. Sarae does not tell parents that she is using MLV – she simply talks to them about the value placed on child agency, with lots of choice time.

Effects on her teaching philosophy. Asked whether using MLV has changed her philosophy of teaching, she said that it has helped her understand the power of making children's thinking visible, not just for the benefit of the teacher but also as a tool to use to reflect back to the children – e.g., "Here's what you said yesterday. What ideas do you have now?"

Challenges. One of her colleagues who does not use this approach commented that these children seemed to "really understand gravity and air resistance." Sarae said, "I wonder, let's ask them so we

can find out what they understand, and then bring what they say to a teacher meeting.” But this did not happen. Sarae has been trying to set up the practice of bringing documentation to teacher planning meetings, but has had a hard time changing the culture of these meetings. Two teachers like this idea, but two are against change. There are so many other priorities that they never have time to share student documentation – even though the lower school director is very interested in PZ.

Impact of Reggio Schools in Italy on Children’s Lives

What effect do the Reggio schools have on the children who attend them? A quantitative evaluation was carried out, led by University of Chicago economist, James Heckman (Biroli et al., 2018). This study investigated a number of outcomes in individuals aged 6, 18, 30, 40, and 50 who had attended a Reggio school and compared them to matched age groups who had either attended non-Reggio preschools in northern Italy or who had attended no preschool. The outcomes for the adults were indices of life outcomes, including high school graduation, marriage, occupation, income, health, and social capital.

The results showed a statistically significant advantage of both preschool groups compared to the no preschool group. However, no group differences emerged between those who had attended the Reggio vs. non-Reggio preschools—clearly a disappointing result for those who championed these schools. However, it turned out, as the authors of the report attest, that the non-Reggio preschools attended by those in the comparison group had gradually begun to incorporate many of the pedagogical practices used in the Reggio schools. Hence a reason for no differences found.

Another reason for the lack of difference in the two groups with prior preschool attendance is, in my view, due to the very general outcome measures used. Even if both groups developed into functioning, married, employed adults, this hardly indicates no differences in their minds. And it is minds that are developed in Reggio preschools. Perhaps if the researchers had figured out a way to measure such things as curiosity, questioning, introspection, collaborativeness, sensitivity to beauty, and love of learning—qualities fostered in abundance in Reggio classrooms—differences might have emerged.

A Comparison Between Reggio Schools in Italy and Reggio-Inspired Schools in the US

Clara Fusco, an Italian doctoral student in early childhood education at the University of Bologna spoke to me about her interviews with US preschool teachers who were incorporating MLV into their classrooms. This study was conducted while Clara was a visitor at PZ in 2014. These teachers spoke about the transformative effect of learning to ask questions in a new way. But when they were first introduced to MLV, they found it very new and different. Here are some of the things the preschool teachers said surprised them:

- They were surprised by the idea of giving students such an active role and said they had never before thought that children could construct their own learning.
- They were surprised by the idea of thinking of themselves not only as educators but also as researchers.
- The idea of sharing their documentation with a colleague was very new to them.

While new teachers in Reggio had the support of all of the other teachers who could mentor them in MLV, US teachers lacked this kind of support. They were often the pioneers of this new approach in their school.

Many school networks and individual schools (and a few museums) have adopted MLV as one of several PZ frameworks that they used. These are discussed in Part IV of this report with their accompanying appendices. The schools and school networks featured in this chapter are those that adopted MLV but not other PZ frameworks.

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Accompanying Appendices

Appendix 10. Sample Documentations from Worcester Head Start

Appendix 11. A Typical Day at Charlestown Nursery School and Sample Documentations

THE ARTS (begins 1992)

The next nine chapters describe PZs projects in the arts, the second foundational area of PZ's work. With two exceptions (Art Works for Schools and Arts PROPEL), these projects focused entirely on the visual arts. Chapters 9-13 describe projects investigating response to art; Chapter 14-17 describe projects related to studio art making. The projects are presented chronologically, and often one project led to the next – hence a case of internal impact on PZ's research. The two projects that had the most external impact are Artful Thinking (Chapter 13) and Studio Thinking (Chapter 17).

Chapter 9

Isabella Stewart Gardner Museum Project 1992-1994

Led by Jessica Davis and Howard Gardner, PZ carried out a project with the Isabella Stewart Gardner Museum from 1992-1994 (described [here](#) on the PZ website). The goal of the project was to develop methods to encourage active rather than passive looking by visitors to an art museum. The tools that were designed were meant to provide visitors with the confidence to explore the often-austere setting of the art museum, the scaffolding with which to experience works of art on their own, and the means by which to reflect on their learning.

A series of educational activities and curricula were developed to help make the Gardner Museum's unique collection of art, architecture, and horticulture more accessible to neighboring school populations and other visitors. The activities were designed to help all museum-goers, from novice to veteran, enjoy and learn from their visit to the museum.

Access to Artworks via Entry Points

Drawing on the theory of multiple intelligences (Chapter 4) and its application to education as articulated in Gardner (1991), the researchers proposed five different "windows" (or entry points) into the museum experience for visitors with different learning profiles, as shown below. These were used to help visitors approach the museum's collection from any or all of these entry points.

Working with local schools, the researchers gave 5th grade students five paper frames, each representing one of these entry points. On each paper frame was written the name of the entry point and instructions to follow for a 15-minute activity (shown [here](#)). Students were given both a science object (a skull) and an art object to use with each frame.

Aesthetic: *The Seeing-Sensing Window. Look at it carefully. What do I see? Write down the details of what you see.*

Narrative: *The Story Window. Tell its story. What is it about? Write the story of the object.*

Logical-Quantitative: *The Reason Window. Figure it out. Why and how do things fit together? Write down some questions you'd like to have answered about the object.*

Foundational: *The Fundamental Window. Reflect on it. Why is it important? Write down your theory about why the object is or is not important, why it matters if it does.*

Experiential: *The Action Window. Do it, make it. How can I experience it? Make a picture, dance a dance, or sing a song about what you see.*

After responding to the various frames, children were engaged in open-ended questions about each one. Which window was easy, hard? Which worked best with the science object, which with the art object? And so forth. These discussions provoked sophisticated metacognitive reflection as

children thought about their thinking processes. And in some classes, students were asked to apply entry point thinking to other subject areas. For example, in a math class, students thought of entry point questions for geometry, such as why geometry is important, who invented it, what the most beautiful geometric shape is, and so on (Davis, 2000). Children used class time to look at reproductions of the museum's artworks, writing down questions that the works provoked. These questions were used in turn by museum educators when the children visited the museum. In this way, the entry points began to provide channels of learning between museum and school.

Impact

Sometimes the most important impact of one of our projects was to give birth to another project which then had impact beyond PZ. This was the case with the Gardner Museum project, which led directly to Project MUSE, described next.

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Chapter 10

Project MUSE

(Museums Uniting with Schools in Education)

1994-1996

After the completion of the Gardner Museum project, Jessica Davis initiated [Project MUSE](#) (Museums Uniting with Schools in Education), which took place from 1994-1996. The [MUSE Book](#) and [MUSE Guide](#) can be found here.

This project was carried out primarily by mail (USPS mail, for those who remember what this is). Invitations to participate were sent to 500 art museum educators, directors, and curators and to 1800 US teachers (mostly non-arts teachers) and principals. Names of museum professionals to invite were provided by Rachel Granholm, then Curator of Education at the American Federation of Arts; names of in-school educators were provided by John Kaiser of the Regional Laboratory for Educational Improvements of the Northeast and Islands. News of this program also spread by word of mouth. Eventually 595 individuals participated.

The Generic Game

Participants first tried out and commented on what was called The Generic Game, a set of ten open-ended questions that could be used for consideration of *any* work of art by *any* viewer (hence generic).

1. Look carefully at the work of art in front of you. What colors do you see in it?
2. What do you see in the work of art in front of you?
3. What is going on in this work of art?
4. Does anything you have noticed in this work of art so far remind you of something in your own life?
5. Is this work of art true to life? How real has the artist made things look?
6. What ideas and/or emotions do you think this work of art expresses?
7. Do you have a sense of how the artist might have felt when making this work of art? Does it make you feel one way or another?
8. Take a look at the other works of art displayed around this one. Do they look alike? What is similar about the way they look (for example, objects, events, feelings, or the way they are made)? What is different?
9. What would you have called this work of art if you had made it yourself?
10. Think back on your previous observations. What have you discovered from looking at this work of art? Have you learned anything about yourself or others?

And then a post-game question:

Do you like this work of art? Why or why not? You may notice that this is the same question that you were asked before you played the game. Has your reaction to the work changed? Do you like it more or less than you did in the beginning. Why?

Next participants were introduced to the five [Entry Points](#) approach developed in the Gardner Museum project described in the previous chapter:

Foundational: The Fundamental Window. Reflect on it. Why is it important? Write down your theory about why the object is or is not important, why it matters if it does.

Experiential: The Action Window. Do it, make it. How can I experience it? Make a picture, dance a dance, or sing a song about what you see.

Narrative: The Story Window. Tell its story. What is it about? Write the story of the object.

Logical-Quantitative: The Reason Window. Figure it out. Why and how do things fit together? Write down some questions you'd like to have answered about the object.

Aesthetic: The Seeing-Sensing Window. Look at it carefully. What do I see and feel? Write down the details of what you see.

The Entry Point QUESTs

Finally, participants received a synthesis of the Generic Game and Entry Point approach, called The Entry Point QUESTs. QUEST stood for Questions for Understanding, Exploring, Seeing, and Thinking. This tool consisted of five sets of ten questions each, with each set for one entry point.

Here is an example of how Question 1 from the original Generic Game was adapted for each entry point. Each entry point presented ten questions, but here I just list one question for each entry point.

Aesthetic: Look at the colors in this work of art. Which one did you see first? Was color the first thing that you noticed? What else caught your eye?

Narrative: What is the story that you see in this work of art? How do the colors help to tell this story?

Logical/Quantitative: What color do you see the most of in this work of art? What color do you see the least of in this work of art?

Foundational: Take a look at the colors in this work of art. Why do you think these colors were used? Do colors have meaning?

Experiential: If you were a color in this work of art, what color would you be and why?

And now, an example of how Question 10 from the original Generic Game was adapted for each entry point:

Aesthetic: Think back on all your responses. What have you discovered about making and looking at art? Have you learned anything about yourself or others?

Narrative: Thinking back on the stories you have discovered, what have you learned from looking at this work of art? Have you learned anything about your own life story or the stories of others?

Logical/Quantitative: Imagine that a group of educators did not want students to see this work of art. These educators said that there was nothing to learn from looking at it. Make an argument for what there is to learn from looking at this work of art.

Foundational: Think back on your previous observations. Is what you have discovered important? How might this work of art change the lives of people who look at it?

Experiential: Think back on your previous activities. Which one was your favorite? Why? What does that tell you about yourself? What else have you learned from these activities?

Impact

During and after the project, Jessica was invited to present this work at various museums (e.g., the Museum of Contemporary Art Santa Barbara, the DeCordova, the Art Institute of Chicago, MASS MoCA, the Institute of Contemporary Art San Francisco), where educators were interested in using the MUSE tools in their programs. Since then, she reports that she has heard of Project MUSE workshops for teacher training organized by educators and individual educators adapting the materials in new ways, such as using the Game and/or QUESTs for students' critique of their own and others' artwork.

Susan O'Neil, in collaboration with the Worcester Art Museum, used the MUSE resources (they were available for purchase from PZ) in her school and in parent and teacher workshops. In 1996, Susan went on to compile a training manual for the use of MUSE tools. The manual also contains a section written in 1994-1995 by Pamela Haas who, along with Susan, documented about 35 MUSE workshops all over the United States, including 13 in the Boston area. These documentations are contained in The MUSE Guide, referenced above.

I have come across one educator, Nevada Benton, who encountered Project MUSE when she was a Fellow at the PZC over a decade ago. She has used the Art Quest tools once or twice a year ever since at the Escalante Middle School, in Durango, Colorado. A description of how she used this approach with Out of Eden Learn/Open Canopy can be found in Chapter 41.

The MUSE project was completed 17 years ago, and I do not know of any other uses being made of the materials today.

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Chapter 11

Art Works for Schools

1996-2001

[Art Works for Schools](#), directed by Shari Tishman and Tina Grotzer, was a five-year project designed to develop thinking dispositions in students by means of looking closely and reflectively at works of visual art – based on the belief that art invites thinking that can be used broadly across any subject area (e.g., literature, science, history etc.). Some of the ideas drew on the Museum of Modern Art's Visual Thinking Curriculum developed by Philip Yenawine and Abigail Housen.

The project was developed collaboratively involving PZ, the Decordova Museum and Sculpture Park (with Eleanore Lazarus and Laura Howick), and the Underground Railway Theater (with Debra Wise and Wes Sanders). Debra Wise became the Artistic Director of the Underground Railway Theater and then of the Central Square Theater in 2007. These theaters work with teachers to use theater as a tool for investigation, understanding, and building community.

Many Massachusetts public schools were also involved in the development of this program, including the Haggarty School and the Graham and Parks Alternative Public School in Cambridge, the Lincoln School and the Hanscom Primary and Middle Schools in Lincoln, the Mason Rice School in Newton, and the Arlington Public Schools. The program was designed primarily for classroom teachers (grades 3-8) who are not art specialists, though the program can also be used by art teachers, museum educators, and theater educators. The lessons are also easily adaptable to younger and older grades than 3-8.

The Program

The Art Works for Schools program was developed for grades 3-8 but is used by teachers of younger and older students. A program handbook was written ([available here](#)) to deepen student thinking in the context of experiencing visual art and then enact their understanding of a work of art in mini theater performances. (Grotzer, Howick, Tishman, & Wise, 2019).

The program consists of four modules which each contain about eight 45-minute lessons plus resources, to be used alongside the regular curriculum.

The modules are designed to develop four thinking dispositions that have broad generality across areas of learning:

- Reasoning
- Perspective taking
- Problem finding
- Metaphor making

Each lesson begins with responding to a work of visual art. Students are asked to look for long periods of time (up to 45 minutes) at a single work of art. As they look, they are asked a variety of questions to get them seeing and thinking.

To promote observation, students are asked about what they see, what makes them say that, what they notice about the shapes, lines, colors, etc., and interpretation questions like what is the most important thing in the picture, and does it look real or unreal, and again what makes you say that. Students are helped to distinguish between observation and interpretation.

To prompt perspective taking, students are asked, for example, to look at pictures from different vantage points.

To promote problem finding, students are asked, for example, to think about what they wonder about in a particular work – e.g., Why is this room without color? What is that shape in the corner? Is that a window or just the light from a window?

To promote metaphor making, students are asked to think about what a particular work would sound like, or what it would feel like if you could walk into it.

Sessions always end with a Reflect and Connect component where students reflect about how looking and talking about a particular work changed what they saw and what they thought about the picture. Lesson plans for each module also include explicit tools to get students to think about how they could transfer these same kinds of thinking tools to science, history, and social studies.

Theater is used to enhance and deepen understanding of a work of art rather than as a topic of study itself. The theater component uses improvisation, monologue and dialogue to get students to think about a work of visual art (or other issues from the regular curriculum). For example, students are asked to enter into an artwork and improvise with such prompts as: What might the paintbrush have said as it was creating the work of art? Pairs of students then perform a dialogue in response. Or if this work were a stage set, what kind of play would take place here? Students divide into pairs, discuss, and write dramatic scenes inspired by the work.

In the Perspective Taking module, students project themselves into one of the characters or things in a painting.

In the metaphor making module, students use found objects to create a puppet metaphor for a person.

As with the visual art sessions, theater sessions always end with a “Reflect and Connect” time where students think about how this kind of performance changed their thinking about the work of art.

Impact on Collaborating Partners

Debra Wise, the theater director who collaborated on this project, told me how working with PZ on this project made her realize that one can become a better thinker and thus become a better actor. She said the PZ approach to thinking – helping students to pause, reflect, brainstorm, and deepen their thinking – is a hopeful approach.: Students in such a program come to realize that they can become better thinkers. She felt that thinking about thinking with teachers and with students was inspiring and eye-opening. Moreover, learning to think deeply is genuinely enjoyable and immediately satisfying. Debra felt that PZ gave her the language to think about thinking in this way.

Debra developed a playwriting curriculum for 5th graders which grew out of her involvement with this project. She invited teachers to think of writing plays as a way of entering into subjects in the academic curriculum. She taught the students to use a PZ inquiry method (pausing and reflecting and brainstorming on questions) as they thought about possibilities for the characters they were creating. This curriculum continued to be used for a number of years, but when teachers who were involved retired, the curriculum faded out.

However, Debra's colleagues at the Central Square Theater teach playwriting using a method based on the playwriting curriculum that Debra developed for children. Debra also developed a worksheet that is still in use today at the Central Square Theater for talking about plays. The worksheet helps audience members to get around the thumbs up or down approach and leads people to pause and think deeply before judging. This grew directly out of her work on Art Works for Schools.

Debra collaborated with two professors at MIT, Alan Brody (playwright) and Alan Lightman (physicist and novelist) to start a salon in which playwrights and scientists met together monthly – called the Catalyst Collaborative. The goal was to think about ways of thinking shared by artists and scientists. Debra remembers that she realized from this experience that artists and scientists have in common their insistence on staying in the middle of a problem for a long time. She feels that it was her work with PZ that led her to be able to come to this realization. The salon met for eight years but is no longer ongoing.

Impact on Participating Schools

Joe Petner, the principal of the Haggerty School, joined in the development of this project because of his commitment to making art more central for his students. In his foreword to *Art Works for Schools*, he wrote:

Our experiences over the past five years have proven to be transformative. The program components of Art Works for Schools were innovative and interactive for teachers as well as students and their families. The goals of the project were rooted in the experiences of seeing artworks and watching theater performance. Teachers and students were asked to develop critical, imaginative, and reflective thinking skills in relation to these experiences. We took away from this collaborative experience a better understanding of how art works as a tool for learning across the curriculum. We were helped to see how art works for students who are differently abled. We were able to use the resources of Art Works for Schools to create a professional community with our collaborators where teachers were engaged in reflection about their craft and were asked to help shape the direction and focus of the content and activities. The influence of the initiative was evident in the level of confidence teachers demonstrated in their ability to think about and discuss art, and their willingness and commitment to integrate it into the curriculum. The Art Works for Schools project served as a critical agent for change by creating the conditions for learning about ways to use visual and theater art as a tool for teaching and learning. It powerfully emphasizes the importance of the arts in our schools. Someone once wrote: 'To know neither the rich storehouse of human experience contained in the arts nor the use of the expressive and communicative functions of the arts is to be educationally deprived.' The Art Works for Schools project has helped us as a community of learners to attain a higher level of literacy. In this regard, it has truly been a "transformative" experience.

Debra Wise offered Art Works for Schools as a mini-course at the PZC for many years, co-teaching with Laura Howick. As a direct consequence of teaching at the PZC, Debra was invited to give workshops to teachers in Singapore and in Arizona. She also went on to lead workshops on this approach with a range of both public and private schools. Whether any of these schools adopted this approach could not be determined today, 23 years after the project ended.

The education director of the Museum of Fine Arts in Boston approached Debra about developing a program for families based on Art Works for Schools. Debra accepted this opportunity and gave tours every weekend for four or five years, providing what she believes were authentic and playful ways to experience works of visual art. She went on to develop programs like this at the Institute of Contemporary Art in Boston and museums in Washington DC, including the National Gallery. She still has the plans in her files for every workshop she conducted in art museums and would love to give this to museums to implement.

Laura Howick, a former museum educator, was involved in developing Art Works for Schools when she worked at the DeCordova Museum. She left the DeCordova in 2003 for a position at the Fitchburg Art Museum, where she worked for 18 years. There she implemented Art Works for Schools in a condensed form when giving tours and training docents and teachers, often using just one of the thinking dispositions. She also taught about this program as part of a continuing education class at Fitchburg State University.

She told me that this program was complicated for teachers if they were to implement the entire package, especially the transfer piece. She lamented the fact that schools say they want more information about teaching critical thinking skills, but when they get something like this, teachers are often not given the time and the support to learn to implement such new approaches. She reflected that Artful Thinking, presented in Chapter 13, does not call for teachers to find a transfer domain, and thus it may be more practical for teachers

I asked Laura if she knew of any museums where Art Works for Schools was being used or had been used. She said she did not know of any, despite the fact that the handbook was sent to many museums.

The next chapter turns to an evaluation that PZ conducted of the Visual Thinking Curriculum adopted by the Museum of Modern Art in New York.

Reference Cited

Grotzer, T., Howick, L., Tishman, S., & Wise, D. (2019). *Art Works for schools: A curriculum for teaching in and through the arts*. [pdf](#)

Chapter 12

Visual Thinking Curriculum Evaluation 1998-1999

Led by Shari Tishman, Project Zero undertook a year-long evaluation of the Visual Thinking Curriculum (VTC) in use at New York's Museum of Modern Art (MoMA) (Tishman, McGillivray, & Palmer, 1999). (Note: Not to be confused with Visible Thinking.) The VTC was developed by MoMA in collaboration with Abigail Housen. The curriculum was written for students in 4th and 6th grades but has been used in K-12 as well as for novice adult art viewers. The curriculum sought to engage viewers in inquiry-based discussions about works of art. These two questions were posed to viewers: What is going on in this picture? What makes you say that?

As described in the VTC evaluation report ([here](#)), data came from interviews with teachers, students, and staff, classroom observations, and a student performance assessment given to students who did and who did not receive the VCT.

Findings

Students exposed to the VTC showed modest but statistically significant gains in the quality of their evidential reasoning when interpreting the meaning of a work of art. This gain also transferred to forming interpretations about the meaning of a non-art image in the domain of science (like fossil footsteps).

The VTC contributed to a modest but significant increase in students' awareness of the subjective, or conditional, nature of interpretation, both when thinking about the meaning of an artwork and a non-art image in the domain of science.

Students experienced the VTC as challenging and engaging, and they appeared to intuitively understand what the VTC questions are getting at. They seemed to understand that the VTC methodology is about "figuring things out" and understanding meaning.

Students found it easy to imagine transferring the VTC questions to many contexts, inside and outside of school, and in fact reported that they did so. Almost all of the connections they mentioned seemed appropriate.

However, the evaluators noted some weaknesses and made the following recommendations:

Evaluator Recommendations

VTC teachers whose students had the highest overall gains tended to push individual students to make detailed observations about works of art and to justify their interpretations with perceptual evidence in the image. They also encouraged a culture of conversation in the class by soliciting comments from many students and encouraging students to respond to one another directly and to reason collaboratively. In contrast, however, teachers whose students had the lowest gains tended to encourage students to list observations of details in works of art and to discourage students

from thinking broadly about the meaning of an image and from exploring disagreements about, or citing evidence for, their individual interpretations.

Teachers needed better professional development, including the modelling of effective practices for developing group discussions that deepen students' thinking. Teachers needed to develop a better understanding of the purpose and rationale of the VTC questions, and the kinds of thinking skills and conversational classroom culture these questions aim to cultivate. Teachers also needed more instruction about how to help students transfer what they learned from thinking about art image to thinking about other kinds of visual images.

Impact

Based on these findings, MoMA began a substantial revision of the VTC in collaboration with Project Zero in 2000. The revised VTC was published by MoMA.

Reference Cited

Tishman, S., MacGillivray, D., & Palmer, P. (1999). Investigating the educational impact and potential of the Museum of Modern Art's Visual Thinking Curriculum. Final report. Cambridge, President and Fellows of Harvard College. [pdf](#)

Chapter 13

Artful Thinking

2004-2006

When the Traverse City Area Public Schools in Michigan asked PZ to help them develop a curriculum using the arts to foster thinking skills, Shari Tishman responded. As a core member of the Visible Thinking project, Shari realized the potential of thinking routines directed towards the arts. And thus was born the [Artful Thinking](#) project, directed by Shari, which took place from 2004-2006. The program was designed for the (non-art) classroom teacher and targeted K-9 grades but can be used at all grades. The 2006 final report on the project by Shari and Patricia Palmer can be found [here](#).

The Artful Thinking Palette

Works of art invite us to think, but all too often viewers do not know what or how to think about a work of art. They are simply puzzled, or pleased, but do not inquire. The goal of Artful Thinking was to help teachers make connections between works of art and the rest of the school curriculum through the use of the Artful Thinking Palette, consisting of the following six thinking dispositions.

- **Observing and Describing:** Close looking and re-presenting
- **Reasoning:** Making arguments, seeking evidence
- **Questioning and Investigating:** Positing questions
- **Comparing and Connecting:** Noticing juxtapositions and seeking connections
- **Exploring Viewpoints:** Adopting multiple perspectives
- **Finding Complexity:** Digging into multiple dimensions and layers

Each of these dispositions calls on a particular form of thinking (as shown in the above list that is useful in responding to works of art and that are also called upon across many disciplines. Many of the Artful Thinking routines are taken from the Visible Thinking project but applied to art, with some small changes in wording. Others were created specifically for Artful Thinking.

Sample Thinking Routines for Each Disposition

Artful Thinking Routines are posed when museum visitors are looking closely at a work of art, such as Ben Shahn's painting, [Liberation](#), and when they are using evidence from the image in their responses. As shown below, specific Artful Thinking routines are used to promote each of the six dispositions.

Routines for Observing/Describing

Elaboration Game. One person describes a specific section of an artwork/Second person elaborates on this by adding more detail about same section/Third person elaborates further, and so on. After four people have described a section, start anew with another section.

Looking: Ten Times Two. Look for 30 seconds/List 10 words or phrases about any aspect/Look again and repeat adding 10 more words.

Routines for Questioning/Investigate

See-Think-Wonder. What do you see, what do you think about that, what does it make you wonder.

Creative Questions. Brainstorm at least 12 questions about the work using prompts like Why, What if? What is the purpose of? How would it be different if? What if we knew? What would change if? Suppose that? What are the reasons? Then start the most interesting questions, choose one and discuss. Then reflect – what new ideas do you have that you did not have before?

Routines for Comparing/Connecting

Connect-Extend-Challenge. How is the work connected to something you know about? What new ideas do you have that extended your thinking in new directions? What is challenging or confusing, or makes you wonder?

I Used to Think...Now I Think. After exploring an artwork: I used to think...Now I think...

Routines for Exploring Viewpoints (inspired by Debra Wise and Art Works for Schools)

Circle of Viewpoints. Brainstorm a list of different perspectives about the work. Choose one perspective to explore using these sentence-starters: I am thinking of this work from the viewpoint of...Describe it from your viewpoint/ A question I have from this viewpoint is...

Step Inside. Choose a person, object, or element of a work, and step inside that point of view. Consider: What can the person/thing *perceive* and *feel*? What might the person/thing *know about* or *believe/ care about*? Take on the character of the thing you've chosen and improvise a monologue. Speaking in the first person, talk about who/what you are and what you are experiencing.

Routines for Finding Complexity

The Complexity Scale. Say some broad things you know about the work – observations, facts, ideas. Then place each statement somewhere on the complexity scale from Simple to Complex and explain why. What new insights or questions do you now have about the work?

Parts-Purposes-Complexities. What are the parts of the work? What are its purposes – who is it for, what does it do? What are its complexities – how is it complicated in its parts, purposes, relationship between parts and purposes, or other ways? This routine became central to Agency *by* Design, as discussed in Chapter 49.

The Artful Thinking team interviewed the Traverse City teachers about how often they used the routines. In the first half of the second year of the program, teachers reported using only one to three routines a week. By the second half of that year, over half of the teachers were using four to six routines a week, with See-Think-Wonder as the most frequently used. They had become more comfortable with using them and even began adapting and tweaking the routines for their own purposes. And they reported that the routines were diagnostic, laying bare students' thinking, and revealing which students were understanding, and which ones had misconceptions.

Effects on Students' and Teachers' Thinking About Art

The Artful Thinking team at PZ assessed the impact of Artful Thinking on students and teachers by asking them what they thought about art, using the thinking routine, *I Used to think...Now I think...* (Tishman & Palmer, 2006).

Six bipolar, four-point scales were developed to assess the quality of student thinking:

Obvious_____	Beyond the Given
Fuzzy_____	Clear and Focused
Simplistic_____	Elaborated
One-Dimensional _____	Multi-Dimensional
Restricted_____	Generative
Tangential_____	Essence-Capturing

Both students and teachers came to think of art in a more complex way, as something with many meanings and as something that invites inquiry. Teachers reported being less concerned about using “good” art in class and more interested in the quality of student talk. They had come to see art as a powerful opportunity for learning rather than just an add-on to the curriculum. They also became more open to using a wide variety of art, including contemporary art, mixed media art, and art with provocative content.

Effects on Students’ Conceptions of Good Thinking

The team also examined the effects of the program on 4th, 5th, and 6th graders’ conceptions of good thinking, comparing the Artful Thinking students to a comparison group not exposed to the program. Students were asked to make a concept map showing their ideas about their thinking when they were trying to understand something – and these were made at the beginning, middle, and end of the two-year program. Those in the Artful Thinking program more often mentioned making careful observations, asking questions, exploring points of view, exploring complexity by breaking things into parts, and reasoning carefully. These findings are reported in Tishman and Palmer (2007).

It seems most likely that the Traverse City schools are no longer using Artful Thinking. The project took place almost 20 years ago, and I could find nothing about Artful Thinking on their website.

For more information about the work with Traverse City, see Tishman and Palmer (2007) and Niehoff & Wenrich.

Impact

Below I describe the impact of Artful Thinking on the educational programs of three art museums as well as on the elementary schools in Hillsborough County, the seventh largest school district in the US.

National Gallery of Art

The mandate of the National Gallery of Art (NGA) is to provide free resources for best practices in museum education. From museum educator Julie Carmean I learned about how the NGA uses Artful Thinking.

Julie came to the NGA in 2007, after going through the Arts in Education Program at HGSE and after teaching for a few years during which time she implemented Artful Thinking routines in her

3rd and 4th grade classes. She joined the NGA to run Art Around the Corner, a program bringing Title 1 students into the museum for repeated visits. Together with Sarah Lesk, Julie revamped the program, named it Teaching Critical Thinking Through Art (TCTTA), and based it on Artful Thinking routines.

The program's introductory video states:

This one-of-a-kind course uses the Gallery's deep experience with Artful Thinking to build a unique online learning environment. Participants will have the opportunity to look, reason, and wonder about works of art...To make this possible, the course includes an innovative tool, called iiiF, that allows participants to zoom in and explore each high-definition work of art from the National Gallery of Art's free, online database. Participants will also watch real lessons unfold with teachers and students in original videos. The course includes all of the resources necessary to put the routines into practice in the classroom.

Fourth and 5th graders from the DC public schools came to the museum for six two-hour visits. During each visit, students looked at three works of art and engaged in discussions with the help of one or more of the PZ thinking routines. In addition, these students received two in-school visits by museum educators.

For a *Forbes* magazine report on Artful Thinking at the National Gallery, click here [pdf](#).

Scope. Thousands of people from 150 countries have enrolled in the TCTTA program (the top ten being the US, India, Australia, Canada, the UK, Brazil, Spain, Italy, China, and Germany). About a third of the enrollees are arts teachers and the rest are educators across all subject areas and grade level,) as well as administrators, artists, and professors.

Other programs at the NGA have also used Artful Thinking routines: The docents have now been taught to use these routines, and the routines are used on many school tours; the routines are used in programs for families and in a slow looking program for adults.

Internal evaluation. A pre-post survey of those who took the TCTTA course was conducted, and 1,348 enrollees completed both parts. Most said that prior to taking the course they did not use thinking routines, did not integrate art into their teaching, and had never visited the NGA. Yet 70 percent watched the course videos from beginning to end. After taking the course, 87 percent said they were extremely likely to integrate routines into their teaching. When asked how many students they had already introduced to thinking routines, 749 teachers responded. Tallied responses revealed that the teachers reported having used routines with 24,519 students. If applied to all teachers enrolled, over a million students might have been exposed to Artful Thinking.

External evaluation. After five years, in 2012, this program was evaluated by Randi Korn & Associates, based on interviews with (and observations of) students who visited the museum to participate in the program six times and those who visited two times. The evaluators compared students who got the six visits to a group who only got two visits (both in one week) and one visit to the school. The outcome measure was how students responded to works of art (ones they had seen in the program) without being prompted. Students were shown images of these works and were asked to identify the one work of art that was most memorable and to explain why. Compared to students who received only the brief program, those who received the full program showed more evidence of observing, describing, and reasoning with evidence.

Interviews with teachers and parents were also conducted. These revealed that teachers were comfortable using the See-Think-Wonder thinking routine. Parents had positive views of this program and felt that it had positive effects on their children.

The evaluators felt that teachers were overwhelmed by the amount of materials in the program and recommended streamlining the materials for teachers. In response, Julie and her colleagues created a four-session professional development program for teachers, with demonstrations of thinking routines which would then be discussed and unpacked. A subsequent focus group with teachers resulted in teachers asking the museum to create videos for teachers who could not come to the museum.

As a result, two online asynchronous courses (on the Ed-X platform) were launched at the NGA and presented on the Ed-X platform: teaching Critical Thinking Through Art (launched in 2019); and Teaching Complex Thinking Through Art (launched in 2024). A description of these courses can be accessed [here](#).

Philadelphia Museum of Art

The Educator Programs at the Philadelphia Museum of Art use multiple tools to help adult visitors and student visitors look more slowly and carefully and to think and respond to what they are seeing, as I learned in speaking to Barbara Bassett, Curator of Education and School and Teacher Programs, Suzannah Niepold, Manager of Teacher Services, and Cherish Christopher, the new coordinator of Sherlock , a program for 5th and 6th graders, a program described below.

The museum added Artful Thinking to its box of tools in 2008 or 2009. [Here](#) are all of the digital lessons the museum developed around Artful Thinking. The museum uses Artful Thinking routines in every one of their educational programs (for example, in a teacher seminar they run in a summer course).

Program for medical students. The museum has developed a program using Artful Thinking to help medical students learn to look more closely. This got started in 2013, when the museum was approached by ophthalmology researchers at the Perelman School of Medicine at the University of Pennsylvania. These researchers were concerned that medical education stressed memorization of clinical signs over observation of clinical signs. They also felt that medical education needed to make students more comfortable with ambiguity. They wanted to test whether training in observational skills with works of visual art could make doctors into better observers of their patients, and perhaps better able to recognize that sometimes there is no one right answer.

Before coming to the Philadelphia Museum of Art, Suzannah Niepold had worked at the Smithsonian American Art Museum. There she had been introduced to Ron Ritchhart's thinking routines and Shari Tishman's Artful Thinking routines through a presentation that Ron gave as part of a teacher seminar. She and her PMA colleagues, who were already Artful Thinking practitioners, developed an intervention for medical students based on Artful Thinking, in which the students would learn to look closely at works of art as they engaged in thinking routines.

Thirty-six medical students volunteered to participate in the first year. They first took a pre-test assessing observational skill with art and medical images where they were asked to describe each image as completely as possible. Students were randomly assigned to a test or a control group. The test group came to the museum for six 90-minute visits. Eleven students attended all six sessions at

the museum, six students attended five sessions, and one student attended four sessions. During each visit, they looked at two works of visual art, spending 45 minutes on each work. As they looked, they were engaged by museum educators in Artful Thinking routines, beginning initially with observing and describing and then moving on to higher order thinking skills such as perspective taking. After the program, which took place over three months, both groups were given a post-test again assessing observations of art and medical images.

A peer reviewed article on the results can be found [here](#). The training group improved significantly in observation for both medical and art images. Those in the training group also reported that they were now applying these newly learned observational skills in their medical practice. One student commented (p. 10), “After just the first session, I found myself listening to a radiologist discuss the same principles we used to look at art in analyzing a CT scan.”

The control group actually performed more poorly on the post-test than on the pre-test, suggesting that they did not try on the post-test. Not having been in the training group, they were probably not motivated.

In response to the published article, David Epstein and Malcolm Gladwell (2018) wrote an [editorial](#) appearing in the same journal, extolling the connections between artistic and scientific seeing (. They wrote (pp. 2-3): “Where his contemporaries looked at the moon and saw a perfectly smooth, divine sphere, Galileo recognized shades of dark and light for what they were: mountains and craters. Why? He was trained as an artist and was well practiced at depicting 3-dimensional figures in various light conditions.”

This program has continued every year at the museum for the past nine years, and the museum has collected nine years of pre-and-post data (but without a control group). They added an additional visit, for a total of seven, to include the Personal Response Tour as a final reflective activity. The museum has added a course for fourth-year medical students focusing on bias in medicine, in which some of the Artful Thinking routines are used. The museum has also created a course for other medical groups (interns, fellows, and residents) on resilience. This course always begins with the Elaboration Game, one of the Artful Thinking routines.

Program for elementary schools. In 2017, the museum developed Sherlock – an eight-part multiple visit program for 5th and 6th graders. This program grew out of the program for medical students. The program was evaluated by Randi Korn and Associates using observations, interviews, and an assessment asking students to look closely at a work of art and respond to a series of questions. In 2017, after the pilot year of the program, a “remedial” evaluation compared a total of 191 students (including Sherlock and control students). Sherlock and control students were compared in their responses to these questions:

- What do you notice?
- What do you think is happening in this work of art?
- What do you see in the work of art that makes you think that is happening? (Evidential reasoning)
- How does the work of art connect to other things you know or have experienced?
- What questions do you have about the work of art? What does it make you wonder about?

There was just one area in which the Sherlock students outperformed the control group on this assessment: they noticed more parts of the painting.

In the second year of the program, another study by Korn with a stronger methodology was conducted using the same methods and questions, with 214 students participating. This time the comparison was from pre- to post-participation using the same artwork at each time point. Post-test performance was significantly higher on all questions except for the question asking what students thought was happening in the work.

One reason for the stronger findings from the second study was likely the use of a pre-post design, allowing improvement to be detected in the same students. Of course, improved outcomes of the second study compared to the first could also have been due to the different artworks that were used for the two different evaluations, or to the fact that the same artwork was used at pre- and post-test so that at posttest, students were already familiar with the work.

American Art Museum and National Portrait Gallery, Washington DC

Museum educators Phoebe Hillemann (from the Smithsonian American Art Museum) and Briana White (from the National Portrait Gallery) told me that both of their museums have integrated Artful Thinking routines, as well as other PZ thinking routines, into their summer teacher institutes for at least ten years. Teachers, most of whom are social studies, history, and English/language arts teachers, come to these institutes from all over the country. They appreciate that the routines are transferable across subject areas (e.g., they can be used for looking at primary texts, as just one example) and are not specific to the visual arts.

Routines that call for pondering and reflection are also used in the museums' teacher workshops, student programs, and public programs for adults. For example, in [this](#) program on social justice, an episode on community gardens and social justice (featuring objects from the Smithsonian Gardens archives and the National Portrait Gallery) asks viewers to look closely at a photo portrait of the chef Alice Waters (by David Woody) standing in a community garden. They are then guided via Artful Thinking routines to reflect on what they notice, what pulls them in, what is the setting, where the focal point is (and how we know). They are then asked to compare this portrait with a photo of an urban community garden from the early 1900s created by Frances Parsons – reflecting on similarities and differences. These practices of slow looking and reflection (this time in the service of thinking about social justice) grew out of the National Portrait Gallery's work with Artful Thinking routines.

The National Portrait Gallery, like the Philadelphia Museum of Art, ran a program for medical students in close looking, using Artful Thinking routines. In 2023, first-year medical students from George Washington University participated, coming to the museum for six sessions. Many told Briana that they had not expected the program to be relevant to medicine but after participating they recognized its relevance. The museum hopes to repeat this program regularly.

In their respective museums, Phoebe and Briana have also used thinking routines from PZ's Global Competence Framework (Chapter 43) and Arts as Civics Commons (Chapter 46).

A number of other art museums have adopted Artful Thinking, as can be seen in these links:

[University of Rochester Memorial Art Gallery](#)
[Oklahoma State University Museum of Art](#)
[Mead Art Museum at Amherst](#)
[Tacoma Art Museum](#)

[National Museum of Women in the Arts](#)
[Sidney and Lois Eskenazi Museum of Art at the University of Indiana](#)
[Museum of Fine Arts, Houston](#)
[San Antonio Museum of Art](#)
[Association of European Jewish Museums \(offered a course on Artful Thinking in 2021\)](#)

Hillsborough County Florida

Hillsborough County in Florida is the 7th largest school district in the US – with 250 art teachers in 190 schools. Each week, 85,000 students spend time in art class (elementary school 30 minutes once a week, middle/high school electives, 50 minutes daily). The new supervisor of K-12 art for the county is Laura Hobby, who spoke to me about how she is transforming art classes through the use of Artful Thinking.

The Hillsborough County schools have a mandated standard in the visual arts called Critical Thinking and Reflection. The mandate states: Students are to learn to use four kinds of processes when looking at a work of art: description, analysis, interpretation, and judgment, as shown below:

1. Description *Be 100% objective / Think of facts -What specific Elements of Art (color, line, shape, texture, form, space, value) can you find within this piece? -What's the title of the artwork? -Who is the artist? -When/where was it created? -What media was used? -Is there a primary subject in the piece?	2. Analysis *Be 100% objective / Think of facts -What Principles of Art (balance, emphasis, movement, pattern, repetition, proportion, etc.) can you find within this piece? -How do the Elements of Art interact with each other? Are there interesting visual effects created? -What specific elements stand out in this composition and why? Is there a focal point? -How is the work organized?
3. Interpretation *Subjective / Requires thought on your part -What is the artist trying to communicate? -What thoughts or feelings come up when you see this piece? *Abstract works quite frequently require us to learn more about the context the work was created in (artist's life and time/place in history) in order to better understand them. -Express your opinion, but ALWAYS back it up with evidence.	4. Judgement *Subjective / Requires thought on your part -Finally, you can share personal thoughts based on previous steps. -Do you like it? Why/why not? Again, use solid evidence to support your opinion. -Is this piece effective? Is it saying what the artist is intending to say? -Are you judging based on technique or emotional content? What criteria do YOU think are important when judging an artwork?

Hillsboro Schools visual arts assessment measure prior to Artful Thinking

Assessment was multiple choice. Here is an example of one test question in relation to a cubist self-portrait by Picasso:

The artist painted a large geometric shape for the person's nose and added lines to create texture and emphasis. Which step in the art criticism process did Maria use?

- A. Analysis
- B. Description
- C. Interpretation
- D. Judgment

Laura found this method uninspiring and disliked the implication that there was one correct answer about art. She was not surprised that the Critical Thinking and Reflection standard for the visual arts had always been the lowest performing standard in her district.

During Covid, Laura sought some intellectual stimulation, and she found Julie Carmean's edX course at the National Gallery on Artful Thinking. Laura was, at the time, an art teacher at a K-5 school serving 800 students. "Julie's class blew my mind," she told me. Coincidentally, the art supervisor for the district resigned, and Laura applied for the job, which she said she would not have done if she had not taken Julie's class. Julie's class inspired her about the potential of art to add value to every subject area.

Laura got the job, invited Julie to come speak to the art teachers and introduce them to the Artful Thinking method, and provided them with *Making Thinking Visible* (Ritchhart, Church, & Morrison, 2011). Laura now provides her art teachers with in-person professional development that she runs herself, including 25 hours learning about and practicing Artful Thinking routines. She has also created an online training course based on five of the thinking routines: Looking 5 by 2 (modified from Looking 10 by 2), See-Think-Wonder, The Elaboration Game, Creative Wondering, and Reasoning with Evidence.

In order to receive professional development credit, teachers are required to show evidence that they have tried five thinking routines, and they are asked to use Artful Thinking routines in each project/lesson. The PTA purchased large whiteboards that make it possible to show high quality art images using the NGA's zoom tool described above.

In 2023-24, Artful Thinking routines became the teaching method used to meet the state art criticism standard in Hillsborough County, and every art teacher is expected to use these routines. Laura is also working on an assessment method that teachers will use to look at the effect of these routines on critical thinking. Laura is also talking to art supervisors elsewhere in Florida and spreading the word about Artful Thinking routines.

Laura reported that her art teachers love Artful Thinking. Why? Because it works for any age and because it is so powerful. "Powerful" is what they most often say. The students are being given a tool they can use for their whole life and not only in art class: the ability to slow down, look, think, and come up with their own ideas. (Getting teachers to be quiet while students look quietly for a full minute is the hardest, but critically important, part.) In short, teachers realize that they are "adding value beyond their union contract of 30 minutes per elementary class."

Art teacher comments. Here is what Alonso High School teacher Cristina Ruperto reported:

The looking 5x2 art criticism model creates a less intimidating way for students to share what they see in an artwork. I used this model for the first time this past fall, and the outcomes were excellent. Every student in my class, even the ones that usually struggle participated...I also discovered that students have great intuitions about the meaning of artwork even with abstract works like that by Bryon Kim called, "Synecdoche", which is the first piece that I looked at with my students. At the end they were more confident in themselves, and this gave them space during our group discussions to ask questions and talk more openly about how they perceived the artwork.

Here is what one elementary school art teacher Andrew Hasebrook wrote about what was easy and what was hard for his students when looking at this artwork below:



What surprised me was how willing the students were to participate! I thought they would complain about not getting to “do” art (and there were a few who did complain but, on the whole, no). What was challenging was to get the students to write down why they wrote what they wrote. For example, many wrote down, “queen.” I would have to challenge them with the questions, “What in the art makes you think it’s a queen?” It was also challenging to have the students look at the work silently for 1 minute two times. They want to immediately share with someone their thinking.

The Tampa Museum of Art has partnered with Laura on a federal grant bringing all of the Hillsborough students from “transformation schools” to the museum in 2023-24 where they practice Artful Thinking in the museum. These are the Title 1 schools, and they serve 18,000 students. Laura helped the museum to decide to use these funds for thinking routines.

The next four chapters focus on the *making* of art.

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Chapter 14

Arts PROPEL

1986-1991

The PROPEL Approach

Arts PROPEL is an approach to teaching and assessment in the arts, developed and field-tested between 1986 and 1991 by two research organizations, Project Zero and the Educational Testing Service, and by teachers and supervisors in the Pittsburgh Public Schools. PROPEL was co-directed from Project Zero by Howard Gardner and Dennie Palmer Wolf, and from the Educational Testing Service by Drew Gitomer. Many other researchers from PZ and ETS were involved and are listed in the 1991 [Arts PROPEL Introductory Handbook](#). Three other handbooks were published subsequently:

Arts PROPEL: A Handbook for the Visual Arts. (Winner & Simmons, 1992). [pdf](#)

Arts PROPEL: A Handbook for Imaginative Writing (Camp & Winner, 1993). [pdf](#)

Arts PROPEL: A Handbook for Music (Winner & Davidson, 1992). [pdf](#)

Although the PROPEL approach was created for the visual arts, imaginative writing, and music, this approach could be used for any school subject. And although the approach was designed for the middle and high school levels, it could certainly be adapted for students in the elementary grades.

Three Roles

The student in a PROPEL classroom assumes three interrelated roles: producer, perceiver, and reflector. The name PROPEL is an acronym in which these three roles are embedded: PRO for production, which includes an R for reflection; PE for perception, and L for the learning that results. Production refers to the process of using materials to create or perform. Perception refers to the close study of elements, materials, and works in a domain. Reflection refers to the practice of thinking about how works have been made and how they have achieved their effects.

Domain Projects

PROPEL students work on “domain projects” sustained over time, rather than performing single daily assignments. Each domain project focuses on a rich, central concept or problem in a particular domain, e.g., portraiture or composition in the visual arts, fiction or dialogue in writing, notation or ensemble rehearsal in music. These projects weave together production, perception, and reflection, with production always remaining the central focus from which perception and reflection flow.

Process-folios

Students keep longitudinal samples of their work in portfolios, often referred to as “process-folios” (e.g., Wolf, Bixby, Glenn, & Gardner, 1991). Unlike the traditional artist portfolios which are composed only of a highly selective collection of finished pieces, PROPEL portfolios contain not only final works, but also some of the drafts and revisions that went into the work. Visual arts portfolios contain sketches as well as finished works. Writing portfolios contain outlines, drafts, and final works. Music portfolios contain sheet music marked with notes for performance and recordings of successive rehearsals. PROPEL portfolios also contain samples of students’ reflection

on their own work and development. Reflective writing often occurs in journals, where students also include instances of work by others that they find interesting or provocative. Reflection is also encouraged through questions posed by the teacher.

Process-folios allow students and teachers to document the evolution of new understandings over time. Process-folios both record and stimulate growth and learning.

Assessment

Fundamental to the Arts PROPEL philosophy is the view that assessment should serve rather than simply reflect learning. Therefore, assessment dimensions are made public and students are constantly active in the assessment process. Assessment is carried out during as well as after a project: Assessment after the fact occurs too late to truly help the student. In short, assessment must not be considered separate from instruction. Good assessment is itself instructional. The ultimate purpose of any assessment, whether by teacher or by peer, is to build standards, principles, and understandings.

PROPEL assessment is qualitative. Just as the competence of skilled adult practitioners' work is assessed not by "objective" tests but by informed qualitative judgments (e.g., by book reviews, concert reviews, critique sessions in an art studio, etc.), the competence of PROPEL students' work is also assessed by informed qualitative judgments. Qualitative judgments need not imply idiosyncratic subjectivity: Standards promote shared judgments across the community.

PROPEL teachers engage in formal as well as informal assessment. They frequently hold critique sessions in which they assess students informally as they listen and respond to student participation in these critiques. Teachers also assess student work informally in regular classroom interaction. Such informal assessments are spontaneous and typically do not leave a paper trail. These sessions are important, because they provide students with ongoing feedback about their performance. These forms of assessment are also valuable for the teacher, as they provide detailed information that might not be picked up by a more formal means of assessment.

In PROPEL classrooms, students actively participate in their own assessment. Students are often asked to evaluate their own strengths and weaknesses, both in informal discussions with the teacher and in their journals. Self-assessment also occurs when student and teacher hold more formal portfolio review conferences, not only at the end of the term but throughout the term. In these conferences, students are asked to articulate what they have learned and what they perceive to be their strengths and weaknesses.

What Was New About Arts PROPEL?

Here are features of PROPEL that were new at the time:

- Process-folios rather than portfolios
- Making (production) remained central – in contrast to Discipline-Based Arts Education in which making was only one of four equally valued activities (along with art history, art criticism, and aesthetic philosophy)
- Regular opportunities for students to reflect on their work
- Insistence on qualitative assessment both formative and summative
- Use of assessment to inform learning

Impact

Studio Thinking

The core ideas of Arts PROPEL reemerged in the Studio Thinking Project featured in Chapter 17, particularly the roles given to perception, production, and reflection.

Mel Pontious Founds Student-Centered Learning in the Arts

Mel Pontious, a music educator and education consultant in Wisconsin, founded a group in 1992 that eventually came to be called the Student-Centered Learning in the Arts (SCLA) research group. Mel's goal was to get teachers together to discuss how to implement PROPEL-like ideas. The group consisted of 30 arts teachers ranging from K-12 and in five art forms: visual art, dance, music, theater, and creative writing. Funding for this was given by the Wisconsin Arts Board in collaboration with the Wisconsin Department of Public Instruction, with the goal of doing a year-long study based on Arts PROPEL.

After the funding ended, the music and art teachers continued to work together, meeting several times a year to study and refine the Arts PROPEL model. Teachers were from a cross-section of schools in Wisconsin – public, parochial, private, small and large. This group was unofficially under the Wisconsin Department of Public Instruction and aimed to abide by the 1994 Wisconsin State Standards in music and visual art. The group tweaked the PROPEL model somewhat, renamed domain projects as learning projects, developed a concept called the learning loop and introduced the concept of habits of mind, but the core ideas of PROPEL were retained.

After several years, teachers reported very creative responses from their students, working on challenging projects and sharing their ideas with one another. Teachers found that while, of course, not every student was creative, the students who were particularly creative “infected” the whole class. One of the music teachers Mel recruited to this group, who had had her students record and then critique their best efforts, said three things:

- The students were amazing.
- This is something she will do forever.
- She was more exhausted than ever but would never teach another way now.

Mel has reported this work in a book not yet published called *Student-Centered Learning in the Arts: Encouraging Students' Natural Disposition to Learn and Create*. Mel has retired and moved to Nebraska but continues to work with the Wisconsin group.

Jodi Brzezinsky is a practicing visual artist and visual arts teacher who is part of Mel's SCLA research group, and I spoke to her about the influence of Arts PROPEL on her teaching. Jodi told me that before she met Mel, and before she had heard of PROPEL, she was teaching in a manner highly consistent with PROPEL principles. She had her students evaluate their own work. She had them do daily reflections. She had them keep portfolios that included early drafts. And she was always fighting against the stereotype of art as something easy, something anybody can do, something that is not really about thinking and learning.

Jodi first bumped into the term Arts PROPEL when she began teaching at the Lincoln Center of the Arts in 1999, a public middle school in Milwaukee, Wisconsin. One of the other art teachers there, Dal Drummer, noted her interest in student reflection and self-assessment, in getting

students to think about their process, and in giving students agency over their own learning. He was familiar with PROPEL, had used it in his work, and showed her the PROPEL visual arts handbook. She was amazed to find how much the PROPEL approach was also her approach.

In 2006, Jodi moved to the St. Thomas More High School, an urban Catholic school in Milwaukee, Wisconsin, where most tuition is supported either by state or school scholarships. There she met Mel, who gave a keynote speech at a WAEA (Wisconsin Art Education Association) Convention. When she talked to him about her methods of art teaching, as well as her interests in creativity, he told her that this all sounded a lot like Project Zero. He invited her to join the Student-Centered Learning in the Arts, which met four times a year. In the group, Mel always pushed teachers to think about how they would “show” that they were fulfilling their teaching objectives – like instilling creativity in their students and giving them a voice.

Jodi teaches nine classes a year (Art Fundamentals, Drawing and Painting, Fibers, Ceramics, Metals, Film, Photography, Design, and AP Studio). In her beginning arts class, Art Fundamentals, students often want to be told what to do. This is what they are used to. But Jodi does not tell them. When students ask what they should do, she replies with, “What do you think?” She wants her students to recognize that they have a voice in their learning and can make decisions based on their reflections and evaluations. She asks her students to come up with their own objectives, their own questions. She guides them to become metacognitive about their process and their goals. For example, she offers them these sample questions to help them think of art making as research and to become aware of their own thinking:

How can I use _____ to show _____?
How will I combine _____ and _____ to get my message across?
How will _____ show _____?
What if _____?
What message do I want to visually communicate in my piece, how will I do that?
What do I want to experiment with and why?
What is my intended outcome for this piece? How will I show that with the media and composition?

What principles and elements will I use and how will I show that in my piece?
What are my outside influences?
What’s driving me to make this piece?

Her students do daily reflections in their sketchbooks. She explained:

Reflections can look like many things, planning sketches, practice, testing colors or media, written reminders or things you notice about your work in progress, etc. In your sketchbook, you are not trying to prove yourself, but you are developing your artist visual and thinking skills. Your sketchbook is helping you track that development and understand the importance of the process and that you have a say/directive in that process. Here are some questions to help guide you as you work on your assignments and reflect a sketchbook:

*What’s working?
What’s not working?
What did you notice?*

What needs to change?
What are your next steps?
What do you need to remember?
What do you need to practice or experiment with?

Jodi was impressed by the reflections of her students. She felt they were really able to recognize the steps they took in their art making, they recognized what they needed to do next, and their observations showed how much they were noticing. When she asked them if they found the reflecting helpful, almost everyone said yes and told her it was because they could use it as a resource as they work, and they could look back to previous reflections that could help with similar art problems. In a reflection about her courses, she wrote:

Having them do the reflections was one of the best things I could have implemented. They show me that the students understand things better. Every now and then I have to remind them to tell me about their thoughts, ideas and choices and the whys behind it and not just record what they did, but for the most part they are truly using this reflection time as a resource and feedback to themselves.

Her students keep portfolios that include their drafts. They evaluate the work in their portfolios using these three questions at the end of the semester:

What have you noticed about the progress / process of your work over the course of the semester?

Be specific, reference specific pieces/reflections/processes: craftsmanship, skill, technique, meaning, ability to develop and follow through with ideas, connections between assignments, risk taking, learning from mistakes.

What did you notice about the decisions you made over the course of the semester?

Were they more thought provoking? Were they better planned out? Did you reference past reflections, evaluations and assignments to inform you? Why or why not?

What have you learned from this class that carries over into your other classes/life?

Be specific about what it is you have learned and how you use it/plan to use it elsewhere.

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Chapter 15

Project Co-Arts

1991-1996

[Project Co-Arts](#), led by Jessica Davis, was a study of community art centers in economically disadvantaged communities. Community art centers in disadvantaged communities are an invaluable but fragile resource relying heavily on external support. These centers are required to document and evaluate their programs if they wish to continue to be funded. Project Co-Arts studied a wide swath of community art centers to determine what counts as educational effectiveness in these centers and to determine how centers assess their effectiveness. This project eventually came to be called the Safe Havens Project, and a full report can be found [here](#).

First Stage

In its first stage (1991-1993), Co-Arts developed an [assessment plan](#) for these centers that incorporated documentation of, and reflection on, the process of educating effectively. The key idea was that exemplary centers build reflection into their daily practice. Reflection focuses on the center's goals or objectives, what the center does to achieve these goals, and actual observed (often unexpected) outcomes. Reflection on outcomes might lead to rethinking of goals and hence, to a rethinking of practice.

In addition, the project created written portraits of six centers identified from the research as exemplary, adapting the methodology of portraiture as a group process (see Lawrence-Lightfoot & Davis, 1997).

The overall methodology was qualitative. It included the close review of written materials from 316 US centers, analysis of responses to 114 detailed questionnaires, 89 in-depth phone interviews, and 32 site visits. Finally, weeklong "residencies" were held at the six portraiture sites:

The Artist Collective, Hartford, CT
Plaza de la Raza, Los Angeles, CA
Another Safe Haven: Portraits of Boulevard Art Center, Then and Now. Chicago, Ill. [pdf](#)
East Bay Center for the Arts, Oakland, CA
Molly Olga Neighborhood Arts Classes, Inc., Buffalo, NY
Manchester Craftsman's Guild, Pittsburgh, PA.

The model and assessment tool that was developed resulted in *The Co-Arts Assessment Handbook* (Davis, Gardner, Soep, Gonzales-Pose, et al., 1993). [pdf](#)

Second Stage

In a second stage (1993-6), Project Co-Arts worked closely with ten community art centers (including four of the portraiture sites from the first stage) in seven states to implement, review, and refine the Co-Arts Assessment Plan. Centers piloting the plan became field experts maintaining organizational process-folios (described below), staging regular assessment forums (structured group reflection), and reporting to Co-Arts researchers and interested others.

An organizational process-folio was defined as “a folder or container filled with examples of the center’s ongoing process.” There were four parts to a process-folio:

1. **Teaching and Learning:** Examples of the center’s educational philosophy, curriculum, and student and teacher learning.
2. **Journey:** Examples of the organization’s history and vision for the future.
3. **Community:** Examples of the community served by the center and its relation to the center.
4. **Administration:** Examples of the organization’s administrative structure, including staffing, funding, and facilities.

The purpose of keeping such a process-folio was to: (1) facilitate ongoing assessment; (2) introduce new staff or families/students to the organization; (3) give funders a more rounded view of the organization and its practices; (4) facilitate staff development, and (5) inform partner relationships with collaborating organizations.

The researchers hosted ten symposia whose constituents included program officers, administrators from higher education, arts teachers in communities and schools, and non-arts teachers. These symposia included presentations and workshops on the Co-Arts model and assessment plan.

The guide to the process with examples from use by these various contributors is contained in *The Wheel in Motion: The Co-Arts Assessment Plan from Theory to Practice* [pdf](#) (Davis, Solomon, Eppel, & Dameshek, 1996), which features a tool kit with which to introduce and scaffold use of the assessment plan.

Impact

President’s Committee on the Arts and Humanities Report

The “Safe Havens” study was recognized in 1996 by the President’s Council on the Arts and Humanities. Davis was invited by Hillary Clinton to the White House to celebrate with numerous leaders of community art centers, many of whom had participated in some part of this work. The head of the council, Ellen McCulloch Lovell, told Jessica Davis that Co-Arts was an inspiration for Weitz’s 1996 *Coming Up Taller: Arts and Humanities Programs for Children* (from the President’s Committee on the Arts and the Humanities) compendium and awards. The following is an excerpt from Chapter 5 of that report:

Cultural leaders currently are searching for an approach to assessment that enriches understanding of effectiveness and provides programs with an ongoing tool for evaluating and improving their practices. To this end, Project Co-Arts at the Harvard University Graduate School of Education began a study in 1991 of community arts education centers with sustained programs in economically disadvantaged communities. The University published in-depth portraits of five exemplary centers in Safe Havens: Portraits of Educational Effectiveness in Community Arts Centers that Focus on Education in Economically Disadvantaged Communities. Harvard also developed and published in The Co-Arts Assessment Handbook, an assessment technique that uses assessment forums and “process folios” to describe effectiveness.

Arts in Education Program (Now Concentration) at the Harvard Graduate School of Education

The National Arts Learning Foundation in 2002 funded the Arts in Education Program at the Harvard Graduate School of Education to create portraits (again, with the group methodology developed in Co-Arts) of three Boston area schools that focus on the arts: The Walnut Hill School, The Conservatory Lab School, and the Boston Arts Academy. The 2001 collection of portraits of these schools, *Passion and Industry* (Davis, 2001), can be found here: [pdf](#).

In the next chapter, I report on a research project that did not develop an educational framework but instead critically examined a common claim about the value of arts education. While this project did not result in a framework, it led directly to the framework of the Studio Thinking Project presented in Chapter 17.

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Chapter 16

Reviewing Education and the Arts Project (REAP)

1997-2000

Lois Hetland and I co-directed Reviewing Education and the Arts Project (REAP) from 1997-2000. REAP was the first comprehensive and quantitative study of what the research on academic outcomes of arts education really shows.

The Claim Tested

The arts have typically played a relatively unimportant role in American schools. Arts educators have tried to strengthen the position of the arts in our schools by arguing that the arts can be used to buttress the 3Rs. The arts, they said, could help children learn to read and write and calculate and understand scientific concepts. The reasoning was clear: perhaps schools under pressure would value the arts because the arts strengthened skills in “valued” areas. This approach became a favored strategy in the United States for keeping the arts in the schools and for making sure that every child had access to arts education.

There is a danger in such reasoning. If the arts are given a role in our schools because people believe the arts cause academic improvement, then the arts will quickly lose their position if academic improvement does not result, or if the arts are shown to be less effective than the 3Rs in promoting literacy and numeracy. Instrumental claims for the arts are a double-edged sword. It is implausible to suppose that the arts can be as effective a means of teaching an academic subject as is direct teaching of that subject. And thus, when we justify the arts by their secondary, utilitarian value, the arts may prove to have fewer payoffs than academics. Arts educators should never allow the arts to be justified wholly or even primarily in terms of what the arts can do for mathematics or reading. The arts must be justified in terms of what the arts alone can teach.

Method Used

After a search for quantitative research testing the claim that studying the arts leads to some form of academic improvement, 188 studies were identified and submitted to ten “meta-analyses.” A meta-analysis synthesizes studies investigating a particular research question and statistical analyses are then used to determine whether the overall impact is statistically robust.

Findings

We examined experimental studies separately from correlational ones. While students who study the arts perform better academically than those who do not, this is a correlational finding and no kind of causal relationship can be inferred. When we examined just the experimental studies, we found no statistically reliable causal links. Here are the areas where we found no causal link: arts-rich education and verbal and math scores; art-rich education and performance on paper and pencil creativity tests; music instruction and reading; visual arts and reading; and dance and reading. We did find three causal links: music listening and spatial reasoning; instrumental music and spatial reasoning; and classroom drama and verbal skills.

These mixed findings should make it clear that, even in cases where arts programs add value to non-arts academic outcomes, it is dangerous to *justify* arts education by secondary, non-arts effects. Doing so puts the arts in a weakened and vulnerable position. Arts educators must build justifications based on what is inherently valuable about the arts themselves, even when the arts are shown to contribute secondary benefits. Just as we do not (and could not) justify the teaching of history for its power to transfer to mathematics, we must not allow policy makers to justify (or reject) the arts based on their alleged power to transfer to academic subject matters

The REAP research was published in 2000 (Winner & Hetland, 2000). The executive summary of the report can be found [here](#). For a discussion of the findings, see (Hetland & Winner, 2001).

Public Response

The publication of this report led to anger on the part of some arts funders and researchers who felt that the report would be misinterpreted as saying that because the arts did not support academic performance, they were not important.

In response to this, the REAP researchers argued that the arts offer a way of thinking unavailable in other disciplines. The same might be said of athletics. Suppose coaches began to claim that playing baseball increased students' mathematical ability because of the complex score-keeping involved. Then suppose researchers set out to test this and found that the claim did not hold up. Would school boards react by cutting the budget for baseball? Of course not. Because whatever positive academic side effects baseball might or might not have, schools believe sports are inherently good for kids. The REAP report argued that we should make the same argument for the arts: The arts are good for our children, irrespective of any non-arts benefits that the arts may have. Just as a well-rounded education requires education of the body through physical education, a balanced education requires study of the arts.

Impact

Despite the REAP report, arts funders and schools continue to this day to claim that the arts should be taught because they make students into better learners. However, artists and arts educators commented that they were grateful for the report. They were tired of feeling having to justify what they were doing by outcomes that they felt were irrelevant to arts learning.

Frustrated that the REAP report had not changed the conversation, we designed a new project. Instead of considering whether the arts bolster learning in other subject areas, we would investigate what the arts DO teach. Thus, one impact of REAP was that it motivated Studio Thinking, the project described in the next chapter.

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Chapter 17

Studio Thinking

2003-2006

From 2003-2006, I co-directed the Studio Thinking Project with Lois Hetland, Shirley Veenema, and Kimberly Sheridan.

If you ask someone what students learn in visual arts classes, you are likely to hear that they learn how to paint, or draw, or use a potter's wheel. Of course, students learn arts techniques in arts classes. But what else do they learn? Are there any kinds of general thinking dispositions (we call them "Studio Habits of Mind" or SHoM) that are instilled as students study arts techniques?

Following our REAP project discussed in the previous chapter, the Studio Arts team sought to shift the conversation about the utility of arts education away from test scores and toward broad habits of mind potentially developed in "serious" visual arts classrooms. The Studio Thinking team undertook a qualitative, ethnographic study of high school visual arts classes in two schools where students could concentrate in an art form. These are schools for students with interest and talent in an art form, where students spend at least three hours a day working in their chosen art form, and where teachers are practicing artists. These schools allowed the team to observe what was possible under better than typical conditions.

The research resulted in *Studio Thinking: The Real Benefits of Visual Arts Education* (Hetland, Winner, Veenema, & Sheridan, 2007). This book has been followed by two later editions, *Studio Thinking 2* (Hetland, Winner, Veenema, & Sheridan, 2013) and *Studio Thinking 3* (Sheridan, Hetland, Veenema, & Winner, 2022). These volumes have been adopted by many teachers in the United States and abroad as an organizing framework for their teaching.

The original *Studio Thinking* book and its two later editions focused on arts-centered high schools. We soon discovered that this approach was being applied at younger ages, ranging from kindergarten through middle school. This led to a fourth volume, *Studio Thinking from the Start* (Hogan, Hetland, Jacquith, & Winner, 2018). For this volume, we observed and interviewed approximately 100 teachers across the US who had found the Studio Habits concepts applicable to their classrooms and created ways to adapt this approach for younger ages. Taken together, To date, over 46,000 copies of the four Studio Thinking Project books, taken together, have been sold.

The Studio Thinking framework is not a curriculum, and it is not a how-to set of steps. Rather, it is a lens, a way to recognize the core thinking practices involved in making art and to develop classroom practices that stimulate and strengthen these kinds of authentic artistic practices. The framework has two parts: The Studio Habits of Mind (ShoM) and the Studio Structures.

The Studio Habits

After coding what we filmed in the arts classes, we concluded that we had found the following potentially generalizable habits of mind being taught. These are described below and also shown in the wheel below. We deliberately used a circular chart to indicate that the list is not hierarchical.

Develop Craft

Students learn conventional uses of tools (brushes, pencils, etc.) and materials (charcoal, paint, etc.) and to care for materials, tools, and the studio space. When we saw students being taught to develop craft, we also saw one or more of the other habits of mind being taught as well. Craft was never taught alone.

Engage and Persist

The teachers presented their students with projects meant to engage them, and they supported students in sticking to a task for sustained periods of time. Thus they were teaching their students to focus and develop inner-directedness. As one of our teachers said, she teaches them to learn “how to work through frustration.”

Envision (Mental Imagery)

Students were frequently asked to imagine (envision) what they could not observe directly with their eyes. Sometimes students were asked to generate a work of art from their heads rather than from observation. Sometimes they were asked to dream up possibilities for their works. And sometimes, when drawing from observation, they were asked to detect the underlying structure of a composition (e.g., one dominant figure, a diagonal composition, a symmetrical composition) and then visualize how that structure could be captured in their drawing.

Express (Personal Voice).

Students were taught to go beyond craft to convey a personal vision or meaning in their work. As one of our drawing teachers said, “Art is beyond technique...I think a drawing that is done honestly and directly always expresses feeling.”

Observe (Notice)

“Looking is the real stuff about drawing,” one of our teachers told us. The skill of careful observation is taught all the time in visual arts classes and is not restricted to classes where students draw from the model. Students are taught to look more closely and for longer periods of time than they ordinarily do and to see with new eyes.

Reflect (Meta-Cognition/Critical Judgment)

Students were asked to become reflective about their art making, and we saw this reflection take two forms. One we called Question and Explain. Teachers often asked students to step back and focus on what they had produced or how they had produced it. Their open-ended questions prompted students to reflect and explain, whether aloud to peers or teachers or even silently to themselves. Students were thus stimulated to develop meta-cognitive awareness about both product and process. The other we called Evaluate. Students received continual practice in judging quality in their own and others’ creations. Teachers frequently evaluated student art informally as they moved about the room as well as more formally in regular critique sessions. Students were also asked to make evaluations themselves – they were asked to talk about what works and what does not work in their own pieces and in ones by their peers. Thus students were trained to make critical judgments and to justify them.

Stretch and Explore (Push Playfully and Use Errors as Opportunities)

Students were asked to try new things – to explore and take risks. When errors resulted, as they will when pushing the limits, they were taught to see these as opportunities for new approaches and ideas. As one of our teachers said, “You ask kids to play, and then in one-on-one conversation you name what they’ve stumbled on.”

Understand Art Worlds

While art history was not taught in a systematic fashion in the studio classes we studied, teachers often asked students to look at reproductions of works of art that related in some way to the project in which students were engaged. For instance, when students were engaged in drawing two figures standing far apart separated by an evocative lonely space, drawing teacher Jim Woodside asked them to study the same kinds of atmosphere evoked by Diebenkorn and Hopper paintings. Students were also taught about the people and institutions that shape the art world – galleries, museums, curators, gallery owners, and how artists sometimes interact with other artists by making works that are responses to one another artist’s work. Students were taught to think about their relationship to the art community. In short, students were continually asked to make connections between their own role as student artists and the thinking and community behaviors of professional artists, both past and present. Students were being taught to think like artists.

As David Nelson, then the President of the Massachusetts College of Art and Design, wrote in his foreword to *Studio Thinking from the Start* (Hogan, et al., 2018, p. v):

...this book encourages a process rooted in the prospect that learning – artistic and otherwise – begins with the human capacity to “see”: to observe, to behold, to imagine”...The habits of artists in their studios can help all of us who teach to hone our techniques in every classroom engaged in the art of learning... the authors illuminate what many good teachers already do, they help us reflect on common practices that are truly beneficial, they make explicit some practices that for many are tacit, and they share what for many may be new practices.

The practices we observed are not a form of “school art” unconnected to what “real” artists do. As David Perkins wrote in the foreword to the first edition, (Hetland, et al, 2007, p.viii):

[The] studio activities are fully developed junior versions of what we would like learners to get better at and do more of later. Good studio activities capture the full motivational, technical, and creative dynamic of creating works of art as a professional artist or a serious amateur might do later in life...one might imagine studio work as mostly a matter of developing technical skills. Nothing of the sort. While this is part of the game, the learners’ struggles with their challenges cultivate a number of studio habits of mind, for example: persistence, envisioning possibilities, expressing, observing, reflecting, and stretching beyond the immediate and familiar....

How the Habits Flow into One Another

Here is how one of the Studio Thinking authors, Shirley Veenema, a long-time arts educator at Phillips Academy, presented Studio Thinking to her colleagues at Phillips Academy (Shirley Veenema, personal communication, January 27, 2025):

...developing craft is certainly important. You do need to know something of craft.... But that’s only part of artistic thinking.

For example, imagine you’re a student learning how to draw. You will likely want to know techniques for rendering light and shade and conventions for creating the illusion of form.

But you will also need to learn to closely OBSERVE and go beyond cursory looking. You will need to know how to ENVISION the underlying structure of your composition, and how your choices impact what you EXPRESS in an image.

Two other habits ENGAGE & PERSIST and STRETCH & EXPLORE address dispositions to learn. As you learn to draw you will also have to learn to persevere in your work and be willing to try things beyond what you already know how to do well. You have to learn to take risks. I always find myself urging students to recognize the potential of “mistakes” or “accidents.” And what about those scraps of paper left on the table? Might they be an interesting addition or path to pursue in one’s work?

It will also be important to learn to step back and REFLECT about your work and perhaps make judgments about your work in relation to the work of others.

And of course all this learning takes place within the larger field of art and it’s important to UNDERSTAND those ART WORLDS.

The Studio Structures

The Demonstration-Lecture

The Demonstration-Lecture is a brief, visually rich way of showing students what they will be doing – and this information is immediately applied.

Students-at-Work

During the major portion of a class, students work independently on projects introduced in a Demonstration-Lecture. The teacher circles the room and asks questions to students individually, questions designed to provoke reflections on what they are doing, and how and why they are doing it. This allows for individualized instruction, tailored to each student’s needs.

Critique

Critiques are often held at the end of class to allow students and teachers to step back and reflect on the work that has been done and to envision new possibilities.

These three structures can occur in several different orders: Demo-Lecture, Students-at-Work, Critique is one common order. Sometimes this structure is spread over more than one class. Sometimes this structure gets repeated within one class session. And sometimes the order varies – teachers may begin with a critique, move into an unstructured Students-at-Work session, followed by a Demonstration Lecture and a second Students-at-Work session, followed by critique or just by clean-up. The order is infinitely variable.

Exhibition

In the third edition, a fourth structure was added – the exhibition, an overarching structure that typically includes the other structures and usually extends beyond the class time and/or space. As students create an exhibition, they engage in Critique as they select which works to show; there may be Demo-Lectures on hanging, lighting, website design, etc. (sometimes from outside experts). And the Students-at-Work structure is involved as students plan, hang, host, and clean up their exhibition.

Impact

As mentioned, the Studio Thinking framework is not a curriculum but instead an analysis of the way artists think – put forth as a desired end-state or outcome for learning in the visual arts. It is a framework built from the study of the pedagogical practices of studio art teachers. The Studio

Thinking lens challenges educators and students to move away from a focus on following instructions and final *products* to a focus on the *processes* of student thinking that are not so easy to see. Our books show how teachers have put into practice ways of teaching that call on each of the Studio Habits of Mind.

Teachers all over the US have adopted this framework for students not only at the high school level but also at grades pre-K-8 as well as in museum settings. As profiled in *Studio Thinking from the Start* (Hogan, et al., 2018), teachers have told us that this framework is a powerful advocacy tool: It helps parents, administrators, and community members understand the real benefits of arts education – which is *not* improved test scores but rather the development of broad habits of mind and learning to think like an artist.

Many teachers have told us that our framework has changed how they teach, causing them to develop projects that would require the use of one or more of the Studio Habits of Mind. Some teachers have also said that the Studio Thinking framework named what they were already doing. The best visual art teachers did not need this framework to teach students the thinking dispositions that artists use, because they were already teaching in this way. Yet even some of these have expressed appreciation to us for naming the habits, making what they were doing explicit. Many told us that the framework gives visual art education “legitimacy” in schools by showing administrators, parents, and teachers of other subject areas the kinds of thinking involved in making art.

Impact on a Studio Thinking Author’s Teaching

Here is how, in another presentation to the Phillips faculty, Shirley Veenema describes the influence that Studio Thinking (as well as Teaching for Understanding and Multiple Intelligences) have had on her teaching at (personal communication from Shirley Veenema to Ellen Winner January 30, 2025):

My teaching has always been influenced by my work at Project Zero and currently the Studio Thinking work has proved to be the most influential.

In planning, I used three frameworks as “advisors” for three areas of focus: Teaching for Understanding for learning goals, Multiple Intelligences for considering the learners in my class, and Studio Thinking to focus on thinking. Obviously all three areas wove through my day-to-day teaching, but considering three distinct strands helped me easily take snapshots over time of how my interactions with students were going, what needed to be emphasized more, etc.

I find that teachers tend to either love or hate frameworks. My own feeling is that rigid use makes a framework a drag on creatively thinking about my classes but frameworks are really useful to help me firm up my courses. When I design my term projects and their sequence, I tend to follow my intuition and then use frameworks to clarify my thinking. In fact, I imagine going into a meeting with “advisors” to help me clarify my goals and be sure my syllabus addresses those goals. Each framework is an “advisor.” For the past two years, the Studio Thinking framework has been central in this process.

For example, last year using the Studio Thinking framework helped me realize that I was not doing enough with envisioning in my classes. I was assuming students could jump right into a project, so this year I’ve added specific envisioning tasks to all my projects. The year before, I realized I needed to emphasize reflection more.

Planning my classes for this year again brought home why I find frameworks useful. I spent most of the summer in the studio working on my own art work, and when it came time to prepare my classes I was stuck with how I, as an artist, fluidly call into play the eight habits of mind as needed in my work. Actually, one interesting aside is that when we showed several artists the Studio Thinking framework while it was in development, they noted how closely the framework matched the kind of thinking they did.

Now think about how different it is for a student who is not an expert – someone who is taking a beginning art course, someone who has no background, or is anxious because they think they have no ability. These students likely won't be as expert as I am, but if I have a clearer definition of expert thinking I probably can more explicitly teach to that thinking. And that's what the real benefit of the Studio Thinking framework has been for me.

Shirley went on to talk about how the Studio Thinking framework might apply across subject areas:

For example in music, Observe might become "Listen and Observe."

In social sciences, observation and envisioning might be altered to fit the process of researching a topic and coming up with a hypothesis.

It's also interesting to ask some "what if" questions:

For example:

What if other disciplines used a studio classroom model?

Might there be relationships among habits in particular disciplines, for example between envisioning in the visual arts and in geometry?

And finally, what about interdisciplinary teaching and learning? I personally find this question intriguing. Does having the clear language to describe thinking in the visual arts make for a more successful interdisciplinary course? I personally think so, because with language to describe my thinking goals, I can be clearer with my teaching colleague about those goals and we can discuss where there might be shared goals.

So lots of questions about teaching and learning, lots to think about – actually it's not unlike being an artist.

Below I describe what we know about the Studio Thinking framework's impact on arts education policy, arts educators, preservice arts education curricula, museum educators, and on educators in music, theater, and dance, as well as in non-arts subject areas.

Impact on Teaching for Artistic Behavior (TAB) Art Educators

Arts educators using the [Teaching for Artistic Behavior](#) (TAB) approach to art education have often told us that they have integrated the Studio Thinking framework into their teaching. TAB is a growing movement in the US advocating for choice-based teaching in the visual arts, and was incorporated as a nonprofit organization honoring children as artists in 2007. The TAB FaceBook forum has 10,697 members as of June 27, 2023; forum users are not necessarily TAB users, but they are at least curious about TAB. Students in a TAB classroom typically generate their own

projects (as do artists) rather than follow assigned projects, though levels of choice vary from educator to educator. All TAB educators however abide by the question and principles, as stated on their [website](#):

What do artists do?

Artists practice. Similar to musicians and athletes, artists practice constantly, observing and evaluating outcomes to determine their next steps.

Artists make art about things that matter to them. Expressing messages and emotions, documenting identities, and spearheading social change are some of the reasons artists make art. Artists work with ambiguity. Knowing (and sometimes not knowing) where to go with their work, artists understand that this is part of the artistic process.

Artists reflect. Artists learn to look closely at their work, ask questions of themselves and others, and evaluate progress to determine when the work has met its purpose.

Artists build community. Art studios and galleries are gatherings of creative people who share their ideas, work and perspectives with each other and the greater community.

The child is the artist.

In PreK-16 TAB classes, students experience the visual arts as artists responsible for their learning. Following introductions to available media, student artists advance their individual artistic processes through exploration and discovery, inquiry and ideation, skill development and artmaking, reflection and revision, self-evaluation and presentation. Students learn to persevere through challenges and to trust their own judgment while receiving input from, and offering feedback to, peers and teachers. When students self-direct their work, they engage deeply with their learning because the work's purposes align with their values and interests.

The classroom is the child's studio.

TAB classrooms are highly structured studio environments with clearly delineated expectations for self-directed learning in choices of varied work spaces. Available tools and art materials are introduced to students who can then access and arrange these materials independently to initiate and explore their artwork.

TAB is by now an international community of educators who meet regionally to reflect together on best practices. TAB teachers often explicitly introduce their students to the Studio Habits of Mind: if children are to be treated as artists, they need to develop the thinking habits of artists. In their book on TAB, Katherine Douglas and Diane Jaquith (2018) write,

"The Studio Habits of Mind are well matched with TAB art programs because they offer precise language to describe students' thinking and actions in every aspect of art class. These eight thinking dispositions describe the types of decisions made by the artist to move an idea forward through experimentation and discovery, expression, revision, and connections in the world" (p. 70).

Many TAB teachers evaluate students' progress using the Studio Habits of Mind to identify strengths and areas in which the student needs to grow. According to Diane Jaquith, when assessment comes up in TAB FaceBook forum discussions, many responses refer to the Studio Habits of Mind. In Diane's words, "The habits really are the best measure of a student's artistic growth" (personal communication, April 4, 2023). TAB does not have information on the precise number of TAB teachers using the Studio Thinking framework. However, Diane estimates that the number is in the thousands.

The current president of TAB Inc. Jennifer Ferrari, wrote in an article in *School Arts*, that “Most TAB teachers build their curriculum around the SHoM” (Studio Habits of Mind). She has elaborated on this in our discussions, stating that “There are many TAB teachers who incorporate SHoM into their curriculum. It [SHoM] naturally aligns with TAB philosophy (in particular, the pursuit of the question ‘What do artists do?’), as well as gives language and structure to the content presented.”

To find out more about the prevalence of TAB teachers’ use of the Studio Thinking framework, Lois Hetland, Jennifer Ferrari, and I invited all those on the TAB listserv (which includes all those who have ever attended the TAB Summer Institute and those who independently sign up to be put on the TAB mailing list), to complete a brief survey. The survey went to 1197 potential respondents to whom we posed these three questions:

- How long have you identified as a TAB teacher?
- Do you use the Studio Thinking framework (Studio Habits of Mind) in your teaching?
- If you answered yes, please tell us how you have incorporated this framework into your TAB teaching.

The survey was completed by 137 respondents (an 11 percent response rate). The 11 percent response rate was disappointing. It is possible that the low response rate was due to the survey coming at the beginning of the summer, when teachers were away from their computers and taking a much needed break. Of course it is also possible that those who do not use the SHoM framework were less likely to respond than those who do use the framework. If so then we cannot generalize our findings to all TAB educators. We can only say that the impression of the TAB leadership is that the majority of TAB teachers do use the SHoM framework. With these limitations in mind, we found the following:

Time identifying as a TAB teacher ranged from just becoming interested in TAB to 30 years, with a mean of five years. The majority of respondents ($n=113$, 82 percent) said that they used the SHoM framework. Of the 24 teachers who said they did not use the framework, one wrote “I plan to start,” one wrote “I do use them informally at times,” and a third wrote “I try to! It’s a struggle when I only see the kids once a week. They slip in between so there is A LOT of repetition.”

A t -test showed that the difference between 24 (non-users) and 113 (users) was highly significant ($p < .001$), with a medium-sized Cohen’s d of .38. Cohen’s d is an indicator of how strong the finding actually is.

Sixteen teachers were just becoming interested in TAB or had identified as a TAB teacher for under a year. Of these, 9 used the SHoM framework, 7 did not, showing that new TAB teachers were no more likely to use the SHoM framework than not to use it. But of those identifying as TAB teachers for over one year, 104 teachers used the framework compared to only 17 who did not use it.

Teachers listed many ways in which they use the SHoM framework. The list below captures the major uses they described:

- To assess growth
- To create assessment rubrics
- To think about big ideas for units of study
- To contextualize essential questions

- To plan curriculum
- To set goals for students
- To create artistic challenges
- To explain that the product is not the goal, it's the artistic behavior that is the goal
- To help students see the intellectual benefits they get from making art – which is uplifting to them; to help them see the relevance of the skills gained when working in a studio
- To connect to thinking about the creative process
- To help students understand how artists think
- To get kids to connect the habits to everything they do

If those who responded are representative of TAB teachers in general, we would conclude that TAB teachers are significantly more likely to use than not to use the SHoM framework.

Impact on Arts Education Policy in the US and in Israel

In 2009 the National Art Education Association, the world's largest professional visual arts education association and a leader in educational research, policy, and practice for art education, published [Learning in a Visual Age: The Critical Importance of Visual Arts Education](#) (updated in 2016). This report highlights Studio Thinking as defining what high-quality arts education provides. Studio Thinking was a resource text for the writing of the 2014 [National Visual Arts Standards](#), which highlight the complex thought processes involved in the arts. The framework has been used as a tool to promote professional dialogue across local, district, state, and university contexts and across arts disciplines. In the politically charged atmosphere of accountability, tight budgets, and competing agendas, Studio Thinking can help explain and justify arts programs to parents, administrators, and groups who control resource allocation to schools.

Israel. Studio Thinking plays a “pivotal” role in a new art education curriculum developed in Israel in 2022-23, according to Sigal Barkai (2025), who oversaw its development and who heads the Arts Wing in the Israeli Ministry of Education. She points out that the new curriculum is a departure from an earlier more rigid curriculum developed in the 1970s and 1980s. She also notes that the new curriculum is consistent with all eight of the Studio Habits of Mind, including assessment based on students' self-reflection and students' capacity to accept and learn from criticism, and valuing experimentation by students that may not result in a final product.

Impact on Teacher Training in the US

Mills College. David Donahue taught at Mills College in Oakland, California, for 23 years, educating future teachers of art, English, and social studies from grades 6-12. He is also the co-editor of *Artful Teaching* (Donahue & Stuart, 2010; 2024). He encountered PZ ideas first from Jen Stuart, an instructor at the California College of the Arts and later his Mills colleague, and then from attending the PZC around 2003. Encountering the Studio Thinking work changed how he thought about teaching future teachers. In their curriculum and instruction course for secondary school teachers, David and Jen used the Studio Habits of Mind as a framework that connected disciplines to one another and provided coherence to the course. They asked teachers to think about what each of the Studio Habits of Mind would look like in their own discipline – e.g., what is OBSERVE in history, what is OBSERVE in writing, what is STRETCH & EXPLORE in foreign language learning, etc. They found this approach to be generative and to allow teachers to break out of their disciplinary boundaries and talk to one another across disciplines.

The SHoM also helped teachers see how teaching and learning goals were about more than discrete bits of knowledge; they were about what one could do with knowledge. The ability to

observe, for example, is not just an objective or standard at a certain grade level, but a disposition or way of being, which spirals through every grade level and throughout life. In this way, the SHoM helped future teachers see that what they were doing was preparing students for a lifetime of learning.

George Mason University. Faculty at George Mason University use the framework as a way to focus on thinking throughout the art education curriculum. Faculty report that this has helped shift teachers' thinking away from specific projects, media, and techniques towards focusing on learning outcomes from these projects.

Other Art Education Departments in the US. The framework has also been used in art teacher education at the Massachusetts College of Art and Design, Pennsylvania State University, and Northern Illinois University. The Center of Creative Arts (COCA), an arts center in St. Louis, Missouri, uses the framework for faculty development in visual arts, theater, dance, and voice.

Impact on Schools in the US

Alameda County Public Schools, California. The spread of the Studio Thinking framework through the Alameda County schools is documented in Chapter 55, because this school system uses more than one PZ framework. But here is what As Louise Music, then Executive Director of Integrated Learning at the Alameda County Office of Education, wrote in the foreword to the second edition of *Studio Thinking* (Hetland et al., 2013).

...the Alameda County Office of Education (ACOE) developed a partnership...with researchers from Project Zero, faculty from the Center for Art and Public Life at the California College of the Arts, and teachers and administrators in the public schools of Oakland, Berkeley, and Emery. Our goal was to pilot the newly minted and not-yet-published Studio Thinking framework. Teachers found that using the Studio Habits of Mind deepened student and teacher engagement and continuously informed decisions about art-making and program improvement. The Studio Habits became a foundation for discovering interactions across subjects that then served as starting points for the purposeful and reflective practice of arts integration. Over time, we formalized what had been learned from Studio-Thinking-in-practice into a certificate program of courses that builds the capacity of K-12 teachers and teaching artists ...for arts integration...[Alameda County has used] Studio Thinking in arts integration – to bring artful thought and attitudes to bear on real-world problems and projects, both in arts classrooms and across the curriculum (p.v)

In September, 2012, the Alameda County schools created a virtual network of teachers, teaching artists, and school leaders in many states. The participating schools met monthly, hosted by the Chicago Teachers' Center at Northeastern Illinois University. Louise wrote in her forward:

In these meetings, they reflected on how the Studio Habits of Mind relate to “good professional practice, to planning and assessment in the arts, and to making visible the essential role of the arts in a complete education for every student” (p. vi).

San Francisco Friends School, California. Since 2002, Caren Andrews has led the elementary visual arts program at San Francisco Friends School, a K-8 Quaker school, along with Jen Stuart, mentioned previously, who taught the upper grades. Caren learned about Studio Thinking in 2007 when she attended the PZC. Her teaching has been deeply informed by the Studio Thinking Framework, and she was one of the teachers featured in *Studio Thinking from the Start*, with a co-authored chapter on classroom organization.

Caren resists overemphasizing vocabulary like the Studio Habits of Mind without anchoring them in experience. Rather than isolate habits such as “engage and persist” or “reflect,” she allows them to emerge organically across projects and over time. “They pick the language up,” she notes, recalling how students begin to articulate their artistic process using Studio Habits during critiques and exhibitions. For example, students might describe their challenges working with clay and proudly explain how they persisted – a reflection of how the habits have become internalized. “Thinking and making are equivalent in this room,” she says, describing how her students track their learning journey visually across the academic year.

Utah Public Schools. The Brigham Young University (BYU) Public School Partnership, a partnership between the School of Education at BYU and public schools across Utah, was founded in 1987 and is one of the longest standing university-public school partnerships in the United States. In 2005, a visionary philanthropist in Utah, Beverley Taylor Sorenson, made it possible for arts education in Utah to be funded in perpetuity. Because of her, the [BYU Arts Partnership](#) was formed (as part of the BYU Public School Partnership), with the motto “Every child, every art.” The goal was to connect Utah’s public school teachers with BYU’s teacher education programs so that, via professional development, classroom elementary teachers could learn to integrate the arts (visual art, media arts, literary arts, music, dance, drama) with language arts, social studies, science, and math.

Arts and education faculty at BYU joined with arts educators, classroom teachers, and school administrators to create arts integration in Utah elementary schools. Over 1,100 K-6 teachers and principals participate in the partnership’s professional development programs in cross-curricular arts education workshops every year. Thus, tens of thousands of students are reached each year. In the first decade of the BYU Arts Partnership (2006-2015), over 150,000 students participated in programs in arts integration.

I spoke to Cally Flox, Director of Arts Education for the BYU Public School Partnership and Founding Director of the BYU ARTS Partnership, and Alyssa Dixon, program coordinator for the BYU ARTS Partnership. Cally told me that she first learned about PZ through Howard’s writings, and then from the first *Studio Thinking* book (Hetland, et al., 2007). As she read this book, she realized that the best elementary school classrooms she had seen were run consistent with the Studio Structures and the Studio Habits Mind – with the majority of time spent on the Students at Work Studio Structure. And so she invited Lois to be a keynote speaker at her Learning Edge conference in order to help general classroom teachers understand how to organize their classrooms much like art classrooms. Hearing from Lois helped teachers understand how to implement arts-integrated pedagogy using the Studio Structures and Studio Habits of Mind.

Teachers (both classroom and arts) are also introduced to the Studio Structures and Habits of Mind in professional development classes at the [Arts Leadership Academy](#). Teachers can choose to integrate their classes with one of six art forms: visual art, music, literary arts, dance, drama, and media arts. While they are exposed to all six art forms, they are encouraged to focus on one, based on their strengths and interests. Most often, teachers integrated English Language-Arts with an art form, though some worked with math, science, and social studies. These professional learning experiences encourage teachers to find their artist voice and teach like an artist.

Cally explained that introducing teachers to the Studio Structures came first, in order to help them change their practice. Once they understood the Studio Structures, they could see a natural connection to the Habits of Mind. They came to see the Habits as the natural byproducts of running one’s classroom like a studio art class, with Students at Work taking up the largest portion of

classroom time. Classroom teachers began to plan their lessons using this [planning worksheet](#) with these essential questions:

- What are the students going to do?
- What do they need to know to do it well?
- What questions will evoke critical thinking and problem solving?

They also used [this worksheet](#) with essential questions for thinking about integrating all eight Habits of Mind into their lessons.

Teachers tried out this new way of teaching, came back, and discussed what they learned and what needed to be revised. Classroom teachers immediately took to this way of teaching and said they found it more “fun” and rewarding to teach this way. On [this page](#) of the BYU ARTS Partnership website, one can find over 100 integrated lesson plans.

Teachers come primarily from five school districts (serving one third of the state of Utah). This professional development was voluntary, and while only a small percentage of teachers sign up, this training goes “deep.” Cally told me that they got the best teachers in the state learning about teaching like artists and subsequently changing their teaching paradigm. Of note: A number of classroom teachers then went on to earn credits to become arts educators or administrators who support the arts.

The BYU ARTS Partnership also provides professional development to arts educators, who come to BYU twice a year. A piece of their professional development includes the Studio Structures and the Studio Habits of Mind.

The ARTS Partnership has recently begun to include a focus on PZ thinking routines and Cultures of Thinking (CoT). Cally saw how CoT immediately connected to the Studio Habits of Mind and Studio Structures. In 2022, Jim Reese gave a keynote address at the Partnership’s Learning Edge Conference for Administrators and conducted a professional development day with the arts leadership team. Teachers were introduced to thinking routines to deepen arts integrated instruction. As of January, 2025, 60 teachers across the state have taken the PZ online CoT course and are now implementing this into their arts-integrated teaching.

Here is an interesting note: Some schools were opposed to arts integration but welcomed CoT. Cally said that learning about CoT opened the faculty and administrators of these schools to arts integration. Why? Because they were introduced to thinking routines involving the arts, and this helped them see how the arts are about thinking. Thinking routines involving the arts helped them focus on the *process* of art making, not just the product, which demystified the creation of art, framing the arts as a skill for all students.

Cally said that PZ played a very important role in all of this. They needed the imprimatur of PZ, she said, to convince people that what they were doing was legitimate. She said that when non-PZ experts were brought in for keynotes or professional development, their work always seemed to connect to PZ ideas. “All roads lead back to Project Zero,” Cally said. She offered the following example. “Michael Fullan was a frequent presenter in our districts, and when he said ‘the arts are the most direct route to deep learning,’ we turned to the research in Teaching for Understanding, Studio Structures, Habits of Mind, and Cultures of Thinking to develop teachers who could produce deep learning in and through the arts.

Impact on ArtCore: Modules for Arts Integration

[ArtCore](#) is an organization based in Oregon that creates modules that schools can use for arts integration. These modules have the Studio Habits at their “core.” This organization also runs professional development for teachers on integrating the arts with academic subjects, again using the Studio Habits.

Impact on Schools in Singapore

I learned about the impact of Studio Thinking in talking to four art teachers from Singapore.

Kok Boon Lim (he goes by Boon) is a Master Teacher of Art at the [Singapore Teachers' Academy for the Arts](#) (STAR), part of the Singapore Ministry of Education. STAR was set up in 2011 to support and connect Singapore art teachers and to provide them with professional development. Thanks to Boon, STAR has been influenced by the Studio Thinking framework. This framework is seen as aligned with an inquiry-based approach to art education, which is valued. The Studio Thinking framework is also valued because it provides a common language that teachers can use to talk about student learning.

Like most countries, Singapore does not mandate how art is taught. The Ministry of Education cannot make the Studio Habits approach something required of all art teachers. Teachers need to buy into this approach. And this is what Boon has been working on.

First a little background about Singapore schools. There are a total of 344 schools in Singapore, divided into three levels: elementary, secondary, and junior college. Elementary school students get one hour of art per week. Lower secondary school students (ages 13-14) get 60-70 minutes a week; upper secondary students (ages 15-17) are not required to take art but can take it as an elective, and this would be for 2.5-3 hours a week. At the junior college level, art is an elective; students opt to take art as one of their subjects and have art classes on average 2.5-3 hours a week.

There is also a Talent Development program, called the Art Elective Program (AEP), for both the secondary and junior college level where students apply to study art. There is also a School of the Arts (SOTA) Singapore for ages 13 through high school which offers the IB program.

Boon was first introduced to Studio Thinking when he came across the first edition (Hetland, et al., 2007) at the library and was intrigued. Then in 2013 he attended a NAEA (National Art Educators Association) Convention in Fort Worth, Texas, attended Lois Hetland's presentation, and bought the second edition of the book (Hetland, et al., 2013) to find out what might be applicable in the Singapore context.

Art teachers in Singapore had been influenced by Disciplined-Based Arts Education (DBAE), an approach very different from Studio Thinking. Boon and his colleagues at STAR were looking for new approaches. After reading *Studio Thinking 2* and realizing the importance of teaching for artistic thinking, he invited Lois Hetland to Singapore in February 2014 to talk about the Studio Thinking framework. She met with at least 130 Singapore art teachers. She visited an elementary and secondary school, met with Boon's colleagues, conducted a workshop for teachers, and gave two open lectures.

Many Singapore teachers had already been using “habits of mind” as developed by Art Costa, co-founder of [The Institute for Habits of Mind](#) in California founded in 2008 (Costa & Kallick, 2008). Therefore, it was difficult to get teachers to start thinking about habits of mind in the arts. In trying to convince art teachers that the Studio Thinking approach could improve the quality of art

teaching, Boon realized that teachers would really need to read the book to understand this approach. There was not much on the internet in 2014 about this approach that they could learn from. It would not have been easy for them to read the book: local book stores did not yet carry it, and it was not in either the National Library or on Singapore's version of Amazon (Amazon SG). Teachers would have had to order the book from Amazon US or the equivalent. Eventually the Ministry of Education bought two copies of the 2007 edition for their library. It was also not possible to fund teachers to attend the PZC summer institute.

In 2018, all of the syllabi in Singapore were revised, and there was not going to be much description about Studio Thinking in the syllabi because of concerns about getting copyright permission. So instead, in 2021, Boon worked with licensed content from Teachers College Press to create a printed poster (see below) that would help teachers understand Studio Habits of Mind (from *Studio Thinking*). The poster was in the teachers' learning portal for two years.

Boon and his colleagues approached art teachers at five schools who had some knowledge of Studio Thinking. He invited them to use the poster and try out the Studio Thinking approach for a defined period of time, such as for an eight-week art project. These teachers started using the Studio Thinking approach and saw it as a way to advocate for the importance of art education. They told Boon they were using Studio Thinking in two ways: for lesson planning using the structures of teacher presentation (Demonstration-Lecture), Students at Work, Critique; and for using the language of Studio Thinking in their formative assessment conferences with students. Some teachers used it more extensively than others. Some of the teachers appreciated this approach, because they believed the Studio Habits can be used in other aspects of life and thus will help students later on. However, the teachers told Boon that the poster was not enough for them to learn this approach, and so Boon and his colleagues created slides and reflection worksheets – whatever the teachers said they needed.

Currently Boon estimates that 10-12 schools in Singapore are using Studio Thinking in their art classes. Singapore just released its refreshed 21st century competencies framework, and Boon is trying to connect the Studio Habits to these competencies so that more teachers will want to use Studio Habits as one of the ways to improve the quality of art teaching and learning.

Boon is now thinking about possible ways to get more buy-in for teachers to be reflective and improve their classroom teaching practices. One very promising idea is to create a learning community network where teachers come together five times a year and study a particular topic. Studio Thinking could be one of these.

Boon's experience really shows how important it is for teachers to work together in a learning group to study a new approach, practice it, and talk about their successes and failures with their learning group. What I have learned through my many interviews for this report is that teachers working together in this way is vital for really understanding an approach, and then being able to teach other teachers this approach.

Boon Eng Lim is the Head of the Faculty of Visual Arts at the School of the Arts in Singapore (SOTA), an IB school. She heard about the Studio Thinking framework a number of years ago, while researching arts pedagogies at the Arts Education Branch of the Ministry of Education in Singapore. Her work with Studio Thinking shows how taking one key idea from a multi-faceted project can be sufficient for changing how one teaches. Rather than giving the language to students, she used it to focus her own thinking and planning.

At SOTA, Studio Thinking is part of the culture of the arts faculty – visual art, music, dance, literary arts, and film. Tien Yang, Dean of Arts at the school, has featured Studio Thinking in staff development. There is a felt need for the arts faculty to have a common language and common approach to teaching, and the arts faculty meet for two hours a week to discuss what particular habits of mind look like in each art form.

One of the things the visual art teachers have developed is a “stretch” task (a task that is open-ended). At the end of the year, after students have learned about the use of various media, e.g., watercolor, oil, etc., they are given a choice of themes, such as Urban and Nature, In My Neighborhood, Travel, and People. They are then asked to create a composition on that theme using a medium or combination of mediums of their choice.

Reflection is a habit of mind that is emphasized by asking students to keep a research journal. Here they document their processes, their intentions, and the next steps they plan to take in connection to each project they work on. They can download works by artists, but then they need to discuss how this artwork relates to their own intentions.

Perhaps it is Stretch and Explore that is most stimulated by something else the students must do: keep a visual journal. For one hour every week, students sketch in their visual journal in response to a prompt given by the teacher (e.g., “positive and negative space,” for example). The journal is ungraded so that students are able to take risks. At first, however, students resisted this, saying they did not want to spend time working on something for which they would not be graded. However, Boon Eng told us that some students who do not do well in more structured graded assignments do very well in visual journaling, probably because these journals are low stakes and thus safe for experimentation.

What Boon Eng Lim has done is transform her teaching by getting students to reflect using one of the Studio Habits of Mind, and to stretch and explore by using another of the Studio Habits of Mind. She did this without naming the habits for the students but by instituting two new components: a research journal and a visual journal.

Cheak Yen Hui is an art teacher at Regent Secondary School, a middle school in Singapore, where she teaches students from ages 13-16. She was introduced to me by Boon as one of the art teachers in Singapore using the Studio Thinking Framework. Yen Hui told me that her school had asked teachers to implement the 16 habits of mind proposed by Art Costa and Bena Kallick (Costa & Kallick, 2008). These habits of mind include ones similar to the Studio Habits of Mind (for example, “questioning and posing problems” (like our Reflect), “persisting” (like our Engage and Persist), and “taking responsible risks” (like our Stretch and Explore). Her introduction to Studio Thinking came from a conversation with Boon, where he showed her the poster he had created depicting the habits and asked her for her input. Already having thought about the concept of habits of mind, she was excited to think about habits of mind in the arts. She did not have any *Studio Thinking* books, but she was able to read part of *Studio Thinking from the Start* in Google Books. She was particularly struck by how art teacher Demetrius Fuller created what he called “HOMie characters:” He associated each habit of mind with a particular kind of character (e.g., for Stretch & Explore – an Inventor-Innovator; for Observe – an Eagle-Eyed Detective) (as shown in Hogan, et al., 2018, pp. 19-21).

Reading this portion of our book stimulated Yen Hui to reshape how she was teaching art. “This was fantastic,” she said. She told us that she had been very focused on the final outcome in an art project, and on teaching technique. No drafts were collected, and no thinking was recorded.

She spoke directly to students as they were working, asking them about their intentions, and probing them about their work by posing envisioning questions like “what if you moved this here?” She feels that asking her students to stop and think as they work helps them go beyond what they had initially set out to do. She found that some of her students even began to stop themselves (without being asked) and think about what they were trying to do, recording their thinking on their drafts.

It is important to note that Yen Hui implemented these changes entirely on her own. She attended no professional development workshops on Studio Thinking. She never saw this approach modelled by another teacher. Yet she took away and implemented two central ideas: getting students to reflect about their intentions and decisions as they work, and getting students to experiment and take risks in an ungraded visual journal.

Wang Mo teaches art to 13-16-year-olds at Nanyang Girls High School in Singapore, including those in the Art Elective Programme (AEP), a Singapore Ministry of Education flagship programme for art education. When she first started teaching in 2014, Studio Thinking had become well known, and the Singapore Teacher Academy was recommending that teachers use it in their practice.

Prior to Studio Thinking, she told me, art teachers were focusing on teaching skill. When teachers did use the Studio Thinking framework, they began to focus on dispositions as well. Mo told me that she and the other three art teachers at her school use the framework but cautioned to add that this approach is not used in all schools. All of the teachers in a school are expected to use the same approach – for fairness to the students.

In designing their art curriculum, teachers at Nanyang used not only Studio Thinking but also Design Thinking and Teaching for Artistic Behavior (discussed earlier in this chapter).

At Wang Mo’s school, Studio Thinking has strongly influenced the kind of formative assessment students receive. Wang Mo is in charge of assessment, and she drafted the assessment rubric and then asked for feedback from the other teachers. This rubric, called Radar Chart Assessment, is used to assess students’ art sketchbooks. It has been in use for three years but is still in the pilot stage as the teachers receive student feedback. The names of the dispositions are not the same as the original StudioThinking names (except for expressivity and reflectiveness). However, clear parallels can be seen between their Curiosity and their Creativity measure and our Stretch & Explore, and between their Diligence and the “Persist” part of Engage & Persist. This rubric is used to assess students’ art sketchbooks, which they work on both in and outside of school. Students receive a report and a diagram indicating their disposition strengths, as shown in Figure Y. A student’s final numerical grade is based on numerical grades received on each module, on the student’s artist statement, and on the student’s sketchbook.

Impact on Ron Gresham, Educator in Hong Kong and India

Ron Gresham has taught art at [Hong Kong Academy](#) since 2019. The school serves children from ages 3 through 18, and Ron teaches children from pre-K through grade 5. Prior to this, Ron taught

art at the same grade levels at two other IB schools, [Stonehill International School](#) in Bangalore, India, and at [Zhuhai International School](#) in China.

Ron's is a Teaching for Artistic Behavior (TAB) classroom infused with the Studio Habits. But it was not always so. Ron began teaching art without any particular kind of teaching philosophy, often getting ideas for art projects online. In 2016, he posted a question on a Facebook page for art teachers about suggestions for how to teach one of his students who did not seem to be thriving in his art class. Someone suggested that he look into TAB, and soon after that, Ron enrolled in the TAB summer program. There he was introduced to the Studio Habits framework, which was a large part of the conversation at the summer program, and he read the *Studio Thinking 2* book.

Without any direct contact or professional development from the Studio Habits team at PZ, Ron's teaching shifted in a big way from a fairly teacher-directed approach to a TAB approach. His focus moved away from product to the thinking process behind the art making. And his teaching became more intentional. He did not focus much on the Studio Habits in the first year of his TAB teaching, but during that first year he said he realized that the Studio Habits were what he needed. Ron used the term "life-changing" when he talked about learning about the SHoM.

Ron uses the Studio Habits in a number of different ways. He uses the habits to plan his teaching, designing entire units around a specific habit so that students will develop a deep understanding of that habit. Units vary in length but sometimes stretch over most of that academic year. For example, kindergarten students have a unit called "Artists observe and express what they understand about the world." This unit integrates with the students' homeroom unit of inquiry about animal and plant habitats. Grade 1 students have a longer stand-alone unit entitled "Artists stretch and explore by trying things out." Grade 2 students consider idea generation in their unit called "Artists get ideas in a variety of ways." During this unit, students explore various approaches to art making and are introduced more formally to the Studio Habits. Grade 3 students explore the central idea that "Artists develop craft through practice and a growth mindset." In grade 4, they delve deeper into developing craft with the unit called "Artists develop craft through techniques." In this unit, students are introduced to techniques such as one- and two-point perspective and shading techniques which allow them to create more realistic and three-dimensional drawings. In grade 5, students explore a unit called "Artists create artworks to provoke a response" which focuses on the habits of Express and Understand Art Worlds. Throughout all these units, students experiment with various kinds of skill-building as they explore the art studio with large blocks of full-choice time.

In his planning, Ron thinks about what each habit would look like at each of the grades he teaches. He developed a chart of [progressions for each habit](#), taking into account developmental levels and his own curriculum. For example, in pre-kindergarten, the habit Observe might look like, "I can notice details about my artwork." By grade 3, that habit might be described as "I can pay attention to how I'm showing details in my artwork." In grade 5, Observe might be "I can pay attention to how I'm showing details in my artwork and how others might interpret those details."

After reading about art educator Demetrius Fuller in *Studio Thinking from the Start* (Hogan et al., 2018, pp. 19-21), Ron designed characters to represent each habit and created this engaging [video](#) to introduce students to the habits starting at grade 2.

Ron uses the habits when students reflect on their work. For example, grade 4 and 5 students often select from a bank of sentence prompts to help them write reflections. A prompt about the Studio Habits might be “One Studio Habit of Mind that I’ve been using lately is....”

Ron creates an [artist-identity](#) profile that includes a section about the habits, an idea he got from the school librarian who created reader-identity profiles for each student. The artist identity profiles are intended to help students understand themselves better as artists.

He also shares his practices with other art teachers. In November of 2023, he went to an artist teacher workshop in Ho Chi Min city where teachers teach teachers about their practices. There he suggested going deeper with the habits, thinking about what kinds of things teachers could do to support each habit. In that session, teachers worked on this [Padlet](#), adding projects that might strengthen each habit.

When asked about the benefits for students of using the habits, Ron said that they provide a shared vocabulary and thus a shared understanding. He also feels that being able to name the habits makes students’ learning more tangible to them and also allows students to realize that engaging in art helps their thinking. While every art teacher implicitly uses the habits (or at least some of them), Ron underscored the value of naming the habits explicitly: “It is powerful to name them,” he said.

Ever since Ron has become a TAB teacher using the Studio Habits, he has had strong support from his school heads, both in India and in Hong Kong. He was actually hired in his current position *because* of his teaching philosophy. His philosophy aligns with the mission of the school, which focuses on supporting students to develop individual pathways to excellence.

Ron sends written communications to parents about what is going on in his class in monthly updates, often writing about one of the habits. His basic message to parents is that part of being human is expressing oneself through visual imagery; by learning to do this, children are learning important ways of thinking. Parents sometimes tell him that they never realized before how important art class is – because it helps thinking.

Other schools using the Studio Thinking framework can be found in Part IV of this report, where I describe framework clusters that combine Studio Thinking with Teaching for Understanding

Today there are no major active projects in the arts at PZ. This is because of the way PZ works: Pls raise funding for projects that interest them and that fit their expertise. When Pls whose focus was on the arts retire (as Lois, Jessica Davis, and I did), there will be fewer arts projects. It is my strong hope that the arts and arts education will once again become one of the major foci of PZ, especially in light of the changes that will certainly emerge with the rise of generative artificial intelligence and its capacity to create works of art. Artists will be (and already are) using AI to make art. How they are doing so, how the answer differs across art forms, and how people respond to art that is co-created by human and machine, are rich questions waiting to be answered!

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ETHICS (begins 1994)

The next section focuses on ethical thinking, PZ's third foundational framework. Chapter 18 describes the initial Good Work Project, followed by chapters describing projects growing out of this initial project, culminating in the 2023 founding of the Center for Digital Thriving. The final chapter describes a project loosely related to the Good Project, investigating what people world-wide consider to be a "good" (worth-while) experience.

Chapter 18

The Good Work Project (Became The Good Project)

1994-to date

PZ took a new direction in 1994 when researchers began a focus on the theme of ethics – a focus that continues today. Work in the area of ethics began in 1994, when Howard Gardner spent a year at the Center for Advanced Study in the Behavioral Sciences at Stanford along with Mihaly Csikszentmihalyi (then at University of Chicago) and William (Bill) Damon (then at Brown University). Together they founded the Good Work Project. Because the project began to spread to realms beyond work, in 2006 the name changed to [The Good Project](#), and this was directed by Howard alone. Bill continued his work at Stanford investigating purpose; Mihaly moved to Claremont Graduate University and there, with Jeanne Nakamura, established the Quality of Life Research Center.)

The Initial Project

The original goal of the initial project was to understand when and how work that is both highly creative and ethical, i.e. “good work,” occurs and to develop resources to increase its occurrence. As described here, the goal expanded with the development of educational resources to equip individuals with the tools to make thoughtful, ethical decisions about the dilemmas that arise in their lives.

In the initial project, Howard, Mihalyi, and Bill interviewed well over 100 high level professionals in the fields of journalism and genetics, probing the ethical dilemmas these professionals face and the strategies they use to keep their moral compass, particularly in the face of increasing market forces. Interviewees had been nominated by informants as both accomplished and ethical. Out of these interviews grew their ultimate definition of good work as consisting of 3Es: work that is Excellent, Engaging, and Ethical. They described good work as a triple helix – the entwining of the 3Es.

In 2001, the threesome published their initial research in *Good Work: When Excellence and Ethics Meet* (Gardner, Csikszentmihalyi, & Damon, 2001). This was chosen as a Book of Distinction by the Templeton Foundation, selected as one of ten most important books in Hong Kong in 2003, and translated into Korean, Spanish, German, Portuguese, Swedish, Chinese, Romanian, Hungarian, Ukrainian, and Japanese).

Three other volumes emerged from the initial project. Two books on good work in business, one by Csikszentmihalyi (2004) and one by Damon (2004). All three research collaborators contributed to an edited book on good work in philanthropy, (Damon & Verducci, 2006).

The initial project had led to Damon’s work on purpose (2008) and to Csikszentmihalyi’s colleague, Jeanne Nakamura, on good mentoring (Nakamura (2009). It also resulted in scores of articles and catapulted the careers of numerous younger scholars.

Later Projects

Following the initial collaboration, a team led by Howard grew to 50 researchers on five different university campuses (including one from Denmark). For about ten years, this expanded group of researchers conducted in-depth interviews with over 1,200 individuals (varying in age and professional stage) from over ten fields, including business, genetics, higher education, journalism, law, medicine, pre-collegiate education, and sports. Among other questions, interviewees were asked about the mission of their work, their most important values, the obstacles they face in achieving their goals, and “To whom or what do you feel responsible in your work?” This latter question often surprised people – it was a question they had not considered before.

To provide a feel for the scope of topics covered, consider the list below as well [here](#).

- [An Exploration of GoodWork in Contemporary Visual Art](#)
- [GoodWork in Business](#)
- [With Great Power Comes Great Responsibility: A Framework for Civic Thinking in the Digital Age](#)
- [The Funnel Effect: How Elite College Culture Narrows Students' Perceptions of Post-Collegiate Career Opportunities](#)
- [“Memes,” “Genes,” and “Scenes”: A Comparison of Veteran Professionals Working in Journalism, Genetics, and Theater](#)
- [A Review of the Santa Fe Institute: Institutional and individual qualities of expert interdisciplinary work](#)
- [GoodWork in Cyberlaw](#)
- [Opportunities and Obstacles for GoodWork in Medicine](#)
- [Spirituality at Work](#)
- [Good Work in Professional Basketball: The Responsibilities of Stardom Models of Trust Held by Young Americans](#)

There was particular interest in this work from the journalism profession, which resulted in an article by Bill in *The American Editor: The Bulletin of the American Society of Newspaper Editors* called “Improving Newsroom Communication: Impact of a Traveling Curriculum for Journalism” (Damon, 2006).

Some of Many Findings

As reported by Howard in his edited books, *Responsibility at Work: How Leading Professionals Act (or Don't Act) Responsibly* (Gardner, 2007), and *GoodWork: Theory and Practice* (Gardner, 2010) (downloadable [here](#)), ethical work is characterized by the following: The worker has a set of explicit values that draw on the values of their domain; the worker tries to follow these values even when they clash with self-interest; the worker recognizes problems of moral complexity, reflects, and tries to do the right thing even when (or especially when) the situation had not been anticipated. In short, the worker takes ethical challenges seriously and tries to behave responsibly.

The Good Project extended to the study of young people at work, resulting in *Making Good: How Young People Deal with Moral Dilemmas at Work* (Fischman, Solomon, Shutte, & Gardner (2004/5). The researchers interviewed over a hundred young people launching their careers and found some unsettling answers about the shifting moral and social character of the working world. Although young workers know what it takes to do good work, they don't always feel they can follow the ethical route. “Later, when I'm successful,” is their implicit promise. The researchers reported on

the choices confronting young workers who join the ranks of three dynamic professions – journalism, science, and acting – examining how these novices navigate moral dilemmas posed by a demanding, frequently lonely, professional life. The book reports differences between these young professionals and the veterans in their fields: while older workers recalled inspiring models and mentors, these novices interviewed in the early 2000s saw themselves as on their own.

The Good Project also extended to the study of good citizenship. [Here](#) is a series of blogs about this initiative.

Educational Materials Produced

The Good Project has worked hard to move from research to practice by developing practical tools and interventions that can be used in various educational settings. These resources, described below, can be accessed in this [resource center](#).

The Value Sort. The [Value Sort](#) resource lists 30 values which users sort in terms of their relative personal importance. Daniel Mucinskas introduces this resource [here](#). Sample items include:

- Personal growth and learning
- Wealth, material well-being
- Challenge, risk taking
- Independence
- Understanding, helping, serving others

This activity can be used to compare one's own values to those of family members and professional colleagues. This tool can also be used to compare one's values to how one chooses to spend one's time.

The Value Sort was used at the end of every interview that the Good Project conducted, allowing the team to gather quantitative data and compare value rankings across individuals, age groups, domains, etc. This sort elicited a great deal of substantive reflections, which is why the team decided to develop it as a practical intervention.

People all over the world have taken the Value Sort, including in classrooms. One example: A class at the University of Florida used the Value Sort in their course on the meaning of a "good life." The current value sort has been used nearly 10,000 times since it was launched in December 2024. An older version on Qualtrics (which went live December, 2019) was taken over 129,000 times.

Dilemmas. [The Dilemmas](#) resource consists of about 60 brief narratives (presented in text as well as in interactive videos) about a person facing a difficult ethical decision. This resource is updated regularly. Most of these dilemmas were drawn from the interviews with professionals in various domains at different stages of their careers. These dilemmas are described to respondents as situations in which the 3Es are in direct conflict.

One story is about Jonah, a college student who returns to campus during the Covid-19 pandemic, assured that strict rules are in place for masking indoors and that any breach in the rules would result in the offender being asked to leave campus. Jonah finds that his friends break the rules. When he talks to them about this, they tell him to loosen up. He worries for his safety. He wonders whether to report this to the college administrators anonymously. But he is worried because this is

the group's senior year, and he does not want to ruin that by having his friends sent home. At the end of the story, the reader/viewer is asked, "What would you do if you were Jonah? Are there options he hasn't considered? What does Jonah owe to his friends in this situation, if anything? What does Jonah owe to his college community in this situation, if anything?" These dilemmas have no easy answers and are meant to promote reflection and discussion.

These dilemmas are freely accessible, and have been used as a component of the lesson plans with the Developing Virtues Community of Practice described in Chapter 20.

Activities. Over 100 [activities](#) were developed to engage individuals in reflection about ethical issues. These include authoring a debate between a good worker and someone who just works; answering questions to yourself about what you believe, how others would describe you, and what you'd like to change; watching a video about successful people who faced big obstacles and then discussing how one or more of these people encountered difficulties relating to the 3Es; and discussing ethical dilemmas.

Lesson plans. A series of [lesson plans](#) with handouts and resources were created and can be accessed here (also available in Chinese, Japanese, Portuguese, and Spanish translations). These lesson plans were developed because, as stated on the [Good Project Resource Center](#):

Despite calls for the development of "21st century skills" (e.g., critical thinking) in adolescents necessary for success in employment, current educational experiences about "work" are insufficient. Generally, secondary and tertiary education devote little attention to work in practice, programs that do exist to explore the topic most often take the form of isolated lessons or classes. Few outlets allow students to grapple with ambiguity, complexity, and their own opinions and beliefs.

Our curriculum attempts to fill this gap by giving young people the skills and strategies to flourish as future workers. Drawing on many years of research in the professions, we expose adolescents to real-world dilemmas, reflective activities, and guided conversations that will help to prepare them for the working world of today. Our contention is that students who are exposed to our materials will develop the skills, understandings, and repertoires to effectively navigate their future work lives.

These lessons explore the core concepts of The Good Project – excellence, ethics, engagement, values, responsibility, and alignment, intended for a secondary school audience. This [blog series](#) describes these core concepts. The lessons engage students in reflective exercises to help them explore these concepts in relation to their own identities and contexts.

In 2024, the lesson plans were developed into a four year curriculum that moves students through four stages, each building upon the other: 1) good person, 2) good worker, 3) good citizen, and 4) a capstone that asks students to synthesize their learning over the previous three years of study. The first year of this program covers all core concepts of The Good Project, ensuring that even if a student can only participate in a single year, they still have a solid foundation in the subject matter. The four year curriculum has not yet been used. The first-year program was used in the Developing Virtues Project, discussed in Chapter 20.

Better Arguments Workbooks. In collaboration with the [Better Arguments Project](#), the GoodWork team created [two workbooks](#), one to promote discussion in the workplace, the other to promote

discussion in schools. Each workbook uses one of the Good Work dilemmas described above as a tool for exploring the Three Es of good work, and the five principles of better arguments: Take winning off the table, prioritize relationships and listen passionately, pay attention to context, embrace vulnerability, and make room to transform. There is no information about downloads or where these workbooks have been used.

The Good Collaboration Toolkit. The [Good Collaboration Toolkit](#) is designed to facilitate effective collaborations, e.g., by students working on a group project; teams from two or more cooperating organizations or institutions, or co-workers seeking convergence about visions for shared responsibilities.

Collaborative efforts are difficult and often face stumbling blocks. For example, sometimes collaborations have the best intentions but lack the strong leadership necessary for success. Sometimes communication breaks down, or the values of stakeholders appear to be in conflict.

The Toolkit is intended to help solve such problems. The development of The Good Collaboration Toolkit draws on data from in-depth interviews with individuals involved in long-standing collaborations, and the Good Project team also studied three higher education collaborations: Babson, Olin, and Wellesley College; the Five College Consortium in Western Massachusetts, and the Claremont Colleges. This research revealed that good collaborations satisfy eight “ELEMENTS” described below:

- Excellent Executed
- Leadership Driven
- Engaging for Participants
- Mission Focused
- Ethically Oriented
- Nurtured Continuously
- Time Well Spent
- Solution Inspired

For each of these, there is a set of materials in the toolkit consisting of reflection questions, narratives about a successful and failed collaboration, and activities allowing collaborators to engage further with one another and to reflect on the features and purposes of their collaboration. There is no information about downloads or where this toolkit has been used.

Opportunities for Educators

There are a number of ways for educators to communicate with and learn from the Good Project team, as described below.

The Good Work Resource Center. Materials continue to be added to the [Good Work Resource Center](#), including a new podcast with an initial season of five episodes and a set of train-the-trainers and professional development materials for educators seeking to implement The Good Project’s tools in their schools.

Professional development. A [professional development series](#) open to all without charge invites participants to explore key topics like global citizenship, responsibility, and character education with the Good Project research team. Participants earn certificates for participation. These

professional development materials are being used by the community of practice educators in the Developing Virtues project described in Chapter 20.

Train-the-Trainer materials. [Train-the-Trainer materials](#) have been developed to empower educators to share The Good Project Lesson Plans more widely within their schools and networks.

A history of the Good Project, along with the projects it spawned (discussed in the following chapters), is captured in these [videos](#).

The various resources described above have been shared with hundreds of educators in the US and around the world (including Australia, Germany, India, Italy, Mexico, Poland, and South Africa) who teach in all different kinds of schools (e.g. public, private, single gender, religious) and at various levels (elementary schools to graduate programs).

Two free, accessible webinars were created for educators of secondary school students and can be adapted for other levels. These can be accessed [here](#).

Impact in the US

The Good Project led to work by Wendy Fischman and Howard on higher education, featured in Chapter 39. In talking with college students about their expectations for college, and how those might lead them to shape their future work and lives, Wendy and Howard stumbled on the finding that college students had not thought about the very purpose of college. Now, after having studied college for nearly 15 years, Wendy and Howard are circling back to the roots of the Good Project: They are studying the efforts on college campuses to help students think about ethics and character.

Bloomsburg University, Bloomsburg, Pennsylvania

In the Fall of 2010, Howard spoke about the Good Work Project at Bloomsburg University, in Bloomsburg, Pennsylvania. . Inspired by his talk and informed by the GoodWork Toolkit, the faculty began to investigate undergraduates' understanding about what it means to do good work as college students, as described in this [blog](#). The method used was small group discussions with 140 first-year students. Students were randomly split into groups: The experimental group participated in six weeks of small group discussions (50 minutes long) about good work; the control group remained in their regularly scheduled University Seminar course and did not participate in small group discussions about good work.

The pre-program data showed that most first-year students described good work as effortful and empathic. Post-program data showed that those in the experimental group had begun to include the idea of ethics in their understanding of good work. Unfortunately, Bloomsburg University has merged with two other state universities in Pennsylvania to form Commonwealth University, and the university no longer features good work as a core part of their academic mission or experience for incoming students.

Noble and Greenough School, Dedham, Massachusetts

In 2007, the Good Work team worked intensively with Noble and Greenough, an independent grade 7-12 school in Dedham, Massachusetts to create a “culture” of good work.

University of Denver Law School

John Bliss, professor at the University of Denver used the Good Project frameworks and tools with law students to help them to reflect on their professional identities.

Impact in Europe

The Netherlands

The Good Project has had a significant impact in The Netherlands. In 2001, the [Professional Honor Foundation](#) opened “The Good Work Hub,” based on the Good Work Project. This foundation is dedicated to the study of the professions and professional identity, hoping to revitalize the professions in today’s rapidly changing world. The Good Work Toolkit was translated into Dutch. At the opening conference of the Good Work Hub, the founder Alexandrien van der Brugstated stated that the hub already had allies in a variety of fields – education, public service, police, home care, social work, and a college of hotel, tourism, and management. A blog about the opening of the Hub can be found [here](#).

The Professional Honor Foundation worked with the Dutch Ministry of Internal Affairs to organize a “Good Work Pilot” for civil servants, and it created “Better Work in Public Administration,” a project to improve work in the public sector. The Professional Honor Foundation created a Good Work Toolkit for Civil Servants (inspired by the Good Work Toolkit) aimed at civil servants who face conflicting professional standards (e.g., helping immigrants seek safety versus the costs of rapid immigration). These conflicts do not have easy answers and are open to discussion. The Toolkit was developed to strengthen civil servants’ abilities to analyze problems from their professional practice, to think for themselves, and make explicit the core values and responsibilities of their profession. A blog about this project can be found [here](#).

In 2016, members of the Professional Honor Foundation visited Project Zero and spoke about three professions where they have had influence: medicine (helping to limit free market forces), accountancy (encouraging greater accountability of accountants), and teaching (calling for increasing teacher agency). As Daniel Mucinkas, a member of the Good Work team, wrote [here](#), “PHF has pushed matters of professional identity into the national consciousness of the Netherlands, presenting a counter-narrative to the marketization and systemic weakening of individual choice apparent across the professional landscape.” A description of the impact of PZ on the Professional Honor Foundation is described in this [blog](#) by Daniel.

Impact in Latin America

Brazil

Ulisses Araujo and Valeria Arantes, psychology professors at the University of Sao Paulo, have brought the Good Project to Brazil, as shown on this [website](#) (and discussed in Pátaro and Arantes, 2022). They have studied 2000 K-12 teachers in public schools in Brazil, with the goal of finding out teachers’ conceptions of the ideal teacher in terms of the 3Es. Teachers’ responses were coded in terms of excellence, ethics, and engagement, and an alignment was found between their ideals and the 3Es, with teachers stressing the ethics of care when it came to the Ethical E. The results were used to argue for a new social contract for education that would allow teachers to reach their ideal selves. The authors argue for the importance of focusing on four principles: collaboration and

teamwork; high quality and continuing professional development; teacher autonomy and professional identity; and participation of teachers in public debate about the future of education.

Ulisses and Valeria and their team have now trained about 1,200 inservice K-12 teachers across Brazil, using these two programs:

- Repensando o Currículo (Rethink the curriculum) - 400 teachers
- ATIVAR - methodologies ativas por Whatsapp (Activate - active methodologies by WhatsApp) - 800 teachers.

Impact in Asia

India

Gowri Ishwaran, the long-time CEO of [the Global Education & Leadership Foundation](#) (tGELF) in India, now serves as its vice-chair. tGELF works with teachers in India to help them move beyond traditional “talk and chalk” teaching towards a more engaging, active style, and one that also helps instill altruistic values. The professional development offered is free to schools after a minimal fee. tGELF works with teachers of grades 7-12. The schools are a mix of government and independent, and the students come from a mix of privileged and underprivileged populations.

According to their website:

tGELF is passionate about helping identify innovative leaders with strong values and then supporting them to develop to their full potential. Supporting the next generation of ethical, altruistic leaders.

Gowri first became aware of PZ through reading some of Howard’s writings, and she guided the foundation to incorporate a multiple intelligences approach in their teacher trainings. Gowri came to Project Zero and attended two, week-long PZ institutes, one focused on Good Work, the other on the Future of Education. The Good Work approach meshed with tGELF’s approach, and in 2011, the Foundation brought Lynn Barensen and Wendy to India to conduct professional development on Good Work with the teachers with whom tGELF works. Lynn and Wendy provided an in-person, two-day “Good Work Toolkit Certification Course” for teachers from about 300 schools and then worked online with a number of these teachers for about a year.

According to Gowri, prior to this visit, the Foundation was in the “nascent stage,” and working with the Good Project gave their teacher training more structure and heightened legitimacy. The fact that this project was from Harvard carried weight, and more people were willing to buy in.

The Good Project approach continues to have a presence in the many schools (about 500-600) with which tGELF works. This approach has broadened teachers’ horizons and opened their minds to new ways of teaching. And importantly, the GW approach came with practical tools.

The Foundation has taken the guidelines of the Good Project and woven these into their teacher trainings. The teachers adapt the principles of the project to their own classrooms, which often have 50-60 students. Some teachers make use of all the project tools, others only use some. The foundation does not micromanage. Today changes have been made in line with the times – e.g., cyber security issues are now incorporated into the ethical issues discussed.

The schools with which the Foundation first worked were located in large metropolitan areas (called Tier 1 schools). But now, increasingly, Tier 2 schools from smaller cities and rural Tier 3

schools have asked to work with tGELF. In every school in which the Foundation has worked, there has been some success in getting teachers to abandon the chalk and talk mode.

In summary, PZ has had a powerful impact on the schools in India that work with tGELF. The incorporation of the GW approach into teacher professional development had changed teachers' mindsets. Their practice is now one in which students are actively engaged. It is important to stress that teachers do not blindly use the GW tools but instead take what they find useful, often adapting them. Teachers (and parents) are now convinced of the importance of getting students to think and be curious.

Japan

Keiko Ishiwata, a pre-collegiate educator in Japan and a long-time friend of PZ, uses the ethical dilemmas in her English communication class. In February of 2025, she wrote:

As universities have broken for spring holidays, I wanted to take a moment to express my appreciation for the teaching materials you provided. I taught an International Communication class during the autumn semester, which was structured more like a workshop than a traditional lecture course. This format allowed students to actively use English for discussion, debate, and presentation.

In the first half of the semester, students read articles on MI theory and Leading Minds, and presented analyses of exemplary leaders based on these concepts. In the latter half, we discussed anecdotes from the Good Project. Topics like "To Tell, or Not To Tell? When Friends Break Rules" and "Speaking Up, or Staying Silent?" resonated with students as they related to their own high school or college experiences.

At the end of the semester, some students reflected on "Liam's Balancing Act" and "Luis's Expectations," which reminded them of their own struggles in choosing an appropriate major. Many expressed regret over their current majors, feeling they had chosen them for job prospects rather than passion, such as linguistics or literature.

The most successful discussions, in my opinion, were "A Teacher Accused" and "Is It Stealing?" These topics prompted students to think critically as budding economists or lawyers. Overall, I found the Good Project materials to be incredibly useful and engaging. It was rewarding to see students incorporate ideas from Leading Minds and MI theory into their discussions and debates.

Thank you once again for providing such valuable resources.

The Good Project lesson plans have been translated into Japanese by Akio Shimogohri, and he has used them in his teaching at the National Institute of Technology, Hakodate College in Hakodate, Japan. He's analyzing the results (student work/reflections) as I write this in 2025.

He will also be presenting a series of three lectures in Japan to educators, researchers, and students on Good Work. He'll be discussing the relationship between future education and professional ethics in light of changes to the work environment with AI and technology. It is indeed his hope that the materials will be widely implemented at college or high school level.

Akio and Minatsu Ariga will be conducting a Good Project workshop for a company called [Grow and Leap](#) which helps young people decide on future careers. Akio and Minatsu have both also been participating in the Community of Practice sessions discussed in Chapter 20.

Pakistan

I spoke to Mariam Fatima, a master's student at HGSE in Educational Policy, about her use of the Good Project in Pakistan while she was working at [The Citizens Foundation](#), a non-profit organization running almost 2,000 low-cost private schools in Pakistan. These schools are found all over Pakistan and are convened in informal spaces such as garages or mosques. Thus it is often difficult to actually locate them, and they are completely unregulated. Parents send their children to such schools because they are less expensive than government schools. To become a teacher at one of these schools requires only a secondary school education. Thus these teachers have never been educated in how to teach. And they are paid well-below minimum wage, which they simply accept because they could not work anywhere else, they say.

In 2019, she was asked by The Citizens Foundation to design a pilot teacher training course for teachers in low-cost private schools outside of their own network of schools. Mariam learned about the Good Project at Project Zero while browsing through the PZ website, which was introduced to her by one of her colleagues at The Citizens Foundation. After learning about it, she decided to try to incorporate it. She asked the teachers to think about a dilemma in their own life. She observed that teachers were uncomfortable reflecting about this; they did not want to admit that they had made mistakes. But as they started talking about what is morally right, they began to open up. One teacher talked about how she had been asked to help a family in Karachi (where girls are not allowed to attend school) to help their daughter go to school. She wanted to help the family but this went against the society's rules. She knew she would face a backlash and thus she confessed that she just gave up – leading to a wide-ranging discussion on what is right and wrong in society.

The introduction of ethical dilemmas in this teacher training was not continued after the 2019 pilot course. But what Mariam described shows the power of these ethical dilemmas – even among teachers who were not used to self-reflection or to admitting to others that they may not have done the right thing.

Singapore

From 2020-2023, The Good Project collaborated with the Learning Innovations Lab (LILA; see Chapt. 30) at Project Zero to create a course offered in partnership with the Singapore Institute of Management, a large university in Singapore offering undergraduate, graduate, and professional programs. The course, entitled “Navigating Changes Successfully at Work,” combined The Good Project's framework of the 3Es with LILA's framework of “unlearning,” focused on developing an awareness of how mindsets, habits, and systems function in order to do work that is excellent, ethical, and engaging on the job during moments of flux.

This course was targeted at working adults in the midst of a career transition due to sector change, organizational change, or unemployment. The course has been offered several times, with the joint LILA-Good Project team training a local group of course facilitators who are responsible for the day-to-day oversight of the workshops. Initial interviews with a small group of the pilot learners found positive reviews for the course's impact on learners' abilities to manage career change and on their desire to continue exploring the concepts that were shared. As of Summer 2023, the course is still running in Singapore, with further updates forthcoming.

The next chapter discusses Good Play and Good Participation, both descendants of the Good Work project.

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Chapter 19

Good Play and Good Participation

2010 - 2016

In or around 2005, Jonathan Fanton, then the President of the MacArthur Foundation, spoke with Howard Gardner about the Foundation's plan to launch a project on youth and the then new digital media. Howard responded by asking him whether he had considered including the *ethical ramifications* of the new digital media – its range of modes of information, misinformation, communication, and miscommunication. He had not. This conversation stimulated a grant proposal that resulted in The Good Play Project.

It is fair to say that this question raised by Howard launched of PZs research on youth and digital media that followed the initial Good Work Project.

Good Play

When the Good Play Project launched at PZ, it was headed by Howard and Carrie James (then a PI at PZ, now its co-director). Good Play was defined as online conduct that is meaningful and engaging to the participant as well as responsible to others in the community and society in which it is carried out. Good Play probed the personal, moral, ethical, and civic dilemmas of tweens' and teens' digital lives, and focused on pedagogical approaches to support effective digital citizenship. The project created interventions to promote ethical thinking and conduct online.

Based on interviews with informants, Carrie and colleagues published initial findings and a framework for their research in a 2009 report, *Young People, Ethics, and the New Digital Media: A synthesis from the Good Play Project*. This book investigates the opportunities and risks, and the ethical issues related to the new digital media (e.g, social media, instant messaging, downloading, uploading, etc.). They focus on five key issues that need to be considered – identity, privacy, ownership and authorship, credibility, and participation – and they propose a model of Good Play.

The project then carried out qualitative interviews with teens, tweens, young adults, parents and teachers about ethical dilemmas around online identity, privacy, property, and speech. Below are three examples of ethical situations participants were asked to discuss. (Note that these may appear dated; they were created for their time, c. 2005).

- After a party, a teen posts a photo on Facebook of a friend drinking a beer.
- A college student repurposes an article from Wikipedia for a paper.
- A group of players in a multiplayer online game routinely cheat new players by selling them worthless virtual accessories for high prices.

Findings revealed that young people are often blind to moral or ethical concerns about privacy; attitudes toward property range from “what’s theirs is theirs” to “free for all”; and hostile speech can be met with a belief that online content is “just a joke.”

Sometimes young people think about ethical issues in a self-focused way, concerned mostly about consequences for themselves. Sometimes they exhibit a sense of morality – showing concern about

the consequences for people they know personally. And sometimes they show something more sophisticated – they think about the ethics of roles (e.g., what is my ethical role as a high school newspaper editor, or as the leader of a teen civic organization). The ethics of roles is concerned with unknown individuals and larger communities; sometimes the ethics of roles conflicts with moral concerns about personal acquaintances (e.g, should I, as my high school newspaper editor, publish something true but negative about my school, even though this might damage my younger sibling’s standing at the school?).

In her 2014 book, *Disconnected: Youth, New Media, and the Ethics Gap*, Carrie describes how young people between the ages of 10 and 25 think about privacy, property, and online participation. She found that young people think about online activity in three ways: (1) Self-focused thinking, concerned mostly about consequences for oneself; (2) Moral thinking, concerned about the consequences for individuals one knows; and (3) Ethical thinking, concerned about unknown people in the larger community. She reported that many youth are often unconcerned with moral or ethical concerns about privacy and don’t always take hostile content seriously. She offered a proposal for what she called conscientious connectivity – which calls for serious consideration of the ethical dilemmas of online participation.

Collaboration with Common Sense Media and Global Kids

An ongoing feature of the Good Play Project was a collaboration with [Common Sense Media](#), a California-based nonprofit organization with large national and international reach best known for its recommendations of movies, books, games etc that they consider “healthy” for youth. The Good Play team brought insights from their research to support the development of Common Sense Media’s first Digital Literacy and Citizenship Curriculum. This curriculum emphasizes the ways in which youth can leverage the positive affordances of digital media while protecting themselves and making socially responsible, ethical decisions. The curriculum covers issues from online privacy to building a positive community online to copyright and creation. [Here](#) is a 2021 discussion of the research behind this curriculum authored by Carrie James, Emily Weinstein (both from PZ) and Kelly Mendoza (from Common Sense Education). Today, Common Sense’s curriculum reaches more than 1.4 million educators every year and over 90,000 schools in the US as well as 96,000+ schools globally.

In 2009, together with Commonsense Media and Global Kids, the Good Play Project convened 250 parents, teachers, and teens together for a three-week online conversational dialogue. Every day, participants responded to scenarios and questions presented and shared thoughts and situations from their own lives.

The idea for this online conversation was born out of a sense of curiosity and experimentation. Can youth and adults have open and honest conversation in an online setting? What are the perceptions and tensions across generations when it comes to how we act on the internet? Is it possible to reach common ground when it comes to digital ethics?

Posting over 2,500 messages over the course of three weeks, participants shared a wealth of perspectives. The findings, summarized in a report called [Meeting of Minds](#), were widely disseminated within the MacArthur Foundation’s Digital Media & Learning community as well as to other educational networks and internet safety organizations in order to inform research, curricular development, and parenting in a space so often hard to navigate.

Collaboration with Project New Media Literacies

In 2011, the Good Play project collaborated with [Project New Media Literacies](#) established by Henry Jenkins, then at MIT, more recently at Annenberg School for Communications and Journalism at USC. This collaboration resulted in materials and activities, such as role-playing and reflective exercises, designed to encourage high school students to think about identity, privacy, authorship and ownership, credibility, and participation with respect to online behavior. These materials were published in 2011 in [Our Space: Being a Responsible Citizen of the Digital World](#).

The Youth and Participatory Politics Network

In 2009, after years of planning and consulting, the MacArthur Foundation officially launched a research network eventually called [Youth and Participatory Politics](#) (YPP). That network, which the foundation supported for nine years, included ethics as one of its core components.

The YPP network formed out of concerns about the implications of new digital media for civic and political life – concerns that were prescient then and salient today. At its formation, the network predicted that digital media would dramatically change the nature, course, and depth of young peoples’ civic engagement. The amount of information that can be accessed, including via participatory channels such as Facebook, is far broader than when people got their news exclusively from traditional broadcast media and print news. With increased possibility of knowledge comes increased risk of misinformation and misuse of misinformation. YPP also sought to understand young people’s civic and political participation in the new digital age, including the ethical challenges these new media pose. The ethical challenges, broadly construed, were central to the projects that PZ led within the network.

YPP was chaired by Joseph Kahne, then at Mills College, later at UC Riverside. Howard was a member of this network for a number of years before it was formally launched and funded. The network came to include Danielle Allen (then at Princeton’s Institute for Advanced Studies, later at Harvard), Cathy Cohen (University of Chicago), Jennifer Earl (University of Arizona), Elyse Eidman-Aadahl (National Writing Project [NWP]), Erica Hodgins (then at Mills College, later at UC Riverside), Henry Jenkins (then at MIT, later at USC), Ellen Middaugh (UCS), Sangita Shresthova (USC), and Lissa Soep (Youth Radio). Mimi Ito (UC Irvine), then head of a partner McArthur network, called the Digital Media and Learning Initiative, and Ethan Zuckerman (then at MIT, later at University of Massachusetts, Amherst) also participated intermittently.

The YPP network supported a number of research projects focused on young people’s political participation via digital media. The projects that PZ carried out within the network were framed around “good participation.”

Good Participation

The [Good Participation Project](#), led by Howard and Carrie, focused on the conditions for “good participation” in civic and political life. The research team carried out in-depth interviews of young people who were members or leaders of groups involved with social or political issues, seeking to understand how these kinds of young people think about citizenship.

In the first three years of the project, the Good Participation team interviewed 80 young people engaged in civic or political activities in largely traditional civic contexts such as school clubs and community organizations, with a few exceptions (e.g., young Occupy Wall Street activists). The

focus was on their civic learning experiences, participatory practices (with attention to digital and social media use), and their beliefs about citizenship and the political realm.

In the second three years, the Good Participation team focused on the roots of participatory politics (including the roles of mentors and institutions); the quality of youth's use of various participatory practices; and the development and expression of youth's civic identities in social media contexts. The project paid particular attention to how youth were navigating the opportunities and risks involved in online dialogue related to civic and political issues. The team completed an additional 40 interviews with young civic actors who were highly engaged in a variety of participatory practices online. Some of them had actually founded movements to address an issue and used online participatory practices as key levers for change.

Materials Produced by Good Play and Good Participation

Digital Civics Toolkit

Based on the research of the Good Play and Good Participation projects, a [Digital Civics Toolkit](#) was created. It was designed to help youth recognize and take seriously the opportunities and risks of digital civic participation. It contains five modules:

Participate: Students explore their identities and communities, identify civic issues that matter to them, and consider how they might use digital media for civic participation.

Investigate: Students work to understand and analyze civic information online and consider what information they can trust.

Dialogue: Students navigate diverse perspectives and exchange ideas about civic issues in our interconnected world.

Voice: Students consider how, when, and to what end they can create, remix, and otherwise repurpose content that they share with others in online spaces.

Action: Students consider a broad range of tactics and strategies for acting on civic issues.

Ten Questions for Changemakers

Other materials included [Ten Questions for Changemakers](#), a framework for young activists developed by network members Danielle Allen, Jennifer Earl, and Lissa Soep. This framework supported youth to consider ten crucial questions as they make decisions about civic engagement both online and offline.

1. Why does it matter to me?
2. How much should I share?
3. How do I make it about more than myself?
4. Where do we start?
5. How can we make it easy and engaging for others to join in?
6. How do we get wisdom from crowds?
7. How do we handle the downside of crowds?
8. Are you pursuing voice or influence or both?
9. How do we get from voice to changes?
10. How can we find allies?

With Facing History and Ourselves

The Good Participation team worked with Facing History and Ourselves to develop materials to help students develop habits of mind in the digital age. According to this [website](#):

The Good Participation Project (Project Zero, Harvard Graduate School of Education) and Facing History and Ourselves teams developed a set of classroom materials that build on Facing History's existing resources with new content, questions, and activities related to social media use and digital civic action. Our aim for these materials is to support students to develop reflective skills and dispositions to participate responsibly and effectively in public life today.

This collaboration resulted in educational material that foster three kinds of dispositions needed for responsible participation in public life:

- *Reflection* on how the internet is used for social and civic purposes.
- *Practicing* using digital tools for reflective activities and discussion of social justice issues.
- *Taking action* on a civic issue via digital and social media.

Some examples of resources can be found [here](#) and [here](#). Note that these activities include PZ thinking routines. Blogs from team members about this project can be found [here](#).

Impact

The impact of Good Participation and Good Play projects can be seen not only in the educational materials created for schools (all to foster young people's capacity to engage as civic actors in the digital age) but also in the spawning of a number of other strands of PZ research, including doctoral research by Emily Weinstein, Katie Davis, and Ashley Lee, with Howard as one of their doctoral advisors.

A related project called Developing Minds and Digital Media, led by Howard Gardner and Katie Davis (University of Washington), explored how youth navigate identity, intimacy, and imagination in the digital era. This project drew on Katie's doctoral dissertation, and resulted in *The App Generation*, a 2013 book published by Yale University Press.

In 2022, Emily Weinstein (Howard's doctoral student) and Carrie James published *Behind Their Screens: What Teens Are Facing (and Adults Are Missing)* with MIT Press, a well-received and widely read book.

In 2015, Danielle Allen (a member of the YPP network), along with Jennifer Light, edited *From Voice to Influence: Understanding Citizenship in a Digital Age*, published in 2015 by University of Chicago Press. This book contains Howard's pivotal article, "In defense of disinterestedness in a digital age."

PZ's involvement in the YPP network also led to the work described in Chapters 23 and 24 (on digital dilemmas, and the Center for Digital Thriving).

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Chapter 20

Developing Virtues through an Educational Community of Practice: A “Good Work” Approach 2022 – 2025

In 2022, a three-year project was initiated, called Developing Virtues through an Educational Community of Practice. The project was led by Shelby Clark along with Lynn Barendsen, Kirsten McHugh, Daniel Mucinskas, and Howard Gardner.

Community of Practice

A virtual “[community of practice](#)” was created, linking educators from around the world interested in discussing “good work” with their students. While some educators were from the US, the majority were from other countries: Albania, Colombia, Croatia, Germany, Guatemala, India, Italy, Jordan, Mexico, Nigeria, Pakistan, Panama, Philippines, Poland, Scotland, Romania, South Africa, and Turkey. This [overview page](#) shows a map of the reach of the community of practice.

The participating educators were in the process of adopting the sixteen [Good Project Lesson Plans](#). A word about how these lesson plans emerged. They grew out of the Good Work Toolkit described in Chapter 18. The toolkit consisted of a set of ethical dilemmas and other activities that users could adapt how they see fit. No specifics were offered about how best to implement them. Fast forward multiple years to 2019: Shelby, Lynn, Kirsten, and Daniel began working with educators in response to their request for a much more directed curriculum. They designed a pilot set of lesson plans and tested them during 2021-2022 with nine schools and school networks from the US and Mexico. Taking the schools’ feedback into account, the Developing Virtues Project adapted these 16 pilot lessons to become the Good Project Lesson Plans used in the project reported in this chapter.

The lesson plans expose students to dilemmas related to issues of good work, and ask students to reflect alone and in discussion upon their identities, values, and purpose. They were designed to help adolescents develop and internalize moral (i.e., a good neighbor), civic (i.e., a good citizen), performance (i.e., a good student/worker), and intellectual (i.e., a good thinker) virtues. These virtues embody The Good Project’s Three Es of good work: Ethical (for the greater good); Excellent (high quality); and Engaging (meaningful). The lessons engaged students in reflective exercises to help them explore these concepts in relation to their own identities and contexts. Students create a portfolio of work throughout the lesson plans and are encouraged to reflect on their learning.

Depending on cohort, teachers were in this community of practice for either one or two years. The goal was to build a strong, scalable character program. The community of practice allowed teachers to discuss their successes and challenges with the lesson plans, exchanging ideas, strategies, and materials. Members frequently share adaptations of materials (many of which will be added to the resource center), new ideas, and innovative frameworks, and a few have even coordinated virtual exchanges between their classrooms (in Colombia and Croatia). Many additional practitioner resources have been created in concert with the educators in the community of practice (such as introductory videos, discussion prompts, etc.) and are available [here](#). Some of the teachers have

become “champions,” ones who take extra responsibility for the community of practice by leading individual groups of teachers in discussion online (on Slack), and conducting presentations.

This [article](#) by Danny Mucinkas explains how participating in a community of practice helped educators feel more confident and effective, and provided a support group.

Impact at Cambridge Rindge and Latin High School, Cambridge, Massachusetts

Kathleen FitzGerald, the Enhanced Senior Year Teacher at Cambridge Rindge and Latin High School (CRLS) in Cambridge, Massachusetts, reports the influence of the Good Work project on her today (Summer, 2025). She wrote:

The Good Project continues to inspire me. I have reconnected with them this year and they are helping me breathe new life into all of my work, helping me to explicitly connect civic mindedness, character education and principles of good work across all that I do.

In an internship seminar that she leads for graduating seniors, she asks them to reflect on the following guiding questions which were a part of the original Good Work Toolkit:

- What kind of worker am I and what kind of worker do I want to become?
- What are some of the factors that challenge me in carrying out my best work? What can I do to prepare myself for these challenges?
- What is “good work,” is it important, and if so, why?
- What does it take to do “good work?”
- What are the standards by which my work is judged? What are my own personal standards or markers of success? Whose standards are most important?

Because this project is concluding as I write this (summer, 2025), it is too early to investigate further its impact. The project is included here because it is an outgrowth of the Good Project, and because it reveals the broad reach of PZ’s professional development activities around the world.

Chapter 21

Family Dinner Project: A Study of Good Conversation 2014-2019

Founded in 2010, [The Family Dinner Project](#) is a non-profit initiative promoting the idea of dinnertime as an opportunity for family members to connect with each other through food, fun, and conversation about things that matter. Most of this project's work took place in Massachusetts, where PZ partnered with the following institutions/organizations, listed alphabetically: Ashland Decisions at Every Turn Coalition, Boston Children's Museum, Boston Public Library, Boston Public Market, Commission on the Status of Grandparents Raising Grandchildren, For Kids Only Afterschool Program, Department of Children and Families, and Harvard Graduate School of Education. In collaboration with these organizations, The Family Dinner Project organized and facilitated community dinners.

The project also worked outside of Massachusetts in over 30 states with the following community partners: Blue Star Families, Cobb and Paulding County School Districts in Georgia, Idaho Office of Drug Policy, Mayo Clinic, Military Child Education Coalition, No Kid Hungry, 92nd Street Y, YMCA, United States Army Special Operatives.

Development of Resources

At Project Zero, Lynn Barendsen led a project growing out of the Good Work project, aimed to develop the resources needed to improve the frequency and quality of mealtime interactions, including guides to help parents instill ethical decision making in mealtime interactions.

Here are the tools that were created by Lynn and her team:

- A [website](#) including blogs, recipes, conversation starters, table games, and downloadable resources to help families overcome common mealtime challenges.
- Monthly [newsletters](#) for families and partners providing information, tips, and resources around a variety of family meal-focused topics.
- Daily "[Dinner Tonight](#)" content, including an opt-in for budget friendly content aligned with SNAP budgetary restrictions, offering meal plans, recipes, games, and conversation starters in both English and Spanish.
- A [four-week program](#) to help families begin a successful, regular mealtime routine.
- Online guides developed with and for [military families](#).
- Content developed with Common Sense Media to help families work with [technology distractions](#) at the table.
- [Community](#) resource guides to help schools, community centers, and parent groups implement community dinners following a carefully designed framework including modeling, coaching, and parent support.

- Content to help parents instill [ethical decision-making and empathy](#) in children.
- *Eat, Laugh, and Talk: The Family Dinner Playbook*, a family cookbook published in 2019, contains 52 weeks of meal plans, recipes, conversation starters, dinner games, real family stories, tips, advice, and clinical research findings.

Impact

Since its founding in 2010, more than 2.5 million people have visited the Family Dinner Project website, over 80,000 people have engaged with the organization on social media, and more than 220,000 families have been reached through events, workshops, and community materials distribution. This initiative has also been featured in dozens of national and international media outlets.

Over several years, the Family Dinner Project conducted a number of evaluations in the form of surveys. Findings showed that families believed that the project had helped them to think more expansively about what family dinner means to them and how they can enhance them for the benefit of all family members – transforming family dinners from a simple task to a frequent instance of time well spent that fortifies family bonds and supports the development of mindful and ethical young people.

After the project's tenure at PZ, The Family Dinner Project continued in full, under a new home and new funding at MGH, now led by Dr. Anne Fischel. All of the existing materials developed by Lynn are still in existence (as of 2023) and used as part of an ever-expanding library of resources and tools for The Family Dinner Project's audiences.

Reference Cited

Barendsen, L., et al. (2019). *Eat, Laugh, and Talk: The Family Dinner Playbook*. Familius, LLC.

Chapter 22

Global Citizens Initiative

2014-2024

For over ten years, members of the Good Project collaborated with the [Global Citizens Initiative](#) (GCI). Lynn Barendsen was an early advisor, Daniel Mucinskas assisted with data analysis and, from 2021 to 2025, Lynn and Shelby Clark were collaborative partners with the GCI Team

What GCI Does

GCI, founded in 2014 by Yumi Kuwana, brings young people together to help them become global citizens committed to leading for positive change. Every year, GCI brings together about 35 academically talented and intellectually curious young people from across the world for a ten-month GCI Fellowship. During an initial in person nine-day summit, fellows (and a group of educators) begin to develop service projects that tackle global issues at the local level (called “glocal” projects). They continue to work with their mentors over the next ten months on these service projects. They do this via design thinking: they define the problem, observe the population they want to serve, brainstorm potential solutions, and test those solutions until they arrive at an implementable project. Mentors are volunteers from various professions who draw upon their experience to guide fellows’ projects. Throughout the fellowship period, fellows work on their service projects.

Here are two examples of projects developed and launched:

- "EdQuity", a project to promote understanding between students from diverse socio-economic backgrounds in Hong Kong through discussion-based learning sessions and mentorship.
- "Funds for Youth Initiative", a project to alleviate youth unemployment and poverty in Nigeria by providing start-up capital and training to enterprising young people looking to start their own small businesses.

According to the GCI website, here is what takes place after the fellowship ends:

Once Fellows launch their Glocal Service Projects, they become Ambassadors and lifelong members of GCI's ecosystem of global citizens and leaders... Through [GCIs] online platform for global collaboration, they continue to further initiatives that effect positive change. Ambassadors are also connected to opportunities for seed funding, internships and worthwhile educational programs.

Impact

To investigate the impact of the GCI on participants, the PZ team conducted a one year evaluation, followed by other evaluations from other research groups as well as by GCI. The PZ team compiled ten years of evaluations to draw conclusions about the GCI Summit experience. Here are the key findings:

- **Open-Mindedness:** An increase in open-mindedness and an openness to new perspectives was the only theme that was present in every year examined during this review. Open-mindedness was by far the most prominent theme discussed across all reports.
- **Self-Identification as Global Citizens:** In five of the yearly evaluations, fellows noted that they identified themselves more as global citizens following the Summit experience.
- **Global Citizenship Skills and Confidence in Making Change:** Increases in global citizenship skills were discussed by fellows or found to be significant over four different years, three of which featured the Morais and Ogden (2010) Global Citizenship Scale.
- **Empathy:** Increases in empathy in fellows were mentioned during four different reports.
- **Teamwork and Collaboration:** Increases in teamwork and collaboration skills were noted by fellows in four different reports.
- **Skills:** Fellows discussed becoming better listeners during the Summit during four different reports. Most often this change was attributed to participating in discussion-based learning sessions, but Fellows also noted that listening was encouraged in informal interactions as well.

Fellows cited the discussion-based learning experiences during the summit as one of the greatest influences on their open-mindedness to new perspectives and cultural experiences. They also often mentioned how design thinking allowed them to engage in intellectual risk-taking behaviors such as seeking help, trying out bad ideas, and learning a growth mindset. They also valued meeting other fellows and teaching assistants from different backgrounds, which they believed helped them grow in open-mindedness, empathy, global citizenship skills, intellectual humility, and in self-identifying as a global citizen.

GCI Fellows Reflect

Reflections by GCI fellows can be seen in these blogs:

- [Jessica and Good Work](#)
- [Michi and Good Work](#)
- [Ukay and Good Work](#)
- [Shinn and Good Work](#)

Reference Cited

Morais, D., & Ogden, A. (2010). Initial development and validation of the Global Citizenship Scale. *Studies in International Education*, 15(5), 445-466.

Chapter 23

Digital Dilemmas

2017-2023

The Digital Dilemmas Project

Led by Carrie James and Emily Weinstein, the [Digital Dilemmas](#) project examined how tweens, teens, parents, and educators perceive and respond to thorny digital dilemmas. In collaboration with [EL Education](#) and [Common Sense Education](#), the researchers conducted surveys on digital dilemmas and timely digital topics with over 3500 students in 15 middle and high schools and over 1400 educators across the US. Interviews were also conducted with about 20 educators using these dilemmas.

The researchers also designed supports for digital well-being and citizenship in collaboration with educators in ten middle and high schools. One result was a set of [Dilemmas and Thinking Routines for Digital Life](#). These tools are designed to be used in classrooms, peer mentoring contexts, and to guide “at-home” conversations about digital life.

In 2021, Carrie and Emily collaborated with a group of teens to co-design a “by teens, for teens” resource for digital well-being. The resulting [Digital Well-Being Guide](#) took the form of a maker-focused project that invites teens (grades 8-12) to co-design solutions for their digital well-being. The methods used in this project became a signature approach for PZ’s Center for Digital Thriving. Their project was part of a Thriving Youth collaborative. The resources created as part of this collaborative are available to educators and youth organizations [here](#).

The Digital Dilemma’s team also conducted investigated the challenges today’s youth face in their digital lives. The research question posed was: How can young people inspire their peers to use technology in healthy ways and make digital spaces better for everyone? The research team then collaborated with youth to develop a toolkit of strategies for digital well-being.

Impact

The project’s [Dilemmas and Thinking Routines for Digital Life](#) are now integrated into Common Sense Education’s Digital Citizenship Curriculum which has widespread reach to schools across the US and beyond (reaching more than 1.4 million educators every year and over 90,000 schools in the US as well as 96,000+ schools globally).

The research work led to the book, [Behind Their Screens: What Teens Are Facing \(And Adults Are Missing\)](#) (Weinstein & James, 2022).

This work led to resource development and research streams further explored by the team through the Center for Digital Thriving discussed in the next chapter.

Reference Cited

Weinstein, E & James, C. (2022). *Behind their screens: What teens are facing (and adults are missing)*. Cambridge, MA: The MIT Press.

Chapter 24

The Center for Digital Thriving

2023-to date

Co-directed by Carrie James and Emily Weinstein, the Center for Digital Thriving (CDT) was founded in spring of 2023. The center grew out of the research findings presented in their joint 2022 book, [Behind Their Screens](#). Their findings reveal that it is not just adults who are mindful of teen risks in using digital media: youth are also often mindful of drawbacks and risks, and they are motivated to lead healthy lives with technology. They reveal how [digital agency](#) is undercut for youth in a variety of ways and describe how adults (including educators) can better support a sense of agency and well-being.

Guiding Questions

The guiding question of the Center is: What types of support do people – and especially kids and teens – need to thrive in a tech-filled world?

The center is conducting translational research and developing practical resources that support youth in reflecting on the role of technology in their lives and building greater intentionality and agency in its use. The research is conducted in collaboration with young people to create resources that resonate with teens' real experiences with technology. The researchers offer practical advice to educators and other adults about how to have actually helpful conversations about technology, how to foster teens' digital agency, and how to replace eyerolls with empathy. The Center aims to elevate young people's voices and contribute research and resources that reflect timely tensions and dilemmas related to new technologies.

The Center's IMAGINE project (Inspiring Moral AI Guidance in Education) is exploring the question, "How can we equip schools to navigate issues raised by generative AI in ways that support character development?" It is doing so by creating and disseminating a resource co-designed with youth that helps schools develop localized, character-driven, AI guidelines.

Resources

The Center's resources focus on connecting evidence-based practices and/or research-based insights to emerging technologies. [Here](#) is one example of a resource focused on [Thinking Traps](#) (cognitive distortions) as they come up in technology use. These resources are being co-designed with youth as key partners and sources of expertise, with equity as a guiding principle. [Here](#) is a report on the Center's approach to resource design.

The team has also collaborated with [Common Sense Education](#) to create curricular versions of their artfully-designed, evidence-based, youth-centered resources for use in schools and other settings. In 2024, CDT carried out a national study with Common Sense and Indiana University, involving 1,545 teens. The report, [Unpacking Grind Culture in American Teens](#), was downloaded by over 2,000 people in the first four months of its release.

In 2025, the Center launched its [first online professional development course for educators](#), "From "Referee" to "Coach" – and Other Game-Changing Mindshifts for Teaching Digital Well-being, Digital Citizenship, & Media Literacy."

The first [app](#) developed by the Center allows young people to reflect on their values and reflect on whether digital media are making it easier or harder for them to live according to their values. The app had more than 15,000 active users in its first ~15 months.

Youth Voice is also a core component of the Center's work. [Here](#) is a guidebook for researchers who want to engage youth advisors or incorporate teen voices into their research or practice.

The IMAGINE project has developed the "[GrAldients](#)" framework to help educators and students make visible their thinking about different uses of AI related to schoolwork assignments.

The team worked on the resources with clinical psychologists, including [Sophia Choukas-Bradley](#) who is leading the randomized controlled trial to assess the effects of these resources on adolescents' social media use and well-being.

I have not written about the impact of this center, because it is just getting started. I hope that later on, others will add to this chapter with evidence of impact.

References Cited

Konrath, S., James, C., Weinstein, E., & Tench, B. (2025). Development and validation of the Tech With Care Index for teens. *Psychology of Popular Media*. Advance online publication

Weinstein, E., & James, C. (2022). *Behind their screens: What teens are facing (and adults are missing)*. Cambridge, MA: The MIT Press.

Chapter 25

The Quality Project

2007-2014

In 2007, the Good Project began a study of quality – how do individuals define quality, what does quality mean to them in their personal and professional lives, and in which spheres does quality matter most? This project began as a result of a meeting with the chairman of the famed [Faber-Castell company](#), maker of high quality writing and drawing implements. The chairman, Count Anton Wolfgang von Faber-Castell, was concerned about potential loss of interest in fine pens and pencils due to the digital era. Perhaps in some areas, quality might matter more than efficiency.

Interviews and Surveys

After nearly a hundred in-depth interviews in the United States with individuals of varying ages and backgrounds, over seven thousand people in Brazil, China, Germany, India, Indonesia, Turkey and the US were surveyed for their beliefs about quality (approximately 1000 individuals in each of the seven countries). The 74 questions on the survey covered five areas: excellence, technology, work, time, and writing implements. The sample was drawn from Internet users who signed up to a survey rewards program (Research Now). Research Now attempted to recruit a sample of individuals that reflected the demographic characteristics of each country.

Findings

One of the most interesting findings that came out of this was the concept of “time well spent,” as Howard discussed in this 2013 [podcast](#) on WBUR’s *Cognoscenti*. Time well spent is quality time. Individuals are less concerned with the cost of an entity, its labels, its proclaimed uses, than they are eager to engage in activities and pursuits which they find rewarding, independent of the amount of time or money involved. They also judge the quality of a product by the time someone else invested in it – a hand-knit sweater, a hand-written card, a barista-made coffee is seen as being higher quality than goods that are mass produced – hence the value of hand-held pens and pencils. Faber-Castell told Wendy and Howard that they incorporated this finding into their marketing strategy, for example hosting art classes at their company.

These findings were shared with the company and with the wider world. Unfortunately, Count Anton died in 2016, but Howard has maintained contact with the younger generation of the Faber-Castell family. And Professor Ryan L. Raffaelli, a colleague at the Harvard Business School, has made use of PZs studies in his own examination of so-called “middle range” companies in Germany that have specialized and continued to survive and even to thrive.

PART III

ADDITIONAL RESEARCH AREAS

Part III reviews projects from eight additional areas:

- *Fostering Learning Through Assessment (Chapters 26-28)
Fostering Institutional Change (Chapters 29-35)
- *Scientific Thinking (Chapter 36)
- *Interdisciplinary Thinking (Chapter 37)
Meaning, purpose and Critical Thinking in College (Chapters 38-39)
- *Citizenship (Chapters 40-47)
- *Fostering Learning Through Play and Tinkering (Chapters 48-49)
- *Workplace Innovation (Chapter 50)

*The six asterisked areas are loosely related to PZ's foundational area of Thinking and Understanding.

FOSTERING LEARNING THROUGH ASSESSMENT (begins in 1988)

In the following section, three chapters describe PZ frameworks for making assessment a part of learning.

Chapter 26

Looking at Student Work: Three Related Projects 1988-to the present

A key aspect of Arts PROPEL was to develop qualitative assessment of student portfolios. However, many teachers, while skilled at helping their students *create* portfolios, were somewhat at a loss in knowing how to *examine* and *assess* the student works in the portfolios. Under pressure to grade and return student work, they often felt they did not have time to sift through the portfolio contents.

Three closely related projects following Arts PROPEL sought to help teachers look closely at student work in order to understand it better, ultimately to assess it better, and to make that assessment serve student learning: the APPLE (Assessing Projects and Portfolios for Learning) Project (1988-1996), the Evidence Project (1998-2001), and Saturday Morning ROUNDS (1995-continues today).

The APPLE Project (1988-1996)

The APPLE Project (acronym of “Assessing Projects and Portfolios for Learning”) built on the Arts PROPEL project and developed curriculum and assessment approaches without an explicit arts focus. The Project was initially directed by Joe Walters and later by Steve Seidel. This project focused on three questions, across the curriculum:

- What are effective ways of assessing student performances and project work?
- How can a student's work on a series of projects be documented and assessed fairly?
- What is required to implement portfolio assessment to serve as an ongoing tool for the evaluation of programs and students schoolwide?

The APPLE team investigated the use and implementation of project-based portfolio assessment in five elementary and middle schools, beginning with video documentation of students' projects at the Key School in Indianapolis. The group also documented portfolio approaches in nearly a dozen other schools and provided support and guidance for schools that were in the process of adopting portfolio assessment. APPLE created a library of portfolios from over twenty different classrooms that was used by teachers across New England. APPLE also established a forum, the New England Regional Assessment Network (NERAN), so that teachers and administrators could share ideas about portfolio assessment. APPLE's methods included interviews and consultations with individual teachers about portfolio implementation, classroom visits, workshops and meetings with school staff, and interviews with students to review their portfolio work.

The Evidence Project (1998-2001)

The Evidence Project focused on creating teacher inquiry groups. Steve describes one of the inspirations for the creation of such groups. In 1994 (as far as Steve can recall), he had an experience that opened his eyes to the possibility of collaborative assessment conversations with

teachers as they looked closely at a piece of student work. Steve's father, a doctor, brought Steve with him to a Saturday morning pediatric grand rounds at Johns Hopkins. The rounds began with a brief talk by a researcher about ongoing work, followed by a discussion in which participants were actively trying to provide suggestions and help the researcher pursue and advance the work.

After that, a mystery case was presented. The case had already been diagnosed, but the diagnosis was not revealed. The presenting doctor told what was known about the symptoms and test results and participants were then invited to hypothesize about the diagnosis, and defend their hypotheses. At the end, the diagnosis was revealed.

Steve wondered why there wasn't a similar kind of structure for teachers to discuss hard questions they have about their teaching and their students' learning – especially for teachers who do not accept standardized test results as adequate measures of what matters most in learning. Hence the inspiration for the formation of ROUNDS at Project Zero. Steve held on to the spirit of pediatric grand rounds at Hopkins, but not the specific structures. Instead, Steve chose to focus ROUNDS at Project Zero on the use of a protocol for looking at student work – the Collaborative Assessment Conference – developed during the Arts Propel project alongside teachers and administrators in the Pittsburgh Public Schools.

The Collaborative Assessment Conference was highly structured yet open-ended. The core idea was to get teachers to look together closely and slowly at one piece of student work, asking open-ended questions about the work for the group to consider. A protocol was developed for these conversations, which were run by facilitators. A teacher was to present a piece of student work, and participants would then be asked to look at the work carefully, describing what they saw without interpretation and without judgment. This move was in response to PROPEL researchers' observation that some Arts PROPEL teachers often judged whether a piece of student work was good, or pointed out what was missing in the work, before having looked carefully at the work. The idea of describing without interpreting and judging is simple but not easy to carry out, because typically we are prone to making quick assumptions and judgments.

Here is how it works. A presenter shows a piece of work. The facilitator asks questions such as what do you see in the work. The group describes it in detail without evaluating its quality. The facilitator might ask the group to think of questions that the work raises for them. As participants raise questions, the presenter does not yet provide answers. Only at the end do participants hear from the presenting teacher about what the teacher sees in the work, and only at the end does the teacher provide answers to the questions raised, wherever possible. Participants then share thoughts about their own teaching and learning, student learning, and what can best be done to support this student in the future. Finally, the group reflects on the conference as a whole.

ROUNDS

(1995-to date)

Inspired by the experience of pediatric grand rounds and drawing on his interest in developing the practice of the Collaborative Assessment Conferences with educators, Steve crystallized the idea of Saturday morning ROUNDS with teachers, administrators – a voluntary form of professional development in which teachers meet together to discuss important issues in teaching and learning and study student work together.

ROUNDS were held on the first Saturday of each month. On a shoestring budget that paid for coffee and bagels, Steve began running rounds in 1995, and they continue today (in 2025), now on Zoom. Steve initially invited the teachers working on the APPLE Project, many of whom were from schools in eastern Massachusetts, and other teachers who had worked with Project Zero in the early 90s. Across all the years, Steve reports that over 600 individuals have attended ROUNDS from between one and 100+ times. About 25-35 people come each time, and because these are now on Zoom, participants come from all over the world. Many teachers have come for years and consider ROUNDS their professional community. When these sessions were in person, they were three hours long; on Zoom they are now 90 minutes. The sessions alternate: one month with discussion of a question that a teacher wants to explore, the next with a piece of student work that a teacher offers to present.

Impact

I asked Steve if he would send out a request to members of ROUNDS with the following question from me:

Would you be willing to take a few minutes and write, in the space below, any ways in which the experience of rounds has changed your teaching practices, and as a result, may have affected your students' learning?

This question was sent to all of the members in 2023 (numbering just over 500). I received 15 responses. While I had hoped for many more responses, I was struck by a common theme running through the responses I did receive – the transformative effect on their thinking and teaching of looking closely and deeply at student work.

Here are five of the responses received:

Anne W. Armstrong

Art Educator, Belmont Day School, Belmont, MA

I'm a 2003 AIE grad, and started attending Rounds after graduating from HGSE...I call Rounds my 'work church'...Rounds to me is a sacred time & space that I carve out for myself - for my teaching & learning practice - that grounds me, while at the same time, pushes and expands my thinking.

I have a photograph of a Rounds question on the board from years ago - before the pandemic - on my desktop: "What are you trying to hold in mind when you design the beginning of a learning experience?" And I find myself returning to that question, even with nearly 30 years of teaching experience under my belt. In all the years I've been going to Rounds, I've only presented once - I brought a question to the group that focused on school leadership. Years later, the conversation from that Rounds session continues to impact my work as a teacher leader today...

Thanks for taking the time to tell the story and the importance of Rounds - it's a cherished and critical piece of my work and life as a teacher. I'm grateful for the opportunity and the experience of every Rounds session I've attended!

Nelina Backman

High School English Teacher, Littleton, MA

I can say, no hyperbole whatsoever, that just a single exposure to the "opening up a question" and "collaborative examination of student work" protocols practiced at ROUNDS has eclipsed the combined value of every other professional development experience I have encountered as a

public-school teacher, whether district-based or in pursuit of a masters in “educational leadership.” Alas.

What is experienced at ROUNDS, so rare in academia and non-existent in canned, top-down public-school “PD,” but so valuable to strive to replicate with my own students, is not cleverness or jargon leveraged to impress, self-promote, or check-a-box, but profound, humble, joyous, BS-free attention and intelligence sincerely exerted in the interest of others.

Also, in every ROUNDS session (informing the claim that the actual value of three hours of ROUNDS exceeds 3,000 of canned PD) one senses a concentrated power deriving not just from a single well-constructed question or impressive piece of work, but from a profound depth of accumulated and shared expertise and commitment--held not just in the group currently present, but resonating with insights and habits of mind absorbed from other ROUNDERs in prior sessions, stretching back years.

Before attending ROUNDS, I considered myself well-practiced in close-reading and discussion facilitation. What I have learned at ROUNDS has utterly transformed this practice – while also making it easier and more joyful. In discussing readings with students, I regularly use a protocol that simulates the ROUNDS protocol of starting with gathering observations while withholding interpretation. I find this practice remarkably effective at defusing students’ default impetus towards claiming the “right” answer and concomitant brownie point. Meanwhile, the academic outcomes of the ROUNDS protocol prove much more rigorous. When students start with observations gathered collectively, not only are they more comfortable, their ultimate shifts into interpretation are much richer and better informed than when they begin in the other direction (yet that remains their default before the protocol is introduced).

Thanks to ROUNDS, my students have come to look more slowly, more closely, more curiously; they share what they see more willingly; they own what they do not know or wonder about more readily, less anxiously; they participate more creatively and joyfully; they write more incisively. They appreciate the value and power of a well-crafted question. They are less grade-driven. Most importantly, they treat their work and one another with more graciousness and respect.

Barbara Powell

Education Consultant, CEO Barbara Powell Associates

The key thing about Rounds for me over the last 2 decades has been the joy of being in a thoughtful learning community with predictable structure and inimitable leadership for one Saturday morning a month. The stories from teachers: young and old, about students young and old, from a variety of public, private and parochial schools, in a plethora of subjects, (English, math, science, art, music, social studies) connect us to each other and to the age-old challenges of teaching and learning. We examine student work in distinct stages according to a deliberate protocol. We distinguish between describing and interpreting what students have created, we endeavor to step out of our own classrooms into the shoes of other teachers. We gain a useful and universal understanding of the work that students do in school and the way they think about it. I have used a Rounds approach in teacher training workshops in Rajasthan, India, Jamaica, Thailand and Morocco.

Laurie Tennant-Gadd

Rounds, for me, is a place to be reminded of my own work as a learner. It is also a place for anyone who wished to bring those objects and questions that have amazed or confounded, or maybe have

done both at the same time. Most importantly, for me, Rounds was a safe place to bring all that out and share it.

Steve's facilitation and the strength of the protocol supported Rounds as a safe space, and yet the history of Rounds seems to be carried in the spaces between us. The slow work of practicing the protocol held the gathering together.

Personally, having a place to bring student work was essential to my teaching. It was so different to place something you loved out of context and see what others observed and wondered about that piece. And I still think about the really important question Barbara Powell asked, when she wondered about me bringing a piece I wasn't in love with.

And then, finally, for me, the question of practice. A question I continue to think about is how practice changes us. The question I brought with my friend, Aliyah was that question. I hadn't even thought about how practice was a definition of a profession. For me, the question has always been concrete, what are the things you do day in and day out and how does your understanding of those actions (and yourself) change as you practice. Gathering on Saturday mornings over 26 (or so) years was that kind of a practice for me.

...choice as an essential foundation for Rounds. We each chose to attend, chose to bring(or not) work or questions, and finally chose to offer our observations and queries. The idea of choice in the studio grew more and more essential to my hope for building that kind of practice for students. I taught middle schoolers and anytime I opened the studio up to personal choice I learned. I was able to see each of them in a different light, who wanted to work with someone else, who struggled to come up with something to work on, who worked on the same thing every time we had personal choice. And, it was what students always requested. To me, Rounds is a studio, where there is a form we are practicing and developing. In that practice of looking slowly at a piece of work or question community is built.

Anna Maria D'Ippolito

Middle School Math Teacher, Waring School, Beverly, MA

I am a long-time ROUNDS attender (12-ish years?) whose primary educational work is in middle school math... In my current role as a teacher, one tool from ROUNDS that I use regularly is the distinction between observation, interpretation, and speculation from the Looking at Student Work protocol. Many of my math class warmups from my current curriculum are called "What do you notice/What do you wonder?" activities. These involve looking at something together on a projected surface. The something might be a problem, a set of related problems, a diagram, or an example of a fictional student's work. The curriculum says to ask "What do you notice? What do you wonder?" I frame the questions for my students in a manner that is more akin to the "Looking at Student Work" protocol. I ask for direct observations and state that nothing is too obvious to state. As students share their observations, I ask the group as a whole if they see what so-and-so saw or if they would like further clarification. Then we move on to speculation as "What do you wonder?" Occasionally a student makes a statement that is a judgment ("I don't like this way...") which I point out as a judgment/opinion as distinct from an observation.

I have also attempted to use the Looking at Student Work protocol in my past role as a department coordinator. I had very infrequent opportunities to do so and met with mixed success as I am not sure the teachers all "got" the value of the exercise.

I have also found that the ROUNDS discussions of questions arising from practice often stick with me the way a piece of music may stay close to one's consciousness

One other aspect of ROUNDS that has affected me as an educator is the richness of the multiple perspectives from educators in such a variety of contexts. Hearing how an art or music teacher looks at a piece of work from my practice, or how educators from early childhood through college through museum work through special education respond to a question, or how the responses differ/overlap among teachers who work with students from different cultural or socioeconomic backgrounds, has broadened my appreciation for what goes on on my campus, in my child's school, in my state, and across the world.

The next chapter takes up the topic of portfolio assessment.

Chapter 27

Portfolio Assessment

1994-1997

The Portfolio Assessment Project, led by Steve Seidel and Tina Blythe, grew out of an approach to portfolio implementation by Arts PROPEL (Chapter 14) and the APPLE Project (discussed in previous chapter). The Portfolio Assessment Project was a collaboration with the Massachusetts Department of Education, and was part of a statewide school reform effort. The project brought together practitioners, policy makers, and researchers to explore how portfolios can be implemented to provide effective assessment of students and programs (see Seidel et al., 1997).

Participating Schools

Five Massachusetts elementary and middle schools served as initial partners, and six other schools were added in subsequent years. Unfortunately the documentation of this network is sparse, but Steve recalls the following schools being involved:

Cambridgeport School (Cambridge)
Fisher Hill Elementary (Orange)
Arnold Elementary School (Brockton)
Jacob Hiatt Magnet School (Worcester)
Brightwood Elementary School (Springfield)

Participating schools committed substantial time and resources to an ongoing school-wide review of the fit between curriculum, pedagogy, assessment practices, and exploring the use of a project-based curriculum and portfolios. Teams of teachers from participating schools met several times a year to share experiences, concerns, and discoveries. These meetings provided an opportunity for participants to compare portfolio models and designs they had developed.

During the collaboration, the researchers developed materials in a variety of media that documented the work and could help other schools with the implementation process. These materials were shared with The New Standards Project and with its network of partner states and districts. The New Standards Project was a national organization developing performance and portfolio assessments for use by school districts and states, including Massachusetts.

Impact

Collaborative Assessment in Staff Reviews of Student Work

In 1994, Jill Harrison Berg began teaching middle school at the K-8 Cambridgeport School in Cambridge, Massachusetts. Steve began to work at this school one or two years later, invited by Lynn Stuart, the school principal. Steve introduced collaborative assessment protocols to use in monthly staff reviews of a student and monthly staff reviews of a curriculum (discussed in the Rounds section of Chapter 26). He also introduced the use of portfolios as both an assessment and a learning tool. The work on portfolios at Cambridgeport is reported in detail in Stephanakis (2002) and in Stuart (2002). Jill soon joined Steve's Rounds (discussed in Chapter 26).

Staff review of a student. For the staff review of an individual student, the teacher presented multiple slices of work by the student completed at different times to the school staff. The protocol followed by the staff was to first look closely, starting only with description, helping each other to notice. The second step was analytical, trying to understand how this child was making meaning of their school experience and of classroom tasks. The third step was to discuss next steps for this child. Other “slice” protocols developed by practitioners are available online [here](#).

Staff review of a curriculum. For the staff review of a teacher’s curriculum, the teacher presented selected assignments and student work. Following the same kind of protocol, the staff then discussed whether this curriculum led to learning, where were the weaknesses, and how it could be improved. We asked Jill how common these reviews are in schools, and she said that the only schools where she has personally witnessed this are the ones where she or Steve had introduced this approach.

In preparation for portfolio day, student sadded materials to their portfolios about once a month. The portfolio always contained a self-portrait and writing sample from every grade, in addition to evidence of other key products and performances that the student was proud of, eg., science lab reports, photos of a drama performance, etc. On portfolio day, students laid out key pieces of their portfolios on their desks, and families, community members (e.g. local business owners, city councilors, etc.) had a conversation with students about their work. To help get these conversations off the ground, the school provided a page of suggested questions for these observers.

Graduation portfolios. Students worked throughout their 8th grade year to prepare to demonstrate that they were ready to graduate. The graduation presentation had four parts: math, science, research project, and autobiography. The autobiography was an essay that included reflections as they looked through their K-8 portfolio archive. Family members, former teachers from earlier grades, and community members, such as a member of the school committee, would come to evaluate these presentations. Students were evaluated using a rubric and occasionally were asked to redo one or more of the four portfolio components. Very rarely a student did not get their act together to present their work. These students still graduated but they were not featured at the graduate ceremony.

Travelling portfolios

After Steve left the Portfolio Assessment Project, Jill and her colleague, Dan Monahan, developed another kind of portfolio: the travelling portfolio, described below.

Traveling portfolios were introduced for 7th and 8th graders. The goal was to strengthen students’ ability to reflect on their work and to engage families with their children’s work. Every six to eight weeks, students chose one or two exemplary pieces of work from each subject area for the travelling portfolio. Students included a written reflection on these chosen pieces using the following questions developed by Steve (Seidel, 1997):

Introductory: e.g., What piece would you like to spend some time thinking about?

Backward looking: e.g., What did you do to create this piece? (purely descriptive) What problems did you encounter when working on this piece, and how did you solve them?

Inward looking: What was it like to work on this piece? How do you feel about the piece? What does this piece reveal about you as a learner? What problems did you encounter when working on this piece and how did you solve them?

Outward looking: What does this piece reveal about you as a learner? If you were the teacher, what comments would you make about this piece? What do you think others looking at this piece would be thinking or wondering about the creator and the process?

Forward looking: What would you change if you had a chance to do this work over again?

Students read their essay aloud to family members. Family members had about one week to look at the work, discuss it with the student, and write a response. The portfolio and the family's response were then returned to the school.

Annual Portfolio Day

The annual portfolio day has continued until this day (years after Steve was no longer working with the Cambridgeport School). In addition, when the Cambridge School Board restructured K-8 schools to be K-5 schools in 2012, the school that the Cambridgeport students fed into has continued the portfolio process for 8th graders. This information was conveyed to Jill by Tsekai English, a teacher at Cambridgeport (email April 9, 2024).

Jill is now retired from classroom teaching and focuses on teaching educators to own their and their schools' improvement through inquiry. She has taken the ideas from the PZ Portfolio project and used them for professional development for teachers and for school leaders, as described below.

Teaching Portfolios

In the 1980s, the National Board for Professional Teaching Standards began to use portfolio based assessment of teachers. They first agreed on what accomplished teaching looks like, and what every teacher should know and be able to do at each subject area and grade level. They then identified teachers who showed, through their teaching portfolios, having met these standards. Jill writes about this in her 2003 book, *Improving the Quality of Teaching Through National Board Certification* and in [this 2011 article](#).

The Board demonstrated that portfolio assessment for teachers could be valid and psychometrically rigorous, and Jill believes this has revolutionized the education profession. The Board began by reaching a consensus on what accomplished teaching looks like. They then identified teachers who met this standard as evidenced in their teaching portfolios containing videos of their teaching and their reflections on their own teaching and growth. Each teaching portfolio received a score. Those who meet a certain score become board certified; those who do not meet this level need to improve to get a higher score. Jill went through this process. She told us that 94 percent of teachers who go through this describe the process as a powerful learning experience.

Turnaround Schools

Jill has used portfolios and PZ protocols to help "Turnaround Schools." These are schools that perform below the tenth percentile on test scores and have been told by the state that they must improve or be closed. Jill realized the importance of building a portfolio muscle in teachers at these schools as a way to get them to reflect on where they are now, where their students need them to

go, and what they should do to get there. This is framed as the process of “inquiry,” not a portfolio, but it has the same roots of examining evidence. By reflecting on each other’s teaching, Jill noted that teachers begin to establish stronger standards for themselves. Jill believes that by using an inquiry cycle, teachers learn to become stronger teachers.

Leadership Portfolios

Jill has also taken the portfolio method to the [National Education Leadership Institute](#) established in 2023 in Ghana to help schools develop strong leaders. Jill sees her work with PZ as providing strong roots for this new leadership work. Ghana, a relatively young country, does not yet have licensure or professional development requirements for education leaders. As a result, often school leaders have neither teaching nor leadership experience. A new learning and licensure program designed by Ghana ASCD, with Jill’s support as senior advisor, is being piloted for school leaders in 2024. The leaders discuss readings for one weekend a month, engaging in protocols and collaborative conversations about what they are doing in their schools. They must complete a portfolio with nine tasks to demonstrate that their practice meets the standards described in the rubrics. In these tasks, they analyze their own leadership practice and develop a personal leadership plan, convene a team of stakeholders to look at data, identify a problem of practice, develop a plan to address it, and demonstrate communication and community engagement practices. Some may have to revise and resubmit their portfolios. Leaders come to see the power of these portfolios – they are not just a form of assessment but also a form of learning. This is a process, Jill said, that transforms these leaders so that they develop a learning mindset.

Jill has written about developing school leaders in her 2018 book, [Leading in Sync](#). She has written about using inquiry to develop teaching practice in her 2022 book, [Uprooting Instructional Inequity](#).

In the next chapter, I turn to the topic of student self-assessment.

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Chapter 28

Self-Assessment

1996-1999

From 1996 to 1999, Heidi Goodrich Andrade led a project on [student self-assessment](#) named Pulling Themselves Up by Their Bootstraps: Using Student Self-Assessment to Increase Academic Achievement. This project investigated how self-assessment using scoring rubrics can help middle school students learn to write. The project took place during a time when many teachers, districts, and states were experimenting with authentic or alternative assessments, including scoring rubrics and, to a lesser degree, student self-assessment. But few of the existing research and development efforts focused on the ways in which rubrics could serve not only as a form of evaluation but also as a way to promote learning.

Rubrics

This project investigated the impact of rubrics and self-assessment on students' understandings of the qualities of good writing and how such understandings might promote better writing. The rubrics were characterized by the following:

- They are written in language that students can understand.
- They refer to common weaknesses in students' work and indicate how such weaknesses can be avoided.
- They can be used by students to evaluate their own work and to guide revision and improvement.

More information about the design of these rubrics can be found in Heidi's 2000 article in *Educational Leadership* [here](#). The study was conducted in the Pacific Beach and Standley middle schools in San Diego and involved 12 teachers, 22 7th and 8th grade classes, and 650 students in using rubrics to improve writing.

The project resulted in a collection of rubrics and a highly scaffolded process of self-assessment. The rubrics drew on district, state, and national standards as well as on feedback from colleagues and Heidi's collaborating teachers in San Diego. The self-assessment was followed by revision of writing by students. Students often improved the quality of their writing and also had deeper understandings of the qualities of good writing, as evidenced by the fact that they mentioned more sophisticated criteria when asked what counts in good writing.

Impact

Continuation by the Participating Teachers

The teachers involved continued to use the rubrics for student self-assessment after the study ended and were committed to helping others in their district learn about rubrics. Heidi's 1996 article in *Educational Leadership* can be found [here](#) and a portion of this article was posted [here](#) on the MiddleWeb website. The article remains posted and, as stated on the website, remains one of "the most sought-after MiddleWeb resources." Two other articles by Heidi on the role of rubrics in self-assessment in learning to write can be found [here](#) and [here](#).

Impact on PZ Young Researchers

PZ has not only had an impact on schools and educators, but it also has had an enormous influence on the careers of young researchers. Heidi is a strong example. She built her scholarly career on the work she started at PZ and has published many peer-reviewed articles and book chapters which can be found via Google Scholar. In 2024 she was listed as among the world's top cited scientists in a [Stanford University Study](#). She has also created professional videos and a webinar with related electronic media, and these are listed in the references section of this [report](#).

This chapter concludes the section on assessing student work, and I turn next to a set of projects designed to help schools and other organizations make innovative changes.

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FOSTERING INSTITUTIONAL CHANGE (begins in 1992)

In the following section, seven chapters present approaches to helping schools and other kinds of organizations make broad institutional changes.

Chapter 29

ATLAS Communities: Authentic Teaching, Learning, and Assessment for All Students: 1992-2010

The ATLAS Communities Project was founded in 1992 as a collaboration between four organizations that had been involved in school improvement efforts: Project Zero (with PI Howard Gardner), the Coalition of Essential Schools at Brown University (with PI TheodoreSizer), the School Development Program at Yale University (with PI James Comer), and the Education Development Center in Newton, Massachusetts (with PI Janet Whitla). This collaboration was one of the 11 groups funded by the New American Schools Development Corporation thanks to a gift of \$500 million from philanthropist Walter Annenberg. These awards were given to develop new and innovative schools for the 21st century. The ATLAS Communities Project was an acronym for Authentic Teaching, Learning, and Assessment in Schools. The project is described through interviews with its major players in *School Reform Behind the Scenes* (McDonald, Hatch, Kirby, Ames, et al., 1999).

This collaboration of four school improvement organizations was meant to result in one overarching innovative model for K-12 schools. The leaders spent the first year debating what they felt ATLAS graduates should know and be able to do. One year proved insufficient to resolve philosophical and implementation differences across the groups. Thus, after one year, further funding was secured to continue the debate, and the ATLAS Seminar was launched. Seminar members met on a monthly basis to explore the approaches and compatibility among each of the four organizations. At the same time, partnerships were formed with four different school districts: Gorham, Maine; Norfolk, Virginia; Prince George's County, Maryland, and Lancaster, Pennsylvania (but this last site did not stay in the partnership). The researchers worked with at least one elementary, middle, and high school from each of these districts. These sequenced schools were called "pathways."

The Pathway Concept

The pathway concept was key to the ATLAS change process. The pathway is both an organizational structure or feeder pattern of elementary, middle, and high schools and a conceptual ideal of the personalization of education through the development of a coherent program for each student going through the system. The ATLAS vision was to create model approaches in a set of such pathways, forming an academic community for students and their families, teachers, and administrators. Within this vision, curriculum, instruction, and assessment were aligned across grade levels and content areas, providing a consistent approach and continuity of the learning experience as students transitioned from primary to middle to high school.

Contributions of Each Organization

There were many points of agreement among the four organizations. They all valued a progressive, democratic, active-inquiry vision of what they considered to be authentic teaching, learning and assessment. Here is how long-time director **Linda Gerstle** described this general approach:

...hands-on projects that embedded activities designed to challenge students to use their minds well. Using a guided inquiry approach, teachers explored among themselves what it means to teach for understanding and to build curriculum and instruction around essential questions and overarching themes. Performance based assessments, including performances of understanding and exhibitions of learning, were used not only to guide instruction but also to ensure that students met high standards established by the school [pathway] community. Members of the ATLAS community learned to use various documentation, evaluation, and self-assessment measures to track changes in student performance, including classroom observation, portfolios, on demand performance tasks, and public exhibitions at key points along the pathway. A system of professional development and leadership development opportunities was designed to foster ongoing inquiry, professional collaboration, and reflection.

Each of the four organizations contributed specific expertise to this overarching, aspirational vision.

The PZ team focused on Teaching for Understanding, creating Cultures of Thinking, and careful, routine examination of student work (following the ROUNDS model developed by Steve Seidel discussed in Chapter 26).

The Coalition of Essential Schools (CES) had guiding principles that helped teachers focus on what was essential to know and be able to do. CES contributed a focus on depth vs. breadth (less is more) and demonstrations of mastery through exhibitions of learning.

The School Development team contributed ideas about school governance as well as a developmental perspective on youth. A School Planning and Management Team managed change by reaching a broad consensus among teachers, administrators and parents and focusing on creating a positive school culture.

The Education Development Center contributed their expertise in professional development that posited teacher collaboration and recursive planning cycles as a key to promoting a common vision and promoting a culture of change that could better respond to students' needs.

Resources Developed

A set of resources was developed during these initial years that created a foundation which was enhanced and adapted over time as the later implementation phase took shape. Of particular importance was a curriculum planning tool whose framework was derived from PZ's Teaching for Understanding and CES's use of essential questions. While the specific content of the curriculum was left up to teachers, this framework guided teachers as they engaged in critical inquiry.

A variety of protocols were introduced that were designed by both PZ and CES. In particular, the Looking At Student Work and Tuning Protocols (these are protocols to use to reflect on how a project is going) and their multiple derivatives remained core to the many ATLAS implementation adaptations that unfolded over a multi-year period.

Philosophical Differences

Despite a shared agreement about developing a progressive and authentic approach to teaching, learning, and assessment, a number of philosophical differences among the four groups were never

fully resolved. A detailed discussion of these differences can be found in an article by Tom Hatch (1998), a PZ member who was part of the ATLAS project. Here is a brief excerpt from the abstract:

Differences in the theories of action of these organizations contributed to significant disagreements over a number of key issues related to the process of change, the nature of the curriculum, and the shape of personal and organizational development. As a result, despite considerable funding, broad initial agreements, and good relationships at the highest levels, it was extremely difficult to make decisions and carry work out in a collaborative and efficient manner. (p. 3).

One significant divide was over whether curricula should be inherently interdisciplinary (as argued by the CES team), or whether deep understanding required engaging with traditional disciplines such as history, biology, and geometry (as argued by the PZ team). Other disagreements included whether the curriculum should be driven by teacher and student interest or the demands of the disciplines, and the role that basic skills and standardized tests should play. Each of the four groups had its own reform-oriented approaches and history. Ultimately the groups realized that it would be challenging and perhaps not possible for them to converge on one best school reform approach.

The four groups decided to let these differences co-exist. As sociologist Nathan Glazer (1999) wrote:

ATLAS became something of a smorgasbord of innovative approaches to teaching, and in effect, one or another element or group of elements was picked up by a school, or a group of teachers, or a teacher in a cooperating school, and developed into a program. (p. 174)

Thus, instead of creating a design that could be put into place in any school, ATLAS developed a set of tools and resources that the schools involved could put together in whatever way they deemed best. In that sense, ATLAS most closely mirrored the approach of Project Zero, where schools can pick and choose which of a set of frameworks to adopt.

The Research Phase and the Implementation Phase

The four initial years of ATLAS constituted a phase of active collaboration and research among the four organizations and the three pilot sites. The funding from New American Schools was decreased and offset by federal dollars from the Obie Porter legislation, which sought to foster systematic approaches to school improvement. New American Schools combined its decrease in funding with contributed expertise to help ATLAS and the other grantees transition to independent self-sufficient organizations.

Linda Gerstle (from Education Development Center) and Ron Walker (formerly principal of the Peabody School, a public elementary school in Cambridge, Massachusetts) took over the implementation phase of the project. Linda served as the Director of ATLAS from 2003-2010, and Ron as the Associate Director. This phase is discussed below in the section on impact.

Impact: Reflections from Key Individuals Involved in the Implementation Phase

Linda Gerstle

Linda Gerstle talked to me about how the goal of this implementation phase was to scale up what had emerged from the research and development phase and to create a comprehensive, research-

informed school improvement model. Over the next eight years, ATLAS worked in 150 schools in 14 states, including many large urban systems (NYC, Memphis, Philadelphia, Miami, Seattle, Chicago) as well as smaller rural systems. During this phase, ATLAS partnered closely with schools and districts to develop and implement a multi-year plan for school transformation.

While ATLAS provided the conceptual framework along with a concrete set of ideas, expectations, activities, structures, and processes, ATLAS staff did not bring a suitcase full of one-size-fits-all ideas. Rather they worked with school and district community members to co-construct an approach that built on local assets. During a “charting the course” buy-in and initiation stage, ATLAS staff and local leadership explored existing policies and practices, and assessed staff willingness and capacity for change and the availability of local resources to support the change process.

As mentioned, the pathway concept was key to the ATLAS implementation schema. The interaction of ATLAS resources and ideas with local conditions led to the adaptation of ATLAS strategies to meet local needs along the K-12 continuum. At the heart of the implementation process was a recursive data-driven planning cycle carried out at both the school and pathway level.

Professional development efforts that initially focused on lead teachers evolved into one involving all teachers in whole faculty study groups. Such study groups became a non-negotiable requirement for joining the ATLAS network of schools. With the input and expertise of Carlene Murphy, who developed this specific model, these study groups prepared teachers to be the driving force in school improvement. Looking at Student Work (see Chapt. 26) remained a core strategy for these groups and was key to enhancing teachers’ instructional practice as they gained new insights into their students’ thinking and developing understandings. Similarly, leadership development for district and school administrators consisted not only of formal institutes and workshops, but also included modeling, mentoring, and peer coaching.

To become self-sustaining, ATLAS developed a business strategy and associated marketing and public relations tools in order to solicit interest and recruit schools and districts. ATLAS successfully applied for and received a 501c3 status. While ATLAS continued to submit for grant funding from varied sources, its business model was primarily a fee for service enterprise. ATLAS services were customized to align with the needs and available resources of a school/district. Contracts ranged from under \$10,000 for a one-day seminar/workshop to several hundred thousand dollars for multi-year contracts. Services received by participating schools included the following:

- Development of ATLAS Study Groups
- Cultures of Thinking seminars
- Mentorship in Looking at Student Work, Portfolios, and Exhibitions
- Coaching for Principals
- Attendance at the annual Pathways to Understanding Institute at rotating district sites
- Attendance (for principals) at the annual National Principals’ Institute at rotating district sites

A site’s plan and services were overseen by an ATLAS Site Developer, hired in the communities where the schools were located. The ATLAS Site Developer was usually a teacher or school leader whose values and approaches to learning aligned with those of ATLAS. Their role was complex and multi-faceted, and they received training and support from ATLAS ‘central.’ While many of the

tools designed during the R&D phase continued to morph and adapt to new learning, ATLAS continued to explicitly reference and credit the founding partners as the primary “authors” not only of the tools, but more importantly of the ideas they represented.

There were many promising practices that pointed to the potential for key elements of the ATLAS design to be sustained. The interactive nature of the early stages of the ATLAS design process strengthened the ATLAS design by building on local strengths which, in turn, became the catalyst for other changes. The pathway concept was transformative: those who were involved learned to think not of individual schools, but of a continuous K-12 journey emphasizing authentic teaching and learning, meaningful assessment, continuous professional development, and the development of learning communities. ATLAS-affiliated schools were able to build an organizational culture that was reflective and emphasized collaboration and consensus as the framework for operation and communications. These schools became better places for students and teachers.

Regrettably, Linda told me (as of 2025), there are no more visible traces of ATLAS schools. Across all the ATLAS sites there were threats to sustainability of the sort that are evident in many schools and districts as they attempt meaningful change:

- Leadership at the district and school levels that championed ATLAS changed.
- High-stakes state tests focusing on facts rather than authentic problem solving pushed teachers toward “counter-ATLAS” practices.
- The 2001 No Child Left Behind act accelerated the emphasis on a unidimensional form of testing, making it more and more difficult for ATLAS to uphold its mission, principles, and values.

While the lasting, systemic change sought by ATLAS remained elusive, there were many individual teachers, principals, and site developers whose practice was influenced beyond their formal affiliation with the organization. And so I asked Linda to put me in touch with one of the site developers to find out more about the personal effects of involvement with ATLAS, and thus I met Patty Maxfield.

Patty Maxfield

Patty Maxfield worked with Linda for seven years as an ATLAS site developer. At the time she was hired, she was a teacher-leader in a high school in the state of Washington that was a member of the Coalition of Essential schools. Patty described to me the “amazing” things that happened in the ATLAS schools, but also noted that when new leadership came in, the new leaders always wanted to put their own imprint on the school rather than support excellence that was already present. She said she had never heard of a new superintendent saying, “The work here is great, and I want to join it and push it to a new level.” Instead, they take apart what has been built and put their own stamp on the school.

Ron Ritchhart was one of the PZ researchers brought in to coach teachers and principals in using TfU. Ron had begun developing his Visible Thinking ideas and had a willing audience on whom to test his thinking routines and continue to develop his own practice around coaching teachers. He worked within school districts and was also a keynote speaker at a week-long summer retreat for Northwest teachers. Thus, Visible Thinking was introduced to schools alongside TfU.

Patty's role as site developer involved coaching teachers in TfU and in what it means to be a teacher-leader. She also did a great deal of mentoring of principals and others in the central office. Such mentoring included helping feeder patterns of schools work to develop a single school on multiple campuses. This included helping teachers from multiple levels develop relationships and consistent instructional practices across schools. This worked to reduce re-teaching concepts and lost instruction time. Patty also helped principals and central office leaders develop data-based decision making. Principals and teachers know that test scores can be misleading. Student work really shows the kind of thinking that students can and cannot do. But for principals to consider using student work, rather than just test scores, to understand how their school was performing and to inform instructional practice was a radically new way of thinking for principals and teachers.

I asked Patty about challenges she faced. She said that initially teachers were resistant to changing practice and felt this was being forced on them by outside experts with no understanding of their particular students. However, once teachers really came to grasp ATLAS, they loved it, saying things like, "I've been waiting my whole career to do this kind of work."

Patty told me two stories to illustrate the importance of the pathways model when teachers were working to integrate TfU with their content area. In one district, high school science teachers complained that the incoming 9th graders lacked basic scientific knowledge. But when these teachers sat down with middle school science teachers, they realized that they were using different vocabulary for the same concepts. Thus, the 9th graders were not, after all, coming to high school unprepared in science. This would not have been discovered had the middle and high school teachers not been working together in a pathway. Relationships among teachers across primary, middle, and high school really do matter, Patty said.

A second story she told was about how an elementary school teacher pushed middle and high school teachers to broaden the generative questions they were developing for a TfU lesson to allow for greater exploration. Again, this would not have occurred if teachers at all three levels were not working together to align the way that they implemented TfU.

Despite the transience of the ATLAS school model, Patty said that ATLAS had a profound effect on her own practice. After she left ATLAS, she worked in the Clover Park School District in Washington, where she implemented many of the ATLAS ideas, working with an innovative superintendent. But once that superintendent left, "things fell apart." Later, when at the University of Washington, she used many ATLAS practices in her work with schools across the country. These included using protocols to look at student work, using Visible Thinking Routines to deepen conceptual understanding, and developing relationships within and across schools.

Bottom line: If one were to go to any of the schools that had been an ATLAS school, the specific structures set up by ATLAS (e.g., pathways, whole faculty study groups) would no longer be there. But one would still see instructional traces. Teachers who were involved with ATLAS would not have reverted to their pre-ATLAS practices, Patty said with confidence. Because to change a teacher's practice, you have to change that teacher's thinking. Once that happens, no teacher goes back to what they were doing before.

Ron Walker

Ron Walker had similar things to say about the impact of ATLAS. When I asked him how he would describe the overall orientation of ATLAS, he talked about the importance of the idea of a pathway from pre-K to 12th grade that allowed teachers to come to really know their students. For

example, middle school teachers would talk to elementary teachers about their new students, finding out what had and had not worked for these students in elementary school. The pathway was also a way to knit the school and community (including parents) together. For a teacher to know a child, he said, it was crucial for the teacher to have a relationship with the child's family (a key belief of James Comer). The glue of ATLAS, he said, was relationships. Relationships matter. He also spoke to the belief that every student, including the most vulnerable, deserved a rich education that would draw out their talents.

When I asked Ron what he saw as the most important practices recommended by ATLAS, he talked about assessing children in terms of student-led demonstrations and exhibitions of mastery; making learning a collaborative effort between learner and teacher; and making learning authentic rather than force-fed.

Why, I asked him, were there no visible traces today of ATLAS in the schools where ATLAS practices were implemented? ATLAS worked with these schools in the 1990s, he said, 30 years ago. Of course, today's principals and teachers would not have been around when ATLAS was implemented in their schools. However, he believes that ATLAS had a deep influence on the individuals on the ATLAS team as well as on the individual teachers and principals they worked with. ATLAS ideas lingered in superintendents (like visionary superintendent Tim McCormack, from Gorham, Maine), principals, and teachers, some of whom went on to be education consultants. The protocols for looking at student work were aggregated from those developed by Sizer and those from PZ, and these are still being used by many of the individuals involved with ATLAS, Ron said with certainty. He mentioned Gene Thompson-Grove, now a consultant working with schools, who uses ATLAS protocols.

In 2007-8, after Ron left ATLAS, he founded a national non-profit called COSEBOC (Coalition of Schools Educating Boys of Color). He said that ATLAS had a direct influence on this organization in its rejection of rote learning. Pedro Noguera, then a professor at Harvard's Graduate School of Education, now the Dean of the University of Southern California's Rossier School of Education, helped to build COSEBOC, and Pedro himself was very influenced by ATLAS, Ron told me.

Gene Thompson-Grove

Gene Thompson-Grove worked with Sizer's Coalition of Essential Schools and was involved with ATLAS from its beginning. She described her time with the Coalition and with ATLAS as a "very heady time." The boundaries between the Coalition and ATLAS were porous, she said. Before working for the Coalition, her goal had been to become a middle school principal. But after working with the Coalition (as well as the Annenberg Institute for School Reform and ATLAS), her mission changed: she became passionate about working with adults (teachers and principals) with the goal of fostering school reform. Two practices that the Coalition brought to ATLAS have stuck with her and shaped her work with educators: providing a structure for conversations about student work through the use of agreed upon protocols; and the importance of "critical friends groups" in order for learning in professional development to lead to changes in practice. What has stayed with her the most from her time with ATLAS was the importance of working intentionally and purposefully with principals.

Gene found Steve Seidel's Collaborative Assessment Protocol (discussed in Chapter 26) especially powerful for framing in-depth conversations about teaching and learning (and leading). In the late 1990s, she and David Allen (also from the Coalition) coordinated the National Looking at Student Work Consortium, inviting all those who had developed protocols to learn from one another.

The Coalition also brought to ATLAS the idea of the “critical friends group.” The key idea is that teachers and principals change their practice when they collaborate with someone who holds them accountable to carrying out the goals they want to achieve. Without such a “critical friend,” one could all too easily slip back into old practices.

Gene worked with principals through the ATLAS Principal’s Institute directed by Ron Walker, which convened yearly at a different ATLAS school site. During these institutes, participants used protocols to look at student work, and each participant had an “accountability partner.”

Protocols and critical friends group go hand in hand, Gene said. Protocols create a “holding environment where you meet people without judgment. The holding environment stays in place after the meeting to hold people accountable.” But you hold people accountable by offering to help, not by judging them.

After ATLAS disbanded, Gene worked for Ron’s organization,, COSEBOC, and for the [Perrone-Sizer Institute for Creative Leadership](#) whose core values included “continuous reflection” and “Listening and communicating regularly, proactively, clearly, and inspirationally to engage hearts and minds for action.” Wherever she has worked since ATLAS, she has brought her belief in the power of deep collaboration. Through it, one learns things one could not have learned on one’s own: the power of dialogue; the power of questioning; the power of working with people with different viewpoints; the power of slowing down, observing, making inferences, and only then devising a practical implementation plan. “If teachers and principals are not learning,” she said, “then the kids are not learning.”

She also believes deeply in the power of looking at student work. She attributes this deceptively simple idea to Steve Seidel’s Collaborative Assessment Conference, which she participated in, and to which she regularly sent colleagues. She said that when teachers say that they learned something that changed their practice, this can always be traced back to the experience of group reflection on student work. It is this kind of slowing down together and attending shows you who the student really is. (This was also an unpublished finding from a study carried out with the Annenberg Institute for School Reform.)

Gene pointed out to me that a large and interconnected community of educators emerged in the late- 1980s from ATLAS, Sizer’s Coalition of Essential Schools, and the Annenberg Institute for School Reform. Many individuals in these three organizations formed new, like-minded organizations. One especially influential organization initiated in the 2000s was the [School Reform Initiative](#). Others included the [Center for Leadership and Equity in Education](#) and the Perrone-Sizer Institute for Creative Leadership.

Brenda Artwell

At the start of our interview about ATLAS, Brenda Artwell said, “Project Zero changed me”. But I learned from our interview that she had what I would call a PZ mindset before she came into contact with PZ. She was always open to new approaches to engage both students and teachers to help them learn.

Brenda was a teacher, teacher support facilitator, and then a middle school principal in Philadelphia. had begun working with the Coalition for Essential Schools when Ron Walker and

Linda Gerstle invited her to join ATLAS at the beginning of the project. “I loved ATLAS,” she said. (After the project ended, she joined Ron Walker’s COSEBOC).

Brenda’s role was to introduce ATLAS to superintendents, principals, and teachers in Philadelphia, Boston, Detroit, and New York City. (She also did some work in Rochester and Seattle.) She found the New York City schools the most challenging, “not a place to work in if you are a weakling.” She provided professional development to teachers, principals, and superintendents, introducing protocols for looking at student work, thinking routines, and Teaching for Understanding. Her goal more broadly was to get teachers to design lessons based on learning as a social activity. In such lessons, students engage in conversations with one another about how they are learning, and the teacher serves as the facilitator and knows how to ask the “right” questions. Brenda provided large, all school professional development, but then worked with teachers in study groups. “We were not changing curriculum,” she said, “but changing the way teachers thought about teaching and the ways children learn.”

She told me that TfU was more difficult for teachers to grasp compared to thinking routines. Why? Because TfU required them to change their conceptions of teaching. They had to change their view about understanding; it was not just demonstrated when students got the right answer on a test. They had to grapple with what understanding really means. Thinking routines were easier for teachers to embrace, because they are straightforward and required less of a “shakeup” in the daily instructional routine.

Nonetheless, teachers were often initially skeptical about the value of thinking routines, concerned that they take up too much time, that students would not benefit, and that there was no way to “test” for any learning outcomes. But Brenda encouraged them to try thinking routines out and had them working together in study groups, bringing student work to discuss. She started with the most open-minded teachers, and they helped bring in the more resistant ones. After a while, she said, they began to “get it,” and some of the most resistant ones sometimes became the biggest supporters. Brenda was also able to persuade resistant principals and some superintendents.

She also said that TfU would have been more difficult for teachers to grasp if they had not already been introduced to thinking routines. Thinking routines changed their mindset and caused them to be more open to TfU.

Teachers, Brenda said, had to move from a test mentality to an assessment mentality. Testing is about facts and typically involves multiple choice questions. Assessment, she said, “changes how you teach, because you are assessing all the time as you listen to a student’s process of learning.” Teachers learned to reflect on what their students said and to be alert to whether students understood or not. This allowed them to think about when to move on to the next level of understanding and how to get students there. Since teachers were no longer siloed, they could discuss all of this with others. Working in groups provided support that helped teachers improve their teaching as well as student learning.

Every summer, all of the ATLAS teachers (funded by their schools) convened in a days-long summer institute held in or near one of the cities in which ATLAS was working. The institutes focused on protocols to look at student work, thinking routines, and TfU. The teachers presented examples from their teaching that demonstrated how they were using protocols to look at student work, and how they were using thinking routines and TfU. “They saw breakthroughs,” Brenda said. Many ATLAS teachers also came to the PZC summer institute.

I asked Brenda what kind of impact ATLAS had on teachers and principals. She has remained friends with a number of the ATLAS teachers, and she said that these teachers never forgot what they learned from ATLAS. After ATLAS ended, many of the teachers became principals and incorporated the ATLAS frameworks into their schools. However, many of these principals are now retired, and Brenda said that she did not know whether the ATLAS frameworks could still be seen today in their schools.

Each ATLAS PI brought something different to the table. For James Comer, it was the idea of connecting schools to community and parents. For TheodoreSizer, it was the idea of exhibitions of mastery. For Howard, it was the idea of teaching for understanding with essential questions, as well as the idea of how individual students learn differently. For Janet Whitla, it was the models of practice developed over the years at EDC. There was a “constant mix and churning” of ideas, Ron said, as they sought to weave a carpet together. Some districts adopted the Comer ideas; in other districts (such as Gorham, Maine), the PZ ideas worked better. Some school leaders were already inclined in one of these directions, and for them, Ron Walker told me, ATLAS was like “manna from heaven.”

Gene Thompson-Grove told me something that Sizer said to her about school reform – which she paraphrased as “school reform organizations come and go, but what stays are the people.” The core ideas of ATLAS stayed with Gene, and she took them with her in all of her educational consulting work post-ATLAS. This echoed what I heard from Linda Gerstle, Patty Maxfield, Ron Walker, and Brenda Artwell – that while there are no “ATLAS” schools anymore, the individuals involved in ATLAS were profoundly changed, and ATLAS lived on in their practice.

In the next chapter, I describe a project designed to foster organizational change in a variety of kinds of institutions, including business organizations.

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Chapter 30

Learning Innovations Lab (LILA)

2000 - ongoing

The [Learning Innovations Lab](#) (LILA) was founded by Daniel Wilson and David Perkins in 2000. The project was motivated by the fact that individual and organizational change is very difficult. LILA was founded to explore why, and to develop strategies to support such change. The project is ongoing and is now led by Marga Biller, with key support from Amanda Nourse. This brief [video](#) provides an introduction.

LILA is a consortium of researchers and practitioners who are leaders in organizational effectiveness, learning, innovation and change. LILA includes members from the private, public, and non-profit sectors; faculty scholars; government organizations; Project Zero researchers, and Harvard graduate students. Together they collaborate to address challenges in their workplaces. The group becomes a learning lab.

Membership is by invitation only and is limited to 25 organizations. Members are encouraged to stay on over the years. Often, when members leave the organization that they represented and take on a role with a new organization, they come back to LILA. “So it’s not just the organization but the person” who is impacted, Marga told me. This continuity ensures that members engage in a deep level of confidential, collaborative inquiry and problem solving. Member organizations have included Meta, BlackRock, Great Place to Work, Siemens, Independent Schools of Victoria Australia, Carrier, Moody’s, US Army University, and World 50. Non-profit organizations are encouraged to apply, to ensure that there are diverse perspectives.

Three Goals

LILA has three broad goals:

- *Craft intellectual insights:* Develop powerful conceptual frameworks that synthesize the latest research and illuminate the challenges facing leaders and organizations.
- *Have practical impact:* Members support one another in making genuine advances on the organizational challenges they face through soliciting critical feedback on organizational initiatives, exploring questions in small and large group formats, and reporting on their progress throughout the year.
- *Create social connections:* Generate high-trust relationships among top global Chief Learning/Innovation Officers across industries and with top academic thinkers and researchers in the fields of organizational learning and innovation.

How LILA Operates

Each academic year, the LILA community explores a theme that connects to current members’ challenges. Areas of focus since 2010 have been:

2010-11: The Effective Collective
2011-12: Developing Wisdom in Organizations
2012-13: Learning from Work
2013-14: Unlearning to Learn
2014-15: Flexpertise: Developing Adaptive Practices in Organization
2015-16: Managing Complexity
2016-17: Adaptive Cultures
2017-18: Emergence in Organizations
2018-19: Collective Mindfulness
2019-20: Ecologies of Learning
2020-21: System Leadership
2021-22: The Human Factor: Agency, Belonging and Connection from the Inside Out and Outside In
2022-23: Placemaking – Designing Organizational Attractors
2023-24: Learning on the Edge
2024-25: Navigating the Cs of Change
2025-26: Resilience in the Age of AI

Four two-day gatherings are held each year, focusing on a topic relevant to the theme being explored. In between these gatherings there are several short online meetings and discussions, often with presentations from guest speakers. Participants are provided research briefings and book summaries that synthesize the latest research and thinking on the topic from a variety of disciplines. Members discuss, share their challenges and receive feedback. After the gathering, members receive comprehensive documentation of key ideas and discussions, and articles that recap central insights. The guest speakers, typically scholars also involved with very practical issues in organizations, continue participation and conversation throughout the meetings rather than just stepping in for their presentations and disappearing.

During the year, members also engage in monthly conference calls to discuss issues of practice that members are facing. A website accessible only to members, includes the 25 years of briefing documents for all of the events that LILA has hosted since its inception in 2000.

The final of the four gatherings, held at the end of each academic year, recaps and synthesizes insights and progress made during the year. Member organizations can send several additional representatives to this gathering. The gathering also includes LILA alumni and faculty guests.

What Has Been Learned

LILA has thus far hosted over 95 gatherings and produced research briefings and insight articles on themes around knowledge, organizational effectiveness, learning, collaboration, and leadership in organizations. As just one example of what has been learned, it takes 25 percent of people using a new convention to spur wide-spread adoption within an organization. This process can be speeded up via homogeneous grouping in which two or more people interact. This and other practical insights about organizational change can be seen here, on these ten ["Adaptive Culture Cards."](#) The front side of each card shares an overview of a particular idea and the back side offers questions for individual or group reflection or conversation.

Impact

Testimonials from participants in 2024-5 follow:

Teresa Roche, CHRO City of Fort Collins, Colorado

Participating in Harvard University's Learning Innovation Laboratory (LILA) has been a profoundly transformative experience, both as a leader in the private and public sectors. LILA's convening of thought leaders from around the world—each bringing unique lenses shaped by diverse disciplines, geographies, and experiences—has offered an intellectual feast and an emotional mirror. The presence of colleagues who are humble learners, willing to sit with complexity rather than rush to resolve it, created a space of rare relational richness. The thematic arcs explored each year have long resonated deeply with the most pressing and meaningful challenges facing organizations that are genuinely committed to learning and innovation. Through LILA, I was not only intellectually stretched but also relationally re-rooted in the kinds of inquiry that make organizational life more responsive, regenerative, and wise.

To illustrate, just a glimpse of the direct impact on the organizations I have or am currently serving:

- The thematic arc on Innovation enabled me to bring one of our LILA thought leaders to Agilent, sponsored by our CEO and CTO, along with a group of our top research scientists, to explore how innovation occurs.
- The year focusing on Wisdom helped my work with our CEO on helping him make explicit how he led the company through significant challenges, so he could begin developing his direct leaders, both of whom became CEOs of the two publicly traded companies formed from Agilent.
- The thematic arc on agency...helped us apply three specific recommendations that helped us navigate a socially charged time in the community and our organization. The effects of this are still felt.
- Navigating complexity and polarity leadership was content brought in immediately to the City, along with insights on adaptive cultures. Given what we faced as a local municipality, we often discuss the energy between tight and loose during many of our leadership conversations. It has helped us frame dialogues well and loosen the grip under pressure.

We have been integrating AI into the LILA dialogues for several years, and the group has generated next year's thematic arc of resilience in the age of AI, which all are welcoming as a deeper dive.

Nick Busalacki, Vice President, HR Global Learning and Development, Organizational Change Leadership, Johnson Controls

LILA has been instrumental in helping me build a strong professional network of talented and thoughtful leaders. The opportunity to engage with such a diverse and accomplished group has expanded my thinking and enriched my leadership practice. I particularly appreciated LILA's ability to balance academic depth with practical relevance—something that's often hard to find in professional communities.

One of the most valuable aspects of LILA was the ability to leverage relationships and conversations outside of the formal sessions. A great example of this was the opportunity to work closely with another member, Marc, to explore the future of learning, our leadership model, and how I might influence the next phase of our ongoing One JCI Learning journey. While I had a relationship with Marc prior to LILA, the depth and focus of our collaboration were a direct result of our shared experience in the community. These kinds of connections have had a real and lasting impact on how I approach learning and leadership at Johnson Controls.

What truly sets LILA apart is the quality of the dialogue and the intentional blending of theory and practice. The community fosters a spirit of inquiry and experimentation that encourages real-world application, not just conceptual understanding. That, combined with the caliber of participants and facilitators, makes LILA a uniquely valuable experience.

Robb Virgin – Assistant Superintendent at Eden Prairie Schools, Eden Prairie Schools

After completing my PhD, I was seeking a community with a diverse set of experiences across sectors, a commitment to learning at the highest levels, openness to new ideas, and a nexus between research and practice. LILA proved to be the perfect fit for me. By understanding the different dynamics of change, we have accelerated key initiatives while also improving organizational health. We have also adopted learning designs and facilitation strategies that have increased employee engagement. I've been part of excellent learning communities throughout my career, and LILA is a distinctly different experience, characterized by its interdisciplinary nature, the back-and-forth relationship between learning and application, and a professional community approach to human development.

Muna Hamza, Director Strategy and Innovation, General Motors

LILA is so unique because of the combination of stretch thinking and practical insights. It's a privilege to have such incredible speakers, hands-on learnings work and incredible network of contacts all so thoughtfully pulled together. I consistently learn as much from the content as I do from how the meeting is curated and facilitated. The moment you discover it, you know it's just a very special community!

T.J. Linz, VP HR and Organizational Development, Doka

LILA has been such a refreshing and rewarding experience to stay connected to academia at such a prestigious level. Coupled with all the talented practitioners in similar fields as mine, this has been instrumental to me in helping to shape my thinking outside of the traditional box.

Specifically, the theme of Navigating the Cs of Change was very relevant as my organization navigates a BANI world in the global construction industry. From internal strategic step-changes to cultural evolution in responding to disruption and at times internal crisis; the LILA community offers a welcomed, refreshing perspective in navigating these challenges.

Leading a "Learning Round" where a LILA member brings in an actual strategic initiative is especially helpful as the challenge I shared was happening in real-time. The member input was extremely insightful and we ended up incorporating many of the inputs and feedback in our planning and execution process.

I make a concerted effort to connect with each of the visiting faculty members through social media. Many faculty members share excerpts of their work online which helps me stay connected and open-minded to new concepts and ideas.

I have been part of other professional development groups. What stands out most the most about LILA is that it blends academia w/ practice by facilitating a scholar-practitioner approach to learning and development. The quality of the member organizations has always stood out to me, we have such a great blend of industries and disciplines in the room, which makes the learning experience so much stronger. The care and thoughtfulness of the faculty and staff who make LILA happen is astounding! None of this is possible without them. The thoughtful curation of visiting academics whose research is relevant for many of the challenges we face in practice is great.

Tony Bond, Chief Innovation Officer, Great Place to Work, USA

LILA continues to be a great experience for me, both personally and professionally. It's been an honor to be part of this dynamic community that has contributed greatly to my development as a leader. Being able to learn from carefully curated thought leaders and having exposure to cutting-edge research has provided me with much-needed tools to navigate the complexity of today's work environment. The opportunity to connect with a cohort of great leaders across industries has stretched my thinking and, along the way, has helped me develop lasting relationships.

From my first engagement, where we explored the power of reflection on learning, to the most recent theme of the 4 Cs of Change, I've had the opportunity to weave these concepts into our executive team's strategic discussions, which has influenced our approach to several initiatives across the organization. I've been able to invite guest faculty such as Damon Centola and Amy Edmondson into several high-profile initiatives, and their work continues to influence our approach with clients. At our most recent Summit, we hosted an Employee Resource Group experience for over 450 employees representing 171 companies and used Damon Centola's concepts around how to leverage social networks to assist ERGs in impacting business strategies. Compared to other professional communities, LILA takes a much more creative approach to organizing people and content. It utilizes modalities that connect to all your senses—auditory and visual. There's a great balance between receiving information and carving out time to have deep discussions with members on how the learning can be applied. I've also been impressed with how the LILA team curates resources, such as the harvest documents and guest faculty content, in a way that is easily accessible and becomes a toolkit that can be leveraged going forward.

The next chapter examines a project dedicated to helping a cluster of schools in Australia make significant changes.

Chapter 31

Leading Learning That Matters and Idea Into Action 2011-2025

In 2011, PZ began a collaboration with [Independent Schools Victoria](#) (ISV) in Melbourne, Australia to help school leaders make changes in their schools. Two PZ frameworks were introduced: Leading Learning that Matters, in 2011, and Idea into Action, in 2017. ISV is the state of Victoria's peak organization for independent schools – with over 200 schools operating on 372 campuses and educating more than 165,000 students. Its mission is to “support independent education for the benefit of students and the wider community,” as stated on their website. ISV has a long history of programs to develop leadership and improved teaching practices. ISV is the largest school network with which PZ has worked.

These projects were led on the Australian end by Michelle Green, CEO of ISV from 2002 to 2024. ISV receives government funding to support teachers and principals, including funding for bringing in experts from outside of Australia, and prior to Michelle's tenure, ISV took its direction from what the government deemed were educational priorities. Michelle, however, a visionary thinker, demurred, and started to do her own research on big new ideas in education. When one of Ron Ritchhart's collaborators, Karin Morrison, came to work for ISV, Michelle learned about PZ. She then began coming to the PZC, learning about PZ's many projects, and forming connections with PZ researchers. She also joined LILA (Chapter 30), which was very influential in her thinking about how to regenerate leadership at ISV.

Michelle decided that ISV would be able to do something special by collaborating with PZ. ISV would not bring in PZ to train teachers on one of PZ's frameworks. Instead, ISV teachers would collaborate with PZ researchers to determine for themselves, with PZ's support and scaffolding, what innovations they wanted to make. Then the school leaders and PZ researchers would co-design a framework for making change happen. In this way, school leaders would have agency in making change. As Michelle told me, “Each school would get something tailored to their circumstances and specific to their schools.” According to Michelle, the PZ-ISV relationship was so intertwined that she could no longer distinguish the PZ from the ISV part. The relationship, she said, was very generative.

Leading Learning that Matters (2011-2023)

Led by Flossie Chua, David Perkins, and Daniel Wilson, [Leading Learning that Matters](#) (LLtM) explores two overarching questions:

- How can learning be expanded beyond traditional academic commitments to matter more in learners' lives?
- How can school leaders shape their institution to stay true to its core commitments to learning and also contribute to a dynamic and complex global society?

LLtM is a leadership program to help experienced independent school principals from a variety of cultural, urban, and rural K-12 contexts in the state of Victoria rethink what and how their schools

teach. With the support of PZ researchers, these principals sought to work with PZ to identify leadership practices necessary for planning and implementing school innovations for 21st century learning. Leaders were helped to articulate visions for the learning they believed mattered for their context and community.

The program recruited leaders who were either about to implement a change or were in the middle of trying to do so. Examples include getting teachers to see their students as independent, engaged, and collaborative learners, developing a growth mindset in students via self-reflection, and trying to create a shared vision for their school.

A [white paper](#), authored by Daniel Wilson and Janis Ortega in 2013, presents two kinds of research-based school leadership models: technical leadership models and adaptive leadership models. Both models include three key leadership behaviors: setting direction, developing people, and creating culture. LLtM is fully described in a short, practically oriented book for leaders called *Leading Learning That Matters* by Flossie (Chua, Perkins, & Wilson, 2021).

School leaders come to four in-person meetings per year, two run by PZ lasting five days and two run by ISV, lasting two days, with funds coming from ISV. A total of 30 ISV principals worked with PZ on this effort, beginning with an initial cohort of 11 principals. The second cohort also had 11 principals and the third had eight. The cohorts lasted for two to five years. The first lasted five years as the desired change was in the development phase. The second and third worked together for two years. Unfortunately, the work could not continue because the contract with PZ was no longer supported.

Idea into Action (2017-2024)

[Idea into Action](#) is not a framework. Rather, it is a project that has generated and tested multiple frameworks, motivated by two main questions:

- Why does taking an idea and putting it into action so often prove difficult to accomplish?
- Are there significantly more reliable ways to get from idea to action?

Common barriers to this transition include: misbeliefs about facts and biases in reasoning, such as a confirmation bias, which leads to resistance to counter evidence.

The Idea into Action project was designed to support school leaders who want to create large-scale, complex change initiatives in their schools while being alert to counter-forces such as busyness, backsliding, and competition. Three frameworks have been tested: the Idea into Action Toolkit, the Teacher Personalization Packet, and Reach.

This project has developed three guides, described below.

Idea Into Action Toolkit

The Idea into Action Toolkit will be published in 2025 by the PZ team in collaboration with leadership teams from three pilot schools (Beaconhills College, Camberwell Girls Grammar, and Girton Grammar School). It was piloted over a three-year period. In August 2022, the toolkit was launched with 19 schools, and ISV leadership is currently working with four other schools to use

the toolkit to support their whole-school initiatives. The Idea-into-Action tools are not solutions but rather customizable resources to help in creating and maintaining innovation.

The Idea into Action Toolkit includes six “big picture” tools. Below are three examples:

- **Change Friendly Principle:** Avoid too many initiatives at once; don’t just discuss but go out and try things; involve early adopters in spreading the change; adjust performance reviews to foster rather than impede the initiative. Try to involve at least 25 percent of the organization as a critical mass, because change may start with a mandate but succeeds through social contagion.
- **Roles:** Roles can be part-time and changeable but the core roles are the political visionary (the leader), the practical visionary (who provides daily guidance), and general participants (those who actually carry out the initiative).

There are eight tools for targeted use. Four examples:

- **Re-visioning:** Think about whether a new idea is compelling, addresses a need, is implementable, and is sustainable.
- **Pivot:** Think about whether a change keeps one foot in what has been learned in the past and one foot in a new direction.
- **Rapid Prototyping:** Try quick testing of new ideas to get feedback and then reflect on the feedback to move forward.
- **Tension Meter:** This tool helps groups identify hidden tensions in a team and helps them work toward optimal rather than destructive tensions.

ISV teachers could sign up for a one year commitment to try out the toolkit. Here are examples of how two schools have used the toolkit. Flossie told me that she believes that the pilot schools are continuing to use the tools, and ISV has incorporated some tools into their course offerings.

Reach

Reach is an [action guide](#) for teachers to help them foster thinking and understanding and to help students transfer what they learn in school to their lives outside of school. The REACH guide is designed to help teachers overcome common barriers to meeting these goals. It does so by providing research-based design principles by which teachers can plan instruction that leads to deep understandings that students care about.

Reach guides teachers in five ways:

- To help students identify personal significance in what is being studied by designing multiple entry points into a topic. To help students engage deeply with ideas by presenting them problems where there is not a clear right answer, and where there are multiple perspectives.
- To help students see understanding as something one *does*, not something one *has* – by applying their understanding to new contexts (using principles from Teaching for Understanding, Chapter 4). To help students take their learning into problems faced in their daily lives – that is, teaching for transfer.

- To help students become metacognitive about their thinking skills and be able to assess whether their thinking strategies were helpful, and to see where they ran into difficulties.

Reach has been piloted in four schools, each involving 7-12 teachers. Teachers are invited to test the tools with any classroom of their choice, so there is variability in which classrooms/grades are involved. Two new schools have come onboard to test the near-final tool in January-June 2024.

Fostering Agency in Teachers to Personalize their Innovations

The *Teacher Personalization Packet* fosters agency in teachers, so they can personalize innovations mandated from above or personalize innovations that they decide to undertake themselves. Three schools (total of 19 teachers) are currently piloting this packet.

This toolkit invites the teachers involved in new school initiatives to find their edge in the change, i.e., the zone where elements of the initiative and their instructional efforts become synergistic. For instance, the Personalizing Instructional Change tool offers a conversational process for teachers to better understand the change initiative, from its purpose to its different parts and details. The Value Sort tool helps teachers clarify what they value in student learning. Knowing what matters most to them for their students' learning is an important first step toward engaging relevant parts of the change initiative.

Impact of Leading Learning that Matters

LLtM resulted in innovations in classroom and leadership practices in participating schools, and has impacted the communities in which the principals work. This program established a strong learning community of experienced principals working with the research team. Now that the project is over, LLtM is no longer offered by ISV.

Findings and case studies from this project are presented in [Leading Learning that Matters: A Leadership Process to Rethink What's Taught and How for Today's World](#) (Chua, Perkins, & Wilson, 2021).

Impact of Idea Into Action

Beaconhills College, Victoria, Australia

Stephen McGinley is the Executive Principal of Beaconhills College in Victoria, Australia (pre-K-12), where he has led strategic change initiatives that integrate Project Zero's Idea Into Action framework into both leadership development and schoolwide reform. Known for cultivating a high-change, high-trust culture, Stephen has drawn from the four core Idea Into Action principles, Change-Friendly, Visibility, Social, and Emergence, to build a sustainable model of innovation that resonates throughout the school's leadership and operational structures.

Beaconhills College first became involved with PZ in 2013, participating in the Leading Learning that Matters project. Through that ongoing relationship, Stephen was introduced to the Idea Into Action framework during a visit by Flossie. After reviewing multiple change models, Stephen and his leadership team identified Idea Into Action as the most practical and impactful for addressing gaps in their approach to educational change. In particular, Stephen said that the Social and Change-Friendly principles struck a chord.

The framework has since been embedded in the college's internal Leadership Framework, and is used for recruitment, appraisal, and professional learning. While not always named explicitly

during implementation, the four principles serve as a consistent mindset for how change is approached and discussed.

An example of this work in action was the school's uniform reform, a highly visible change that spanned multiple years. Drawing on the Change-Friendly principle, the leadership team designed a phased three-year rollout that minimized disruption and eliminated unnecessary costs for families. For Visibility, the leadership team created brochures, static displays, and consistent updates in staff meetings. Social engagement was prioritized through community forums and surveys, which directly influenced final design decisions. Finally, when unexpected challenges emerged, such as a supplier failure, the Emergence principle provided the flexibility to adapt and stay responsive. The result was a smooth and widely celebrated transition. "It was a complete success," Stephen shared, "and our confidence in future changes has grown because of it."

Reflecting on earlier experiences, Stephen contrasted this with a failed uniform change years earlier that lacked transparency, community involvement, and communication. "It felt secretive," he recalled. "This time, it was completely different." Staff who had participated in both initiatives reported a marked difference in process and morale, citing collective trust and buy-in as key improvements.

The Idea Into Action models and toolkits have also influenced how Beaconhills approaches other complex reforms –from mobile phone policies to digital infrastructure. One key insight has been the need to "hold ideas lightly" and treat emerging developments as opportunities rather than setbacks. This mindset, grounded in the Emergence principle, encourages reflection and course correction when better alternatives arise. Stephen emphasized that the model has helped shift the school from a focus solely on execution to one that values mindset and process. While Beaconhills had strong project management systems, the Idea Into Action framework filled a critical gap: "We didn't have a mindset around how to manage change."

One challenge Stephen identified was the initial rollout of the framework to the leadership team. A brief introduction wasn't enough; deeper understanding required time, conversation, and collaborative interpretation. "I handed it out in a booklet and said, 'Let me know if you have questions.' That didn't work." In hindsight, he advises schools to create intentional spaces for unpacking each principle and reflecting on their relevance to real work.

Looking ahead, Stephen sees the Idea Into Action framework as vital in today's increasingly complex educational landscape. "Schools can't afford to just react," he said. "We need proactive change leaders who know how to lead, reflect, and adapt. This model gives us the foresight and language to do that."

Camberwell Girls School, Australia

Charlotte Forwood is the Director of Learning, Design, and Development at Camberwell Girls Grammar School (CGGS), a Pre-K–12 school in Victoria, Australia. The school's involvement with Project Zero's *Idea into Action* initiative began in 2018 through an unexpected opportunity. While Charlotte was in Boston for a fellowship at the Isabella Stewart Gardner Museum, her principal, Debbie Dunwoody, was also there, participating in PZ's *Leading Learning That Matters* project. During their visit, Debbie invited Charlotte to a meeting with Flossie. At that meeting, Flossie mentioned that a school had dropped out of the *Idea into Action* project, and Charlotte and Debbie quickly volunteered for CGGS to step in.

Reflecting on how the *Eco Toolkits* aligned with her school's approach to change, Charlotte emphasized their flexibility and inclusivity. "What I really liked," she said, "is that you could look really big picture ... but there are also tools that ... staff who are in the classroom [could] be engaging with as well." The toolkit offered accessible entry points for classroom teachers as well as high-level tools for leadership – well-suited to CGGS's philosophy of involving staff meaningfully in the change process.

Charlotte shared a major instructional change initiative where the toolkit played a key role. When she joined CGGS in 2018, she found that junior school teachers had varied and unaligned approaches to reading and writing instruction. To address this, the team used the *Change Roles* tool to identify key influencers in the staff community. One particularly influential teacher was invited to become a change champion. "They were very excited to be part of that," Charlotte recalled. Remarkably, the teacher voluntarily removed classroom materials that no longer aligned, without being asked to do so.

Sustainability beyond individual leadership was a core priority for Charlotte. The tools helped the team monitor role shifts over time and design targeted professional learning. One strategy involved making staff mindsets and feedback visible. "We made really giant, big pieces of paper ... and had them in the staff room area, and we got staff to come and ... write their questions and their responses." This public display helped surface concerns and created a sense of shared direction.

One challenge was making time for reflection, Charlotte noted. Charlotte and her colleagues recorded conversations about how they used the tools and shared them with Flossie and David. "We found those really useful ... but sometimes it was just about finding the time to actually sit down and have those conversations." She emphasized that reflection was a vital part of the process.

Charlotte also credited Flossie's guidance and presence as essential to the project's success. "She brings a huge amount of energy to whatever she does ... and she always brings out the best in people." Even when the team felt they had little to report, Flossie met them with encouragement and understanding. "She would acknowledge that was just a period of time where we just had other priorities."

Finally, Charlotte emphasized the importance of visibility and transparency throughout the change process. "A really important part of using the tools is ... making them really large and visible ... so people can come and go and see what other people's responses are." This approach, she noted, reflected PZ's principle of *Making Thinking Visible* – a practice that helped build shared ownership and trust across the school community.

Girton Grammar School, Victoria, Australia

Emma O'Rielly is the Principal of Girton Grammar School, an independent school in Victoria, Australia. Her school's engagement with Project Zero's Idea into Action framework began in 2018, when then-principal Matthew Maruff joined a Harvard study tour and connected with Flossie and David. Inspired by the conversations and the opportunity to be part of something formative, the school chose to participate in piloting the Idea into Action tools.

For Emma, the decision was driven by a deep belief in continuous school improvement. "I'm never satisfied with things as they are," she said. "I think we need to evolve and change and adapt constantly, because the world around us is doing that." While valuing school traditions, Emma

challenged her staff to reflect on whether longstanding practices continued to serve students well. “Are we doing things because they’re meaningful – or just because we’ve always done them that way?” Emma saw Idea into Action not just as a set of tools, but as a scaffold to navigate the often chaotic terrain of change in schools. What appealed to her most was the framework’s grounding in the ecologies of change – a metaphor that deeply resonated with her own background. “Everything interacts with everything else,” she explained. “You need to constantly be reviewing how that’s going, what tweaks are needed, how people are taking to it, what problems have emerged.” For Emma, the ecological lens offered a realistic and empowering way to approach change – not as a one-time event, but as an evolving process that must be monitored, adapted, and sustained.

One of the most ambitious projects supported by the Idea into Action framework at Girton was the transformation of the school’s reporting system. For years, teachers had produced detailed written reports at the end of each semester, a practice that was time-consuming and the feedback provided was too late to be actionable. The school moved instead to a model of continuous online reporting, where assessment feedback was delivered in real time. “It wasn’t very effective to provide feedback after the event,” Emma explained. “This new system gave students and parents more timely, specific insight into learning.” Implementing the shift across a teaching staff of 150 people meant overcoming both technical and cultural challenges. “You’re asking them to move away from something they’ve done for 25 years,” she said. “They weren’t familiar with the new software or the pedagogical shift to timely, formative feedback.” Tools from the Idea into Action framework proved vital here. One in particular, which was focused on stakeholder mapping, helped the leadership team identify who needed to be engaged, when, and how. “That was really useful,” Emma noted. “We used a heap of tools for that project.”

The framework was also instrumental in launching a new Teacher Growth Process: a school-wide initiative that encouraged educators to reflect on and improve their teaching through action research, rather than being subjected to top-down performance management. From the outset, Emma’s team used the Idea into Action toolkit to guide this initiative. They piloted different student feedback surveys through short innovation cycles, using structured evaluation to decide which to keep and which to abandon. “We would try something in a little cycle, see if it worked, and then either let that idea go or refine it further,” she said. The program faced a pause during the COVID years but resumed in 2022 and remains active in 2025 with only minor adjustments.

While Girton Grammar has not maintained regular communication with Project Zero in recent years, the impact of Idea into Action continues to shape its culture and systems. “Schools are constantly adapting,” Emma said. “It can be overwhelming. But the work that Project Zero has done – it helps.” Looking ahead, she hopes that efforts to support schools in meaningful change will continue to grow. For Emma, leadership is not about imposing change but about nurturing growth rooted in reflection, responsive to context, and sustained by collective effort.

Although Michelle left her role as CEO of ISV in 2024, both of these frameworks appear to be continuing to have an influence. PZ has sought to maximize the chances that PZ-inspired changes will be sustained after a project ends by publishing freely available frameworks and toolkits.

In the next chapter, I examine Creating Communities of Innovation in the United Arab Emirates.

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Chapter 32

Creating Communities of Innovation: United Arab Emirates 2016-2019

Creating Communities of Innovation (CCI) took place in the United Arab Emirates, focusing on working with educators to support inquiry-based innovative changes in their schools. A related project, Creating Communities of Inquiry (Chapter 32, 33), took place in Peru, and a third related project, Envisioning Innovation in Education (Chapter 34), took place in Hong Kong. These projects share the view that inquiry-driven innovation is made possible by developing agency and autonomy in teachers and students. All use methods of working in small groups, slow looking, reflection, try-share-revise cycles, and constructive feedback. All three use tools from other PZ projects, including thinking routines and documentation.

In this chapter I focus on Creating Communities of Innovation in the United Arab Emirates. The project overview can be downloaded [here](#). The frameworks, tools, and case studies developed by this project (many of which can be downloaded) are described in detail in the resultant book, [*Inquiry-Driven Innovation: A Practical Guide to Supporting School-Based Change*](#) (Dawes Duraisingh & Sachdeva, 2021).

In 2015, GEMS Education (an international company that operates independent schools) asked PZ to help them promote innovation within the GEMS network of schools in the United Arab Emirates. Together, GEMS and PZ established the Creating Communities of Innovation project, led by Liz Dawes Duraisingh and Edward Clapp from 2016-2019, with Andrea Sachdeva as Senior Project Manager. The researchers began to work with eight study groups of teachers from seven K-12 schools in the GEMS network. The emphasis was on supporting teachers to take more initiative to make changes in their own practice to improve teaching and learning for students.

The seven participating schools served different populations from very different communities and had quite varying tuition. They also used different pedagogies – following American, British, IB, and Indian curricula. The project therefore involved intercultural exchange and allowed for the development of materials relevant to a variety of curricular and cultural contexts.

In a second phase, another seven schools were added, and the researchers worked with TELLAL, a professional development provider for these schools. Through TELLAL, the researchers conducted workshops for principals and teacher leaders, with about 50 participants in each workshop.

Innovation was broadly defined to include anything new to those teachers or schools. The study groups developed, piloted, implemented, and scaled innovations that included shifting kindergarten classrooms from a traditional, teacher-centered approach to a Reggio-inspired approach; developing a school-wide and subject-wide critical thinking framework; developing new interdisciplinary and design-based curricula; and introducing PZ thinking routines across the curriculum using student-led thinking routine squads to promote the practice.

What the Project Created

The project created an actionable framework for experimenting in the classroom to create innovation. The concept of *inquiry-driven innovation* was defined as an ongoing process that allows for school change that works within the local context. Five principles of inquiry-driven innovation were described:

- Purposeful and intentional
- Attentive to multiple perspectives
- Adapted to context
- Sustained and iterative
- Structured and supportive

A loose [roadmap](#) was created with the following sequence to be carried out over the course of a year:

- Creating the study group
- Building inquiry skills through slow looking, interviewing, and documentation
- Gathering inspiration by reflecting on wishes, challenges and opportunities
- Developing an inquiry focus
- Making a plan
- Pilot testing
- Working with data
- Reflecting and sharing
- Moving forward

An Innovation Toolkit was created with 21 pedagogical tools and resources, an early version of which is downloadable [here](#) (some were updated for the published book, [Inquiry-Driven Education](#)). One of these, the Slow Looking protocol tool, guides educators in slowing down to consider the complexity of the school system that they wish to change. Other tools include interviewing strategies and a guide to the documentation of innovations being tried.

In addition, a series of case studies of educators developing innovation strategies in various kinds of schools was developed.

Impact

In the above-mentioned book, teachers discuss the positive impact this project had on them and their students, and several examples of teacher comments can be accessed [here](#). Originally the plan was to scale this work across the entire GEMS network, which operates independent schools around the world. Unfortunately, key leaders in the GEMS school network and in the TELLAL professional development organization left the organization, and new leadership was put in.

However, the materials developed are still being used in workshops by the teacher trainers with whom the researchers had contact, including in Nigeria and other countries outside of the UAE. And the participating schools are still using the practices that were developed – as can be seen in my summaries of interviews with educators below.

GEMS Legacy School, Dubai

The GEMS Legacy school in Dubai (previously called Kindergarten Starters school) was one of the seven schools that Edward Clapp, Liz Dawes Duraisingh, and Andrea Sachdeva began working with in 2016. GEMS Legacy charges a relatively low tuition fee and follows the Indian curriculum. However, the school serves not only Indian children but those from other countries, including the Philippines, Kenya, Nigeria, Bangladesh, Pakistan, Nepal, Iran, Tajikistan, Indonesia, and Tanzania.

I spoke to Asha Alexander, who took over the school in 2011 when it was known as The Kindergarten Starters and functioned as a primary school. In 2021, the school transitioned into a K-12 school known as GEMS Legacy School. Asha was hired with the mandate to improve the school academically. The school followed a typical transmission model – teacher led, teacher in front of the class, students sitting at desks in rows. Asha inherited teachers who had been at the school for 20 years and had always taught this way. She knew that she would have to win over these teachers to a new way of teaching. She wanted a complete sea change – inquiry-driven education using digital resources instead of textbooks, teaching coding starting with kindergarten, with no remnants of the old ways continuing on. Parents were upset about the lack of a textbook; some teachers were angry and some left, but Asha held her ground, meeting and explaining her thinking to teachers and parents and asking for one year to show what could happen. At the end of one year, both parents and teachers realized that learning had not been compromised. At that point Asha visited the Reggio Emilia schools to learn more about open-ended exploration, with children leading the learning.

Five years into running the school, Asha learned of the opportunity to work with the CCI team from PZ, and she jumped at this opportunity. Over the course of two years, the PZ team (Edward Clapp, Liz Dawes Duraisingh, and Andrea Sachdeva) visited the school twice a year. They asked the teachers what changes they wanted to make and helped them brainstorm new ideas. Teachers formed themselves into study groups, meeting regularly to share new practices. During their visits, PZ also brought all seven Dubai schools together to share their change-making. This is described in this *Inquiry-Driven Innovation* (Duraisingh & Sachdeva, 2021) and this downloadable [toolkit](#).

Asha's overall goal for CCI at Kindergarten Starters was to help teachers reexamine and innovate in their practice. Working with PZ helped Asha do just that. One of the main tools she introduced was the use of thinking routines. These were a "huge hit," with everyone from kindergarten on up now using them. Parents were invited to visit classes. Both parents and teachers were surprised to see very young children debating using the [Tug of War routine](#) and using routines to explain their thinking. The school also developed interdisciplinary learning (including STEAM projects) and problem-based learning – where students identify a problem in their country that they want to solve and then design a possible intervention.

Asha told us that her teachers were her resources. "I changed their mindset," she said, noting that teachers had learned how to become facilitators. Change, she said, must be based on trust. She was always transparent, always listened to their suggestions, and she told teachers to experiment, which meant allowing for making mistakes. She told them that no change comes all neatly packaged; change is chaotic at first, and that is okay. "I said to teachers, 'Be fearless, I'm there to back you up.'" With their new mindsets, teachers realized that they could make change. That is a powerful feeling.

Now the teachers are empowered and no longer need Asha, who has gradually taken a backseat as the teachers have taken ownership of inquiry-based innovation. "I don't make the changes anymore," she said. "The teachers and students do."

The changes that Asha has brought about via inquiry-driven innovation have remained at the school even though the CCI project has concluded. After PZ's involvement with the school ended, the PZ team asked Asha to share what she had accomplished with all of the 45 GEMS Education schools in the Middle East. People in India often reach out to Asha asking how they can get in touch with PZ, and Asha puts them in touch with Liz.

Asha told her teachers that they would continue to create communities of inquiry without PZ's leadership. She guided her teachers to innovate in the area of climate change. She became certified in educating about climate change through [UN CC:Learn](#), The One United Nations Climate Change Learning Partnership, and has gone on to get all of her teachers certified. They then invited other schools to become hub schools on sustainability, and they now have connections with schools in India, Indonesia, Italy, Kazakhstan, Lithuania, and Malawi. According to Asha, CCI helped create a climate in which teachers could develop and try out new ideas on their own. They had become change-makers. Even teachers who have left the school, she said, remain changemakers.

Anyone at her school who wants to innovate is allowed to build a community of innovation. Any new idea is researched by a group of teachers who then present it to the rest of the school and the corporate office for approval. They have learned how to carry out and to present research.

After seeing what Asha did with the hub schools around climate education, teachers inspired their students to teach children from difficult backgrounds, for example, girls who are not allowed to go to school or orphans. Under the supervision of their teachers, students teach these children math and literacy as well as issues about the environment. The students learn from this and ask, for example, why some girls are not allowed to go to school. They know this is wrong, and they talk to their parents about it.

Asha said what she learned from working with the CCI team is this: Change flows from leadership. The leader must be brave – otherwise innovation will not flourish. She also learned that if you empower 30-40 percent of teachers, they will drive the change. We support them, holding their hand, until they can take charge. But they must get the rest of the school to really understand what they are trying to do. We need more communities of innovation around the world—these can create ripple effects.

Wellington International School, Dubai

Until 2020, Nick Bruce was Deputy Head Teacher at the Wellington International School in Dubai, which is part of the GEMS school network. Wellington is an IB school using the British curriculum.

Nick began to work with the CCI team in 2016. Wellington International School (WIS) became one of the seven schools in the GEMS network brought together for four years to work with the PZ Creating Communities of Innovation team. (A description of the school's work with CCI starts on p. 36 of the [CCI toolkit](#)). The culmination of this work was the [CCI Toolkit](#), and Nick is now using these innovation tools at the International School of the Hague to help develop their online professional development hub, called [ISH Academy](#). CCI helped them to reflect about what these two schools needed and how to get there.

One of the tools Nick has used is the Population, Innovation, Outcome tool, described in detail in the toolkit (starting on p. 60). WIS identified a need for strengthening critical thinking skills in students in years 7-9 (ages 10-13) and developed a critical thinking framework consisting of six components called WISical Thinking (a play on the school's acronym, WIS). Study groups created a

Theory of Action diagram to connect current practice to new practices to achieve the long-term outcome. Nick spoke about using the Sweet Spot of Innovation tool to discover the school's maximum threshold for change

International School at The Hague, Netherlands

In 2020, Nick joined the International School (ISH) at The Hague, Netherlands as Head Deputy Teacher. In 2023, Nick created a professional development hub for school faculty called [ISH Academy](#), where eight courses have been developed so far. The CCI tools were used to identify the need for the hub and to build and execute it. Nick runs an eight-week course on effective classroom management, which includes creating a positive classroom environment and dealing with difficult situations. He said that he has seen its effectiveness, because he observed teachers before and after taking the course. They learned to create very clear expectations from the start. They also learned to use online platforms, like [Nearpod](#), to engage students in active learning and [Socrative](#) to give students individualized, instant feedback. ISH also offers a course on using cooperative learning techniques, facilitating group work. To make this professional development unique to their school, the staff focused on what the school values – that students be curious, connected, and compassionate.

Nick has also used CCI tools in work with academic leaders in all school subject areas. These leaders were given the opportunity to identify what they would like to work on changing. They identified scheduling as a key problem to change. The CCI tools gave them a very clear support framework for reflection and for developing concrete actions to get to their stated outcome goal. CCI worked well because it provides leaders with tangible structures and theory of action tools. These middle school leaders were unanimously positive about the CCI tools they used.

In addition to using the CCI framework, Visible Thinking routines are used throughout WIS. No one from PZ has come to work with either of these two schools on thinking routines, but of course the CCI framework incorporates thinking routines. The school had a working group on VT two years ago, doing classroom observations and mini-focus working groups to identify the best thinking routines for their needs.

In the next chapter I describe the Creating Communities of Inquiry project in Peru.

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Chapter 33

Creating Communities of Inquiry: Peru 2018-2023

The Creating Communities of Inquiry (Creando Comunidades de Indagación) Project in Peru was led by Liz Dawes Duraisingh, with Andrea Sachdeva as senior project manager, and was carried out with the Innova Schools of Peru. The Innova Schools are a private network of approximately 70 K-12 schools in Peru that aim to provide affordable and high quality teaching and learning. Innova Schools are expanding their model across Latin America to serve emerging middle-class families in resource-scarce neighborhoods.

This project built directly on the similarly named project, Creating Communities of Innovation, in the United Arab Emirates. It used many of the same tools and existing PZ practices, such as slow looking and thinking routines. The goal for both of these projects was to work collaboratively with teachers (rather than “train” teachers) to help their students think deeply (rather than learn content superficially). The PZ team also worked with Innova coaches, curriculum designers, principals, and school network leaders. In both projects, researchers modelled thinking routines very carefully. Teachers sometimes took PZ tools and adapted them. For example, the Dialogue Toolkit from Out of Eden Learn/The Open Canopy (described in Chapter 41) was reframed as “Express yourself!” And thinking routines were quickly adapted to more relational situations such as promoting understanding among students who had been fighting. An overview of this four-year project can be found [here](#) (also available in [Spanish](#))

At the beginning of the project, a definition of inquiry was developed collaboratively by PZ and Innova educators, and it can be found [here](#). Inquiry is described as “both a stance toward the world and a process for trying to understand and transform the world.” The goal was for inquiry, collaboration, and teacher autonomy to be developed together among educators at different levels of a system (teachers, principals, coaches, curriculum designers, etc.) to promote “deeper learning.”

The following tools, activities, and practices were found to be useful in supporting important shifts in participants’ thinking and practice: (1) modeling core practices and values; (2) providing scaffolds to promote observation, analysis, and reflection, and (3) creating opportunities for sustained inquiry and collaboration. Participants showed change in the following ways: learning to be learners rather than experts knowing all the right answers; reflecting on purpose and practice rather than merely completing tasks; accepting uncertainty and learning to adapt rather than sticking closely to known plans; and developing trust and autonomy both in themselves and in their colleagues and students.

Innova Schools are run according to a highly centralized model which, prior to the project, had limited teachers’ abilities to innovate and adapt. It also limited students’ autonomy in their learning – with students producing very similar work to one another in what was generally a content-heavy curriculum. In parallel to their work with PZ, Innova began to address these issues by introducing project-based learning and loosening up the structure. The work with PZ supported these changes and introduced new ways of teaching and learning to help promote student and teacher inquiry, collaboration, and autonomy.

The Four Years of This Project

Year 1. Twenty-five teachers and principals from five K-12 schools participated. The teachers, who came from different grade levels and subject areas, were divided into small study groups each of which included one principal or academic coordinator. The PZ researchers led whole group workshops introducing strategies for fostering inquiry. Teachers then tried these out with their students, and reflected together on what they had learned.

Year 2. These same participants continued their work from the prior year by developing inquiry-based projects, sometimes incorporating one of PZ's thinking routines or protocols. In addition, 12 leader-administrators (coaches, curriculum designers, managers) from the Innova central joined. They too formed study groups and developed inquiry-based projects that they could incorporate into their practice.

Year 3. In a pivot due to the onset of the pandemic, 20 curriculum designers, whose job was to develop new online curricula for all Innova Schools, participated. PZ researchers supported them in developing project-based, learning-type units

Year 4. Twenty subject-specialist coaches and eight academic coordinators participated. They were divided into small study groups with one academic coordinator in each group. After several months of professional development provided by PZ, each group developed and tried out an approach that was focused on inquiry. For example, one group introduced teachers to the PZ thinking routine See-Think-Wonder (see Chapter 4). The class was recorded so that teachers could watch the video, make improvements to their practice, and try it out again – in a cycle of implementation-reflection-revision. This study group reported that teachers became more autonomous in using the routine and in making decisions about their own practice. Interviews and surveys were carried out at the end of the year asking participants to reflect on how their thinking or practice had changed.

Findings

Analysis of the interviews and surveys revealed challenges that the coaches and coordinators from Year 4 faced in terms of transforming their pedagogic practice: time pressures; a top-down centralized culture and preference for adhering to known plans; individuals having little personal experience of deeper learning, and a lack of confidence and trust among people – both in themselves and in their colleagues.

Despite these difficulties, the coaches and academic coordinators began to change their mindsets. The most effective tools, as revealed by the interviews, surveys, and the documentation of participants' learning over time, were the following:

- PZ researchers modelling in their workshops ways to deepen learning (slowing down to allow time for reflection, documenting collective learning, offering constructive feedback, showing intellectual humility and uncertainty, giving participants autonomy to try out strategies in ways that made sense to them).
- Modelling the use of scaffolds: slow looking techniques, the See-Think-Wonder thinking routine (as well as others).
- Modelling documentation practices (as in Making Learning Visible, Chapter 4).

- Using a collaboratively developed [rubric](#) for inquiry-based teaching.
- Offering constructive feedback using the [Ladder of Feedback](#), a PZ protocol for constructive criticism.
- The small study groups in which participants identified an aspect of their practice they wanted to change, developed a “Theory of Action” for how to make this change, tried out new approaches, documented their learning and that of teachers and students

A full description of the project can be found [here](#).

Impact

Impact on Participating Educators

This project had an impact on the educators who were recruited to participate and on the students they taught. The project had to end (due to funding) after four years – when participants were still developing their new approaches. However, 19 of the coaches and academic coordinators from Year 4 reported that they were still incorporating project-related principles and practices into their practice. And the centralized structure of Innova means that some of the new practices will spread across the network.

Impact on a New PZ Project: Learning to Learn: Transforming Pedagogy Together

Like many PZ projects, this one led to a new two-year project just beginning in 2025. This project, Learning to Learn: Transforming Pedagogy Together (Aprendiendo a Aprender: Transformando la Pedagogía Juntos), is led by Liz Dawes Duraisingh. Though privately funded, it has national support from the Ministry of Education of Panama.

An initial phase is underway with ten public schools of varying sizes and contexts, all with very limited resources. Each of the schools has established a collaborative, inquiry-style study group involving the school principal and four teachers. The professional development is structured and approved as a 'diplomado' that earns participants government professional development points.

Each group will be allocated two extra people from one of the 25 themed teacher networks (e.g. Spanish, Physics, early childhood, research) that the Ministry of Education has launched to promote peer-to-peer support. Every teacher in Peru is expected to join one of these networks. There is an expectation that ideas developed in this project will be shared widely across these national networks. The work will also be scaled through ten experienced coaches mentored by PZ who will facilitate many more teachers earning this Diplomado.

This project is similar to the project described in the next chapter, Envisioning Innovation in Education.

Chapter 34

Envisioning Innovation in Education 2020-2024

The Envisioning Innovation in Education Project (EIE) was led by Edward Clapp, with Lynne Solis as Project Director (from 2020-2021), and Seana Moran as Senior Project Manager (as of 2021). This project is actually a program of professional development for teachers, with teachers organized as a professional learning community in which they work collectively to develop ways to improve their practice. Edward told me that this project was supported by two dedicated project coordinators on the ground in Hong Kong, Queen Hon and David Ng. Queen and David developed relationships with each of the cohort members, and thoroughly supported them throughout the project. Given the restrictions presented by the COVID-19 pandemic, Edward said the project would not have been as successful without the on-the-ground support of Queen and David. The project was interrupted by the COVID 19 pandemic. It was originally designed to be a three-year initiative but was extended to four years because the project team could not travel to Hong Kong for the first three years of the project.

The project grew out of the Creating Communities of Innovation in the United Arab Emirates, described in Chapter 32. As in the other projects described in this chapter, the guiding principle of the project was inquiry-driven innovation – defined as an ongoing process by which individuals in a school pursue positive school-based change relevant to their local context. The process involves slowing down and looking closely at one’s teaching and learning environment before deciding on any innovation to try out. This is in stark contrast to innovation imposed from above.

EIE was introduced to schools in Hong Kong by the [CATALYST Education Lab](#), the project’s funder. The project involved 11 schools and about 70 educators in Hong Kong. Study groups at each of the 11 schools were created with four to six secondary school teachers and a lead administrator. This [book](#) describes this project in detail (Clapp, Hicks, & Wilson 2024). At the end of the book, you will find a collection of tools and frameworks that were used in this project. In addition, some of the teachers are highlighted, with descriptions of their processes of change.

A Three-Part Sequence

The research was designed to follow a three-part sequence: Envision (Year 1), Inquire (Year 2), and Innovate (Year 3).

Year 1: Unlike in the Creating Communities of Innovation project in the United Arab Emirates, this project began with year-long envisioning about the kinds of change that might be tried. To expand ideas of the possible, the research team introduced the schools to many PZ frameworks: Thinking Routines, Teaching for Understanding, Agency by Design, and Pedagogy of Play.

Year 2: In the second year, teachers were introduced to strategies of inquiry to understand their own school environment and consider the kinds of changes they wanted to make. During this year, teachers experimented with PZ tools and frameworks.

Year 3: In the third year, teachers tried out innovations.

Year 4: (which was added due to the Covid-19 pandemic) has focused on helping the schools launch an EIE alliance to continue the work of the cohort schools and to spread this work more widely across Hong Kong.

EIE ended June 30, 2024. Before the project had ended, the project materials (e.g., thinking routines, strategies for inquiry, ways to build student agency, documentation, slow looking to assess student work, and collaboration in designing lessons) had been demonstrated widely to Hong Kong schools through school open houses and internal professional development programs.

Because the project has just ended as I write this report, it is too early to look for any lasting impact in the schools that worked with the EIE team. Instead, I describe interviews with two of the teachers involved showing the changes they made in their teaching as a result of their involvement with EIE.

Impact

Fanling Kau Yan College, Hong Kong

Chun-Ying Au, educator and administrator at Fanling Kau Yan College in Hong Kong, has played a key role in implementing the *Envisioning Innovation in Education* initiative. He has focused on curriculum development, professional learning, and the integration of Project Zero frameworks – particularly PZ thinking routines – into both teaching and school-wide planning.

Fanling Kau Yan College first joined the EIE initiative during the COVID-19 pandemic, a time when normal school operations were disrupted. Chun-Ying described the moment as an unexpected opportunity for experimentation and innovation. With support from Project Zero and guidance from CEL (CATALYST Education Lab), the school began engaging with the frameworks in earnest. Chun-Ying and his team started small, testing new ideas and iterating on what worked – especially focusing on integrating thinking routines into their existing junior and senior curricula.

As a teacher of Chinese, Chinese History, and Religious Studies, Chun-Ying integrates Project Zero tools directly into classroom practice. In one illustrative example, he leveraged the *Peel the Fruit* thinking routine – a previously taught tool – to guide students in outlining reflective essays after an examination. Working in groups, students recorded ideas on small blackboards, enabling peer exchange and real-time elaboration. The exercise culminated in a homework assignment that required students to apply the same thinking routine independently. “Thinking routines provide a structured framework,” Chun-Ying reflected. “They help students visualize their thinking, which is critical for developing higher-order thinking skills.”

Chun-Ying and a team have shared their PZ-inspired practices across the 70 teachers at the school with professional development sessions. Teacher feedback has been crucial in refining and expanding implementation efforts.

Hong Kong International School

The [Hong Kong International School](#) serves 2800 students and uses an American style curriculum. Betsy Lewis-Moreno is a humanities teacher in the high school who teaches 10th grade Interdisciplinary American Studies and 11th grade AP English Composition. Betsy is featured in the EIE book (Clapp, Hicks, & Wilson, 2024, p. 86ff). The school had already worked with Ron Ritchhart on Cultures of Thinking.

In 2020, the school was selected to be part of the three-year EIE project. Four teachers (two at the high school, one of whom was Betsy, two at the middle school) and four school leaders, all of whom had expressed interest, were chosen to work with the PZ EIE team. The other high school teacher dropped out after the first year due to other commitments, and one of the middle school teachers left the school. I note here that many teachers who could leave Hong Kong did during this time as the Chinese National Curriculum was imposed upon schools, and teachers were under threat not to foment pro-democracy student protests which were wide-spread at the time. Thus the team from this school was small. They also got off to a rocky start, because everything had to be conducted on Zoom during the Covid pandemic. It was only in the final year of the project (2022-2023) that the project members were able to meet one another in person.

Lindsey Hicks from the PZ team met monthly with members of the school team via Zoom. The educators at all 11 selected schools met four times a year (Zoom for the first year and a half, in person after that). Schools hosted visits during the final year of the project when Covid restrictions were finally lifted in Hong Kong.

Betsy described the kinds of innovations she made in her classes as a result of participating in EiE:

She developed creative kinds of formative assessments.

She began to focus more on the process of learning in individual students rather than on their final products. She talked to students about their first drafts, asking them what they were noticing, and how they were thinking about what they were writing. This kind of focus made students more aware of their own learning process, she said, rather than just thinking about their final product and grade. While Betsy had always engaged students in the drafting process, she said that she now integrated more student reflections about changes they made.

She also adapted strategies like the [3-2-1](#) thinking routine from the VT/CoT Project (see Chapt. 4) to provide more structure for their drafting process. This routine asks students to think about the changes they made in their thinking about a topic after feedback, explaining how their new understanding connected to or altered their earlier thinking. She also used this routine as a reading comprehension tool.

She gave more agency to her students in choosing which projects they would work on.

She made sure that students worked together face-to-face. For example, students were working in groups of two or three on a research project to be presented to the class in the form of a two-minute “elevator speech.” Her students had been struggling to communicate during the process of putting together their research for the formal 15-20 minute presentation. At first, students just sat working on their individual laptops. When she told them they had to work together, they said that’s what they *were* doing – working on shared Google documents. Prior to Covid and two years of Zoom classes, students did not have a problem communicating and working together. But with the influence of her work with the EIE team, she told them to stop, go to the white board, and talk through their ideas with one another face-to-face, making their thinking visible before giving an elevator speech without notes. After their elevator speech she asked them to think about what had been a struggle and what were the gaps. She asked the class to provide feedback, and the students used this feedback as they worked on the slides and script for their formal presentation. The elevator script was a preparation for the formal presentation that was assessed later – a formative checkpoint allowing for feedback for revision.

During the third year, the teachers began to use many thinking routines from the PZ toolkit (this school had worked previously with Ron Ritchhart on CoT). Betsy had been using the [3-2-1 tool](#) (where students think about what they knew before learning and after learning) as a reading comprehension tool. As a consequence of working with the EIE team, in a unit on *Hamlet* she began to combine this routine with slow looking at images. After having read the play, she showed students many different images of actors playing Hamlet, asking them to choose the one that resonated most with them – that looked like how they thought Hamlet would have looked. They then were asked to find a scene in the play which led them to think of Hamlet in that way, and to explain their thinking to the class. [Here](#) is an example of a creative summative assessment she designed for the Hamlet unit.

Another example of the influence of EIE is how Betsy changed an assignment for her American Studies class in which students wrote an opinion editorial. First the students used AI to gather the basic information about an issue. Then she used a graphic organizer designed by Ron Ritchhart, as shown [here](#). The students used this organizer to think about how to put all of the pieces together – how to synthesize all that the “bot” had supplied them. She said she would have not done this if it had not been for her work with EIE. Before, she might have assumed they would make connections and then create outlines, but she realized they needed more structure because the issues are complex. [Here](#) is another reflection tool she has used with another class more recently.

Betsy said her school was supportive, providing teachers with release time for meetings. She said that she wished that they could have shared what they learned and did with the rest of the school, but there was no chance to do this. This seems unfortunate since it did not allow for EIE’s influence to spread through the whole school.

Chun-Ying noted that one of the primary challenges was building understanding and buy-in among colleagues. “Any time you bring change to a school, there is hesitation.” Teachers worried about increased workload and the need to revise existing lesson plans. To address this, the team emphasized a gradual approach – “one topic a year, one lesson at a time” – and prioritized practical demonstration over theory. As teachers observed the success of peers, more began adopting the routines themselves. By 2025, every department at the school had incorporated thinking routines into their lesson materials.

Marymount Secondary School, Hong Kong

The [Marymount Secondary School](#) in Hong Kong is a Catholic school for girls, ages 12-18. Caroline Li, featured starting on p.126 of the EIE book (Clapp, Hicks, & Wilson, 2024), teaches English language and literature to seniors. She is familiar with the VT framework (aspects of which are used in EIE) and has taken both the MTV and CoT online PZ courses.

The Marymount School was glad to join EIE because they sought to move away from the traditional focus in Hong Kong on grades and exams. They wanted to help students learn in a more self-directed manner and to equip them with skills that are transferrable for future learning so that they could become lifelong learners. Caroline said that ideas about education are changing in Hong Kong, with a move away from drill and memorization to helping students develop into well-rounded people.

The EIE group at Marymount consisted of five teachers from different disciplines (literature, Chinese, economics, science) and two administrators (the principal and vice principal). The teachers

joined the group voluntarily, after an invitation by the principal to participate if they were interested. The group began with each person envisioning what he or she wanted to change. At first they all had different ideas about what they wanted to change – some wanted a more value-laden education; some wanted to get students to ask good questions; Caroline wanted students to find ways to celebrate their learning. It was a challenge, Caroline said, to reach a common goal, but they finally did: They decided at the end of the second year to set up a school based on inquiry, one that promoted a culture of thinking. The new approaches that the group developed were introduced to the whole school after the first three years with a year-long coaching system developed especially for teachers who are new to the school. Incoming new students were also introduced to these approaches during the summer before entering the school.

Caroline said that before joining EIE, she was already teaching in a non-traditional way by acting as a facilitator or learning companion with her students. But PZ gave her the specific tools and activities to do this more effectively. Thinking routines lead to a great deal more interaction among students, and the incorporation of Pedagogy of Play helped her make her classroom more playful.

She also saw some of these changes spread across the whole school. Visible Thinking became part of the school's development plan, with all teachers encouraged to use thinking routines. She saw teachers beginning to use these routines in a complex way – using a few of them, with each one building on the students' previous responses. See-Think-Wonder has become a habit for teachers and students. As a result of EIE, teachers had a common language. Caroline did note, however, that the teachers most interested in trying out these new approaches were the younger ones. The more experienced teachers were less likely to try out new things, presumably seeing this as an extra workload. As a result, the school ran numerous professional development meetings, introducing specific routines for specific subjects and encouraging teachers to use these.

It is of course our hope that these new ways of teaching can continue in the current (2025) difficult days politically for Hong Kong.

The following chapter is the final one in the Institutional Change section of this report.

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Chapter 35

Inspiring Agents of Change

2018-2020

Led by Ben Mardell and Mara Krechevsky, the Inspiring Agents of Change project was a collaboration between Project Zero, the Opal School in Portland, Oregon, and the Portland Children's Museum Center for Learning. The project grew out of the Making Learning Visible (MLV) Project, investigating the conditions likely to support inventiveness in early childhood and primary school. The two main goals of the project: 1) to map a framework that invites, sustains, and extends inventive dispositions in schools; and 2) to develop related practices, strategies, and examples that illustrate how inspiring inventiveness can be embedded across learning experiences in schools.

Principles for Inviting and Sustaining Inventiveness in Elementary Schools

The outcome of this project was a [framework](#) for inspiring inventive thinking in children ages 3-11 (located on the Opal School website). The framework describes 11 principles for inviting and sustaining inventiveness in elementary schools:

Schools invite, sustain, and expand inventiveness when they:

- are grounded in the belief that inventiveness is a fundamental human disposition
- are based on clear and explicit values about the purpose of schools
- make inventiveness central to the daily life of the classroom
- are driven by big questions that normalize uncertainty
- embrace the full range of emotions, knowing that academic and intellectual development is inextricably linked to feeling
- are grounded in purposeful and facilitated dialogue and collaboration
- rely on play as a strategy for learning within a conflict-rich environment
- empower the use of the imagination
- encourage the use of a variety of materials and media to catalyze children's thinking, extend it, and make their thinking visible
- use cognitive tools and strategies to support creative and critical thinking
- value reflection as essential to learning

The framework also described a set of practices that support inventiveness in the classroom, and a number of tools that help teachers enact these practices.

Impact

The Opal School was discontinued soon after the project ended due to the Covid 19 pandemic. However, the tools were shared with participants in Project Zero's online course, Let's Play, and with the Hawaii Charter School early childhood coaches.

FOSTERING SCIENTIFIC THINKING
(begins in 1998)

Chapter 36

Understanding Causality

1998-2019

Tina Grotzer has led three large-scale, multi-part projects at PZ developing innovative materials to promote deep understanding of scientific phenomena: Complex Causality, Causal Learning in the Classroom, and EcoLEARN. These materials, developed in collaboration with teachers, were designed for middle school students, and they align with the Next Generation Science Standards.

Complex Causality

The Complex Causality Project, led by Tina Grotzer and David Perkins from 1998-2005, has three subparts: Understandings of Consequence, Reveal Causal Structure (RECAST), and Causal Learning in the Classroom.

Understandings of Consequence

Understandings of Consequence investigated the kinds of misconceptions about causality that underlie children's difficulties in scientific thinking. The researchers investigated children's thinking about causality in their explanations of ecosystems, density, electrical circuits, evolution, heat and temperature, matter, geology, and air pressure.

Working closely with teachers, the research team developed curriculum materials to help educators teach about causal patterns. The schools involved were as follows: Arlington Public Schools (3 elementary teachers and their classes), Billerica Public Schools (2 high school teachers and their classes); Burlington Public Schools, (2 elementary teachers and their classes; 3 middle school teachers and all of their classes (5 each); 1 high school teacher and his students) Cambridge Public Schools (3 middle school teachers and their classes); a Washington, DC Private School (2 high school teachers and their classes).

The lessons were designed for middle schoolers but can be adapted to be used at younger ages.

The UC project resulted in the following curriculum materials:

Causal Patterns in Ecosystems [pdf](#)

Nature of Scientific Thinking [pdf](#)

Causal Patterns in Simple Circuits [pdf](#)

Causal Patterns in Density [pdf](#)

Causal Patterns in Air Pressure Phenomena [pdf](#)

Tina's book, *Learning Causality in a Complex World* (2012), discusses this project in depth.

Reveal Causal Structure (RECAST)

RECAST (REveal CAusal Structure) was developed in collaboration with the Science Media Group of the Harvard-Smithsonian Center for Astrophysics. This involved a five-year iterative design process to create on-line professional development tools to help middle school physics and biology teachers use the curricula listed above. The activities focused on helping students RECAST their explanations by drawing their attention to underlying causal structures. By recognizing outcomes

that don't fit a simple causal pattern, students realize that a different causal pattern is involved. The [resulting website](#) shows teachers how to teach causal patterns embedded in science curricula. The site includes frameworks, assessments, and videos to demonstrate classroom teaching of causal concepts.

The ReCAST work contributed to Tina's book, *Learning Causality in a Complex World* (Grotzer, 2012).

Causal Learning in the Classroom (CLiC)

The Causal Learning in the Classroom project took place from 2009-2014. Researchers interviewed children in grades K, 2, 4, and 6 about how they understood three kinds of complex causality: distributed causality, probabilistic causality, and spatial gaps. (These were later termed "action at an attentional distance" by the research team.) Each of these are relevant to how we reason about climate and sustainability. Findings showed that forms of each type of reasoning ability were present at each age level. However, findings also revealed that school experiences did not encourage – and sometimes impeded – this kind of reasoning. The latter was the case in understanding probabilistic causation.

[Two curricular modules](#) for middle school were designed:

- Becoming Global Thinkers: Thinking About Distant Causes and Effects
- Becoming Responsible Individuals: Understanding Distributed Causality

These modules reveal patterns of thinking that can interfere with students' ability to understand the complex causal patterns in science. The modules invite students to think creatively about these challenges as they develop their own knowledge and create sustainable lives in our world. Each module contains four lessons that introduce big ideas about causality.

The big idea in Becoming Global Thinkers is that causes can be very far apart in space from their effects (e.g., an earthquake in Japan, tsunamis in the Galapagos islands). Students reflect on why it is so difficult to pinpoint a cause when its effects are distant.

The big idea in Becoming Responsible Individuals is that behaviors of individuals can result in often unintended collective outcomes (and in some cases impeded outcomes). For example, individuals all over the world contribute to climate change in different ways, and the collective outcome is global warming. The effects of individuals may be additive, the effects may interact, or the effects may be synergistic.

These big ideas are the understanding goals of each module – note the influence of Teaching for Understanding in focusing on big, generative ideas (see Chapt. 4).

These modules were developed with teachers from Benjamin Banneker Charter School in Cambridge, Mass; Fayerweather St. School in Cambridge, Mass; Edward C. Brooke Charter Schools in Mattapan and Roslindale, Mass; Community Day Charter in Lawrence, Mass, and Seacrest Country Day School, in Naples, Florida.

EcoLEARN

EcoLEARN was a multi-part project led by Tina Grotzer in collaboration with Chris Dede at HGSE from 2008-2020. Shari Metcalf was Project Director. Three of these sub-projects are described

below: EcoMUVE, EcoXPT, and EcoMOBILE. (The fourth sub-project, [EcoMOD](#), is not described here, because this was led primarily by Chris and by a researcher outside of Project Zero.) All of these sub-projects use immersive technologies to help students develop deeper understandings of the causal dynamics of ecosystems. The curriculum materials for these projects can be accessed [here](#).

EcoMUVE

[EcoMUVE](#) (MUVE stands for Multi-User Virtual Environment) built upon the Understandings of Consequence, ReCAST, and CLiC projects. EcoMUVE is a technology-based curriculum that uses immersive Multi-User Virtual Environments (MUVE) to teach middle school students about ecosystems and causal patterns. MUVES are 3-D virtual worlds that look and feel similar to videogames. They are accessed via computers and, in this case, recreate authentic ecological settings within which students explore and collect information. Students work individually at their computers and collaborate in teams within the virtual world. The immersive interface allows students to learn science by exploring and solving problems in realistic environments. EcoMUVE includes two modules, Pond and Forest; each module is a two-week, inquiry-based, ecosystems curriculum built around a virtual ecosystem.

This project was developed in collaboration with teachers from the public schools of Cambridge, Lexington, and Newton, Massachusetts.

EcoXPT

[EcoXPT](#) is also a multi-user virtual environment project. Here students explore a virtual representation of a pond ecosystem based on the EcoMUVE program. In EcoXPT students learn epistemologically authentic forms of experimentation – both in lab and in situ in the immersive world. Students engage in *observation* and *measurement* as they explore a virtual world. They *gather evidence* for what might be going on. They *collect data* and notice *correlational patterns*. They learn the *techniques used by ecosystems scientists* by conducting *experiments in a virtual lab and in the ecosystem* to reveal its causal dynamics. They integrate their findings with other evidence to build hypotheses. They use an on-line notebook to organize their claims, evidence, and reasoning and an interactive concept map to represent their learning.

This project was developed in collaboration with the Peoria school system in Arizona and the following Massachusetts schools: the public school systems in Attleboro, Cambridge, Everett, Lexington, Newton, Wayland; and Conservatory Lab Charter School; Lawrence Community Day Charter School; Malden Linden Steam Academy, and Tech Academy Boston.

EcoMOBILE

[EcoMOBILE](#) (Ecosystems Mobile Outdoor Blended Immersive Learning Environment) allows students to extend their learning as they embark on a field trip to a real pond environment. Their experience in the real world is enhanced by using two forms of mobile technology for science education – mobile broadband devices and environmental probeware. The EcoMOBILE research explores how ecosystems instruction can be more engaging and effective by combining immersive virtual environments and real ecosystems infused with virtual resources. This project enables learners to transfer learning to the real world and to learn in the real world with augmented reality and just-in-time supports.

Impact

Regrettably, there is no way to determine where the materials from the Complex Causality projects are being used. The website was developed before people included sign up mechanisms to monitor the number of downloads. However, we have the following anecdotal evidence from Tina Grotzer, who wrote me the following:

I regularly meet teachers from around the world (some at the PZC) who are using it. My own kids came home with homework assignments from the Ecosystems module and their teacher had no idea I had written the book. I have teachers in the Boston area and the U.S. reach out to me with questions and for information about supplies. But I have no way of knowing the extent of use.

Tina also told me that she believes that EcoMOBILE “is harder to use in teachers’ local contexts so it is imitated and cited a LOT but not used directly.”

This concludes the section on fostering scientific thinking. The next section examines the fostering of interdisciplinary thinking, critically important for today’s complex world.

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FOSTERING INTERDISCIPLINARY THINKING
(begins in 2001)

Chapter 37

Interdisciplinary Education

2001-2006

A series of projects on interdisciplinary research, education, and assessment was led by Veronica Boix-Mansilla and Howard Gardner from 2001-2006. The projects were based on the recognition that our most pressing issues, climate change, mass migration, health, and the digital revolution, must be addressed through multiple disciplines and cultural perspectives. Veronica and Howard investigated what exemplary interdisciplinary work looks like in research professionals as well as in exemplary secondary schools. This work resulted in a definition of interdisciplinary work and a framework for assessing interdisciplinary student work.

After 2006, as shown below, Veronica went on to collaborate with educational institutions that adopted the definition and framework developed at PZ. For an overview of Veronica's analysis of interdisciplinarity, see Boix-Mansilla (2017).

Excellence in Interdisciplinary Research and Education (2001-2003)

The project on Excellence in Interdisciplinary Research and Education conducted in-depth interviews of individuals and teams carrying out interdisciplinary research to understand the strategies and conditions that shape quality interdisciplinary work. The team interviewed experts, higher education faculty, and high school teachers, as described in Boix-Mansilla, Dillon, and Middlebrooks (2008). The interviewees were as follows:

- Experts (N=55) at the Center for Bioethics at the University of Pennsylvania, CIMIT (Center for Integration of Medicine and Innovative Technologies), the MIT Media Lab, the Santa Fe Institute, and Xerox-Park. For a report on findings for the Center for Integration of Medicine and Innovative Technologies, see Dillon (2001a); for a report on findings for the Santa Fe Institute, see Dillon 2001b).
- Faculty (N=50) at Stanford University's Human Biology Program, San Francisco State University's NEXA Program, University of Pennsylvania's Center for Bioethics, and Swarthmore College's Interpretation Theory.
- High school teachers (N=15) at three interdisciplinary programs: St Paul's Academy's humanities program; the Illinois Math and Science Institute, and the International Baccalaureate Theory of Knowledge course. For a report on St. Paul's Academy, see Nikitina (2002); for a report on the Illinois Math and Science institute, see Nikitina & Boix-Mansilla (2003).

The following definition of interdisciplinary understanding was found to be applicable across cases and settings:

The capacity to integrate knowledge and modes of thinking in two or more disciplines to produce a cognitive advancement, e.g., explaining a phenomenon, solving a problem,

creating a product, or raising a new question, in ways that would have been unlikely through single disciplinary means.

Four aspects of quality interdisciplinary work were identified:

- Grounding in each of the component disciplines
- Integration of disciplines
- Purpose of interdisciplinary inquiry
- A critical stance

Several distinct modes of integration were identified:

- aesthetic synthesis
- transdisciplinary analogy
- pragmatic problem solving
- conceptual compounds
- cross-disciplinary resonance

The National Academies of Science included PZ's work as an example of assessment of interdisciplinary work in its [publication](#) mapping the field of interdisciplinary research (see section in that publication called Toolkit Box 8-1, Measures to Evaluate Interdisciplinary Work).

Successful Interdisciplinary Collaborations (2003-2006)

In 2008-2011, Veronica collaborated with Harvard sociologist Michelle Lamont on a study of interdisciplinary collaborations at the MacArthur Foundation, the Santa Fe Institute, and nine research networks of the Canadian Institute for Advanced Research. Analysis revealed the critical role of emotions and social interactions in successful collaborations, as discussed in this [report](#) from the Social Science Research Council.

While a doctoral student at HGSE, Matt Miller, formerly a Senior Associate Dean for Learning and Teaching at HGSE, and now a Senior Lecturer at HGSE, attended a panel on interdisciplinarity led by Howard and Veronica. He found it inspiring, and reached out to Howard and Veronica asking whether he might work on the Interdisciplinary project. Matt worked on the project for three years. For his dissertation he worked directly with teachers from all over Massachusetts in a weekly seminar (Miller, 2006). The focus of his research was on why teachers choose to teach interdisciplinarily. He discerned three main reasons: student-centered (because my students are motivated by it), teacher-centered (because this kind of teaching is more meaningful for me), and knowledge-centered (because the phenomena demand it). And all spontaneously mentioned the danger of "forced" interdisciplinarity – which would not motivate students.

Crossing Boundaries in Exemplary Secondary School Teaching (2003-2006)

Between 2003-2006, Veronica and Howard studied interdisciplinary pedagogies in a project called "Crossing Boundaries: Empirically Grounded Models of Interdisciplinary Instruction," This project involved working with 12 exemplary secondary teachers across Massachusetts, meeting over the course of 2.5 years to explore how to develop interdisciplinary units about the topic of globalization. The construct of *global consciousness* as a contemporary phenomenon worthy of educational attention was advanced. The goal was to develop a framework for quality interdisciplinary instruction in pre-collegiate education.

The questions asked were as follows:

- What are the elements of a pedagogical framework for quality interdisciplinary (ID) education?
- What does quality ID education look like in practice?
- How can we best assess and support students' interdisciplinary understanding?
- In what ways do participating disciplinary teachers develop their capacity to teach for ID understanding?

The project resulted in a framework for interdisciplinary teaching to support educators in teaching for interdisciplinary understanding, as reported in [this report](#) (Boix-Mansilla, no date).

The project also yielded a set of model units on teaching for interdisciplinary understanding that directly informed the work of the International Baccalaureate, as shown in Boix-Mansilla (2010), as well as the global competence work at the Council of Chief State School Officers, as shown here. A rubric was created and empirically validated to assess quality in interdisciplinary student work (Boix-Mansilla & Jackson, 2015).

For more on interdisciplinary assessment, see Boix-Mansilla (2004), Boix-Mansilla & Gardner (2003), and Boix-Mansilla, Feller, & Gardner (2006).

Reports From These Projects

The George Lucas Educational Foundation, dedicated to transforming pre-K-12 education, commissioned this [analysis](#) of interdisciplinary education. The report highlights the International Baccalaureate's conceptualization of interdisciplinarity, which is based on Veronica's work with the IB Middle Years Programme and the Diploma Programme. The foundation also refers to Howard's and Veronica's work on interdisciplinarity [here](#) and [here](#).

Hosted by the Social Sciences Research Council Veronica co-led a national study of assessment practices in ID programs. The [final report](#) highlighted the need for the cognitive and epistemological framework for interdisciplinary assessment advanced by Veronica and her team.

Impact

National Science Foundation

The assessment framework provided core assessment criteria for the evaluation of the National Science Foundation's Integrative Graduate Education and Research Training (IGERT) Program tasked with the interdisciplinary education of graduate students, as discussed in Hackett & Rhoten (2009).

The [National Socio-Environmental Synthesis Center](#) (on which Veronica served as an Advisory Board member), used this project's assessment framework to inform their own work, as shown [here](#).

Through [analysis](#) of interdisciplinary work in an informal settlement in South Africa's Stellenbosch University, Veronica, Flossie, and their colleague John van Breda advanced a critique of institutionalization assumptions in conceptions of transdisciplinary work in sustainability research (Chua, F., Boix-Mansilla, V., & van Breda, J. (n.d.)).

Boston Arts Academy

The Boston Arts Academy, a public pilot high school focusing on the arts, uses the framework. Here is what the founder and then-director, Linda Nathan, wrote in this [blog](#):

At BAA, we have spent years in professional development discussions and workshops trying to define the terms and the experience so that faculty, students, and parents would know what interdisciplinary understanding (IU) meant. We spent one year pairing up departments so that teachers could develop interdisciplinary units together. For example, world languages paired with theatre, dance with math and so on. Some interesting projects emerged, but the effort seemed forced. Teachers never had enough time to work together. They didn't know if efforts would meet any external criteria for what constituted IU. We felt we needed more of an academic framework to support our endeavors. After over a year of working with Project Zero, particularly Veronica Boix-Mansilla and her colleagues, we adopted their definition for interdisciplinary understanding: The ability to integrate knowledge and modes of thinking from two or more disciplines to generate a new insight. Further, PZ suggested that "students build and demonstrate interdisciplinary understanding when they can bring together concepts, methods, or languages from two or more disciplines. For example, to explain a phenomenon, solve a problem, create a product, or raise a new question in ways that would have been unlikely through single disciplinary means."

Washington International School

Veronica spent a year at the Washington International School helping teachers implement the framework she developed for the design, teaching, and assessment of quality interdisciplinary units at the middle and high school levels.

Argentina Secondary Education

Javier Simon (featured in Chapter 6), an Associate Professor of Education at the University of the City of Buenos Aires, attributed his interest in interdisciplinary teaching to what he learned from Veronica. When Veronica gave a talk at the Argentine Ministry of Education on interdisciplinary understanding, the authorities were very interested in moving forward and asked Javier and his colleagues to approve the resolution and introduce interdisciplinary topics into the curriculum. Since then, interdisciplinary content has already been introduced into the curricula of the City of Buenos Aires: Digital Education, Sexual Education, and Environmental Education are often taught in conjunction with science, mathematics, or history. Javier is currently working to deepen this (as of May 2024) in a new project that he is about to develop in secondary education in the City of Buenos Aires.

Argentina's Ministry of Education adapted the Interdisciplinary Teaching Framework to inform its Secondary Education School reform, as reported (in Spanish) [here](#).

The Universidad Austral in Buenos Aires adopted the ID teaching framework for its Interdisciplinary Masters Programs. A document about this (in Spanish) can be found [here](#).

India's Learning Centers

In the informal settlements of the city of Bangalore, India, learning centers engage multi-age groups of children in arts-informed interdisciplinary explorations of relevant issues in the city and

the globe, as discussed in Chapter 53. These excellent teaching designs have their intellectual roots in the interdisciplinary framework (Boix-Mansilla & Jackson, 2019).

International Baccalaureate Schools

From 2006-2012, Veronica worked with 20 schools in the International Baccalaureate Middle Years Programme (MYP), whose students are ages 11-16. The program adopted Project Zero's definition, principles, pedagogies, and assessment tools as can be seen in this 2010 [report](#) by Veronica. For over a decade, the IB has been offering professional development for teachers centered on this approach. In 2022, 153,634 students took the MYP representing 1003 schools across six continents.

From 2010-2012, Veronica worked with the IB Diploma Programme (ages 16-19) in three schools: Mahindra United World College (India), Mombasa Aga Khan Academy (Kenya), and Washington International School (USA). Together they designed, piloted, assessed, and supported the implementation of a new form of essay in which students develop an interdisciplinary research project that deepens their global consciousness. Site visits involved over 100 interviews with students, teachers, and administrators. In addition, over 45 World Studies Extended Essays were analyzed.

This resulted in the establishment of a new form of the World Studies Extended Essay based on PZ's framework (and Veronica and her team wrote the teacher's guide for this essay). According to the IB [website](#):

A world studies extended essay must focus on a topic of global significance. This encourages the student to reflect on the world today in relation to issues such as the global food crisis, climate change, terrorism, energy security, migration, global health, technology and cultural exchange.

The student should then explore how their chosen issue may be illustrated in a local context or contexts using specific examples of a small scale, local phenomenon; in this way the student is linking the local to the global.

*As the approach is interdisciplinary explaining the topic through the lens of more than one discipline, students should develop a clear rationale for taking an interdisciplinary approach, selecting the IB disciplines through which they plan to explore the topic. The process of researching and writing the world studies extended essay develops international-mindedness and specifically the concept of global consciousness. This concept encompasses three distinct strands: **global sensitivity** - a sensitivity to local phenomena and experiences as expressions of developments on the planet; **global understanding** - the capacity to think in flexible and informed ways about issues of global significance; **global self** - a developing perception of self as a global actor and member of humanity, capable of making a positive contribution to the world.*

In 2022, over 4300 students chose the World Studies Extended Essay. It ranks 6th among the ten top extended essays selected by students that year. The teacher's guide for this essay, written by Veronica and her team, can be found [here](#).

London Interdisciplinary School

The [London Interdisciplinary School](#), a new and radical innovation in undergraduate education in the UK, has based its articulation of interdisciplinarity on Veronica's foundational paper on interdisciplinary integration as well as the team's interdisciplinary assessment rubric among a few other pieces.

Washington Center for the Improvement of Undergraduate Education

In collaboration with the [Washington Center for the Improvement of Undergraduate Education](#), Veronica worked with 27 college teams (including leading community colleges serving minority populations) to foster quality interdisciplinary teaching practices (Boix-Mansilla, 2008).

I turn next to a very different area: Meaning, Purpose, and Critical Thinking in College.

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FOSTERING MEANING, PURPOSE, AND CRITICAL THINKING IN COLLEGE (begins in 2007)

This section presents two projects focused on students at the college level. The first describes a series of seminars at colleges intended to help students reflect on their values; the second describes a large-scale study of college students' mental models of college, with the goal of getting college educators to move students away from a transactional model of college to an exploratory or a transformational model.

Chapter 38

Reflecting on Your Life Seminars

2007

In 2007, Howard Gardner along with four colleagues developed a first year seminar for Harvard undergraduates called “[Reflecting on Your Life](#).” The four colleagues: Richard Light, a faculty member at the Harvard Graduate School of Education; Tom Dingman, Dean of Freshmen at Harvard; Katherine Steele, then Director for Freshman Programming; and PZ’s Lynn Barendsen and Wendy Fischman. The sessions invited students to think about meaning, purpose, and values in their lives, asking themselves what it means to live a happy life, a useful life, a productive life, etc. In these seminars students were asked to list how they want to spend their time at college, and then to make another list of how they actually spend their time over the past week. When they compare the two lists, students are often shocked to discover how much time they are spending on activities they don’t value highly. This [essay](#) from the New York Times by Richard Light (2015) describes other activities in the seminar.

The seminar met typically for three 90-minute sessions at the beginning of the second semester, with twelve students in each group. Although the program fulfilled no academic requirement, over 100 students signed up each year.

The Funnel Effect

These seminars led to a paper called [The Funnel Effect: How Elite College Culture Narrows Students’ Perceptions of Post-Collegiate Career Opportunities](#), based on interviews with 40 Harvard seniors (Locker, Barendsen, & Fishman, 2014). While students reported that they had entered Harvard College with broad interests, by senior year, most of them focus on high earning, prestigious jobs, especially in the finance and consulting industries. In short, the paper reports a disconnect between students’ initial interests and the jobs they pursue. This often cited (yet unpublished) paper led to a study of higher education by Wendy Fishman and Howard Gardner (2022, discussed in Chapter 39).

Colby College

In the spring of 2007, the team taught an expanded version of this seminar at Colby College called Meaningful Work for a Meaningful Life, in which issues about professional life were intertwined with reflections about the 3Es. Students discussed ethical dilemmas in their lives, the kinds of work they would and would not want to do, and their understanding of responsibility and trust. Because of the positive feedback about the course, Colby College designed the first day of freshman orientation to focus on the ideas of good work, meaningful work, and good citizenship – with the goal for students to carry these ideas with them throughout college.

Project on Purpose and Values in Education

The team then formed a working group of other universities, called the Project on Purpose and Values in Education (PAVE), offering programs like Reflecting on Your Life. The group included Boston College, Bowdoin College, Dartmouth College, University of Richmond, and Smith College, and met four to five times over a year to discuss practices, share resources, and bring their students

together. A small group of those involved ultimately led a day-long pre-conference workshop at the annual conference of the National Association of Student Personnel Administrators ([NASPA](#)) in Indianapolis (around 2016). Katherine Steele told me that she remembers that there were about 60-70 attendees from at least 20 different institutions attending, including some outside the US. The goal was to share best practices and findings from assessments so that other universities could start their own programs.

The Reflecting on Your Life seminars are no longer going on at Harvard, though similar interventions are currently on the drawing board. In the next chapter, I describe a highly related project that focuses on students' understanding of the meaning and purpose of college and how this fits into their understanding of their own life.

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Chapter 39

Fostering “HEDCAP” in College Students 2012-2022

Beginning in 2012, Wendy Fischman and Howard Gardner conducted a ten-year study of the experience of college students in the United States (Fishman & Gardner, 2022). They carried out in-depth qualitative interviews of approximately 1,000 students at ten colleges across the country. They also interviewed 500 faculty and administrators and 500 alumni, trustees, job recruiters, and parents. The colleges were deliberately chosen to range in size, selectivity, status (public and private), and geographical location. Nine were liberal arts (non-vocational) colleges; one was a college of engineering that also emphasized the liberal arts. This study and its findings and recommendations are detailed in Fischman and Gardner (2022).

The findings revealed that students across these diverse campuses were more alike than different in the ways they talked about their goals, their hopes, and the challenges they faced. The most pressing emotional issue faced across all campuses was mental health. Students also indicated feelings of alienation and lack of belonging.

Mental Models of College

Analyses of in-depth interviews revealed that students across research sites could be classified as having one of four mental models of college:

Inertial. Inertial students believe they are in college because this is what comes after high school. They are unmotivated and uninvested. They do not have any clear idea why they are in college or what they are supposed to get out of college. Inertial students were rare – only three percent of students in this study were classified as inertial.

Transactional. Transactional students see college as a means to an end: They seek a college degree so that they can get a good job. They see jobs and earning potential as more important than genuine intellectual engagement. Forty-five percent of students in this study were classified as transactional.

Exploratory. Exploratory students see college as an opportunity to explore new ideas and new perspectives and discover their interests. They take advantage of the intellectual opportunities of college. Thirty-six percent of students in this study were classified as exploratory.

Transformational. Transformational students also take advantage of the intellectual opportunities of a liberal arts institution, and they believe that college affords them the opportunity to transform themselves – to become different persons after four years of exposure to new ideas and diverse perspectives. Sixteen percent of students in this study were classified as transformational.

Higher Education Capital (HEDCAP)

The research team developed a construct called “Higher Education Capital,” referred to as HEDCAP, and defined it as “the ability to attend, analyze, reflect, connect, and communicate on issues of importance and interest” (Fishman & Gardner, 2022, pp. 79-80). At more selective schools (compared to less selective schools), students entered with higher HEDCAP. However, at some of the low selectivity schools, there was more “growth” in HEDCAP. For example, students at one of the least selective schools showed the most dramatic positive change – demonstrating that it is possible to move the needle over the course of college with any and all students, not just those who are in highly selective schools.

Importantly, HEDCAP had a clear relationship with students’ mental models of why they were in college. Those with high HEDCAP scores were more likely to be transformational students; those with low HEDCAP scores were less likely to be transformational.

Mission Sprawl

Findings also revealed that colleges had so many missions that the goal of intellectual learning got lost in this mission sprawl.

Study’s Conclusions and Recommendations

Fischman and Gardner (2022) argue that higher education in the United States has lost sight of its principal reason for existing: not vocational training, not the provision of campus amenities, but to increase HEDCAP – the ability to think well and broadly, express oneself clearly, explore new areas, and be open to possible transformations. They offer recommendations for how every college can become a community of learners who are open to change as thinkers, citizens, and human beings.

Impact

The measure of HEDCAP, developed in this project, is now central to new work by Wendy Fischman and Howard Gardner. In this new project, they are assessing the impact, or value added, of courses, programs and missions at colleges and universities that aim to advance the public good and cultivate character in their students. HEDCAP is now being used to assess intellectual growth over the course of college and years after graduation (in addition to other measures capturing how students think about their roles and responsibilities as workers and citizens).

This chapter concludes the section on finding meaning and purpose and developing critical thinking in college. I turn next to a set of chapters devoted to fostering a sense of both local and global citizenship in young people.

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FOSTERING CITIZENSHIP FROM LOCAL TO GLOBAL (begins in 2011)

Chapters 40-47 present frameworks designed to help children understand what it means to be a citizen – to recognize that even though they are young, they are also citizens whose voice should be listened to, to connect to others all over the world, and to develop an understanding of the global world in which they live.

Chapter 40

Children are Citizens

2011-2021

The Reggio philosophy insists that from birth, children are citizens of their community and have rights (see Chapt. 4 for PZ's work with the preschools of Reggio Emilia). Reggio children collaborate democratically with teachers to make decisions about the curriculum. They also engage in projects that contribute to their community, as when they designed a curtain for the theater in the city that now hangs on the theater's stage, showing children that what they create is taken seriously by adults and is considered a contribution to the community.

Core Beliefs

The [Children Are Citizens \(CAC\)](#) Project grew out of the Making Learning Visible Project. Led by Mara Krechevsky and Ben Mardell from 2011-2021, CAC targeted preschool and elementary school. The project was grounded in the belief that children are not just future citizens; they have the right to participate as citizens in the present, able to express their opinions and participate in democratic civic and cultural life. Children as young as three have ideas about citizenship – such as how to make where they live more fair and more safe. They have the capacity to notice, think about, and have an impact on issues of importance to them. When children brainstorm ways to improve their facilities, they often have something to teach adults. Children, the CAC leaders believe, should have the opportunity to help make rules, work out compromises, and have their voices heard in what they will study.

Among the issues CAC encourages children to discuss are fairness related to race and gender, how to notice when people are not being fair or respectful, and what to do about this. Children should come to see themselves as having agency; they can make changes in their own communities. The hope is that if children's ideas are taken seriously, they will be more likely to participate in democracy as informed citizens when they are adults.

The CAC program, like the Reggio preschools, has consistently challenged assumptions about young children's capabilities. Unfortunately, preschoolers rarely get the chance to engage in the civic process. Most civic education programs focus on adolescents.

The CAC Classroom

CAC teachers help students find a problem they are interested in as they explore their neighborhood or city. As a group, they then investigate the issue, sometimes for months, and often go to museums or libraries to do so. They employ thinking routines, such as See-Think-Wonder (described in Chapter 4), encouraging slow looking and reflection. Teachers practice Reggio-style documentation of children's thinking throughout the project. CAC classrooms often create a self-published book about their process and findings. Children have proposed ways to improve their city, such as putting jokes on street signs to improve the mood of grumpy drivers stuck in traffic; creating a monument dedicated to children; asking their city to replace a missing tree; and asking their city to clean smelly storm drains in their playground (in fact, this led to the District of Columbia to fix the drains). Children investigate their own neighborhoods. Teachers and principals

report on how transformative it is for children to be listened to and how motivating it is for them to read about an issue they care about.

Project Sites

Providence, Rhode Island. The project began in collaboration with Ready to Learn in Providence, Rhode Island, where 3-and 4-year-olds created a guide to places to play in their city. The mayor handed out free copies to visitors to the city, as reported in this [article](#) by Ben Mardell and Bethany Carpenter (2012).

Boston. The project was built on a prompt from then-Mayor Marty Walsh. He asked Boston Public School kindergartners and preschoolers the following:

What suggestions do you have about construction in our city to make Boston fairer and a more interesting place for children? I know you know a lot about Boston. You know about buildings you see and your houses and your schools. It is important that constructions such as parks, buildings, and roads be fair and interesting. This is a big question, so take your time in answering it. Talk to your classmates, your teacher and your family. Do research to get ideas. Write your ideas and please make a model to help me understand your ideas better.

The message to these children was: We take your ideas seriously. You are citizens of our community. Here are three of the children's suggestions:

- More buildings so parents can have jobs, because it's not fair if they don't have jobs.
- A community around a natural pool that had housing, food, and cars for all (after learning that one of their classmates had become homeless).
- A new park for kids with more flowers and more trees.

[Here](#) is the full set of responses.

A display of children's models of Boston as a fairer city and a city that is more interesting to children was held in Boston for multiple years at the Atlantic Wharf Lobby.

Washington, DC. From 2014-2018, CAC collaborated with Jim Reese at the Washington International School's (WIS) Professional Development Collaborative. Jim worked with 55 teachers from ten schools and centers in Washington, DC, serving over 1000 3- to 7-year-old children. He also involved the DC Public Library, the National Gallery of Art, the National Building Museum, and Imagination Stage (a children's theater company) in a project he called *Children Are Citizens: Children and Teachers Collaborating across Washington, DC*.

The teachers met in a monthly professional development seminar. They worked to develop projects where children would explore their city, projects that involved ongoing documentation and reflection. Children explored, discussed, wrote, photographed, built models, and drew. They went to museums and theaters. Their teachers attended monthly professional development seminars learning about documentation of learning and learning in groups.

Books, Conferences, and Project Recognition

This [book](#) highlights the work carried out in Washington, DC, describing children's observations of the subway, the monuments, the museums, and the playgrounds. It also includes their suggestions

for improvement (e.g, the subway map should have a more visible shade of blue). In short, the children had conducted field research, and the book documented their research.

The first Children Are Citizens Conference was held in October 2018. Over 100 educators from 33 schools attended the conference at Washington International School's Primary School campus in Georgetown. All of this school's language immersion Preschool, Pre-K, and Kindergarten classes later embarked on a CAC project, inspired by the conference.

The second annual Children Are Citizens Conference took place in October 2019 at the Washington International School's Primary School campus. The 130 participants came from 36 schools, including Excel Academy (DCPS), St. Thomas More Academy, and Sunshine Early Learning Center. At that time, WIS Preschool, Pre-K, and Kindergarten teachers made CAC a permanent part of their International Baccalaureate Primary Years Program curriculum.

In 2020, Children Are Citizens was named one of 16 learning innovations by the *Learning Across America Forerunner Report* put out by the global education organization [HundrED](#). The report highlights 16 system-level best practices that foster innovation at scale in the US. More information about each of the featured innovations and the HundrED Learning Across America Forerunners can be found [here](#).

The project has garnered national publicity in a variety of early childhood publications and was featured in an [article](#) in *The Atlantic* online (Rothchild, 2015).

The Covid-19 pandemic interrupted the project in March 2020, but the project re-launched in September 2020 with a virtual exhibition of learning in March 2021.

For other publications, see Krechevsky, Mardell, Filippini, and Tedeschi (2016).

Impact on Teacher Educators

In what follows I discuss the influence of CAC on teacher educators and schools in Somerville, Massachusetts, Washington, DC, and Chicago, Illinois.

Karen Haigh: Early Childhood Program, Columbia College, Chicago

From 2018 to 2017, Karen Haigh was an associate professor in the Early Childhood Education program at Columbia College in Chicago. She was also the former director of Child Development at Chicago Commons for 15 years, a program serving lower-income communities. Chicago Commons was inspired by the Reggio Emilia approach during the last 12 years she was there (demonstrating that this approach is not just for affluent schools). Karen first learned about the Reggio schools in 1991 and since then has visited the Reggio schools many times. The Early Childhood program at Columbia College was Reggio inspired when Karen was hired, and they even sent their students, teachers-in-training, to visit the schools of Reggio Emilia.

Unfortunately, Columbia College (which is actually an arts college) closed the Early Childhood program in 2017. Karen said the school simply did not value early childhood education. She felt the school did not realize how much Reggio ideals were connected to the arts.

As Director for Early Childhood Professional Development at the Chicago Public Schools, she faced the usual mixture of responses from the teachers in the preschool program: Some were very

interested in using Reggio methods, some were not interested (and felt this was just one more thing they were being asked to do), and some were in between.

While at Columbia College, Karen introduced her students to the idea that every child has a voice, a perspective, and is part of a group working together. She impressed upon her students the power of listening to the child's perspective, something not typically done in schools. She said it takes time for people to really understand this. She also taught her students about the role of documentation with learning and said that documenting and displaying the individual work of each child in the learning group is sending an important message: "You are part of this group."

While at Columbia College (and before she knew about CAC), Karen carried out a two-year project much like CAC. She worked with teachers from roughly 15 centers/schools from various economic backgrounds (some independent, some public). The project involved teachers and children studying the city of Chicago. They created a booklet capturing what the children noticed and said about the city, including drawings of parts of the city such as specific buildings and bus stops, and 3-dimensional models of city landmarks like the John Hancock Building, the United Center, and Wrigley Field.

This project emphasized small group learning. Most teachers, she said, focus on either individual learning or large group learning (which can get boring). Small group learning, she said, does not come naturally to teachers. She has had to push teachers to try it, making sure the approach is not didactic but more of an exchange of ideas, understanding, or experiences. Small group learning allows every child to speak and share what they are thinking about, with others in the group encouraged to respond. Responses go way beyond "I like what you said/I like what you made," as children are encouraged to ask questions of each other. As Tiziana Filippini (a leading educator from Reggio Emilia) suggested, If a child directs her answer to the teacher, the teacher turns to the others in the group asking, "What do you think about what she said?" The Chicago project also involved documentation, and teachers met weekly or biweekly to reflect on what was documented and to make use of what they noticed to determine where to go next in the curriculum.

Karen's visits to Reggio changed her philosophy and teaching practice. And this change occurred just as her Chicago project began before she knew about CAC or PZ. She learned about PZ when Ben Mardell contacted her to find out more about her work at Chicago Commons. She then invited Ben and Mara to come and visit and present their work on CAC. Karen said that getting to know Ben, Mara, and the CAC project caused her to think more deeply about democracy. Democracy, she said, is not just about voting. The idea that the child's voice has input into the curriculum is very democratic. The CAC project, she said, "is important because it helps people focus on this."

Lisa Kuh: Wheelock College, Boston, Massachusetts; Eliot Pearson School, Tufts University; and University of New Hampshire

Lisa Kuh has taught at Wheelock College, Eliot Pearson School at Tufts University, and the University of New Hampshire. She served as the Director of Early Education in the Somerville, Massachusetts Public Schools from 2014-2021. She has been closely involved in the Democracy Inquiry Group (DIG is mentioned in Chapter 8), Making Learning Visible, and Children are Citizens, and was also part of Steve Seidel's ROUNDS (see Chapt. 26). She first learned about PZ by attending the PZC summer institute in 2005.

In her teaching, Lisa made MLV and CAC an integral part of the coursework and used the MLV book as a text. Her students put these ideas into practice in the lab schools at the University of New

Hampshire and Tufts. She realized that teachers needed very specific scaffolding to implement the Reggio approach. All too often, teachers would create a beautiful environment and lay out materials in a Reggio inspired way, and then find that the children just dumped everything onto the floor. This is presumably what leads American teachers to think that what goes on in Reggio is somehow magic and cannot work here. But Lisa understood that Reggio teachers actually provide a great deal of specific instruction to the children on how to handle the materials, how to carry a basket, how to hold special pens, etc. She feels that Reggio does a disservice by not highlighting the scaffolding and direct instruction that they use that supports children's success.

Did her students continue to use MLV and CAC in their practice when they graduated and went off to be teachers? Not always, Lisa told us, because teachers don't always put into practice what they learn. tend to fall back on teaching the way they were taught, unless there is strong leadership at their school that supports teaching that draws on MLV or CAC. Without this, teachers are likely to default to traditional methods of teaching young children, which she described as having "learning time," which means worksheets and then completely unstructured free play, which is not considered learning time.

In her work in the Somerville Public Schools, Lisa was very influenced by Mara and Ben's CAC work in Providence, Rhode Island, as described in their article, [Engaging City Hall: Children as Citizens](#) (Krechevsky, Mardell, Romans, 2014). Lisa often assigned this article as a foundational piece in seminars for teachers, and she decided to carry out a similar project in Somerville. All of the early childhood teachers in Somerville were given Mara and Ben's article and were invited to carry out similar projects and document them for later display in City Hall. Children and their families were invited to City Hall during the Week of the Young Child to see these displays and to hear the Mayor read the proclamation of children's rights that Lisa and her team had crafted. This project was carried out every year from 2015-2021 (with 2021 being virtual due to the pandemic).

Lisa said that her involvement with PZ and the DIG group always stimulated her thinking about early childhood education.

From 1996-2013, Debbie Lee Keenan was the director of the Eliot-Pearson Children's School at Tufts University (where she hired Ben Mardell as a kindergarten teacher). She has taught at Tufts University, Lesley University, and University of Massachusetts at Amherst. She was part of the first group that brought Reggio's exhibit, *The 100 Languages of Children*, to the University of Massachusetts Amherst in 1988. Debbie has worked closely with Ben for many years on collaborative projects including the CAC project. She was also a member of the Democracy Inquiry Group. She described the DIG group as "a hotbed, a think tank about teacher inquiry and the power of group learning, about how to think more deeply about children and how they can make a difference in the world, and how children can have an active voice and agency even as young children." She talked about how helpful it was for teachers and administrators to have a group to talk to and get feedback from, since all too often teachers are isolated. She describes her work and thinking as being equally impacted by Reggio and by Project Zero; these cannot be disentangled.

Debbie's area of expertise and experience is anti-bias education. Anti-bias education has four goals: (1) to promote and foster in each child confidence, family pride, and positive social identities, (2) to express comfort and joy with human diversity, (3) to develop capacity for empathy and fairness, and (4) empowerment and the skills to act against prejudice and bias. CAC, she said, is an embodiment of the third and fourth goals (fairness and action) and helps her pre-service students and in-service teachers understand what anti-bias education really looks like in the classroom.

In her teaching of preservice teachers, Debbie uses the MLV book (which she says lays out the basic ideas). She also introduces her students to the [Boston Project](#) (also described in [Children at the Center](#), Bardige, Baker, and Mardell [2018]). This volume includes Mayor Walsh's letter to all kindergarteners in the Boston Public Schools mentioned earlier in this chapter. Debbie considers this to be a powerful and meaningful curricular innovation. As an international consultant, Debbie uses this and other CAC examples in her talks all over the world. She tells people that the idea of children as citizens can be used to inspire children to solve real-world problems relevant to their own context. She highlights that PZ literature is a wonderful resource and freely accessible to download.

When asked how people respond to these ideas, Debbie said they are astounded. Many had not thought that young children were capable of carrying out these types of projects and thinking. The key ideas are developing opportunities for children to investigate real problems carried out over a sustained period of time, providing opportunities for group learning, using documentation with children as a research tool, and getting parents, families and the larger community involved in the investigations and projects. She believes that her students go on to use these ideas in their own teaching practice.

Peggy Martalock: Greenfield Community College, Greenfield, Massachusetts

Peggy Martalock is a professor of early childhood education at Greenfield Community College in Greenfield, Massachusetts. Her department is deeply influenced by the Reggio approach, including documentation of student learning as well as the firm belief that children have rights and that schools should be democratic institutions. Peggy initially learned about the Reggio approach from Reggio publications and was also a part of the Democracy Inquiry Group at Wheelock College. It was in this group that she learned about the various CAC projects. In her teaching of future teachers, she assigns portions of the MLV book in her teaching.

Susan Twombly, Infant Toddler Children's Center in Acton, Massachusetts

Susan Twombly was the founding director of the Infant Toddler Children's Center in Acton, Massachusetts. She was influenced by CAC via the many years she participated in the Democratic Inquiry Group at Wheelock College (which she learned about from a parent at her center). Before she joined the group, she knew about the Reggio schools, and she joined the group to learn more. She currently serves on the board of Boston Area Reggio Inspired (BARIN).

Susan worked closely with the teachers at her center as they learned to implement CAC. Here are examples of how the center helped children to recognize themselves as citizens of their community.

- Children were asked to pick a favorite book and the teachers then recorded what they said about why they liked it and whether they would recommend the book to other children in the class. A local independent book store agreed to display these reviews along with a picture of each book, drawn by the child.
- An art center in a nearby town was having an exhibit about nature and agreed to show a collaborative work by children from the Center, in which they hung found objects from nature on a branch, along with the children's description of what they had done.

Currently Susan teaches future teachers at Lesley University in the Graduate School of Education. She introduced the concept of children's rights as citizens to her students, using a book called *Seen and Heard: Children's Rights in Early Childhood Education* (Hall & Rudkin, 2011). The book's coauthor, Ellen Hall, is the founder of the Boulder Journey School in Colorado. That school made a Bill of Rights for children, based on what children said they thought they had a right to. What was remarkable about this list, Susan said, is that when children talk about rights, they also talk about the responsibility that comes with a right. For example, "I have a right to give someone a hug, but only if they want me to." Or, I have a right to get as near as possible to a bird as long as I don't frighten the bird." Susan said children seem to grasp something many adults do not: that one's rights end where they collide with other's rights. She believes children learn that living in a community means taking others' feelings into account. In her courses at Lesley, she discusses how to create community in the classroom and considers this an essential skill for teachers today.

Susan retired from the Toddler Center in 2015. The current director, who was formerly on the NAREA board, is continuing to use CAC as an image of the child upon which they base their pedagogy.

John Nimmo: University of New Hampshire and Portland State University, Portland, Maine

John Nimmo taught at the University of New Hampshire (UNH), where he directed their lab school for ten years, and he is now professor emeritus at Portland State University in Portland, Maine. He became involved with the Reggio schools in 1988 while at the University of Massachusetts doing doctoral research on collaboration and community building. He had long been interested in, and had written about, the idea of children as participants in the world around them. All of this was before he met Ben and Mara, before he joined the DIG group, and before he learned about PZ's CAC project – though he had long known of PZ through Howard's work on Multiple Intelligences.

Unlike most of the people interviewed for this report, John was not directly influenced by PZ's CAC project. Rather, he was already doing very similar work with his students – one can say that when John came to the DIG group there was a meeting of similar minds. In his work at the UNH lab school, his student teachers did a great deal of observation and documentation. They learned about the role of documentation in developing the (emergent) curriculum. He helped them understand that making learning visible is also a way of making teaching visible, since teachers use their documentation to think through next steps. His student teachers did projects that helped children understand the world of adults. He also used Ben's film on the Boston Marathon, [Learning is a Team Sport: Kindergartners Study the Boston Marathon](#) (video by Melissa Rivard & Ben Mardell [2004]) to show his students an example of a long-term project involving documentation. The teachers at his UNH lab school were also engaged in collaborative exchange with the teachers at Tufts' Eliot Pearson Children's School where Ben was a teacher.

When asked whether his students went on to teach in this social-constructivist, meaning-making manner, John echoed what others have told us. It is more difficult to teach in this way than in the traditional way. If a teacher works in a school where everyone is teaching in the traditional way, and where there is no leadership supporting Reggio-style teaching, new teachers are likely to revert to more traditional approaches or are more piecemeal in pursuing constructivist education. There must be school leadership or collegial allies nurturing this kind of approach and philosophy for teachers to be able to continue to teach in this way.

John has taught a course at Portland State on children's rights. Among the many readings assigned is a [guide](#) to the city of Providence created by children with support from the city's mayor. In

addition, students have access to the CAC website. John expressed some criticisms of the CAC project, suggesting that compared to the CAC projects, Reggio children's investigations of their cities are more long-term, go deeper, and reflect an ongoing collaboration between children, educators, and the city. He also stressed that if children develop, for example, a guide to their city, it is essential that someone reads and uses this, and that children know about this. He noted that taking children to museums (as was done in the CAC Washington, DC project) gains value and meaning through children getting a chance to talk to the adults who work in the museum, ask them questions about their various roles, and contribute. He emphasizes the importance of developing long-term and meaningful connections with adults and places in the community.

Katherine Payne, University of Texas, Austin

Katherina Payne is a researcher who carried out work very similar to CAC without knowing about the PZ work. Formerly a social studies teacher in the New York City public schools, Katherina is now an Associate Professor of Curriculum and Instruction in Social Studies Education at the University of Texas, Austin. Her research focuses on young children and civic education. She has published work showing that in naturally occurring situations, young children's behavior reveals that they have a more complex understanding of fairness than seen in decontextualized laboratory settings.

She learned about PZ and CAC when a colleague alerted her to the CAC work at PZ – work her colleague recognized as closely related to Katherina's own work. Most social studies teachers who teach about civics do so at the high school level and focus on institutional issues such as voting. People rarely think about young children as fully capable of taking civic action and making real contributions to their communities. So she was gratified to read PZ's CAC books and learn about CAC. CAC provided her, she said, with another set of resources to support what her research team had been arguing for. CAC also provided her team with language to help us think about how to present what they were observing in young children.

Among the readings she assigns in her teaching of future social studies teachers is the 2015 CAC book. Most of these students are going to be high school teachers, and Katherina wants them to learn about young children's capacities to think and act civically. She said that her students love these ideas and are amazed at what young children can think about and do. She also teaches undergraduates who are not intending to become teachers: she wants them to come out of her classes seeing children in a new way.

Katherina is hoping to carry out an iteration of CAC in Austin, a rapidly gentrifying city with a great deal of ongoing construction, to find out what young children know and can understand. "CAC," she said, "is a way for us to see and show this in a way adults can comprehend."

She has not followed her former students and does not know if they use CAC in their own teaching. But it is what she offers them, and of course she hopes they will.

Jeane-Marie Lorio, University of Melbourne, Australia

Jeanne-Marie Lorio is an Associate Professor of Early Childhood Education at the University of Melbourne, Australia, with a focus on Reggio pedagogy, documentation, and "children as citizens of the now." She first learned about the Reggio schools as an undergraduate in the late-'80s and early-'90s at the University of Maryland where she was studying education. There she read the original

Reggio book. *The 100 Languages of Children* (Edwards, Gandini, & Forman, 2012), and there she also learned about Multiple Intelligences.

Several years later, she taught with Lois Hetland and Tina Blythe at the Celebration School in Florida (in 1997 or 1998) where TfU was being implemented. Working with Tina and Lois familiarized her with many of the PZ frameworks and inspired her to attend the master's program at HGSE. There she took a class with Steve Seidel, where Mara was a guest speaker talking about Reggio and MLV. While at HGSE, in 2000 she worked on the TFU module at the PZC summer institute and also worked on the Good Work Project and Spectrum. She has gone on to use Spectrum in her early childhood teaching. She is clearly deeply familiar with a number of PZ's frameworks.

Jeanne-Marie used the MLV book as an early childhood teacher, and as a professor of education at University of Hawaii in 2007 and now at University of Melbourne, where the book is used in all of the early childhood classes. Her research in Australia involves several primary schools, where she has introduced the MLV book as well as the *Visible Learners* book. MLV is a seminal text for her, providing her with "a foundation to continually build and evolve."

Jeanne-Marie's research focus is teaching and "learning with place." As stated on learningwithplace.org:

Learning with Place is inclusive of local knowledge and stories, histories and living multispecies (for example, landforms, waterways, animals, insects, flora, and fauna). Through the Learning with Place framework, deep relationships with the local Place are generated and these relationships become the catalyst for actions and decision-making regarding caring for/with local places across multiple disciplines/fields.

She wants to help children (and teachers) decenter humans and make the environment the most central way of thinking about things. Children spend long periods of time in local places, observing and discussing. Teachers engage them to think deeply about their responsibilities towards the land. Her most recent early childhood course is about foregrounding first nation world views, and creating citizens of the now, contributing to sustainability and positive climate action.

At the root of all of this is the CAC idea that children are capable and can contribute and can make changes. When teachers learn about this, they come to see children in a different way. They also come to see themselves in a different way – as agents of change who can empower children and families. The focus shifts from the individual to the group and the community. Jeanne-Marie sees a strong connection between MLV and CAC in that both focus on democratic principles and the group.

She has not tracked all of her former teachers to find out if they teach in the way she trained them, but those she has kept in touch with are definitely using MLV and CAC (with a focus on place). But she realizes that when new teachers go into schools with very different approaches, all of this training might fall away. It is important to have a school leader who believes in these approaches. But she is aware of a number of schools using these approaches, even if they do not use the term 'Children are Citizens.'

Asked whether PZ changed her, she said that even before learning about PZ she knew she was going to be a teacher and that she was not going to be a traditional teacher. She had a BA in dance

as well as education, and, she said, “I always did things a little bit different.” It was when she became a teacher at the Celebration School that PZ began to inspire her and led her to HGSE. “If I hadn’t had those PZ experiences, I would not have been able to articulate my ideas. They were pivotal and gave me foundational ideas and I used these to create something new – learning with place. But I could not have done this without those foundational ideas.”

Somerville Public Schools, Somerville, Massachusetts

The Early Childhood Program in the Somerville, MA Public Schools was inspired by CAC and calls its programs Changemakers. Click [here](#) for a celebration of their work with the Somerville mayor.

Margaret Ricks, School Within a School at Goding, Washington, DC

In 1995, Margaret Ricks cofounded School-Within-School at Goding, a teacher-directed Reggio-inspired school in Washington, DC, now serving children from pre-K through 5th grade. She also served as a study group leader at the Washington International School Summer Institute, and it was there that she heard Ben and Mara present on MLV and CAC. She asked that her school become a part of CAC.

Margaret’s class decided to use Union Station as their focus with CAC, because it was within walking distance from the school and was something children were interested in. Her school was already involved in documenting student learning, Margaret said, since it was a Reggio-inspired school. But Ben and Mara helped the teachers dive deeper into documentation specifically by engaging the children more in reflecting about the documentation. Margaret viewed bringing in the children in this way as very important.

She talked about an “aha” moment for one student. Her school was paired with another school and the students, aged five, were communicating about their CAC work on Zoom, showing their work and getting and giving feedback. Margaret said one child was “arrogant and set in her thinking.” That child had created a model of an ice cream shop in Union Station, and when she shared that work, the other students questioned her, asking where the ice cream came from, and why she had not included a menu board with prices. At first this child felt offended, but Margaret used this as a teachable moment. She helped her realize that the others were not criticizing her but just wanted to understand more about her work – that the other children wanted to be a part of what she was doing. The child started to respond more positively and also came to see that other children’s ideas are just as valuable as hers. The children were learning to work together as a community of citizens, putting their ideas together.

Now retired, Margaret works as a long-term substitute teacher as well as a CAC mentor with teachers in many Washington schools. She has found teachers who do not communicate well with children and helps them to be less in control and allow children’s voices to be heard. She shows teachers her documentation (in the form of notes) of the conversations they have just had with a student to get them to see what the children are really saying, and to get them to use this documentation to decide what direction to go in next. Her goal is to get these teachers to move away from a handed-down curriculum to one that emerges from the interests of the children.

Margaret feels that CAC helps children feel valued, trusted, and respected. They have a sense of belonging: their classroom is not their teacher’s classroom, it is *their* classroom. They see that their friends like their ideas and want to try them out. Children become very verbal, because they are made to feel that what they have to share is as important as what the teacher has to share. Collaboration among students without the teacher is powerful, she said. And she added:

The foundation I received from CAC is a big plus for me.... CAC was not like things they forced on us in professional development, here today, gone tomorrow. Instead we went through many steps together, thinking about documentation and our environment. This is something teachers can always benefit from no matter what school or what curriculum. CAC is adaptable no matter where you are.

Jere Lonenzen-Strait, School Within a School at Goding, Washington, DC and Sunshine Early Learning Center, Washington, DC

Jere Lorenzen-Strait is an early childhood educator at the School Within School at Goding. He has been at this school for 15 years and has not taught anywhere else. He has also served as an online coach for the MLV online course from PZ.

After attending the Washington International School Summer Institute for Teachers, led by Jim Reese, Jere met with Jim Reese and Ben Mardell to plan a collaborative project on CAC. Jere does not think of CAC as a framework; he is more comfortable with calling it a philosophy. He described the philosophy as one of teachers planning projects connecting with students' interests, listening to and observing their students, and being a student of their students – all the while using play-based learning and providing provocations to get students thinking. Provocations mean big questions, such as “Who does DC belong to?” This philosophy was not new to him since his own Reggio-inspired school was deeply infused with this philosophy. He described CAC rather as affirming his already developed philosophy of teaching.

In the first year of the project, Jere was one of a number of teachers participating in a seminar focused on CAC. During that pilot year, most of the schools were already somewhat connected to the CAC philosophy – listening to children, dabbling in documentation. In that first year, the teachers took their students to Kingman and Heritage Islands, created a sewn map of the islands to share with others as a resource about DC, and also helped make houses for blue birds on the island.

Years 2 and 3 had a deeper impact on teachers, because the teachers who participated had never done anything like this before. In Year 2, Jere served as a mentor for teachers at the Sunshine Early Learning Center. This was a school using a scripted curriculum that teachers had to follow, unit by unit. Though they still had to follow the scripted curriculum, they were able to combine this with the CAC philosophy.

For the Sunshine Center, the provocation was simply allowing children to walk around the school neighborhood with a curious attitude. Teachers observed and recorded what children noticed, thought together about how this revealed children's interests, and reflected on how to continue to foster these interests. This school had a very supportive principal who attended all of the CAC seminars. Not all schools had such a principal, but all had principals supportive enough to let their students participate in the seminar. In Year 3, Jere and a colleague from his school led the CAC seminar – again teachers who participated were new to the CAC philosophy.

Jere reported that participating in the CAC seminar was transformative for teachers new to this approach. They began to see children not as empty vessels to be filled, but instead as people to be listened to and learned from. Teachers began to think of themselves as researchers. This approach also had a very positive effect on the children, who now felt heard.

Teachers also felt respected by being invited into the seminar. They received a stipend and every meeting was accompanied with good food. Teachers, Jere said, are not used to being paid and fed during professional development. The teachers also reported how much they liked working together with teachers from public, independent, and religious schools, again something they were not used to. CAC affirmed Jere's belief that learning is more meaningful when playful and when it connects to students' interest and ideas. In addition, his own experience as a teacher is more joyful and meaningful when he is creating projects related to students' interests rather than teaching from a fixed curriculum. He is not in contact with any of the teachers he worked with on CAC and thus did not know whether the teachers from the seminar are still using this approach.

Sarah Hair, Washington International School Washington, DC and River School, Washington, DC
Sarah Hair taught pre-K through grade 4 at the Washington International School (WIS) for 18 years and there gained familiarity with a number of PZ frameworks. She first learned about CAC at the 2013 PZC when Ben and Mara presented it. They came to WIS shortly after that to lead a project in CAC, and Sara attended some of their workshops.

At that time Sarah could not herself use CAC as she was teaching 1st grade – and CAC was being used only for pre-K. But after shifting to pre-K in 2017, she began to engage her students in thinking about their city, what is important to them about their city, and who is important in their city. They also engaged in a project on thinking about how to have more fun at recess, and they created a book presented to all of the classroom teachers. The book included chapters about how slides work, the safety of slides, how to use your imagination in the playground, and about fairness. She used simple thinking routines like See-Think-Wonder to provoke thinking, and Chalk Talk to get children to elaborate on their thinking. Careful listening to what the students said guided Sarah in planning further activities.

Sarah's involvement with CAC led her to become a clinical social worker serving young children, and she is now a school social worker at Appletree Early Learning Public Charter School. While she was working towards her social work degree, she consulted on CAC with Jim Reese and with the River School in Washington, DC – an independent school for children with hearing loss. In 2022-23, Sarah facilitated a pilot CAC program, in which a third of their classrooms participated. She led monthly teacher seminars and supported the teachers through regular classroom visits. After watching a celebration of CAC learning, parents pleaded for CAC to be a permanent part of the curriculum. CAC is now on the school's website, [here](#).

One problem Sarah mentioned was that CAC teachers at the River School have only one scheduled hour a month to reflect together. WIS also had this time problem. There was simply not enough time for teachers to look together at documentation and use it to provoke further planning. Sarah is trying to inspire teachers at the Appletree School where she now works to use CAC, though this is a difficult task because the school has a very structured curriculum. But she said it was her mission to bring CAC to the school – to show that children are much more capable than we think they are. She sees this as an issue of social justice, and of course social justice is a large part of the mission of social work.

She believes CAC helps children build confidence and agency. It also allows them to develop literacy and math skills while working on projects that interest them (rather than just being taught literacy and math as independent subjects). She would love to find out whether CAC improves the state of mental health in children today. Parents also loved CAC, saying they had never thought of children as citizens.

When asked if CAC had changed her philosophy of teaching, Sarah said yes. She was educated in France, where classrooms are entirely teacher-led. She knew she wanted to move away from this kind of teaching. Encountering CAC was, she said, like an “Aha” moment – solidifying what she was already feeling as a need and providing her with an approach backed up by research.

Kristen Kullberg, Sacred Heart School, Washington, DC

Kristen Kullberg taught at Elise Heil’s Sacred Heart School in Washington, DC (discussed in Chapter 55 on school networks using multiple PZ frameworks) from 2008 to 2021. She now runs the Design Lab as the Making and Design Initiatives Coordinator at the Washington International School, which Jim Reese heads. At Sacred Heart she served as the project liaison for CAC (and was also a middle school language arts teacher and arts integration instructional coach).

All of the early childhood teachers at Sacred Heart were implementing CAC. At the earliest age of three, children gained the idea that, in Kristen’s words, “I have a voice, I’m a meaningful citizen, I’ve identified a concern in my neighborhood, and I want to address it.” So as the children moved up in grades, they brought these attitudes with them. Kristen had to coach the teachers who were inheriting these children, but as soon as teachers listened to how these children talked about their community, they were sold. Elise provided huge support for her teachers, building in teacher reflection time into the schedule, with time for team planning, coaching time, and visiting other schools involved in the CAC project.

Kristen said that Ben and Mara also provided a lot of support for CAC, spending a great deal of time with the schools involved. Ben spent most of his time at other schools, while Mara spent a lot of time at Sacred Heart. She facilitated workshops after school and dropped into classes during the day, spending time with the children, which, she said, was “awesome.” Kristen finds Mara’s definition of documentation, which Mara said took years to develop, to be extremely helpful: the practice of observing, recording, interpreting (ideally in a group), and sharing through various media the processes and products of learning in order to deepen learning (Krechevsky et al., 2013). “CAC became a lived pedagogy in our school,” The pedagogy of CAC works for everybody, in any context, she said. “CAC is a magical beast, it does not need to be adapted, because it is inherently differentiated; you meet students where they are, following their collective passions. CAC is never the same. You never know what you are going to get into.”

When asked about challenges teachers faced, Kristen remembered one teacher who was intimidated by the idea that she was doing a project coming out of Harvard and did not want to participate. But Kristen eased her doubts, and this teacher went on to do a wonderful CAC project. That teacher noted that her three-year-olds were obsessed with wheels. She gave them tiny clipboards, and the children went into the school parking lot, and into other places in DC, and documented (by drawing or writing) what they noticed about wheels. The children could later look at and reflect on what they had written or drawn, even if undecipherable by anyone else. Eventually this developed into a fictional story of a wheel rolling around Washington, DC looking for friends.

When asked whether CAC had affected her philosophy of teaching, Kristen replied, “5000 percent!” She said she had the beginning inclinations of these big ideas which were then solidified by CAC:

- teacher as facilitator and active listener instead of sage on the stage

- documentation as a way of reflecting student thinking back to them to revisit and challenge it
- student as a community connector (a term Mara introduced to her)
- student agency
- student as someone whose strengths are there to be fostered (even when the student was unaware of these strengths)

She said she could not imagine teaching without these tools in her back pocket. CAC, she said, is “so formative for all of us.” She went on to say that documentation is fun, and CAC creates joy in teachers who realize how much children have in their minds. The students feel this joy, too. “It was like a code had been cracked.”

Kristen even got her 8th graders involved in documenting preschoolers’ thinking. They were mesmerized by what children said. Parents, too, were surprised and brimming with pride when they saw what their children were capable of. Parents saw what a “labor of love” this kind of approach was. And when they documented what their children said on field trips, this strengthened parent-child relationships.

Kristen concluded the interview by saying that finding Project Zero “was the catalyst for a *major* shift in my practice.” She also said she was glad that we have featured Sacred Heart School, because “something magical is happening over there.”

Grace Bogosian and Elise Heil, Sacred Heart School, Washington, DC

CAC was featured in this [article](#) by Grace Bogosian and Elise Heil (2022) in the international *Childhood Education Innovations* magazine. The article describes their school’s involvement in CAC since its inception in 2014. The youngest CAC cohort from the school was in pre-K3 that year, and was finishing 5th grade when the article was written. They have engaged in a CAC project each year of their Sacred Heart education!

This chapter focused on a sense of local citizenship; the next one focuses on fostering a sense of citizenship with the global world.

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Chapter 41

Out of Eden Learn/Open Canopy

2013-ongoing

The [Out of Eden Learn Project \(OOEL\)](#) began in 2013. It was originally led by Liz Dawes Duraisingh, Carrie James, and Shari Tishman, and is currently led by Liz and Shari and called The Open Canopy. This project began as an experimental collaboration with Pulitzer Prize-winning journalist and National Geographic Fellow Paul Salopek.

In January of 2013, Paul began a 24,000 mile walk around the world – beginning in the Great Rift Valley in Ethiopia, accompanied at first by a local guide and supply-carrying camels. He is following the path taken by our Stone Age ancestors as they migrated out of Africa 60,000 years ago – from Ethiopia through the Middle East, Asia, and the Americas, aiming to end at the southern tip of South America. Along the way, he documents the experiences of the people he meets – farmers, villagers, nomads, and ordinary people whose voices we rarely hear. Paul is practicing “slow journalism” – careful observation, interviewing, storytelling, and listening. The name of his venture, Out of Eden Walk, refers to his starting place in the Rift Valley, where the oldest hominid fossils to date have been found.

The Out of Eden Walk [website](#) offers this description:

Paul Salopek's 24,000-mile odyssey is a decade-long experiment in slow journalism. Moving at the beat of his footsteps, Paul is walking the pathways of the first humans who migrated out of Africa in the Stone Age and made the Earth ours. Along the way he is covering the major stories of our time – from climate change to technological innovation, from mass migration to cultural survival – by giving voice to the people who inhabit them every day. His words, as well as his photographs, video, and audio, create a global record of human life at the start of a new millennium as told by villagers, nomads, traders, farmers, soldiers, and artists who rarely make the news. In this way, if we choose to slow down and observe carefully, we also can rediscover our world.

Project Goals

PZ researchers Liz, Carrie, and Shari met Paul while he was still planning his journey. They realized that this walk could be a rich learning opportunity for students from all over the world – the chance to follow Paul on his walk, mirror his activities in their own communities, and share their learning with one another. And so was born “Out of Eden Learn” (later renamed The Open Canopy) – a K-12 asynchronous, virtual exchange program with curricula that include activities for students to carry out and reflect on related to Paul’s journey, with each activity called a Footstep.

The mission of The Open Canopy is to ignite students’ interest in the wider world via cross-cultural inquiry and exchange (Dawes Duraisingh & Tishman, 2024; Dawes Duraisingh, Sheya, & Kane, 2018). Students are meant to draw inspiration from the ways in which Salopek and other writers and artists combine “slow journalism” with local and global storytelling.

A Free Online Learning Community

Project Zero created The Open Canopy as a free online learning community that connects students from all over the world. Using a custom-built social media platform created by The Open Canopy, students of similar ages, but from diverse geographical and socioeconomic settings, come together for collective learning experiences. The program currently offers five [8-12-week long learning experiences](#), or “learning journeys” in which six-eight classrooms join together. On these journeys, students engage in a structured curriculum and share their work with other students on the platform. All of the journeys combine offline activities with online interaction and invite young people to: 1) slow down to observe the world carefully and listen attentively to others; 2) exchange stories and perspectives with one another; and 3) make connections between their own lives and bigger human stories.

Students range in age from K-12, they are from schools, after-schools, and home-schooling families, and their teachers teach a variety of subject areas. An important goal of this program is for students to engage in thoughtful intercultural exchange, ideally avoiding engaging in the Three “Os:”

- Overgeneralization – making sweeping statements and stereotyping,
- Over confidence in one’s own knowledge or perspective and viewing one’s own culture as the norm,
- Othering – over emphasizing how different (and better) one is than others.

To help achieve this goal, students are deliberately placed in diverse groups as they participate together in “learning journeys.” These “walking partner” groups are created so that their members come from different cultures and socio-economic backgrounds, including from both rural and urban environments.

One of the first “learning journeys” that was developed is called “The Present and the Local.” Students read some of Salopek’s posts about the details of everyday life in a particular community. For example, [here](#) is a post in which he describes talking to rice farmers in Japan during a brutal heat wave. He writes:

Out in the big golden rhomboids of the paddy fields, the rice drooped in the blowtorch heat. Dragonflies sparkled like glitter in the sun above the canals, while back inside the cool and darkened cybercafe, a soft ice cream machine hummed, giving and giving and giving for free. We eventually found a farmer and asked him what he was going to do next year. “I have no idea,” he replied.

Students are invited to read Paul’s posts, as well as other resources. And, inspired by his descriptions of what for many of them are far away places, students are asked to explore their own communities, looking for what they have never noticed before in their everyday worlds. They go for a walk, observe closely, take photos, and post their videos and observations. They map their neighborhoods and write stories about something that happened to them at some place along the map. They interview an adult about memories of the past or about the meanings of a particular valued object found in their home.

Most importantly, students comment on the posts of their walking partners. They use a dialogue toolkit developed by the project to go beyond simple “likes” to develop good habits about commenting. The toolkit provides specific moves such as “help me understand,” “I wonder if...,” “another way of looking at it is...,” “from my perspective...” All of these are designed to promote

richer dialogue, guide students in making connections, and sharing how a post extended their thinking.

Not only are students connecting with other students from around the world, but they also have an authentic audience. They know that what they post will be seen by someone besides their teacher: It will be read and commented on by another person their age, living far away, whose life is different in many ways from their own, but who is eager to connect.

[The Open Canopy Handbook](#) describes this project in detail, and a 2016 paper by Liz, Carrie, and Shari describing this initiative can be found [here](#). *The Economist* featured a cover story on Paul Salopek which included the following:

The Harvard Graduate School of Education, a sponsor of the project, has developed a six- to eight-week curriculum called “Open Canopy” for schools. Over 70,000 children in 30 countries have followed Mr. Salopek’s progress, written up their own projects and shared their work with classes in other countries. (The Economist, December 19, 2024)

Open Canopy is also an active research project that examines themes such as students’ conceptions of culture, the character of their online interactions, and what they learn when they slow down to observe the world closely both with and from one another. A collaboration has been ongoing with Global Cities – a peer organization – that offers similar online intercultural programming. The collaboration involves co-creating a codebook used to analyze the data collected, based on Global Cities’ framework for identifying global competence.

For the past 12 years, this program has been free and open to all – and Project Zero hopes it will remain so as Paul gets ready to arrive in Alaska and ramble south through the Americas to Patagonia, where his journey will eventually end. But long after he puts away his boots, The Open Canopy program aspires to remain freely available to educators and students worldwide. After all, its powerful approach to teaching and learning – an approach that emphasizes slowing down, sharing stories, and making authentic connections across contexts and cultures – will surely continue to be vital.

Impact on Students

Student participants have reported that as a result of their participation, prior stereotypes were dismantled, and their curiosity about their own and other peoples’ cultures was increased.

In an online survey, 398 students ages 9-17 who had just completed their first Out of Eden Learn learning journey were asked: “By taking part in Out of Eden Learn did you become more interested in learning about people and places that are unfamiliar to you?” Responses: “a great deal” (41 percent), “quite a bit” (31 percent), “somewhat” (18 percent), “a little bit” (7 percent), and “not at all” (3 percent).

Many students have also been interviewed about their experience (e.g., Dawes Duraisingh, Blair, & Aguiar, 2021). Here is what one student from Mexico said:

Getting to know people from different cultures gives you a different perspective on certain places. You can say, ‘Hey, we have a lot of things in common,’ or ‘Hey, that’s different. I would never do

that.' It definitely eliminates stereotypes that you have on that nation or culture or whatever, and it gives you a totally different perspective.

Student posts also reveal a positive impact. Here are a few examples from the above mentioned white paper (Dawes Duraisingh, et al., 2016):

A student from Mumbai, India posted a photograph of a man receiving a haircut, commenting "Hello, as I took a walk in my neighborhood today I saw things I don't ordinarily see. I was shocked because it seemed like everything about my neighborhood was new to me."

A student from Shanghai, China wrote: "Many times we are busy with life and don't have time to look at the environment around us. Seldom do we have time to make any plans. Out of Eden Learn lets me calm down, pay attention to my surroundings and make plans for places that I want to go."

A student from Barcelona, Spain writes about realizing as she was walking slowly "how much I loved being there and all the things that I didn't see before—I didn't notice that I had. And then I discovered new places too, and it was really incredible."

A student from Singapore chose to examine an umbrella in response to the Learning Journey 2 activity Connecting everyday objects to bigger systems. She noted the different components of the umbrella and how as an object it relates to cultural, manufacturing, trade, and linguistic systems. This student was able to notice complexity by first slowing down to look at the umbrella very closely.

Impact on US Schools

Mark Urwick, R. J. Frank Academy of Marine Science and Engineering, Oxnard County, California

R. J. Frank Academy of Marine Science and Engineering is one of three magnet middle schools (grades 6-8) in Oxnard County, California (the other two are the Dr. Manuel M. Lopez Academy of Arts and Sciences and the Fremont Academy of Environmental Science and Innovative Design). Ron Ritchhart has carried out extensive CoT professional development at all three of these schools. Almost 90 percent of the students in the Oxnard school district come from Mexican-American families where parents work long hours as agricultural workers. Many of the students are English language learners and are reading below grade level.

Mark Urwick teaches social studies and world history at the R. J. Frank Academy. He first learned about OOEL at the 2017 PZC (and he noted that the PZC really "changed mindsets"). Here is what he wrote in a [blogpost](#) for The Open Canopy about discovering OOEL:

When I discovered Out of Eden Learn at Project Zero Classroom I was hooked. I remember thinking, "Someone built an entire platform that provides structure to support students from my school to interact with students around the world and it is all free?! Not only that but they are collaborating with an award winning journalist who is walking across the world and providing content from some of the countries and people we know the least about. SIGN ME UP!"

Here is a [slide show](#) Mark created to introduce OOEL.

At that time, he was serving as an instructional coach and did not have his own classroom. He wanted to bring OOEL to his school, and spent the academic year of 2017-2018 team teaching OOEL once a week in 11 classrooms. Mark wrote in his blog:

This quickly became the most rewarding part of my job with students constantly reminding me, "Mr. Urwick don't forget you are coming into 4th period today!" I loved being able to team-teach the lessons with the classroom teacher and provide the extra support our English learners need to keep up with the pacing of the program.

Mark also ran, and continues to run, hour-long workshops across the Oxnard district on OOEL (as well as what he referred to as Visible Thinking Skills). He referred to these as a one-hour pitch in which he shows teachers what OOEL can do and shows them that it is easy to use.

Mark values opening up the broader world to his students through OOEL and, at the same time, getting students to realize the deep knowledge they have about their own world. As he writes in his blog:

Many of the students I work with do not have the opportunity to interact with young people beyond their neighborhood. They often have extended family nearby so there is not much incentive for day trips to explore the surrounding area. I am always amazed when I ask how many students have seen snow and only a few hands go up. When I hear educators comment about the lack of "funds of knowledge" of these students, I get frustrated because it is not a lack – it is just different. They may not have my funds of knowledge, but these students are eager to share their rich, daily experiences with other students far and wide.

Here is an example from one of Mark's students showing how much she knew about her own world:

This is what I usually see when I walk back home after school.



The murals have been there for quite a long time already. Sometimes the people that painted the murals have had to fix them by painting them again because some other people would spray paint over them and ruin the art that takes a long time to do. There are more parts of the murals but I couldn't capture it all in one picture. There is also another mural by Del Sol Park. That one is already all ruined though, I'm not sure if they will fix that one. Then the little park that's in the middle of the whole complex. It's small but pretty fun. My cousins and I would play on it almost

everyday when we were younger during the summer. Nobody really uses it as much as they used to, I still remember when almost every kid would go outside and play on it. Some would even be there until it got dark and everyone had to go back inside.

Here is an example of how a student from Jordan introduced himself to students in Mark's class – testimony that must have helped Mark's students rid themselves of any stereotypes of people in the Arab world living in tents and riding camels:

My name is Emilio, XD isn't my family name, it just flows with my name. I'm thirteen years old and study in king's academy in Madaba, when you hear the word Madaba or Jordan, you'll think we ride camels and live in tents, too bad this was our past, we have everything you have. we have phones too, you aren't unique, we know about the iphone 8, yet it's harder to buy it here, I'll say you are ahead of us by one month and that's not much. Here most kids like football and basketball, by the way i'm talking about our football which you refer to as soccer, the football Americans play is called American football, makes sense. video games like Fifa 18, GTA V, Overwatch and rocket league are my favorites, we prefer a Playstation 4 not an xbox. During my free time i would love to watch Youtube, i would watch up to two hours per day, I can name some youtubers you will know but too bad the teachers won't, I would waste my time watching jake paul sometimes, but I prefer watching his brother logan, I also see ricegum and ksi's disstracks and end my two hours with some dude perfect trickshots.

You would love to come one day to see the city of Amman or Madaba, We have the best weather in the whole world, you will love to stay.

With OOEL, students connect with others living in very different environments and often coming from a very different level of social class. Mark wrote:

Although the content was challenging and our school has high numbers of English learners and students reading below grade level, the students felt very comfortable commenting on posts from more affluent private school students. Middle school students understand "the world is flat" and, yes, some of these students were posting photos from wealthy gated communities with private lakes, but issues of class never came up. We were all members of a walking group eager to engage with new found friends from around the country and around the world. Students were much more interested in sharing hobbies and commenting on daily routines that would come up through photos and drawings rather than talking about what their parents did for a living... Out of Eden Learn is helping to break down barriers for students who don't have opportunities to travel far beyond their own communities.

As do most OOEL teachers, Mark uses PZ thinking routines. He wrote:

I am constantly asking my students "What makes you say that?" when they comment about Paul's posts, the curriculum on the platform, or the interaction between walking groups members.... Ron Ritchhart talks about providing time, opportunities, interactions, environment and language that build the culture of thinking, and Out of Eden Learn is the one place I have found that ties all these aspects together.

Mark said that the well-written framework from PZ contains everything teachers look for all on one platform:

- Getting students to slow down and look closely at everyday things (in contrast to how teachers usually rush to get through their curriculum)
- Teaching students how to ask questions as they interview
- Helping students see themselves as global citizens as they interact with students their own age in far-away places.

He also praised OOEL for showing students aspects of other cultures very different from their own, as well as getting them to recognize more commonalities than differences between themselves and the students with whom they interact.

When asked about challenges, he noted several issues and had some recommendations:

It's important that everyone in your walking journey go at the same pace so the students are all working on the same things. This does not happen if one party slacks off, or when students have time off for school holidays that are not consistent with the holidays of their walking partners.

It's important that there be enough teachers signed up that walking parties can be created. One spring the OOEL team could not get a walking group going because there were not enough classrooms participating. Mark would like to promote it more, and have more workshops on it at the PZC.

Time is always an issue. Teachers need buy-in from their district or principal. If a new principal asks him why he's not teaching world history, he has to explain that he is teaching world history, and he is doing this through OOEL.

He values the opportunities to interact with other teachers using it and does not feel that the tool on the website for teacher interaction is used enough.

Mark has built some things for OOEL on the [Canvas](#) platform. Many teachers are already using Canvas, and he would like there to be a place on the OOEL website for teachers to share what they have created on Canvas.

Mark is well aware that teachers often start using something they are enthusiastic about but after a few years it peters out. He, however, said that he plans to use OOEL for the rest of his teaching career. On this [podcast](#), Mark talks about his experience with PZ and with using OOEL.

Hollis Scott, Montair Elementary School, Canville, California

Hollis (Holly) Scott teaches 5th grade at Montair Elementary School in Danville, California. She has attended the PZC summer institute for seven years.

She was moved by the classroom engagement she witnessed when she used OOEL. She said that this was the most exciting work she has done as a teacher.

She wrote about her use of thinking routines in her [blog](#):

As students are pressed to think and make their thoughts visible through the simple steps of thinking routines and guiding questions I pose, I become more of a documenter of their ideas and learning, using their information to guide my teaching as well as assess their understanding. With

this shift in the way I teach, I am starting to see students empowered by their new role in learning, as they go from passive receivers of information to active knowledge creators.

She also wrote two blogs about her use of Out of Eden Learn as a tool for getting students more engaged in writing and to write with greater depth. She concludes this [blog](#) with these words:

Our students live in a fast world. I have noticed that when they are invited to slow down, look closely, and make their own observations, they experience joy in the process. And when they know their stories matter to others, they care about writing them. Understanding others' perspectives comes more easily for students as Paul Salopek shares his discoveries through slow journalism dispatches, videos, Tweets, and Instagram posts. They feel his desire to understand the world. And in their online [dialogues](#), with their peers in other classrooms around the world, I see a developing eye toward understanding others' perspectives and the authenticity I seek for them as writers. No more groans and looks of despair!

According to Holly, not only were the students more engaged, but Holly was also more engaged in their writing. She told me that she recently went to a 12th grade graduation where she saw her grown 5th grade students. She was shocked that she could remember vividly what they had written in their Out of Eden project.

She concluded this OOEL [blog](#) with these words:

Instead of having the [Common Core Standards](#) guide my teaching, the learning of the standards became a consequence of the thinking moves the students were making in their footsteps, discussions and extended class work. While I believe we incorporated every Common Core State Standard for reading and writing, I was particularly impressed with the progress the students made towards achieving the standards that involved the most thinking and analysis.

Nevada Benton, Escalante Middle School, Durango Colorado

Nevada Benton teaches 8th grade social studies at Escalante Middle School, a public school in the Durango School District in Colorado, where she initially taught 7th grade language and literature for four years. Before that she taught 6th through 12th grade language and literature at Mandela International Magnet School, an IB school in Santa Fe, New Mexico. She has integrated OOEL into her classes at both of these schools. At Mandela, she also worked with Ron Ritchhart on VT and CoT. She has been a fellow at the PZC, and this is where she learned about OOEL.

In 2023, her social studies class at Escalante followed OOEL's Remembering the Past learning journey, and she incorporated the Native American perspective (some of her students were Native American). She was able to bring a traveling museum of Native American artifacts to her class, and students used the See-Think-Wonder routine as they studied these artifacts. Her students also took a virtual tour of a Native American museum in Santa Fe where they selected a piece of art and engaged in an art quest, using all of the entry points into art developed by Jessica Davis in Project Muse (described in Chapter 10), reflecting on what this meant for them. Children worked in groups of three-five students, with each focusing on a different entry point. One student read the questions aloud, and the others responded often prompting one another with the thinking routine "What makes you say that?" Nevada told me that students find this to be engaging. She said that next time, however, she will teach them how to do an Art Quest in greater depth by engaging in one as a whole class before breaking up into groups.

Nevada said that she has yet to convince any other teacher at her current school to adopt OOEL, probably because it requires extensive time outside of the school day to manage. At the IB school in Santa Fe, other teachers in the English Department were using OOEL along with Nevada.

Nevada has faced some resistance from Escalante curriculum consultants who were concerned about whether she was meeting all of the standards. “I just aligned it with either my English or Social Studies standards because doing OOEL was important to me,” she said. She has been teaching with OOEL for 11 years, despite the extra challenges of sometimes not having a teacher partner to collaborate with and having to align to the standards to prove its educational value.

Nevada switched from teaching English after four years at Escalante to teaching social studies, because teachers of English (but not social studies) were required to use a fully scripted curriculum. She said she is an improvisational kind of teacher – “listening to what my students need and meeting them where they’re at.” For this she needs pedagogical freedom.

One challenge she faced with OOEL was that only 40 percent of her students were reading and writing at grade level. Her students were sometimes grouped with students from independent schools who were at grade level. She was concerned that her students might be self-conscious about posting their reflections and questions. So she did an initial brainstorm with her students about what they wanted to post, they then revised and revised again and only after that were they allowed to post a comment.

Over the 11 years, Nevada’s individual-, whole-, and small-group support has varied depending on the learning journey, the students, and what each footstep was calling for. At Mandela she had 50 students, and so individual writing conferences could happen twice per learning journey. At Escalante she has 100 students, and so individual conferences happen for all students once per learning journey, and then as needed if students are struggling to engage.

The whole group instruction at both schools has included viewing and analyzing other student examples of posts and comments. Small group instruction has included peer reviews using PZ thinking routines such as the Three Whys. (Why might this topic/question matter to me? Why might it matter to people around me? Why might it matter to the world?) Individual conferences have typically been held using the Ladder of Feedback for posts, and feedback on an individual basis is typically done by private comments on Google Classroom. Also students draft all posts on a Google document and feedback is given to each student prior to their posting.

Nevada also had to go over guidelines for appropriate communication. One student, for example, created an avatar of a girl and made fun of it; another was talking about women’s bodies at church; another used a photo of a rap star for a profile picture; another used an account with an inappropriate account name. Out of approximately 750 students, these were the only such issues she faced over 11 years.

When asked how she evaluated the program, Nevada was very positive. She noted that her students were excited to talk to other students around the world. She has found the framework easy for her to use and also flexible enough to adjust so as to meet her school’s mandates. She liked the sentence stems from the dialogue toolkit, because it helps students who lack the experience of texting with someone in a substantive way. And there are enough walking journeys to allow her to offer something new to those students who are in her class for two years in a row. “Engaging in

other perspectives is very powerful,” she said. Learning to use academic discourse, and thinking deeply, make this program worth it, in spite of the time and work that it calls for. For her students who would not go on to college, the experience of OOEL might be the only way they would ever be introduced to this kind of collaborative deep learning.

She did have a few suggestions for improvement. Many of her students have executive function difficulties, and she thinks that the platform could be made more accessible if students could use an app on their cell phones during OOEL work. This would allow students to do less clicking around to get into their posts, edit them, or find one to comment on.

Mike McPharlin, Francis Parker School, Chicago, Illinois

Mike McPharlin is an experienced teacher currently teaching 5th grade (9-11 year olds) at the Francis Parker School in Chicago, a K-12 independent, progressive school. He first learned about OOEL while attending a conference where someone was speaking about Paul Salopek’s journey.

He used it in his class the following year and is now in his 9th year of using it with his students. He is currently the only teacher at his school using the program.

Mike sees clear connections between OOEL and the various subjects he teaches. He first used it in his social studies curriculum. Paul writes about the lived experiences of the people he encounters, and Mike’s social studies curriculum focuses on the way in which our perspective shapes how we understand our world and our history.

He has used OOEL in his measurement unit in math. He asked his students to calculate the number of steps Paul had taken from his starting point to his current location. The only thing he gave them (after communicating with Paul), was Paul’s average stride length. After that they had to figure out their own average stride length and calculate how many footsteps they would have taken going the same distance as Paul.

Mike has used the dialogue toolkit in his writing curriculum when students are peer editing – students use the elements of the dialogue kit when they provide feedback to each other as writers. He has also partnered with the science teacher on some of OOEL’s projects.

Mike praised the framework and curriculum of OOEL as very well developed, immediately accessible without first requiring professional development. He did say that the PZ team has always been available for questions. One year Mike came to the PZC and spoke at one of the OOEL sessions about the challenges and benefits of using OOEL and thought it was very useful for educators to hear from other educators using OOEL.

Mike believes that his students benefit greatly from OOEL:

They get to think about important topics, like the relationship between human health and planetary health or the relationship between mental health and the environment. These are topics that would be difficult to teach to 5th graders, but with the OOEL framework, students readily make connections to these issues.

They notice the similarities between themselves and students living very different kinds of lives – which is sometimes surprising to them.

There are many online platforms where students can communicate with students in other countries, but OOEL is the only one he knows of where students are communicating with students in far-away places all engaged in the same kind of learning and talking about the same ideas. This makes the interaction much deeper and more meaningful, he said.

OOEL makes kids better thinkers, he said. They really care about Paul, and they really care about connecting to other students far away. This makes the learning real and powerful, and they think deeply. "It's not learning that is being done to them," he said. "It's learning they are taking part in."

OOEL helps kids become better at communicating with others.

Parents have also responded very positively. Former students often ask Mike if his students are still doing OOEL; they tell their younger siblings going into Mike's 5th grade that they will get to do this exciting project; and many keep up to date on Paul via social media.

The biggest challenge he has faced is that bringing something new into the existing curriculum requires time, but he does not simply get to remove something else. He said, "If you feel it's important, you find a way to do it."

Jennifer Murray do Carmo, Kingswood Regional High School, Wolfeboro, New Hampshire

Jennifer Murray do Carmo teaches at Kingswood Regional High School in Wolfeboro, New Hampshire, a fairly conservative area with a great deal of diversity in SES.

When we spoke in 2024, Jennifer had been using OOEL for six years. She learned about OOEL while developing a course on current issues in global citizenship. She found on the internet a National Geographic, grant-funded, professional learning community called Walk On. She applied, was accepted, and there she was introduced to OOEL as well as to PZ thinking routines by Kim Young, the learning community's leader. The group followed the Human Migration module of OOEL, reflected together, built resources, and shared practices.

OOEL has inspired Jennifer and shaped much of her own professional development. Because of OOEL she has embedded slow journalism, close looking, storytelling, and thinking routines into her global citizenship class.

Here is an example of how she brought something from the students' own community into OOEL. James Foley, an American journalist who was beheaded by the terrorist group ISIS in 2014, had graduated from Kingswood High School. Her students began to explore James's story through the OOEL theme of borders. Students created an exhibit about James, including one station called "The Three Why's" – Why is James's story important to you? To the local community? To the world? Students invited various groups to view the exhibit (including the school's administrators and James's parents.) A photographer documented the exhibit and the students were invited to present their work to the school board. They then received a grant of \$8600 allowing them to fly to the James Foley Awards at the National Press Club.

Jennifer's department is quite traditional, and no other teachers use OOEL. She said there was not a lot of curiosity among teachers about what others were teaching. She faced no opposition from the school administration.

Jennifer has taken both the Visible Thinking and Making Learning Visible online courses and also attended the PZC in 2023 (using her own funds). What she found most interesting at the PZC was watching Sarah Sheya (and perhaps Liz) evaluate student work from OOEL using PZ protocols. She had never seen anything like this before, with students noting their work being taken seriously by adults. Jennifer said that PZ researchers respect teachers and recognize that they have a lot to offer, just like she saw students being respected by OOEL researchers. She liked being a student at PZ, because she could then imagine how to teach students in the same way. PZ professional development models how to teach, with participants in the role of students, and this kind of professional development sticks, she said.

She finds OOEL particularly useful for her students. Their lives are very insular, and OOEL makes the world bigger for them. The Circle of Viewpoints helps students see themselves in their local community, their school, their state, their country, and the world. OOEL gets them to think about important and relevant issues like what is a border and what are the invisible borders in their school – such as SES. It allows them to talk about difficult issues like immigration by seeing the human stories behind migration. It allows students from families who have different political beliefs avoid knee-jerk responses and think deeply about stereotyping, bias, and hate.

Jennifer said that OOEL has changed how she teaches. Before OOEL, she was a more traditional teacher, often lecturing. PZ, she said, gave her tools to experiment with. She finds her new way of teaching, where students are driving their own learning, to be rich and joyful. PZ is her place to go for professional development – “it’s the gold standard.” She wrote to me that OOEL “has helped me be a better student of my students.”

Chris Sloan, Judge Memorial Catholic High School, Salt Lake City, Utah

Chris Sloan teaches photography, AP English Language and Composition, and a class on New Media at Judge Memorial Catholic High School in Salt Lake City, Utah. We interviewed him about his use of OOEL and thinking routines.

Chris uses OOEL in his photography classes but not in his English classes, for two reasons. First, he has more latitude in the photography classes, whereas in the English classes there are more constraints in the curriculum. Second, the idea of slow journalism meshes well with his goals in his teaching of photography, as described below.

In about 2014, he first learned about OOEL through the National Writing Project. Someone there suggested he connect to OOEL due to his interest in productive civil dialogue online. He connected with Liz, Carrie, and Shari and worked with them on developing the OOEL [Dialogue Toolkit](#).

He finds OOEL particularly helpful in getting students to change their habits of snapping quick photos on their phones and instead slow down and study the subject of their photos before taking pictures. He noted how students responded to the assignment in the Stories of Migration learning journey – asking them to photograph a family object over 30 years old and interview a family member about it. One student found a family bible from the 1600s; another found her great-grandmother’s ring that had been handed down to her mother. In the context of studying and learning about the object from a family member, both of these students took strong photographs.

Chris is the only faculty member of his school using OOEL. PZ never came to his school to do professional development. Chris really came to understand OOEL by his working face to face with Carrie, Liz, and Shari and collaborating on the Dialogue Toolkit. The other support he has received

is by connecting virtually with other OOEL educators around the world. Finally, he said that the curriculum itself provides support, and he riffs off of it.

Chris noted what he believes are three important consequences of engaging students in OOEL:

Slowing down and looking more carefully. OOEL gets students to slow down and be more intentional about the images they take. This happens because they have to use digital cameras instead of their phones, which means they have to slow down to control the aperture and shutter speed. This gets them to look more carefully as they compose their picture.

Understanding others is very different from oneself. OOEL is an online community where teachers are present to help students engage in productive interactions online (unlike with Facebook or Twitter/X, where there is no adult monitoring). OOEL gets students to take the perspectives of other students living in very different cultures from their own. He uses the thinking routine [Circle of Viewpoints](#) before students comment on someone's post so that they can gain some understanding of the other before engaging in conversation. His students, he said, "can be provincial, and any time we can get them to see outside of themselves, understanding that people are living very different kinds of lives, that's important." This is also why parents like the program – they want their children to see a broader world.

Becoming respectful digital citizens. Related to the benefit of understanding others is becoming more respectful digital citizens. The students who take his English classes after having taken his photography classes seem to him to be more respectful digital citizens than those who have not engaged with OOEL.

Seeing beauty in the everyday. Finally, taking photos intentionally, focusing on the everyday, and editing their photos helps students appreciate things and see the beauty in the world. Given how much we hear about today's students as anxious and depressed, this can only be a good thing.

When asked about challenges, Chris said that he is asking his students to engage online in ways that are new to them, since they are used to firing off things quickly, sometimes anonymously. He needs to get students' buy-in, but generally they do so. "Every semester at least one student gets passionate about OOEL, and most often it's quite a few in the class. There are some students who just go through the motions, but I'd say they're less than half of the class."

When we asked about thinking routines, Chris told us that he uses variations of Think-Pair-Share in both his photography and English classes. He uses Circle of Viewpoint in his English class, to help students see beyond themselves. He uses many more routines in his summer teaching, where he works with teachers from all over the world. He introduces them to thinking routines so that they will come to use them in their own practice.

Impact on Schools Outside the US

Kiriaki Melliou, Ministry of Education, Greece

At a 2013 Visible Thinking Conference in Miami, Florida, Kiriaki Melliou heard Shari present OOEL. As she wrote in her [blog](#) for The Open Canopy, she knew right away that she wanted to bring this

project to Greece, a country replete with immigrants speaking many different languages. At that time, Kiriaki was a kindergarten teacher in Piraeus, Greece, working in a low-income public school serving many refugee families. Now she works for the Ministry of Education in Greece, where part of her work involves overseeing the use of OOEL in over 100 classrooms including those in remote islands.

Greece has a mandatory curriculum that all schools (except for IB schools) must follow. In 2019, the Ministry of Education launched a large educational reform movement and invited organizations and universities to develop a competency-based curriculum to include seven-week mini-courses in four thematic areas (called Skills Labs): Well Being, Environment, Social Conscience and Responsibility, and Innovation. In collaboration with the University of Piraeus and with the support of the OOEL team, Kiriaki wrote a proposal for OOEL to be one of these mini-courses within the theme of “Social Conscience and Responsibility.” The PZ team worked closely with Kiriaki when she developed her proposal, and when she tested it out in June 2020. Kiriaki and the PZ team then set up online workshops open to all teachers in Greece who had chosen to pilot the OOEL mini-course. In 2021, the OOEL Skills Lab project that featured the OOEL mini-course won the first prize for a competition run by the Global Education Network Europe (GENE). In 2022, the OOEL dialogue tools and PZ thinking routines became part of the mandatory Greek national curriculum for students from early childhood through primary education (ages 4 to 12).

Kiriaki faced a problem: teachers reported feeling under pressure to use OOEL along with the curriculum content they had to cover. She found that they often omitted parts of the footsteps or reduced opportunities for “slow looking.” As a result, in collaboration with the Department of Digital Systems at the University of Piraeus, Kiriaki developed a new OOEL-inspired series of mini-courses closely tied to the content of the curriculum and to all four thematic areas. Instead of using Paul Salopek’s resources, she identified specific units in the curriculum that could be tied to basic OOEL activities. For example, mapping the neighborhood was associated with Geography units, doing an interview was linked to Language units, and so forth. As a result, teachers now feel they have time to cover the content of the curriculum, because the new 15 OOEL-inspired mini-courses include the units teachers have to teach, and they relate to all four thematic areas. One of these mini-courses is shown below as a strong example of an educator adapting a PZ framework to fit the context in which that educator worked.

***Sample OOEL-inspired Minicourse for Science and STEM/ 4th Thematic Area of Innovation
Primary School of Ano-Syros (an island in the Cyclades)***

Week 1. Syros, like most Greek islands, is facing a challenging water future. Climate change, low rainfall, and geology are some of the issues that prevent locals from storing sufficient water. As illustrated in the image below, 6th grade students engage in slow looking as they explore their neighborhoods to identify natural resources that could be used for drinking water (related curriculum subjects: Geography, Language, Local History).



Slow looking

Week 2. Students in groups use several PZ thinking routines to revisit their field notes and documentation. Without sufficient water resources in their island, students needed to find a solution to combat water scarcity (related curriculum subjects: Language, Science, Environment).

Week 3. They decided to interview officers from the municipality of Syros, who were responsible for rural water management and also organized an online meeting with a representative of a Greek NGO on nature-based water solutions (related curriculum subjects: Language, ICT, Social Sciences).

Week 4. Reflecting on the information gathered from previous steps, the students decided to create a system for collecting and filtering rainwater. Connecting PZ thinking routines and OOEL dialogue tools with STEM methodology, they designed a model of “steps” for constructing their “solution.” Among their actions was to predict where rainwater will flow and calculate collection and use (related curriculum subjects: Language, Math, Sciences, Arts).

Weeks 5-6. Students created a water collection and filtration system pictured below (related curriculum subjects: Science, Technology, Engineering, Arts, Math).



A water collection and filtration system

Week 7 Their work is shared with the local authorities (related curriculum subjects: Social Sciences, Language).

The thinking routines and OOEL dialogue tools were used to design protocols for students' work and self assessment rubrics like the one below.

The OOEL resources were translated into Greek by Kiriaki. In addition, PZ thinking routines and the OOEL dialogue tools were included as strategies for promoting 21st century competencies that included critical thinking, problem solving, and perspective taking.

Kiriaki spoke about two challenges she has faced in getting teachers to use OOEL:

The first has been to show teachers how OOEL aligns with the national curriculum.

The second is insufficient professional development. Kiriaki devotes her own personal time for professional development in the use of OOEL, but she cannot do it all. She wishes that PZ could have ambassadors all around the world engaging in professional development not only for OOEL but also for all of its other frameworks.

Kiriaki spoke about the multiple benefits of OOEL. About the power of slow looking (which she said everyone can do, even newly arrived students who do not yet speak Greek), she wrote this this 2015 [blog](#):

This new perspective of looking at common things through different and more 'patient' lenses encouraged children to become critical of their own assumptions about their immediate environment.

OOEL provides a way to develop deep critical thinking: it helps revise their “situated” assumptions about culture, project themselves into another culture, and wonder about what they do not know. For example, children wondered if culture disappears when people disappear, if it leaves signs behind, and finally if Paul’s culture would change after the end of his long walk.

OOEL makes online communication more meaningful. As Kiriaki wrote,

I have been using asynchronous communication for many years in my classroom, but in exchanges among children I always noticed that they were quite impersonal and superficial. What makes a real difference on the Out of Eden Learn platform, however, is the Dialogue Toolkit, which is designed to support meaningful communication between students of different nationalities living in different countries. During each footstep children were encouraged to brainstorm and structure the questions to their 'distant' friends using the vocabulary of several thinking routines. Soon, all comments became more thoughtful, which allowed children to develop reflective interactions with their peers. (See the example she offered in the blog).

OOEL aligns with Greece’s global education goals. By fostering mutual understanding across cultures, OOEL helps students understand that the difficult experiences they and their families may have had (particularly children of immigrants and refugees) are similar to those had by others. As Kiriaki wrote in her blog, “the biggest advantage of viewing the world through the stories of others was that it helped to develop a culture of respect for human diversity and complexity.”

OOEL bridges the language barrier children face in communicating across cultures. Kiriaki concludes her blogpost with these words:

I'd like to invite all non-English speaking early childhood educators around the world to consider taking the vocabulary challenge and join the Out of Eden Learn community because the stories and experiences that are shared here go beyond any language barriers.

In a 2016 [blog](#), Kiriaki elaborates on these points and also adds that OOEL offers students visibility.

For me, documentation is an integral part of maintaining and interpreting our Out of Eden Learn experiences. Documentation invites students to present their stories and others to slow down and listen to them. Thus, even children from lower socioeconomic backgrounds become able to “see” the value and meaning of their ideas and develop a positive self-image.

Kiriaki praised the support she received by the entire OOEL team.

India

For the Loka School in Bihar, India, discovering Out of Eden Learn was transformative.

Loka was founded in 2007 by Charlotte Leech, an arts policy advisor from the Netherlands, and Sanat Kumar, a Sanskrit scholar from India. These two educators began teaching rural children, sitting under a neem tree in Varanasi, India. Eventually a small structure was built on a temporary

location, and more children joined. Neither Charlotte nor Sanat were trained in education, but Charlotte saw this as an advantage, allowing them to be more open to new possibilities.

In 2009 they had to leave their temporary space. They moved to Manikpur, a small village in the state of Bihar where Anat had come from. They bought land for the school and created a basic infrastructure, mostly with their personal resources. Bihar is one of the least developed states in India, known for its rich history and fertile soil but also, since the late 1970s, its corruption, caste-related unrest, and criminality (although things are gradually improving). Many people would be afraid to enter this village. The children were amazed to see Charlotte – they had never seen a non-Indian. And Charlotte and Sanat were welcomed.

A school building, study center, and cow stable were created on a six-acre plot of land. The founders wanted the school to have a strong connection with the land, which is why the school was also a farm, managed by the students and teachers along with local farmers. The buildings were designed (pro bono) by a renowned architect and trustee of the school, the late Pradeep Sachdeva. Initially the school received financial support from 'Stichting Loka', a foundation started by Charlotte in the Netherlands. Most donors were family and friends. Now the school is funded primarily by a Swiss foundation, the Van Kesteren Foundation, and Sanat and Charlotte are trying to find additional support, including through starting local entrepreneurial activities and a worldwide 'Friends of Loka' community.

The school opened in 2015 with 25 students ages 6-11. The students could not read. Their parents, who had had only a few years of government schooling, were illiterate. Initially there was no electricity, but eventually electricity and an internet connection were established. Charlotte, Sanat, and a few teachers they were able to hire taught English, Hindi, reading, math, art, and yoga. Students participated in community projects such as planting trees and cleaning the village. They also engaged in two activities close in spirit to PZ, even though the encounter with PZ and OOEL was yet to occur, namely deep listening and slow looking at nature.

In 2019, Charlotte received an email from a friend telling her that an interesting person who wished to visit the school was going to be passing on foot through Bihar. And so one day Paul Salopek just walked into the school. This proved to be a turning point for Loka.

Paul engaged the students in slow looking and documenting their village and surroundings. He told them that learning starts the moment they leave their house in the morning and walk to school. What kind of conversations do they have? How do they relate to each other and their surroundings? What do they observe while walking? This way of thinking inspired Loka to expand its views on learning and teaching.



Paul engages with Loka students

Paul told Charlotte and Sanat that Shari, Carrie, and Liz were coming to meet with him in India. And thus Shari, Carrie, and Liz met up with Paul at Loka.

According to Charlotte, OOEL brought the school to the next level by giving them the structure that they needed. She said she never could have imagined that a university in the United States would be able to help them move forward and would be sensitive to their particular local situation.

The learning with OOEL started with the older children (age 16). When they went on their first learning journey – The Present and the Local – they began documenting “the everyday” in their own surroundings, describing in words, drawings, and photographs what they saw both in nature and in the village. They reported on the houses, flowers, trees, birds, and cows as well as problems such as conflicts between communities and issues with land. They made beautiful maps of the village and its surroundings, working either alone or together in small groups of two or three (as shown on the next page).



Maps of the village and surroundings

Loka students were among the first to participate in the Remembering the Past learning journey. There were no written histories about the village, and so they interviewed village elders (as shown in the photo below) and wrote their stories, illustrating them with how the village used to look.



Loka student interviewing a field worker

The interviewees – often undervalued field workers and labourers – felt appreciated, because students were interested in their stories.

The school partners with artists, craftsmen, and scientists who offer master courses to students, sometimes continuing over several years. In the art classes, students often work together on one work of art (Reggio style), as can be seen below.



Students in a master art course working collaboratively on a painting

With a visiting artist from Artreach India, students made paper from rice straw, a byproduct of rice plants grown on Loka's farm. They made books, embroidered on the paper, and they made objects such as lamps and boxes from the pulp of the paper. Initially, students saw rice straw as a material to feed cattle or to light a fire = in their wood-ovens. Now they realized that straw could also be used to make paper – their understanding of their local surroundings and its possibilities had expanded.

One by one the students completed all of the OOEL learning journeys that existed. They also read articles written by Paul, each of which could require up to three weeks of daily study as English is not these students' first language. The text was printed out, and the difficult words were underlined by Charlotte. Students would find the meanings on their tablets (donated by an organization in the Netherlands) and explain them to one another during class. Students' language skills and word knowledge rapidly improved, and they appreciated the rich and interesting writings of Paul, which made them curious to keep on learning more.

Parents were amazed. While children from local government schools were learning to read simple words, Loka children were observing, researching, drawing their village as it had been 100 years ago. Parents began talking to their children about what they were doing, and the whole family became involved – sometimes with parents making drawings even though they had never drawn before. Entire families were sharing with each other and learning together.

As of 2024, Loka has ten teachers or interns and educates about 100 children from pre-primary (age 4) until grade 8 in India (around the age of 15 or 16) – reaching about 80 percent of the village children of that age range. Admission is open for everyone. Students from grade 9 onwards (16+) are enrolled in a nearby college, go to coaching classes outside Loka, and engage in self-study to earn a college certificate. They remain connected to Loka by participating in projects, and some of them recently started working as interns who teach children in pre-primary, 1st, and 2nd grade. They understand Loka's vision, which can take time to grasp by teachers coming from outside. In the fall of 2024, Loka's senior students will start teaching OOEL's learning journeys (which occur twice a year) to grades 7 and 8 under Charlotte's guidance.

After getting their college certificates, girls typically marry, and boys work as laborers or farmers. A few might get selected for a government job. Loka's vision is to encourage and equip students to uplift their surroundings and allow their village to progress in new ways, instead of moving to the cities where rural people often end up living in slums. To create such change takes time. Participating in OOEL has been an immense support in this process.

More than anything, OOEL opened students' eyes to look with fresh eyes at their own village – and the world beyond.

Rob Martin, American International School, Chennai, India and American International school of Lusaka, Zambia

Rob Martin has taught in India at the [American International School Chennai](#). When I interviewed him in 2024, he was teaching in Zambia at the [American International School of Lusaka](#), an IB school. These schools have students from up to 50 nationalities, and the students come from primarily middle- and upper-middle class families.

On the Chennai school's website, you will read: *From Making Thinking Visible to Project Based Learning to AISC's Inquiry Cycle, all students experience the wonder of inquiry-based learning across all grade levels and disciplines.*

Rob learned about OOEL from Paul Salopek. Rob was fascinated by Paul's journey, read his blogs, and corresponded with him. He even spent a week shadowing Paul in India – something that no other OOEL teacher has done. Paul suggested that Rob look at OOEL. Rob did not receive any professional development from PZ on OOEL. He figured it out on his own, using the videos and discussion board (which he says is underutilized) on the OOEL website. He said that the PZ team has been very helpful to him when he has had questions. He has also had virtual meetings with Paul, where Paul talked to his students.

Rob went on to introduce his 6th graders at Chennai and his 7th and 8th graders at Lusaka to OOEL. He did not always tie OOEL to a particular unit in his class. "It was just something I found interesting, it

promoted lots of important thinking like what's going on in the world, why should we care about migration, digital citizenship, connecting to kids around the world, giving kids an authentic learning platform ...The story of migration is the story of our time." He feels that the "sweet spot" for OOEL is from 4th grade through 8th grade. He has seen less success with 9th graders. He is unsure whether this is due to the age of the students or simply due to being paired with unmotivated teachers (more on this later, when I discuss challenges).

Rob has engaged his students in all of OOEL's learning journeys, including serving as part of a pilot team for the last two journeys. He likes the wide variety of activities, and has created rubrics with criteria to allow him to grade student work. In Lusaka he pairs OOEL with his unit on migration.

Rob sees OOEL as asking students to engage in Paul Salopek's kind of slow journalism – observing, mapping, photographing, interviewing, all with the goal of thinking about their own culture. He uses See-Think-Wonder to get students to look carefully and curiously. For example, early on in a footstep he gives this assignment:

During your ride from school today, make a list of things you notice. Put down your phone and look out the window. What do you see? What does it make you think? What wonderings do you have?

When he asked his students to map their neighborhood, some asked if they could just copy a Google map. He had to explain to them that the point was to get to know their neighborhood by walking around it. He had to explain this to parents to make sure they would allow students to do this alone, and if not, to ask them to walk with their child.

His favorite project is one that helps students think about their own family history. Using thinking routines, they are asked to analyze an object from home that is at least 30 years old and that is meaningful to them. They also interview family members about the object. Here is what one student wrote for this "footstep."

I interviewed my grandfather for this footstep. The object I interviewed him about is a sterling silver letter opener made in England over a hundred years ago. The letter opener is about one foot long and made of tarnished silver. On one side are 5 small symbols that represent the person who made it, where it was made, what year it was made, and other things. On the other side are some mysterious initials, JJR, which we are guessing are the initials of the person who owned the letter opener before my grandfather. The letter opener was a wedding gift to my grandmother and grandfather from my grandfather's aunt and uncle. He has owned it for 53 years but he thinks it was originally made for someone else, in the 19th century. It is important to him because it reminds him of his aunt and uncle and how close he is to them. It also reminds him of his wedding which was a very important day in his life. I asked my grandfather to tell me a story about the letter opener and the one he told me was very funny. One day, he sat down to watch TV and he sat right on the point of the letter opener. I asked my grandfather how his life would be different without the letter opener and I was surprised by his answer. He said, "My life wouldn't have been different, but I think this [the letter opener] just adds to my life." I think it is special that he uses it almost every day and can use it to connect to an important experience of his. At the end of the interview, he mentioned that he would take the letter opener to a silversmith to learn more about it. I think it is important that my asking has prompted my grandfather to learn more about something that is special to him.

Rob praised OOEL for allowing students to study topics to which they can personally relate.

Rob finds the [Educator Guide](#) very helpful. He uses this to show his students examples of what a good comment looks like – to inspire them not to give lazy comments like “that’s cool” but instead to tell the other students specifically and graphically what they liked about their posts, what their post makes them want to learn about, and what questions you’d like to ask them. Without coaching his students on how to engage and ask questions, they may just scroll passively.

Rob has promoted OOEL on social media (X), and to other educators who are passionate about PZ, and he has given workshops in both Chennai and Zambia. But he is the only teacher at Lusaka (and was the only one at Chennai) using OOEL.

Rob said a key benefit of OOEL is that it gets students out of their own world. Many students in international schools are living in gated communities, with their parents working for the United Nations, the American embassy, or an American company. Living in a gated community shelters residents from knowing about the country in which they live. OOEL connects them to the world outside the gates. It pushes them to connect the culture of their sheltered community with the culture of the country in which they live and with other cultures around the world. It also helps students make connections between the past and the present and to understand how they are affected by history.

The best part is that students get to connect with students around the world, which gives them an authentic audience. They know that this will be read by someone besides their teacher. Sometimes Rob takes OOEL activities and uses them as stand-alone learning activities or as a summative assessment.

When asked how parents respond, Rob said they have been very supportive. He has invited parents to evening meetings at the beginning of the year where he tells them about Paul, about OOEL, and shows them some strong samples of student work from the prior year.

When asked about challenges, Rob said that the platform is very well run but sometimes he faces wifi challenges. He also has found that 9th graders are less inspired than younger children, but concedes that this might be due to the classes his 9th graders were paired with. When one is paired with other classes that have passionate, motivated students, OOEL is a great experience. However, when the teacher and students on the team do not take it seriously and don’t post and comment, students are disappointed. They love getting comments from someone far away.

Rob finds it helpful to meet with the teachers he is paired with right away to set up ground rules, expectations, and pacing. The paired classrooms need to go at the same pace so that they are doing the same activities as all of the other students.

Sandra Teng, Independent Secondary School, Singapore

Sandra Teng teaches language arts at an independent secondary school for girls in Singapore. Her first encounter with OOEL was at a conference at Columbia University in 2014, where she heard Liz present about OOEL. She was fascinated with the idea of slow looking and Paul’s slow journalism.

In 2015, her school allowed her to experiment with a more connected curriculum, with OOEL as one means of cutting across disciplines. A team of teachers from different disciplines (Chinese, history, geography, and language arts, mathematics, science) worked together with three lower

secondary school classes (100 students in total). (About 60 of the 100 later opted to continue the next two years in upper secondary with the teachers who were also willing to continue with the iteration.)

During these first three years, the teachers worked to build OOEL into their curriculum, moving parts around and using the different footsteps to meet their own desired outcomes. They needed to recognize that OOEL is not *in addition* to their syllabus but could be used *alongside* their syllabus.

In Singapore, all students take a national exam at the end of their primary education, which determines the academic pathway for secondary school. Many of these students are well-trained to sit for exams but are less familiar with the kind of authentic learning OOEL affords. The challenge was to make sure that the 100 students using OOEL would get to where they needed to be, so they could do well on this national exam – as well as the other 300 students not using OOEL.

This curriculum experimentation ended in 2018 with this batch of students moving on to junior college, but some of the best practices from this work continue on (at least as of 2024 when I spoke to Sandra), especially in the English Language Arts curriculum. OOEL was written into the lower secondary language arts syllabus with assessment outcomes of writing creative nonfiction of neighborhood stories. This means that more LA teachers came onboard the OOEL platform: the hope was that ELA teachers would recognize, value, and use the resources of OOEL and the local environment to enrich students' authentic learning.

But there were also challenges: Some of the language arts teachers were reluctant at first to use OOEL, mostly because it was not immediately apparent how the teachers themselves were to navigate the platform, but possibly because of the familiarity of the tried-and-tested materials on hand. Thus the importance of writing OOEL into the syllabus to include assessment that is tied to it.

Also, Sandra said that students often object when first introduced to OOEL, asking why they have to do this when this has nothing to do with the typical written summative exam at the end of the year. In response, she tries to show them how the kind of thinking and dispositions they are using, and the kinds of connections they are learning to make, can be used in other classes and assignments. More importantly, she tries to show them that this kind of learning is important to life.

Sandra views the practices of slowing down and reflecting as particularly valuable aspects of OOEL. At the end of the four-year experiment, students reported that students were reflecting much more than they ever did before. And when they graduated on to what is called "junior college" (grade 11-12), they said that it had become almost automatic for them to look closely and notice things. They had developed a disposition. It had become a part of them.

Also valuable, she said, is the Dialogue Toolkit – as this gets students beyond just saying "hi" and "bye." She often redirects them to the toolkit even when not working on OOEL, as when they are asked to give peer feedback. OOEL also teaches them online etiquette, she said.

OOEL widens students' worlds. For example, sometimes the task of observing and interviewing required students to leave their gated communities. "Wow, across the canal there is this whole other world!" Parents, who sometimes accompanied their children out of concerns for safety, saw how engaged their children were.

A final note: Sandra also uses *Agency by Design* (which she learned about in Australia). She uses parts-purposes-complexity to get her students to analyze poetry into its parts, focusing on words for example and asking why this particular word and why here, what purpose does this word serve for the whole.

Sandra said she was very grateful for the resources of OOEL and of PZ.

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Chapter 42

Cultivating Creative and Civic Capacities (C4)

2019-2022

The [Cultivating Creative and Civic Capacities](#) (C4) Project was a three-year collaboration (July 1, 2019-June 30, 2022) between PZ (led by Flossie Chua, Mara Krechevsky, and David Perkins) and the Columbus Museum of Art (led by Jen Lehe, Cindy Meyers, and Caitlin Lynch, working with teacher mentors Jason Blair and Britanie Risner), with the input of Ohio public school teacher-researchers. Students were meant to use works of visual art to imagine, think critically, and act together toward a more just and sustainable world. Civic capacity was conceptualized as a commitment to making a real difference toward the flourishing of one's community.

The program built on the Columbus Museum of Art's work on Making Creativity Visible and their framework called Thinking Like an Artist (see Chapt. 58 on the Columbus Museum of Art). The researchers ran monthly seminars with 21 public school teachers exploring the intersection of civic and creative thinking and developing learning experiences to foster both kinds of thinking. The teachers also participated in small learning groups sharing their experiments and reflecting together.

The Four Lenses

Four lenses were introduced, as described [here](#):

Investigation: Investigate by slowing down, observing, reasoning, and adopting new perspectives in order to understand a civic problem

Imagination: Identify what is unjust, collectively imagine how things could be otherwise, develop a shared vision for thriving by taking on new perspectives

Influence: Understand how we are influenced by, and how we influence, others; consider the change we want to see; take meaningful civic action

Interconnectedness: Understand that we are both individuals and part of larger communities, consider the tension created; take care of oneself and the community

For each of these lenses, the researchers developed a set of tools for teachers to use. PZ thinking routines were also used. While there were no publications from this project, the following resources were created.

[C4 at-a-glance](#) – The premise, rationale, and overview information about the project, along with key points and potential challenges for each of the C4 lenses (Interconnectedness, Investigation, Imagination, Influence). Good for: Gaining an introductory understanding of C4 and what makes it unique and powerful; revisiting for clarification as you explore C4 in your practice.

[Concept Papers](#) – Explore the four core lenses of C4 and ideas for viewing situations in creative and civic ways. Good for: Teacher reflection and group discussion; a conceptual grounding and “why” for the other resources.

[Ideas for Practice](#) – Concise ideas for tapping into each C4 concept in your practice, developed with the teacher-researchers of C4. Ideas range from simple phrases that target C4 thinking to broader inspiration for year-long explorations. Good for: Finding a starting point that integrates well into your context and teaching style.

[Tools](#) – Activities that support a specific C4 concept lens: Investigation, Imagination, Influence, and Interconnectedness. Good for: Promoting creative engagement with civic matters; creating routines to set a classroom culture of exploring the C4 terrain.

[Creativity Challenges](#) – Playful prompts to support creative and civic habits. Includes tips and variations to tailor to your contexts. Good for: Encouraging divergent thinking; loosening students up to approach civic topics with imagination and courage; promoting collaboration and culture-building.

[C4 Thinking with Art Kit](#) – A thinking routine and follow-up questions, tips sheet, and sample artworks from the CMA collection to promote observation-based exploration and other types of C4-supportive thinking. Good for: Getting started with using art to practice habits of Investigation, Imagination, Influence, and Interconnectedness; launching conversations that embrace ambiguity.

Impact

Columbus Museum of Art

PZ’s three-year work with the Columbus Museum of Art on this project constituted the development phase, and PZ’s involvement has now ended. The museum, however, continued to use and refine the framework and resources developed during the first three years. The museum is using its own funding to work directly with teachers to disseminate the ideas and practices of this project. Below I describe the impact of C4 on four of the teachers who collaborated with PZ during the development phase.

Participating teachers: Jason Blair, Rachelle Howland, Sarah Pence, Britanie Risner. Jason Blair, who has been teaching art in elementary schools in Ohio for over 20 years, now teaches at Abraham Depp Elementary School in Dublin, Ohio. He first learned of PZ when he was getting his master’s in art education at Ohio State University. Learning about PZ led him to realize that what he really wanted to do in his teaching was to cultivate creative thinkers.

Jason was a teacher-leader in residence at the Columbus Museum of Art, where the Making Creativity Visible Project was developed (see Chapt. 58). When the museum began a new collaboration with PZ on the C4 Project, Jason became one of the co-directors. To help develop this project, the museum drew on a group of local educators representing different disciplines, grade levels, and demographics. Their role was to think through practical ways to cultivate the creative and civic capacities of their students. In addition to this, they were asked to test out various tools, routines and protocols that were emerging under their guidance.

Jason said C4 has had an impact on practice every day. He began to shift his approach away from focusing only on standards and assessments to one in which “students learn with, through, and for others.” Learning in his art studio is now focused on exploring how art affects our identity and our

interactions with others. For example, in his 5th grade class, students were asked to design a joyful experience for kindergarten students. They began by interviewing and observing kindergarten students playing to get an idea of the type of joyful experience they might like. What they created for the younger students was nothing short of amazing. After learning that the kindergarteners loved getting transported into video games, reading adventure stories, and exploring space and dinosaurs, they used a large cardboard box cut out in the shape of a TV. When each kindergartener crawled inside the box, they were given a remote and told to press a button. At that time, the back of the box was opened and the students crawled through the TV into the room which had been transformed into a live video game – in which they had to escape a dinosaur and ride a boat through a jungle, advancing to levels where they had to battle asteroids and find their spaceship to return to their world.

Even though this project was an adaptation of C4, as it involved making art rather than looking at art, Jason said the project was directly inspired by C4, because it was about building creative and civic capacities through an immersive learning experience. He felt that this helped the 5th graders develop empathy, communication skills, perseverance, risk-taking, and confidence in their creativity.

The work that came from the C4 Project, Jason said, has impacted teachers across central Ohio and beyond. Locally, in Dublin, Jason's school has adopted the 4 I's (imagination, investigation, influence, and interconnectedness) as their "Trailblazer Actions." The school had adopted the mascot of a trailblazer based on their namesake Abraham Depp, who was a conductor on the underground railroad. The school decided to focus on empowering students to be trailblazers as well. Trailblazers imagine possibilities, investigate these possibilities to create a more just and sustainable world, seek to influence others to join them as agents of change, and they do this all while mindful that they are both unique individuals as well as members of many communities. These 4 I's, Jason said, help provide a northstar to our building culture.

The annual Agents of Change Festival is another way C4 has had a profound impact on educators and students, Jason said. The purpose of this festival is to celebrate the ways educators have embraced the C4 lens and empower their students to have more agency in their learning. The goal of the festival is to bring together educators and students from across the Columbus region to illuminate the ways in which they are challenging the status quo of what education can look, sound, and feel like. By creating a venue to showcase the ways they are "living" C4, educators and students are able to help change the narrative around what impactful learning can look like. The festival is highly interactive as well. Parents are asked to be active participants in the event and not passive viewers.

Working on C4 made Jason realize that before students can engage in trying to make changes in their world, they need to understand perspectives other than their own. He tried something new in his class to encourage perspective taking: He taught a class composed of both 1st and 5th graders. He found that the 1st and 5th graders learned from one another. The 1st graders were able to articulate and communicate ideas that were a stretch, doing so with the help of the older children. And the 5th graders gained a sense of the whimsy and imagination of young children and were more willing to take risks, because they knew they would not be judged as uncool by the younger children. At the end of the year, the 1st graders decided to rethink recess in the playground and use art class to design potential things they could do in recess.

One example: A group of students dug a pit. They noticed during recess that there were so many interesting items once they began digging in the fields. They wanted to be able to dig more and explore, so they created a digging pit by drilling wood together to make an outlined box. They also created digging tools and items to dig for to make it more adventurous. They asked kindergarten students to come try out the ideas to see how they liked them. They asked kindergarten students, since they were going to transition to the “big kid” playground the following year. The 1st grade students also presented their ideas and kindergarten feedback to the administration to state their desire to have more recess options. The C4 mindset helped create this opportunity from an educator perspective by imagining new recess possibilities, investigating ways to create and implement these ideas, influence others through presentations and experimentations, and lastly exploring the interconnectedness of how these actions impact more than just the original designers. That is the power of C4, said Jason. The framework can inspire students to embrace the mindset of a change agent, big or small, in many different ways. It can also empower educators to break free from a traditional approach to teaching and learning to focus more on student agency and creating learning experiences that challenge the status quo. C4 is not just a framework for student empowerment but one for teachers as well.

A challenge Jason discussed was making teachers feel comfortable with helping children become creative and critical thinkers, given the conservative political climate in Ohio.

Jason believes that creative and civic capacities “are the two things that are going to help move our society forward” and “challenge the status quo.” He teaches in a new school that opened in 2020, and the school decided the mission of the school should be to help the students be trailblazers. Jason has a core group of teachers in his school who are committed to C4.

Rachelle Howland. Rachelle Howland is an art teacher (grades 6-12) in Bexley, Ohio, a suburb of Columbus, where she has been teaching for six years. She was among the original pool of teachers working at the Columbus Museum of Art with Project Zero, helping to develop the C4 framework. In that role, she met with a small cohort of teachers on weekends to discuss how they were using C4.

Rachelle has always wanted her students to think about how art can change society – a goal very much in line with the C4 framework. She begins by getting them to think about what society is and what are the needs of a society. Then when students look at art, she guides them to find evidence of social issues; and when students are making art, she challenges them to show aspects of society in their work. In a culminating project for 8th graders, students made work to be exhibited at the school for the other students to see. They were asked to make art that might get their student audience to change their perspective on something they could relate to. She wants her students to think about something bigger than themselves.

Rachelle told us that she tweaked the C4 framework to fit her own needs. For example, instead of using See-Think-Wonder when students are looking at art, she uses *Feel-See-Think-Wonder*. When asked whether involvement with C4 changed her teaching, she said, “it has become ingrained in my practice to analyze art over and over using the *Feel-See-Think-Wonder* for thinking through things.” Using this protocol for thinking, she said, means that students don’t have to think about *how* they are going to think about something, and this allows them to think more deeply. She also uses PZ protocols for conversations, such as having one minute where every person can respond to a particular student’s work.

At the beginning of the semester, Rachelle asks her students to reflect about why they are in school, why they are learning, and how they can have autonomy over their learning – powerful things to talk to kids about that they don’t usually think about. These questions came up in one of the C4 meetings and really stuck with her. She puts her students’ answers into a spread sheet, takes off names and grades, and gets students to reflect about what others had said.

One of the best parts of C4, Rachelle said, is having a group of teachers across departments with whom to discuss teaching.

Sarah Pence. Sarah Pence teaches 3rd grade at Evening Street Elementary School in Worthington City Schools, a suburban district outside Columbus, Ohio. With 13 years of teaching experience, Sarah has developed a pedagogical approach deeply influenced by her exposure to Reggio Emilia principles during her undergraduate studies. Although the realities of teaching in a standards-driven system initially caused her to drift from these philosophies, her participation in the C4 Project reignited her passion for fostering creativity and reflection in her classroom.

Sarah’s experience with C4 began in 2019 and spanned three years. Prior to joining the project, she had already engaged with thinking routines through a district-wide book study of Ron Ritchhart’s *Creating Cultures of Thinking*. These early encounters with PZ ideas aligned well with her own aspirations to center student voice and creativity in her teaching. When she was invited to help to develop the C4 framework, Sarah described it as “incredible” and “life-changing,” noting how the project helped her reconnect with her foundational belief in slowing down and listening to her students. The monthly seminars and inquiry groups offered her a hands-on, reflective learning process, where she could experiment with PZ frameworks in her classroom and receive feedback from like-minded educators.

One of the defining aspects of Sarah’s experience with C4 was the emphasis on art as a lens for inquiry, reflection, and community building. She introduced art-based thinking routines like See-Think-Wonder into her classroom, inviting students to slow down, observe deeply, and share their interpretations.

Sarah also said that C4 encouraged her to embrace ambiguity. She noted how the creativity challenges initially felt uncomfortable but gradually became a powerful tool for fostering open-ended thinking and risk-taking in her classroom. By modeling these challenges in her staff meetings and retreats, Sarah inspired her colleagues to incorporate similar practices into their teaching.

Sarah’s involvement with C4 expanded her connections to other educators and initiatives. She highlighted her participation in the Inspiring Agents of Change Project, where students created art to reflect on their growth as learners and showcased their work at the Columbus Museum of Art. In 2018, the project evolved into an annual festival celebrating authentic student learning, growing from 100 attendees in its first year to 500 participants by 2022.

Reflecting on her teaching philosophy, Sarah said that PZ frameworks have profoundly reshaped her approach to education. Through C4, she gave herself “permission to slow down” and prioritize connection, reflection, and creativity over rigid adherence to curriculum standards. The experience helped her see the value in sitting with ambiguity and focusing on the “messy middle” of learning, both for herself and her students. “Learning happens in the gray space,” she explained, emphasizing how art and creativity can fuel compassion and problem-solving.

Although the formal C4 Project concluded in 2022, its influence continues to ripple through Sarah's teaching. She maintains connections with C4 colleagues, incorporates its principles into her classroom, and inspires others in her district to explore PZ ideas. For Sarah, C4 has been more than a professional development opportunity – it has been a source of renewal and purpose in her career, helping her stay engaged and joyful as an educator. “It gave me the insight and courage to enjoy my kids as people...and to enjoy being a human in the classroom.”

Britanie Risner. Britanie Risner was a 4th grade teacher and then a principal in Ohio. When she returned to the classroom after serving as principal, the incoming principal asked her to name a gift she would like. She chose going to the PZC. This is where she learned about many PZ frameworks that she continues to use.

Britanie was one of the teachers involved in developing the C4 framework, working closely at the Columbus Museum of Art with members of PZ in monthly in-person seminars, and holding small support groups reflecting on documentation of C4, and looking closely at the evidence from how students responded. She helped to draft some of the tools, tried them out in her classroom, and reported back to the group on what worked well and what worked less well. After working with the first group of teachers, Britanie stayed on to work with a second group. The teachers who worked to develop and test C4 had been involved with the Museum's Teaching for Creativity institutes and were eager to add a civic component to creativity with the C4 framework.

Britanie acknowledged that it was hard to get everyone to focus on the four “i”s. Many teachers wanted clear definitions and indications of what these looked like in the classroom, and Britanie recognized that these are not things that teachers usually talk about. Luckily, she said, they had a very supportive group to help them talk through these issues.

Britanie's involvement with C4 had affected her own teaching “100 percent.” The biggest change was her focus on how students are interacting in groups in the spaces in between her teaching of language arts and other subject areas. She came up with the concept of “moments that matter,” where students showed empathy. Her class began to collect these moments. For example, one student who had difficulties with interpersonal relationships wrote a note reaching out to connect to one of the other students, saying “maybe you could write me back.” The class ended up creating mailboxes for each student, and they all began to leave notes to each other. “These are the moments where we learn how to be citizens and show empathy,” she said. Other teachers at her school, she said, are also using C4 but not as intensively as Britanie.

Up until this year, Britanie said she used the C4 tools every day. This year, her school is required to use a fully scripted curriculum that is entirely teacher delivered. But Britanie still manages to squeeze in C4 in the “in between moments.” She has also used other PZ frameworks: She used CAC a lot when she was teaching 3rd grade, because she wants her students to realize that what kids say matter she has used Out of Eden learn for many years in social studies; MLV has also had a strong impact on her, and she often uses thinking routines. She said she will have to find a way to keep using thinking routines with the packaged curriculum she has been given. She said PZ is her number one place for resources about thinking and learning, and she did not know what she would do without it.

When asked how parents respond to her use of C4, she said they were grateful. On parents' night, Britanie asks parents what they want their kids to be like as adults. This question leads them to PZ

tools. Parents don't say they want their child to be in the 96th percentile. Instead they say they want their child to be honest, hard working, and compassionate.

Britanie brings a group of students to the Agents of Change festival created by Jason Blair. Her students tell the audience about how what they are doing now is different from what they used to do. This gets parents to pause and see what is different, and they are overwhelmingly positive.

Amanda Schaeffer, Teacher Not Involved in Developing C4

Amanda Schaeffer was not involved in developing C4 and discovered this framework on the PZ website. She teaches a course integrating art and ecology to 7th and 8th graders at the Hilliard Innovative Learning Hub, a public school in Ohio where children from other schools in the district are bussed in for special classes. Amanda was involved in the founding of the Learning Hub six years ago. The goal was to build an interdisciplinary and innovative school, and in search of this goal, Amanda searched the internet and discovered and combed through the PZ website. Later she attended the C4 conference at the Columbus Museum of Art and was inspired by the museum's Jen Lehe.

Amanda uses art to get her students to think about the complex problem of climate change using the C4 framework (tweaking the language to make it easier for her middle school students to understand) as well as many of PZ's thinking routines. As one example, she showed her students a painting by contemporary artist Alexis Rockman who paints images of future landscapes affected by climate change.

She also used the See-Think-Wonder and What Makes You Say That? routines with her students as they studied this painting. When students return to their home school, Amanda said they wonder why their home schools are not using things like See-Think-Wonder which, they say, make it so much easier to understand.

As I write this in 2025, the C4 project continues at the Columbus Museum of Art, despite the fact that there is no more funding. Each year a new group of teachers is recruited. Thousands of teachers have participated in one-day workshops with the museum (held semi-annually and by request, and Jennifer estimated that about 50 teachers have carried out sustained work on this project with the museum.

Chapter 43

Educating For Global Competence

2010-2012

The Educating for Global Competence Project was a collaboration between Veronica Boix-Mansilla at PZ, the Asia Society, the Council of Chief State School Officers, and curriculum and instruction leaders from 27 states. This project focused on educating children in the context of globalization – the accelerated movement of people, capital, cultural practices, and ideas around the world. The goal was to help children develop the kinds of competencies needed in a global world. The project addressed first of all a definition of global competence and why it matters, followed by investigating how global competence can be nurtured and assessed.

Global Competence Defined

A literature review on global and intercultural education and case studies of best practices around the world led to the following multi-part definition of global competence as the capacity to:

- investigate the world beyond one's immediate environment
- adopt the perspective of others
- communicate across differences,
- take action to improve conditions.

These four elements are elaborated on in this brief [video](#) from the Asia Society. A definition and rationale for global education, along with case studies, is provided in Boix-Mansilla and Jackson (2011).

Impact

American Friends Service (AFS) Committee Intercultural Programs

Ana Carolina Cassiano (Carol) is the Global Head of Education Development at [AFS Intercultural Programs](#), a global nonprofit organization focused on intercultural learning and global citizenship. With over ten years of experience at AFS, Carol has played a central role in shaping and implementing the organization's educational vision. Her collaboration with PZ began through Veronica Boix-Mansilla at PZ, who helped AFS articulate its Global Citizenship Framework.

The connection with Veronica and AFS emerged from *Fondazione Intercultura's Forum on Intercultural Learning and Exchange*, a biennial event bringing together global educators, researchers, and practitioners. Veronica began advising AFS in 2018 when she joined the International Board of Trustees. In 2022, she chaired AFS's newly established Education Committee, where she guided the creation of the Global Citizenship Framework.

The AFS Framework for Active Global Citizenship, launched in 2023, has influenced AFS programs worldwide. As Carol explained, the framework builds on AFS's historical focus on intercultural learning and developing active global citizens but brings greater clarity and structure to its mission. It emphasizes a whole-learner approach, focusing on cognitive, socio-emotional, and ethical

dimensions of development. “It’s not just about knowledge or skills,” Carol noted, “but about dispositions – how learners reflect, relate to others, and take action as global citizens.”

The implementation of the framework has led to several significant changes within AFS programs. In their traditional high school study-abroad exchanges, AFS has historically included educational components such as pre-departure orientations and monthly reflection sessions. With the development of the framework, these components are being restructured to provide greater depth and alignment with global citizenship education goals. Tools from PZ, such as thinking routines like See-Think-Wonder have been integrated into student orientations and facilitator materials, creating structured opportunities for reflection and encouraging deeper engagement with global citizenship concepts. The framework has also been integrated into the training provided for volunteers.

Veronica continues to play an advisory role to the AFS Education Committee, providing input on revisions to content, learning objectives, and assessment tools. PZ resources remain central to this effort, with tools like thinking routines offering practical strategies to help learners develop the values and competencies required to thrive as global citizens.

Carol described the Global Citizenship Framework as a powerful tool that has strengthened AFS’s mission to develop active global citizens. She expressed gratitude for PZ’s collaboration and noted how the framework has provided clarity and structure to AFS’s educational goals. “The framework has given us a compass,” she shared, “guiding how we define global citizenship and how we help learners develop the values and capacities to make a difference in the world.”

Role of the Longview Foundation

The Longview Foundation has based its [global competence initiatives](#) on the Global Citizenship Framework. I spoke to the foundation’s Executive Director, Jennifer Manise, to find out more. The foundation supported Veronica’s work in developing the framework, and supported its dissemination by encouraging its grantee partners to adopt the framework in their projects. The impact of the foundation’s work with Veronica is most clearly seen in a year-long fellowship program for teacher educators. Seven cohorts of fellows and mentors representing traditional teacher preparation programs at 61 institutions have been exposed to the framework along with PZ thinking routines. The number of preservice teachers who have been exposed to the work of global competence and taught how to use thinking routines can only be estimated but is, at a minimum, thousands across 28 states, Jennifer Manise reported.

Challenges. Jennifer identified two challenges in integrating Global Competence into K-12 education. First, the decentralized nature of the US education system means there is no national curriculum to address global competence and no way to ensure that all schools have exposure to the global competence framework. And second, the absence of structured professional development opportunities for all educators makes it difficult for schools to adopt Global Competence principles effectively.

Successes. Jennifer highlighted three states where the Global Competence Framework has been successfully embedded into education policy. In Illinois, the revised social studies standards incorporate Global Competence principles. In Washington, DC, public school standards previously included the Global Competence principles, though recent revisions have deprioritized it. In Massachusetts, middle school social studies standards integrate key elements of the Global Competence framework. Additionally, suburban school districts near Boston, where PZ has strong

partnerships, have successfully embedded the Global Competence framework into their curricula. Longview has supported PZ's work at the Washington International School (WIS) in collaboration with Smithsonian Archives and the Library of Congress to develop educational tools that promote Global Competence through museum-based learning. Longview has also supported the National Gallery and the Cleveland Museum in integrating the framework into their educational programming.

Organizations That Adopted the Global Competence Framework

The framework developed in this project has been adopted by the following:

- The Asia Society, as shown in its global competence [portfolio assessment system](#).
- The Asia Society and Arizona State University, as shown in this [global teacher certification course](#).
- OECD's approach to global competence, as shown in a 2022 [publication](#) by Veronica and Andreas Schleicher, the head of OECD.
- OECD's PISA's assessment of global competence, as shown [here](#). In reply to Veronica's question about the impact of this work, Andreas Schleicher, the director of OECD, wrote:

I can certainly say that, from the 2018 PISA assessment, this has been the most widely discussed component. What's also interesting is that, whereas interest in the results on reading, math, and science died down relatively quickly, we keep getting questions on this and there is virtually no week that passes without some presentation on this (my next one is on Saturday). (Personal communication, August 29, 2023)

The following schools or school districts in the US have based their global education work on the Global Competence Framework developed by PZ and the Asia Society:

- Washington, DC Public Schools,
- Washington International School
- Collegio Montserrat in Barcelona
- Portland Public Schools
- Newton South High School in Newton, Massachusetts
- Independent schools in the [Global Education Benchmark Network](#)

References Cited

Boix-Mansilla, V., & Jackson, A. (2011). *Educating for global competence: Preparing our youth to engage the world*. Council of Chief State School Officers and Asia Society. [pdf](#)

Boix-Mansilla V., & Schleicher A. (2022). *Big picture thinking: How to educate the whole person for an interconnected world*. Paris, OECD. [pdf](#)

Chapter 44

Global Competence Projects in Schools Around the World 2011-2022

This chapter describes five projects led by Veronica Boix-Mansilla to help schools in various countries develop strong global competence education:

- The World in Portland (2011-2014)
- The World in DC (2016-2019)
- Global Competence Education through US and China Lenses (2016-2018)
- Nurturing Global Competence in the Early Years (2015-2027)
- Growing Up to Shape the World (2017-2022)

The goals of these projects were three-fold:

1. To develop interested teachers' capacity to teach for global competence
2. To develop, revise, and disseminate practical tools and guides
3. To establish a network of teachers across the participating schools and, when appropriate, with NGOs, cultural-, and higher education institutions

The World in Portland, Oregon

In Portland, Oregon, the team worked with the school district's chief academic officer and principals in six schools to identify and support the growth of 40 teachers across elementary (N=2 schools), middle (N=2 schools), and high schools (N=2 schools). An overview of the project can be found [here](#); the Teachers' Guide for this project can be found [here](#).

Participating teacher Nancy Smith published a book each year with her students, based on their stories, and revealing the many cultures of her school (for an excerpt, see [here](#)).

The World in DC

In Washington, DC, the PZ team helped the Washington School District create three [Global Studies Schools](#) in the city, where PZ researchers worked with 40 teachers across grades. The participating teachers were part of the DCPZ educators network led by the Washington International School (see Chapt. 7). An overview can be found [here](#) (scroll down).

While the project ended in 2019, the Washington, DC district has continued to advance its global initiatives using Veronica's and Project Zero's work as its foundation, as shown [here](#). Veronica continues to serve as an advisor to the district on global initiatives.

China

In China, the team worked with the Weiming Education Group's network of schools, including schools in Guangzhou, Guiyang, Qingdao, and Shenzhen. Teachers (N=60) serving approximately

8,100 students participated in a 2.5-year-long seminar and a parallel number of school-based learning groups. Seminar sessions were designed to reveal tacit knowledge and cultural beliefs in relation to their practice.

The PZ framework of global competence was based on individuals' capacity to understand and take action in the world, but this conflicted with Chinese teachers' views of education's purpose. Eventually, as discussed in this [article](#) by Veronica and Devon Wilson (2020), a revised framework was crafted that foregrounds "virtues" as ethical dispositions and notions of self-improvement, resilience, determination, collectivity, and expanding circles of responsibility. This project underscored the importance of interpreting global competence in culturally sensitive ways, as discussed in Boix-Mansilla and Wilson (2020).

It was not possible to assess the impact of the work with Chinese teachers, as the PZ team and collaborators in China have not remained in touch. But three years after the project ended, schools in China were offering a global competence approach in teacher development and as a track in regular school grades. Weiming's agenda was to broaden their student exchange program with the US. Today they partner with multiple educational institutions and host families to bring Chinese students to US high schools for a year.

Japan and Vietnam

In Japan and Vietnam, a group of early childhood educators in each country (20 in Japan, eight in Vietnam) collaborated with ten US early childhood teachers to examine the teaching of global competence in children ages three to five. This project examined ideas of inquiry, culture, dialogue, empathy, altruism, and action as foundational to the development of global competence among the youngest of our citizens.

References Cited

Boix-Mansilla, V., & Wilson, D. (2020). What is global competence, and what might it look like in Chinese schools? *Journal of Research in International Education*, 19(2), 3-22. [pdf](#)

Boix-Mansilla, V., Chua, F., Rivard, M., & Krechevsky, M. (2014) The world in Portland: Milestone learning experiences – Teachers' guide. [pdf](#)

Chapter 45

Role of Museums in Fostering Global Competence

2016-2017

[Engaging the Arts and Museums with the World in Mind](#) was a one-year (2016-2017) collaboration between Project Zero and the [Professional Development Collaborative](#) at Washington International School. Led by Veronica Boix-Mansilla in collaboration with Jim Reese's Professional Development Collaborative at Washington International School, the goal was to examine how engagement with artworks and artifacts in museums and classrooms might contribute to nurturing global competence.

Participating Educators

The project convened leading museum educators working at the National Gallery of Art, the Library of Congress, the Smithsonian's Freer and Sackler Galleries, the American Art Museum, and the National Portrait Gallery together with experienced public and private school teachers in the Washington, DC metropolitan area. The teachers and museum educators in this seminar were all involved in professional development roles at the PZC and the Washington International School Summer Institute. The group participated in a seminar to develop model units that illustrate the power of museum classroom interaction.

The classroom teachers were:

Anne Charny of Sidwell Friends School
Carmen Jenkins-Frazier of School Without Walls at Francis-Stevens (DCPS)
Kristen Kullberg of Sacred Heart School (Archdiocese of Washington)
Anne Leflot, Afef Merzougui, and Emily Veres of Washington International School;
Tondra J. Odom of Savoy Elementary School (DCPS)
Susan Silva of Oakton High School (FCPS)

The museum educators participating were:

Julie Carmean, Heidi Hinish, Sara Mark Lesk, Dena Rapoport, and Nathalie Ryan of the National Gallery of Art
Elizabeth Dale-Deines of the Smithsonian American Art Museum
Elizabeth Eder of the Smithsonian's Freer and Sackler Galleries
Briana White of the Smithsonian's National Portrait Gallery

Educators were told:

Our hope is that you will find the lessons both useful and inspiring. We do not expect that they can be put into place as is. Rather, skillful teachers will take from them what is most practical for their setting and adapt them. While we name the intended audience and topic being studied, we feel there is great potential for these lessons to be used across many grade levels and subject areas.

In the first phase, the group developed lesson plans that explored works of art in the museums "with the world in mind." In the second phase, the teachers and museum educators began collaborating to develop and try out lessons that could be used in both classroom and museum

settings. Participants brought lesson plan drafts to the seminar for feedback. In the third phase, the [lesson plans](#) were finalized.

Impact

This project led Jim Reese to initiate a related project, [Museums Go Global](#). A sample lesson plan can be seen [here](#).

Chapter 46

Arts as Civic Commons (ArtsC)

2018-2020

Arts as Civics Commons (ArtsC) was a project conducted in collaboration with Independent Schools Victoria (ISV), a network of schools described in Chapter 31. On the Project Zero side, the project was led by Shari Tishman, Carrie James, and Flossie Chua. The leader at Independent Schools Victoria (ISV) was Anne Smith, who was assisted by several ISV researchers. Many schools and museums in both Australia and the US helped to pilot the program as it was being developed. A full description of contributors can be found on [Arts as Civics Commons Handbook](#) (see p. 5).

The activities developed by this initiative involve slow, close looking at contemporary works of visual art that invite reflection about some kind of civic issue. The activities also involve prompts for dialogue to cue reflection. Some also include art making. Most of the activities can be carried out in 20-50 minutes.

Three Lenses

The [Arts as Civics Commons Handbook](#) describes a framework that consists of three lenses on civic life: *identities* (the way we perceive ourselves and the way we are perceived), *systems* (the structures and policies that shape how we interact), and *visions* (imagining how civic life could be more just, beautiful, and inclusive).

As stated in the handbook, looking at art through the lens of identity can:

reveal who is present or absent and how people with different identities are positioned or framed in the work. Further, when we look at art, our own identities inform what we notice, what ideas or stories we read into the work, and how the work is meaningful and resonates on an emotional level (p.12).

Looking at art through the lens of systems provokes thinking about systems of justice, power, oppression, conformity, gender, values, and so forth. The handbook goes on to state:

Many contemporary artists are interested in drawing our attention to civic systems—often in a critical spirit, sometimes in a celebratory spirit, and sometimes both...But a systems perspective on works of art can be revealing even if such a perspective wasn't explicitly intended by the artist. For example, a traditional Western-style painting of a rural village may show quilt-like squares of individual farmland. The image may provoke us to critically consider legal systems of individual land ownership—perhaps in contrast to a land stewardship model—even if the artist didn't intend to spark this line of thought (pp. 12-13).

[Looking at art through the lens of visions, we can] visualize new possibilities and different ways of representing social realities, so that we build new narratives that need telling and/or retelling. If we cannot imagine alternative futures, we lose the motivation to notice, to anticipate, to hope, to strive, and to thrive (p. 15).

Five Thinking Routines

Five thinking routines are introduced:

See, Think, Me, We

See: What do you notice?

Think: What thoughts do you have about it?

Me: What connections can you make between you and the work?

We: How might the work be connected to bigger stories – about the world and our role(s) in it?

See, Choose a Lens, Exchange and Explore Perspectives, Reflect

See: What do you notice?

Choose a lens, e.g. your race, gender, interests... and look again

Exchange and explore perspectives

Reflect

Values, Identities, and Actions

Values: What values does this work invite us to think about?

Identities: Who is this work speaking about?

Actions: What actions might this work encourage?

Making the Future

Imagine: Suppose what is happening today with [a particular civic topic] continues the way it is. What do you think you would see more/less of?

What do you want to see more and less of in the future? Who might that future benefit?

Who might it not benefit? Does it matter?

Make: Make something that symbolizes or represents the future you want to see.

Share: How does what you made express the future you want to see? In what ways did the process of making help you to think about the future? What were some key decisions you made in the process of making? How is thinking through making different from the usual ways that you express ideas in the classroom?

See, Think, Make, Discuss

See: Look closely at the work

Think: How might this work connect to ideas or questions about civic life (how we live together)?

Make: Choose an idea/question about civic life that came to mind during the THINK step, explore your thoughts by making/drawing something

Discuss

Three Thinking Arcs

Three thinking arcs (longer than thinking routines) are introduced:

Exploring Civic Points of View with Art

Notice

Make a civic connection to this artwork

Explore points of view

Reflect and revisit

Art to Systems and Back

Look closely at the work.

What civically related-systems does this work invite you to think about?

Choose one system you'd like to explore: identify its parts.

In what ways might you be connected to the system now, in the past, or in the future?

Look back at the work. What stands out to you related to systems or just generally? What more do you notice?

Civic Thinking Through Making

Invisible/Visible: Think of a civic issue or system. What is something invisible about that issue or system? Create something that makes the invisible visible.

Foreground/Background: Think of a civic issue or system. What is something about that issue or system that is foregrounded so much that it is difficult to ignore? Perhaps it is something we take for granted. Create something that brings what is in the background into clearer view.

Storytelling with Data: Pick a civic issue. Research the topic if need be, not extensively, but just enough to help you find some relevant, important numeric data. Make something using the data that tells a story about or deepens our understanding of the civic issue.

Exploring Identities: Make something that shows the complex, multifaceted nature of your identity.

Remix: Start with an image of a work of art. Who or what is missing from this artwork? What is not being shown? What is the other side of this story? Change the work of art in some way. Add something to or subtract something from it in order to tell a different story about the same civic topic.

What comes next? Start with an image or story from a newspaper that explores an event connected to a civic issue. Make something that shows a possible outcome of that event. Consider what will happen immediately afterwards. Consider what could happen five, ten, or twenty years from now.

Impact

Birra-Li Ward and Joanna Beck: Frankston High School, Melbourne, Australia

Two visual arts educators at Frankston High School in Melbourne, Australia are currently (as of June, 2025) using ArtC routines.

Birra-li Ward wrote me the following about the routines she uses and why:

Routine: See, Think, Me, We

Who: 11-18 Year Olds

The See, Think, Me, We routine helps students to look closely at art, share what they see and think, and to connect it to their own lives and experiences. I have found it is a great way for students to explore and express more about their identity and to see how their stories do link to bigger ideas and other people's perspectives. This is perhaps my favourite routine!

Routine: Values, Identities, Actions

Who: 16-18 Year Olds

The Values, Identities, Actions routine is a way to get students thinking in a more focused manner about what an artwork might be communicating or how we are interpreting it. The routine facilitates an exploration of what the artwork might be caring about, who's being represented (or left out), and how it connects to the viewer's own identity. It also gets them thinking about what the artwork might be encouraging us to do—whether that's learning more, speaking up, or seeing things from a new perspective.

Routine: Art To Systems and Back

Who: 16-18 Year Olds

The Art to Systems and Back routine helps students link their own art to the real world, e.g., justice, media, or the environment. I have found that the routine gets them thinking about how these systems work, the interconnections and how they affect people's lives. I often use it as a starting point for students in order to support them in making art that means something more to them and society and might even inspire change.

Birra-Li was appointed by the Victorian Curriculum Assessment Authority (Victoria, Australia) to write the Secondary Visual Arts V2 Support Material which will be published in between July/Dec 2025 on the [VCAA website](#). This material will be accessed by secondary visual arts teachers across Victoria in all sectors: Government, Independent and Catholic.

The support materials help teachers implement the updated Victorian Curriculum (V2) by providing clear guidance, practical teaching examples, and assessment tools. It supports curriculum planning, inclusive education, and consistent assessment practices across schools. In the visual arts, it offers curriculum mapping, a scope and sequence, and a unit of work that includes strategies for exploring cross-curricular themes like identity and civic engagement.

The unit of work that Birra-Li wrote for the support material was a unit for levels 7 & 8 (c. ages 12-14) titled, "How can relationships influence and inspire our creative expression through portraiture?" The ArtC routines are mentioned five times across the unit, with weblinks provided to the ArtC routines. The Lenses for Dialogue routine is used at the beginning of a lesson to explore portraiture with the focus on inclusivity and Aboriginal and Torres Strait Islander Peoples. The Values, Identities, Actions is used to discuss how relationships and identity are expressed through portraits and the role relationships play in creating meaningful portraits.

Birra-Li also co-wrote (with Andrew Landrigan) *Making and Responding: A Visual Arts Teacher's Handbook* (2025). The book is intended for preservice teachers and primary and secondary visual arts educators across Australia.

The following is an excerpt from the book's introduction:

Throughout the book are questions that prompt critical thinking about approaches to arts education that avoid easy definition or consensus. They serve as a tool to prompt discussion, debate and curiosity. These questions are suggest-ed opportunities and experiences for learning that educators may use and adapt to their context. As such, they should be seen as provocations to be adapted to use by students and colleagues alike. We hope that you find the definitions, questions and activities in this publication will expand and consolidate your approaches to visual

arts education. We want it to become a useful resource in the stages of speculation, research, development, delivery and reflection that are inherent within visual arts pedagogy.

Joanna Beck also uses ArtC routines, and here is what Birra-Li wrote me about her classroom:

Routine: See, Think, Me, We

Who: 11-14 Year Olds

This routine is used as a way to analyze the artworks of artists for inspiration. This is typically scaffolded – she supports students to complete one 'quadrant' at a time. The inclusion of 'We' enables students to consider and make connections beyond themselves. The 'We' often needs to be supported with discussion to help foster those connections.

Routine: Values, Identities, Actions

Who: 13-16 Year Olds

This routine is also used as a means to analyze the artworks of artists for inspiration. If this is being run for the first time, a discussion is facilitated to help define “value” and brainstorm common human values. Often she provides a list of 50 common human values and students discuss those they are not familiar with. The inclusion of 'We' enables students to consider and make connections beyond themselves. This is a great precursor to students' own idea generation and brainstorming for their artwork concepts.

Reference Cited

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Chapter 47

Reimagining Migration

2018-2022

In the third decade of the 21st century, the children of immigrants are one of the fastest-growing sectors of the post-industrial regions of the world, accounting for 27 percent of children and 33 percent of all young adults in the US alone. Every day, immigrant-origin children straddle cultures, languages, dialects, and value systems at home, at school, and in cultural and religious institutions, making their lives and development uniquely rich and complex. At school and in society, these children meet rising xenophobia, bias, and bullying. And they meet educators who wish they had better preparation to teach in such culturally, linguistically, economically, and religiously diverse contexts, and to nurture young people to live and thrive in a world of growing diversity, complexity, and mobility.

Responding to this need, Re-Imagining Migration Project Zero was led between 2018-22 by Veronica Boix-Mansilla in collaboration with Carola Suárez-Orozco, Marcelo Suárez-Orozco, and Adam Strom. (This project has been so named to distinguish it from Adam Strom's extension of this project, referred to here as Re-Imagining Migration, NGO.) The goal was to help educators and institutions reframe education about migration, de-stigmatizing immigrant children, and coming to view them as having rights as participating citizens of today and tomorrow.

Input was received from immigration scholars and experienced practitioners gathered in two seminars in 2019: *Mapping Human Migration: Setting the Educational Agenda for a World on the Move* (hosted at Harvard); *Finding our Way in a World on the Move: Re-Imagining Migration Summer Fellows Seminar* (hosted by the National Gallery of Art and the Smithsonian Institution). These seminars helped the Reimagining Migration team to articulate what is most important for young people, educators, and the public at large to understand about human migration, what kinds of resistance and learning demands we might encounter and how to best overcome them. (See [here](#) for more information.)

It is important to note that this project was carried out prior to Donald Trump's second term when immigration policies were thrown into chaos.

Five Principles

The framework proposes five foundational principles. These catalyze healthy and inclusive mindsets to understand immigrant-origin children, youth, and their peers in a world on the move:

- *Diversity*: Migration experiences are diverse.
- *Ecology*: Children grow in dynamic social contexts.
- *Strengths*: Children possess important social, linguistic, and cultural assets.
- *Rights*: All children have the right to a safe learning environment and quality education.

- *Agency in belonging*: Children are agents in creating conditions for belonging and two-way inter-group integration processes through which both immigrant-origin children and their receiving peers and adults are changed.

Five Questions

This project examined five questions:

Who are the young people we are educating? This question promotes de-stigmatization of immigrant children and recognition of their potential.

What matters most for them to learn and how? This question is designed to shift mindset away from the importance of “covering information” to the importance of developing these broad “Dispositions for a World on the Move:”

- To understand perspectives – their own and others – empathetically,
- To inquire about migrations past present and future,
- To communicate and relate across differences,
- To recognize inequities in the experience of migration,
- To take action toward belonging and inclusion.

How should we teach about migration? This question is designed to help educators teach about migration not merely as “the unit we teach in the 8th grade social studies curriculum” but as a conceptual lens through which we can understand ourselves and the world around us and make informed decisions. The Migration Learning Arc provides a curricular foundation, beginning with an interrogation of personal and family identity and stories of migration, followed by a deep dive into understanding migration and turning to action and participation. The goal is to promote students’ disposition to ask generative questions such as “Why do people leave their homes? “What are the meanings of borders?” How are people received in the new country?” The learning arc presents three curricular innovations:

- It foregrounds migration as a shared human experience.
- It proposes a curriculum in which students revisit a small set of questions over time preparing them to navigate emerging cases of migration.
- It treats migration as an interdisciplinary problem.

How can we create inclusive and powerful learning environments for all? This question invites educators to conceive of learning environments as cultures of thinking, empathy, inclusion, respect, pluralism, and participation by showing interculturality, plurality, and hybridity as the norm.

How can we prepare educators for a world on the move? New, more culturally sensitive approaches to professional development are in order allowing teachers room to reflect about their values and biases, and to develop their capacity for influence.

Impact

Veronica worked with a number of organizations to spread the ideas of this project:

- The Re-Imagining Migration PZ was introduced to over 200 education leaders and teachers at PZC summer institute around 2018-2020.
- Veronica led a year-long seminar with the 20 participating Smithsonian museums and galleries, leading to a digital collection space at the museum called [Re-Imagining Migration@Smithsonian](#). The site uses the Migration Learning Arc as an organizing principle.
- From 2020-22, Veronica collaborated with educators at an emergency reception center in West Texas to develop and test a curriculum responsive to the socio-emotional and cultural navigation needs of unaccompanied youth arriving through the US Southern Border. The curriculum was used with over 8000 youth, ages 13-17, in its first 18 months.
- Veronica worked from 2023-4 with Cardozo Education Campus, the public school in Washington, DC that receives the highest number of children from the Southern border. The curriculum is being adapted for this urban public school.
- Veronica worked with 12 secondary school teachers, serving approximately 180 students, at Riverdale Country School in the Bronx from 2023-2025 to develop curricular units based on this framework.
- Since 2020, Veronica has been working with a group of professors of education in the US, Spain, and Argentina to develop a new set of thinking routines focusing on social and emotional learning in the context of marginalized populations. (Boix-Manzilla, 2022).
- In 2022, Veronica collaborated with educators in early childhood schools to test the framework in Greece with migrant children from Syria and their local peers, and in Miami, Florida with migrant children from Guatemala.
- In April 2019, Veronica co-ran a seminar examining how to re-conceptualize language(s) in school to maximize immigrant-origin students' learning potential.

Re-Imagining Migration NGO

The Re-Imagining Migration Project Zero provided the foundational framework for the [Re-Imagining Migration](#) initiative founded in 2017 as a project at the UCLA Graduate School of Education led by Carola Suárez-Orozco and Marcelo Suárez-Orozco. The project became an independent 501(c)(3) nonprofit NGO organization in 2021 led by Adam Strom.

- The NGO has developed 650 lessons, tools, and resources that can be deployed at scale to support the implementation of that framework.
- 400,000 educators in all 50 states have accessed its resources.
- The NGO has led professional development for over 10,000 teachers in workshops and events based on the framework.

Over 40 museums, cultural institutions, and high-impact organizations have partnered with this NGO, scaling the adoption of research-based practices for teaching and learning in a world on the move.

FOSTERING LEARNING THROUGH PLAY AND TINKERING (begins 2015)

The next two chapters fall under the umbrella of fostering learning through play and tinkering.

Chapter 48

Pedagogy of Play

2015-2024

The [Pedagogy of Play](#) (PoP) project, led by Ben Mardell and Daniel Wilson, Mara Krechevsky, and Jen Ryan, ran from 2015 until 2024. The 2023 handbook, [A Pedagogy of Play](#), describes the project. The project focused on learning through play – on play as a strategy for learning, play as a way to make learning interesting and engaging. We know that many kinds of animals play (even the octopus!) and like to play, and the evolutionary explanation for this is that play supports learning. Human children are no different.

Challenges at the Outset

Integrating play into school is challenging for several obvious reasons:

- In play, children are in charge. Typically in school, the adults set the agenda.
- Play can be chaotic, messy, and loud. Typically schools seek order and quiet.
- Play often involves taking risks. Typically schools scaffold students so that they avoid making mistakes.

Three Questions

POP focused on three questions about learning through play:

- Why do educators need a pedagogy of play?
- What does playful learning look and feel like in classrooms and schools?
- How do educators set up the conditions where playful learning thrives?

Schools Participating in Development of PoP

The POP was developed first with educators at the [International School of Billund](#) (ISB) in Billund, Denmark (location of the LEGO headquarters; LEGO funded this project). ISB is an International Baccalaureate school whose mission was already designed around learning through play.

Idah Kahn O'Neill, the research coordinator at the school, told me that at least one of the PoP researchers visited ISB four times a year in person (and monthly online) to facilitate professional development study groups on playful learning. Over the years, the number of visits by PZ began to decrease as ISB teachers became co-facilitators and eventually facilitators of the study groups, so that PoP would become self-sustaining after the PZ collaboration was over.

Later the research expanded to three schools in South Africa (K-9th grade); six schools in the US (preschool-grade 8); and five schools in Colombia (pre-K-7th grade). The list of these 15 schools (which include over 100 classrooms where the research was conducted) can be found in Appendix A of *A Pedagogy of Play*.

In these researcher-teacher collaborations, as with all PZ projects, teachers take on the role of researchers – in this case, conducting action research on the practice of playful learning. Teachers

worked in study groups investigating the characteristics and effects of playful learning, and what would happen if children were included as co-researchers. In short, educators along with PZ researchers co-constructed what it would mean to have a pedagogy of play. Importantly, the project did not develop a set of activities that teachers need to make time for. Rather, they urged the incorporation of play, and a playful mindset, into what teachers already did.

Six Core Principles of Playful Learning

Based on literature reviews of learning and play, insights from educators and researchers around the globe, and practitioner action-research with playful teachers and school leaders in Denmark, South Africa, the US, and Colombia, the research team developed six core principles of playful learning that cut across teachers' different ideas of what playful learning means:

- Play supports learning: players are relaxed, challenged, and following their curiosities.
- Playful learning in school requires play with a purpose: play should always serve understanding.
- Paradoxes between play and school add complexity to teaching and learning.
- Playful learning is universal yet shaped by culture.
- Playful mindsets are central to playful learning.
- Supportive school cultures enable playful learning to thrive.

These principles form the foundation of a pedagogy of play. Each principle is discussed in detail in the PoP handbook.

What Playful Learning Looks Like

When teachers think of playful learning, the following associations come to mind: fun, creativity, laughter, problem solving, collaboration, independence, problem solving, exploration, imagination and risk-taking. Some cultural differences were found in emphasis and wording by the researchers. To find out if learning is playful, one must both observe to see what it *looks* like and talk to the children to understand what it *feels* like.

The following five core practices promote playful learning:

- Learners lead their own learning.
- There is a culture of collaborative learning.
- There is experimentation and risk taking going on.
- Imaginative thinking is encouraged with “what if” thinking.
- All emotions generated through play are welcomed.

Some Examples of Playful Projects

Projects developed in the playful learning classrooms where this research was born all involved open-ended investigations and hence uncertainty – not knowing what would happen, asking questions like “what if,” experimenting, pretending, reflecting (often using the kinds of thinking routines described in Chapter 4), documentation (as described in Chapter 4), and students acting things out with their bodies.

In a classroom in Colombia, 4th graders turned their classroom into a restaurant with a menu consisting of foods they have created with their own recipes (requiring some experimentation).

This project required students to research food production and consumption around the world, the history of the spice trade, the sugar content of various kinds of food, create a budget to buy ingredients at a local market, make a trip to a local restaurant to learn what is involved besides preparing food, etc.

In a classroom in South Africa, 4th graders were expected to learn about plants. Instead of lecturing her students about plants, the teacher told them they were plant scientists and sent them out in groups to collect plants to study and then make observational drawings of their plants.

Both of these projects involved play with a purpose, a learning goal. They all involved questions worth playing with. One might ask how playful pedagogy differs from inquiry-based pedagogy. I would respond that inquiry-based pedagogy involves play because inquiry calls for testing out hypotheses in a playful manner – meaning trying things out without worrying about being right or wrong. Both inquiry-based and play-based pedagogy are simply terms consistent with good constructivist progressive models of teaching – models that value learning guided by students' interests.

Vehicles of Impact

PZ Online Course

For many years, PZ has offered (and still offers) an [online course](#) called Let's Play: Teaching Strategies for Playful Learning, developed by Jen Ryan and Ben Mardell. The syllabus can be found [here](#).

Media Attention

In 2023, an article in the *Early Learning Nation* magazine asked educators to weigh in on the question, "How can we make this school year the most playful in history?" Mara's response reflected the PoP project's broad view of play that includes imaginative thinking: "Regularly invite children to use their imaginations, as well as to think critically and engage children in solving problems that you usually think can be solved only by adults."

Publications

Spanish and Chinese translations of the PoP handbook are underway. A set of blogs on play authored by the PoP team and invited practitioners can be found [here](#). Working papers, articles, pictures of practice, and research guides can be found on the [PoP webpage](#).

Impact in the US

This framework had an impact on the Boston Public Schools and a public charter school in Washington, DC.

Boston Public Schools

In 2023, the Early Learning Team of the Massachusetts Department of Elementary and Secondary Education (DESE) was funded by the LEGO foundation to integrate playful learning into grades K-3. This initiative was led by Donna Traynham, and strongly supported by Jason Sachs (former head of Early Childhood Education in Boston). Six schools in five districts varying quite widely in demographics were selected: Beverly (one school), Pioneer Valley (two schools), Sharon (one school), Woburn (one school), and the Boston Renaissance Public Charter School (each charter school is its own district). Two classrooms at each of the five grade levels in each of these six districts participated (a total of 50 classrooms). At least one principal, superintendent, or

curriculum developer for each district was involved as well. The program, called the Playful Learning Institute (PLI), launched as a pilot in 2023-2024, with funding renewed through the end of 2026. (The PLI team is working on securing additional funding to continue on after 2026).

I spoke to Megina Baker (a program developer for the [Boston Public Schools Department of Early Childhood](#), and also a member of PZ, Mara Krechevsky, and Jen Ryan (PM for PoP) to learn more and to find out the relationship of this program to PZ's PoP framework.

The Massachusetts Department of Early Childhood Education (DESE) as well as the Boston Public Schools Department of Early Childhood did not always value play, failing to recognize play as a force for learning. Those who were interested in play had to use other terms, such as hands-on-learning. But by 2018 attitudes towards play had changed (perhaps due to the value placed on play by the National Association for the Education of Young Children). The DESE released a [position paper](#) on the importance of universal access to playful learning.

The professional development team for this initiative consisted of five coaches: Megina (lead coach), Yvonne Liu Constant, Katie Ertel, Fay Ferency, and David Ramsey. Professional development materials included the PoP book, which laid the foundation for the PLI initiative. Some of the classroom practices developed were inspired by Boston's Focus on Early Learning curriculum. This curriculum was developed beginning in 2010 and has continued to grow in the years since. Megina and Ben Mardell were key contributors to the initial version of the curriculum, called Focus on Kindergarten, and Megina has also been a curriculum collaborator for Focus on Pre-K.

Sections of the PoP book were assigned to all participants prior to a two-day professional development experience. During these two days, teachers were introduced to PoP as the theoretical framework as well as the indicators of playful learning for Massachusetts:

- leading learning—exercising choice, ownership, empowerment, and autonomy regarding their learning
- exploring the unknown—experiencing wonder, curiosity, and learning that is meaningful
- finding joy—experiencing feelings of delight and enjoyment.

Megina told me that these indicators were inspired by the PoP cross-cultural indicators and the indicators developed with schools in Boston by the PoP team. Each coach worked with one or two schools. Every school was expected to develop its own indicators over the year.

Six playful learning practices inspired by the *Focus* curriculum were offered as possibilities for playful learning through the PLI. While not part of the PoP framework, Mara Krechevsky told me that they were inspired by both the MLV and PoP frameworks. The parallels to MLV and PoP will be clear to the reader when looking at the practices listed below:

- A community meeting at the start of the day where children gathered for mindfulness
- Studios where children could freely choose activities, such as building, art, sensory play, writing, investigation with science materials, and storytelling

- Thinking and feedback, which follows directly after Studios, where children look closely at a piece of work by one child and reflect using protocols (Looking, Noticing, Listening, Wondering, Suggesting, and Inspiring)
- Read aloud/text talk, where the teacher reads stories aloud and engages children in acting out stories or playful discussion using blocks
- Writing
- Storytelling and story acting

Each district was asked to adopt at least two of these practices, and most chose three. These practices could be integrated with the content of the district's existing curriculum, or the districts could choose to adopt the full *Focus* curriculum and take on all six practices.

An example of integrating the practices with the curriculum, here is what happened in a 2nd grade unit about landslides and erosion where children learned how water and wind shape the earth's surface. In Studio time, children were challenged (working in small groups) to design two ways to keep a hill (made of cornmeal) from washing away in the rain using some kind of protective barrier.

Students talked about this kind of learning as exciting and fun. Asked about what she liked about Studio time, one 2nd grader said, "Studios just helps kids' brains to actually work - they actually help you learn and how to build and make your brain go wild. When you're building something and using your brain - using stuff with your hands when you're learning helps you learn better."

In June of 2024, Mara attended the end of year presentation of PLI. She said the teachers were "raving.... It was one of the most powerful demonstrations of impact of a PZ framework statewide on public school communities (administrators, teachers, children) I've ever witnessed."

Educator Donna Traynham told Mara that this was some of the most inspiring work she has ever seen. Mara went on to write: "I think that Ben's sweet spot of playful learning (when what the kids want to be doing matches what the teachers want them to be doing) was reached in multiple ways in this initiative."

A veteran kindergarten teacher, with 34 years in the classroom, noted:

Great writing floats on a sea of oral language...The Storytelling/Story-acting studio got all kids to want to write, because they all wanted their stories to be performed...During Thinking and Feedback sessions, kids learned what others were writing, which inspired them to want to do it, too. (NOTE: Both Storytelling/Story-acting and Thinking and Feedback are part of the Boston BPS Focus curriculum that Ben and Megina wrote.)

A special ed teacher said she can no longer tell who are the special ed students in the classroom Studios.

Mara believes that playful learning really took off in these districts because so much groundwork, both practical and theoretical, had already been laid both by the Focus curriculum and by PZ's PoP project.

Briya Public Charter School, Washington, DC

[Briya Public Charter School](#) in Washington, DC, is a two-generation program, with families and children attending school together. Children ages six weeks through age five attend a mixed-age group, Reggio-inspired preschool; the adults either study English or enroll in a high school diploma and job training program.

The school has been closely involved with PoP, as told by Noelani Mussman and Kerstin Schmidt. Noelani was the director of professional learning at Briya from 2012-2022; Kerstin has been a pre-K teacher at Briya since 2018 and is gradually moving out of the classroom to become a professional development coach. Noelani referred to Briya as a PZ partner school. Even though PZ has no such official designation for schools, the term is used because Briya has done so much work with PZ.

PoP researchers from PZ have not come to Briya. However, Briya is part of the DCPZ network (see Chapter 55). Briya teachers attend the workshops run by this network as well as the Washington International School Institute for Teachers (WISIT) – WIS’s version of the PZC summer institute. Kerstin and Noelani are both on the WISIT faculty, as are several other Briya teachers.

In 2020, many Briya teachers enrolled in the PZ minicourse, “Let’s Play,” and in 2022 Briya joined the DC Area Playful Schools Network consisting of eight DC schools. During the 2021-22 school year, teachers in the Playful Schools Network created professional development communities across the eight campuses, with teachers teaching each other about their practices and reflecting together about where indicators of playful learning are evident. After that year, Briya has continued to have its own learning groups in which PZ ideas are explored, especially PoP, thinking routines, and Agency by Design. Teachers take inspiration from PZ ideas, but, as Kerstin said, they then put their own spin on them – given that they work in a dual language school with an inclusion classroom.

PoP did, however, change the school’s previous traditional approach to professional development with teachers. Play now takes on a more central role in which teachers are engaged in experiences of curiosity and wonder. Thinking routines are used in professional development with teachers, as they are with the children, as these are understood to be playful practices. Noelani described a professional development workshop in which teachers used the routine of Parts-Purposes-Complexity after bringing in objects and taking them apart. As they took things apart, recreated objects with the loose parts, and then did a gallery walk examining all the things that had been created, they were helped to think about systems. This kind of professional development, Noelani said, sparks freedom and playfulness in teachers and rejuvenates them in their challenging work. This same method is used at the PZC and at the WISIT – teachers themselves experience what they will subsequently offer their students.

Adults involved in classes for parents at Briya are also introduced to playful practices – all with the goal of helping parents support playfulness at home.

Noelani left Briya in 2022 and now works with 117 DC K-12 schools, where she is applying what she learned at Briya. She is coaching both classroom leaders and school leaders, helping them think through their work through playful experiences, and is also working with classroom teachers who want to become school leaders.

When asked about whether PoP changed teaching at Briya, the answer was “not really.” This is because the school was already a Reggio-inspired school with play at the center. However, Kerstin said that PoP helped teachers go deeper in their thinking about play, and it also affirmed that they were on the right track. Noelani said that it gave teachers permission to do what they believe is good for children.

When asked about the effect of PoP on children, Noelani said that it gives them joy and freedom. Kerstin emphasized play’s effect on social and emotional regulation, noting that Briya students have often experienced some level of trauma from migration issues or family issues. But the preschool classroom is a happy place, and the children do not have a lot of behavioral problems.

When asked whether PoP had changed her philosophy of education, Noelani made three points: (1) PoP revolutionized how she thinks about constructing understanding, (2) it rejuvenated her practice, and (3) it changed how she conducted professional development. In short, PoP gave her leave to think of what is possible and to imagine a way that things could be different. Kerstin said that it affirmed her approach to teaching that was already in place, and it also gave her confidence about the importance of play as an equalizer and as a catalyst for learning.

Briya’s approach to teaching and professional development, along with specific examples, is described in [this article](#) co-authored by Kerstein and Noelani. Here they lay out three realizations about play:

- Creating a culture of play is a collaborative, reflective, iterative process.
- Play is healing, engaging, and transformative for teachers and children.
- Empowered, free, and curious classroom environments depend on emulating those conditions in teacher learning.

Eric Carle Museum

The Eric Carle Museum of Picturebook Art in Andover, Massachusetts, uses PoP as a way to define play. This is mentioned in some of their handouts and presentations.

Impact in Latin America

Isabel Tejada, Jimena Alviar, and Martha Ramirez: Teacher Training in Bogotá, Colombia

Isabel Tejada, Jimena Alviar, and Martha Ramirez, professors of education in Colombia, work with teachers in training, inservice teachers, and adults in life-long learning courses. The three of them were members of a five-member practitioner action-research team on playful learning in Colombia.

When Isabel, Jimena, and Martha took the online PZ course, Let’s Play, in 2021, they realized that this framework was aligned with what they were already doing. However, taking the course helped them realize that the approach they had been taking was not just “fun,” but had a structure and a rationale. “I had never thought about the concept of playful learning, I was just doing fun stuff, and now I learned the name of what I was doing,” Isabel told us.

They identified several challenges:

- They had to “disrupt” the common assumption that higher education classes should consist of serious, theory-based lectures.

- They had to make sure that they created an environment where playful learning, which sometimes included competitive games, could be “safe,” i.e., where students realized it was OK to lose a game or not know the answer.
- They had to be flexible and sensitive to their students. If students are too shy to do role play, then one should be aware of this and introduce other kinds of playful activities.

Sometimes students who have become used to playful learning will object if the teacher introduces something in a more traditional, non-playful manner – complaining, “this is boring.”

Impact in Africa

Ellen Fesseha and Rola Hodeib: Right to Play, Rwanda

PoP has had an impact in Rwanda via three organizations funded by LEGO Foundations: Right to Play, USAID Rwanda, and VVOB Education for Development.

[Right to Play](#) is an international NGO based in Canada working in 14 countries to help educators introduce playful learning into schools in order to improve educational outcomes. Right to Play works with educators in the most disadvantaged communities – indigenous peoples in Canada and in 13 countries in Africa, the Middle East, and Asia. The schools in which they work use traditional ways of teaching, with (often strict) teachers at the front of the room speaking while students listen.

After the PoP team worked with Right to Play, Right to Play incorporated PoP into its training materials. Two leaders at Right to Play, Ellen Fesseha and Rola Hodeib, told me that a ten-week course called [Learning Through Play](#) was developed by Right to Play. This course was first offered in 2023 in Rwanda to over 3,300 teachers of grades 1-3 in schools that partner with Right to Play. An adapted version is now being developed in Ghana and will be used in other interested Right to Play countries.

Rola described how working with PoP broadened their idea of assessment. Ben and Mara showed how classroom observations themselves could serve as a form of assessment – revealing a growth in student-teacher interaction and evidence of learning through play. Students found themselves amazed to be playing on the floor with their teacher who used to be so serious and severe, and teachers found that their relationship with their students was stronger.

When parents first heard about playful learning, Rola said that they felt that play would interfere with or take the place of learning. But when they observed the classroom, and also when their children explained to them what they were doing in school, parents’ attitudes shifted. Rola described mothers almost crying when they participated in play activities designed to raise their awareness of the importance of play for their children.

USAID, Rwanda

US Agency for International Development Rwanda (USAID) works with Rwanda to improve economic growth, education, democracy, and government. USAID Rwanda facilitated Ben, Mara, and Megina’s visit to Rwanda in 2022 where they introduced PoP.

Aliou Tall: USAID, Rwanda

Aliou Tall, the education officer for USAID Rwanda, wrote to Mara on June 5, 2024, telling her that Rwanda plans to have a national learning through play [policy framework](#) for early childhood education.

When asked about the reception of play-based learning in Rwanda, Aliou told us that children enjoy and prefer this approach which allows them to be active rather than just sitting and listening. Parents are first skeptical, worried (as Rola told us) that play takes time away from learning. But when parents are informed about the value of play, they change their attitudes.

Lieve Leroy: VVOB-Education for Development in Rwanda

[VVOB](#)-Education for Development is an organization founded in 1982 working in countries around the world to strengthen education systems via professional development. Lieve Leroy, the Strategic Education Advisor for VVOB, attended what she called a “deep dive” session with a PoP team in Rwanda, and she used the PoP resources to inform [IT’S PLAY](#), a program VVOB implemented in Rwanda, Zambia, and Uganda. The project provides professional development for early childhood educators in learning through play.

In Rwanda, the focus has been on play as a way to teach emergent and early numeracy skills. Rwanda has a well-established competency-based curriculum for early childhood in which play has an important role. As stated on the IT’S PLAY website,

In many ECE classrooms, however, school readiness equals formal teacher-led literacy and numeracy instruction. Current instructional practices in ECE in these countries fail to actively engage learners and limit social interaction, favouring content-based rote learning over learning through play. Ironically, this strong focus on academic skills in ECE is an obstacle for the development of the emergent literacy and numeracy skills that prepare children to learn to read and write in primary school. Conversely, learning through play methodologies stimulate the holistic development of learners as described above, all the while creating an environment in which learners develop the literacy and numeracy skills necessary to be “ready” for school – and later life.

Lieve received feedback from the PoP team that led to some changes in the IT’S PLAY materials. She considered using PoP’s observational tools in the training materials for teachers and school leaders (play feels like... looks like...) but she decided against it because concepts like agency and dialogue are very difficult concepts for the teachers with whom VVOB and its partners are working. What she found most helpful about the PoP book was that it did not offer an assessment tool in the form of a rigid checklist but instead offered close observation itself as an assessment tool. “The reality of a classroom cannot be shown on an excel sheet,” she said.

Many early childhood educators in Rwanda, Lieve said, have welcomed the professional development around play. Many of them are under-qualified and have no idea where to start. Thus they welcome the professional development offered by the IT’S PLAY project, which provides concrete guidance on how to set up activities for their classroom. One of the main takeaways is the importance of having enough concrete materials which children can manipulate and use freely.

Kgopotso Khumalo: South Africa

Kgopotso Khumalo was a researcher in the South Africa PoP project in 2017-18. The PoP project worked in three primary schools in South Africa that differed in terms of how much play-based

learning was used, and how teacher- vs. learner-driven the classrooms were. One school was an independent (and expensive) school with small class sizes. The other two had larger class sizes: one was a low-fee government school, and one a free government school where many of the children were from migrant families from other African countries.

Kgopotso provided an example of how a teacher at the free government school changed her teaching about plants. When teaching the national science curriculum, she used to ask 6th grade students to open their textbooks to a certain page and report what the textbook said about plants. Not surprisingly, students were not very engaged. But she changed her approach after learning about PoP, sending her students outside to find a plant and bring it back to the classroom. Then students worked in pairs, pointing to and naming all of the parts of their plants, describing each in detail, and they were then asked to draw their plant. This low-resource school used the environment as its resource.

Both parents and teachers were at first resistant to this hands-on approach, thinking of play as the opposite of learning, and something one did in breaks from learning. Teachers were afraid of the noise and messiness of play, especially those who teach large classes. Manipulables like LEGO blocks for teaching math were considered a toy that had no place in learning. But when teachers and parents were shown how having a manipulable object helps students learn a concept, they began to buy in. In general, younger teachers were more open from the start to playful learning as they sought to be creative in their teaching.

Once the project wrapped up, Kgopotso led several workshops to introduce educators to PoP, and she presented the PoP South Africa research at a Play Conference held in South Africa in 2019.

In 2019, Kgopotso became a coach for the PZ Let's Play course, and attended the PZC in 2024 as a study group leader.

Kgopotso was affected by PoP in several ways. PoP influenced how she now trains educators. It has influenced her thinking in her current role as a consultant on education for UNICEF where she designs play-based materials for children. It has influenced how she is collecting and analyzing data for her doctoral research on teaching STEM through tinkering. And it has influenced her thinking as a mother and caused her to change her son's school to a more learner-centered school.

She described an "aha moment" when, in her teaching university students, she noticed that faculty were always asking why certain students were struggling. She realized that they had not been educated from the start in a learner-centered playful way. It is important to start early using play as one of the strategies to help these struggling learners, because play builds the foundational skills needed for life-long learning.

As of the interview with Kgopotso on April, 2024, all three of the schools in South Africa where the PoP project was carried out were still using PoP four and a half years after the PoP team left at the start of 2019.

A paper by Solis, Kgopotso, Nowark, et al. (2019) on South Africa and PoP can be found [here](#).

Impact in Taiwan

Hsiao-Fen Hsu: Humanistic Education Foundation, Taiwan

Hsiao-Fen Hsu (邱曉芬) works for a non-profit organization in Taiwan focused on educational reform in Taiwan, called Humanistic Education Foundation (HEF). From spring 2022 to spring 2023, HEF collaborated with Yvonne Liu-Constant in a two-phase project to introduce Pedagogy of Play (PoP) into different learning environments. In the first phase, this was implemented in the Forest School (Taiwan's first alternative school) and in the after-school "Math Thinking" curriculum. In the second phase, the project was extended to a cross-school teacher community convened for the PoP project. This group consisted of 16 teachers from 12 public elementary and middle schools.

In Phase 1, Yvonne hosted six meetings to help teachers understand "what the Pedagogy of Play is and what it is not," share classroom implementation experiences, and ultimately create "Playful Learning Indicators." In August 2022, HEF invited Ben Mardell, Yvonne, Taiwanese education scholars, and media figures to listen to presentations by PoP teachers reporting on their experiences. This [report](#) describes their interaction.

In Phase 2, in May 2023, HEF hosted a teacher workshop with 18 participating primary and secondary school teachers and one principal (from seven counties and cities across Taiwan) as the main speakers, presenting on what they saw as the indicators of playful learning when teaching Chinese, mathematics, ecology. This [report](#) describes the workshop, and below are the three indicators that the teachers agreed upon:

1. **Seeking (getting to the "roots" or the bottom of things)**
Looks like: eager to ask questions, clarifying, not easily fooled, daring to guess and try, finding rebuttals, seeking conclusions
Feels like: curious, active, bold, excited, confused, chaotic, alive
2. **Engaging (being in the moment)**
Looks like: focused on thinking, keenly observing, quietly concentrating, fighting for a turn to speak, wanting to overcome challenges, resonating
Feels like: interested, enthusiastic, excited, "brain-burning," can't/won't stop, unwilling to let go
3. **Evolving (internalizing change)**
Looks like: gaining insight, changing, connecting spontaneously, wanting to apply new ideas
Feels like: suddenly dawn upon, accomplished, different, reborn, hopeful

Hsiao-Fen Hsu told us that the goal of PoP in Taiwan is to create a more interesting and engaging curriculum in order to create a love of learning. PoP in Taiwan is *not* about designing games or playful opportunities. Rather it is about discovering elements within the content of what is being taught that can inspire and promote the desire to explore and discover.

When asked whether the schools involved in the collaboration are still using PoP, the answer was yes, according to her own recent brief inquiries that she made for us, as reported below:

Participants of the first phase:

1. *Director of Forest School:* "The pursuit of "mental exploration" in class has been ongoing. I feel that (the six-month project) had a more significant impact on adults."

2. *Teacher from Math Thinking*: "Even with excellent teaching materials and many years of experience, I still rack my brains every time to prepare a more playful teaching plan! Although it may not always be perfect, I give myself time."

Hsiao-Fen Hsu provided two examples of how a lesson plan was made more playful:

Science. In a science class studying gravity, Teacher Chen of Forest School used physicist Galileo's thought experiment "Which falls faster, a heavy object or a light one?" as a model to guide 6th grade students in reasoning and debating. Students discussed and debated for over an hour.

In post-class interviews, students said that "having something to think about" and "wanting to figure it out on their own" made the class more interesting than watching videos (like the science museum's experiment showing a feather and an iron ball falling equally fast in a vacuum tube).

Mathematics. The multiplication table is one of the most tedious topics in the 2nd grade math class in a regular school. To help students appreciate, understand, and remember the "multiplication of 8," Teacher Zheng of "Math Thinking" told a childhood story of an old man: To earn money, he worked part-time as a vendor selling ice pops after school, and the price of each ice pop was eight dimes. However, he only knew how to use mental addition! From that man's unique calculation method, students discovered:

(1) Each "additional eight (dimes)" is equivalent to "adding 10 and then subtracting 2 (first receive one dollar, then return two dimes)"

(2) "Five 8s (dimes)" is exactly "four 10s (four dollars)."

Based on these findings, students rearranged them into a table, forming the appearance as shown in the figure below. The key point is: the number in the left column plus 40 is precisely the answer in the right column! The trick is to imagine yourself selling ice pops, and the price of "6/7/8/9 ice pops" naturally becomes "the price of 5 pops plus the price of 1/2/3/4 pops."

Students found this way of learning fun because there was a story to listen to, surprises to discover, and also because, after understanding multiplication, they could use "8, 1, 8" to think of "8, 6, 48"—this greatly reduces the burden of memory. Students said, "Such a good method, the teacher should have told it earlier and told more people!"

(Text on top: The numbers on the left plus 40 are equivalent to the corresponding numbers on the right.)

Have these changes lasted? When PoP team member Yvonne Constant-Liu was asked whether the teachers she worked with in Taiwan are still using PoP, she sent out an email to all of them (August, 2024) asking the following:

你們一年多前學到的「玩的教育學」現在在課堂裡還用得到嗎？請老實講，謝謝大家！

Now that it's been a year since you were part of PoP, are you still using it in your classrooms?

Please be honest, and thank you all!

She translated their responses, below, and occasionally added a comment about context:

有「找反例或歸謬法」有機會就會玩

Yes, "arguing by contradiction or reduction to absurdity," we play with it whenever we get a chance.

Context: This comment came from a middle school math teacher. In one of our whole group bi-weekly online meetings, we talked about how the playful mindset includes asking "what if." The math educators amongst us wondered about pushing "what if" to the extreme, arguing by contradiction and providing absurd solutions to math problems as provocation to students. They tried the strategy, and their students and they themselves enjoyed the fun in the absurdity.

我的語文教學也是有機會就會讓孩子比對、歸納、推敲

I also find opportunities in my language arts teaching to engage the children in comparing, inductive reasoning, and deliberating.

士敏國小的各班級持續把玩的教育融入在各領域的教學中

這是我們整個學校的教學氛圍

The classrooms in our school continue to integrate pedagogy of play in various subjects. It has become the atmosphere of teaching and learning in our whole school.

Yvonne added this contextual informaton: "This comment came from a public elementary school principal. Ben and I visited his school when we were in Taiwan. It was the only public school that engaged in PoP as a whole school led by the principal. Other public school teachers joined PoP individually."

我社會課發展的劇本，課本那頁消失了，不過還有拿出來玩一下～小孩反應也不錯

The drama script I developed for social studies, that page is no longer in the textbook, but I still bring it out to play with from time to time – the children respond pretty well.

森小的腦子裡的推究，有一直在進行哦，我覺得對大人的啟示比較大。教學上，也持續中。

At the Forest School, the exploration in our minds continues! I feel that it is more inspirational to adults. We also continue to use it in teaching and learning.

The school's principal added: "Forest School is an independent, alternative school in Taiwan, which participated in PoP as a whole school."

玩的教育是一種精神，它隨時出現在我的各領域的教學前、教學中。比起以前，今年偶爾多一個動作：會問學生“這樣學有什麼感覺？”（口頭輕鬆問答。）

The Pedagogy of Play is a kind of spirit, it shows up spontaneously before and during my teaching in different subject areas. Compared to before, I sometimes add a new move this year: I ask students, "How do you feel about learning this way?" (In a relaxed, verbal Q&A kind of way)

From Yvonne: “The main research questions at PoP are “What does playful learning look like? Feel like?” The teachers said that “feel like” was not a question they usually ask students, but were willing to try. It’s so great that she is continuing to ask!”

As can be seen in the examples given in this chapter, PoP is really about engaging, hands-on, inquiry-based learning. In my opinion, this framework could have been called “inquiry-based learning.” But calling this kind of learning “play” broadens the canvas.

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Chapter 49

Agency by Design

2012-2018

Led by Shari Tishman and Edward Clapp, the [Agency by Design](#) (AbD) project investigated the practices of “maker-centered” learning growing out of the maker movement – working and tinkering, designing and engineering with one’s hands. The goal was to help students see their world as having been designed, and therefore as malleable, subject to redesigning. The ultimate goal was to help students see themselves as agents of change in their world. The project was carried out in two phases.

First Phase (2012-2016)

The first phase of the project took place from 2012 to 2016 and was conducted in collaboration with four schools in Oakland, California, one private, three public. Soon thereafter three more schools were added.

Through site visits and interviews with maker educators, the researchers identified maker-empowerment as a disposition – a sensitivity to the design of objects and systems along with the inclination and capacity to shape one’s world through building, tinkering, hacking, and re-designing. Maker-empowerment requires the willingness to look closely, explore complexity, and find opportunity.

To support the development of maker-empowerment, the researchers developed four thinking routines which were then pilot tested and refined in collaboration with the teachers in Oakland.

The [Parts, Purposes, Complexities](#) thinking routine is designed to help students slow down and make careful observations about an object or a system.

Parts: Look closely at how this clock works, and look at its parts

Purposes: What does this clock do, what does each part do?

Complexity: How do the parts of the clock work together? What would happen if a part were missing?

The [Parts, People, Interactions](#) thinking routine asks student to identify a system and then consider:

Parts: What are the parts of the system?

People: Who are the people connected to the system?

Interactions: How do the people in the system interact with each other and with the parts of the system? How does a change in one element of the system affect the various parts and people connected to the system?

The [Think, Feel, Care](#) thinking routine encourages considering the different perspectives that can be held by those who interact within a particular system – based on peoples’ positions in the

system. Students are asked to choose a variety of people within a system and then step inside each person's point of view and consider what each person might think, feel, and care about.

Think: How does this person understand this system and their role within it?

Feel: What is this person's emotional response to the system and to their position within it?

Care: What are this person's values, priorities, or motivations with regard to the system?
What is important to this person?

The Imagine If... thinking routine asks students to choose an object or system, consider the parts, purposes, and people who interact with this object or system, and then consider the following:

In what ways could it be made to be more **effective**?

In what ways could it be made to be more **efficient**?

In what ways could it be made to be more **ethical**?

In what ways could it be made to be more **beautiful**?

Through site visits and interviews, researchers discovered that the learning outcomes that maker educators see happening have less to do with skill development and more to do with learning to be a self-directed learner, proactively and independently seeking out knowledge and resources. Maker educators talked about students learning to collaborate, building on each other's strengths, learning to persist, becoming confident in their ability to learn, and coming to see themselves as capable of effecting positive change in their own lives and their communities. In short, students were seen as developing a sense of personal agency (hence the name of the project). Technical skills were the byproduct of these more important developments of the self.

A full description of Phase 1 of the project can be found in [*Maker-Centered Learning: Empowering Young People to Shape Their Worlds*](#) (Clapp, Ross, Ryan, & Tishman, 2016). In the foreword to this book, Ron Berger, CEO of EL Education writes:

This book, Maker-Centered Learning, takes on the fundamental question of how making things connects to the learning process and to student empowerment. With depth, integrity, and insight that are hallmarks of Project Zero, this analysis of making and learning explodes the shallow binary debate about whether the new maker movement is a groundbreaking answer to transforming schools, or simply a distraction. It instead dives deeply into the questions no one is asking: What constitutes "making"? How does the process of making instantiate learning? What are the characteristics of successful making experiences? In what conditions is making a transformational learning experience for students?

The introduction to the book states:

Since its inception, the Agency by Design research team has endeavored to gain an understanding of the benefits of maker-centered learning and the pedagogies and practices that support it. To better understand this opportunity space, the Agency by Design team pursued three strands of inquiry: (1) a review of literature associated with maker-centered learning; (2) a series of site visits to a variety of maker-centered learning environments paired with formal interviews conducted with maker educators and thought leaders at the forefront of this emergent domain; and (3) a program of participatory research carried out first with a group of educators in Oakland, California, and later with a national learning community consisting of individuals representing maker-centered learning environments throughout the United States.... This book, Maker-

Centered Learning: Empowering Young People to Shape Their Worlds, presents what our team has learned about this new pedagogical trend throughout our three years of research.

Second Phase (2016-2018)

The project leaders realized that if Agency by Design were to become more than a passing trend, it would be necessary to develop documentation and assessment strategies. This was the mission of Agency by Design 2, which took place from 2016 to 2018.

During this second phase, fellows from AbD Oakland (described below) worked closely with the PZ team and a group of teachers in Pittsburgh, PA. They sought to answer these questions:

- How can learners make visible their ability to enact the three capacities at the core of the AbD framework – looking closely, exploring complexity, and finding opportunity?
- How can teachers qualitatively measure students’ performances in these three maker capacities?
- How can we collaborate with students and teachers to design a suite of practical documentation and assessment tools best suited to the development of maker empowerment?

The project developed a number of tools for documentation and qualitative assessment, all freely downloadable on the AbD website.

The [Memorable Making Experience](#) tool is a conversation and reflective activity to introduce the concept of making.

[Documentation Templates](#) provide one observation sheet to use for each of the three maker capacities: Looking Closely, Exploring Complexity, and Finding Opportunity.

The [Maker Capacity](#) tool provides questions to help students reflect on each of their maker moves – Looking Closely, Exploring Complexity, and Finding Opportunity.

The [Tell Me More](#) tool consists of a series of questions to get students to reflect about using a particular Making Move.

The [Mapping Systems](#) tool helps students go deep into mapping a particular system.

Additional tools can be found [here](#).

Impact

Three independent spin-offs of AbD were formed in Oakland, California, Pittsburgh, Pennsylvania, and Washington DC, and all three are active as of 2025. They continue the work of phase 1 of the AbD project.

Paula Mitchell: Agency by Design Oakland.

[Agency by Design Oakland](#), in Oakland, California, is directed by Paula Mitchell and has been active since 2016. AbD Oakland runs a two-year fellowship program that provides professional development to a network of teachers from about 50 public and charter schools, and one independent school, in the Oakland area. By now this program serves the Greater Bay Area in California. AbD Oakland professional development sessions are interactive, giving teachers the same experiences they will later provide for their students. Teachers receive PD through the fellowship program and then some also offer PD for others.

Paula believed in student-centered learning before encountering AbD, but the AbD framework gave her group a model, and that “made a huge difference.” She became more intentional about hands-on, student-centered learning, which has remained central to her educational philosophy.

A major challenge for sustaining the work in Oakland has been the isolation some teachers experience after completing the fellowship. To address this, multiple teachers from the same school join together to receive training, making a two-year commitment. This shift enabled more sustained support for implementing AbD across school communities and helped create a shared language and mindset for using the framework.

Paula said that some teachers come with a mindset already prepared for student-centered hands-on learning, while others find their mindsets shifting during the professional development. Everyone, however, worries about time constraints. To address this, they were helped to think about infusing AbD into the curriculum they were already teaching, and the two-year fellowship gave them time to plan for this.

Paula also acknowledged the challenge of measuring the program's impact on students, explaining that while the benefits are visible, they are more often qualitative than quantitative. “We know the impact is there,” she said, but said that it is not clear how to measure it quantitatively. Finally, she said that they have not had the capacity to follow up on their cohorts to see if their AbD practices have been sustained.

Jeff Evancho: Agency by Design Pittsburgh

[Agency by Design Pittsburgh](#), in western Pennsylvania, is directed by PZ Fellow Jeff Evancho and began in 2011. This network is discussed again in Chapter 55, where I feature networks that adopt multiple PZ frameworks.

When Jeff Evancho was working on his dissertation in the late 2000s in Education Policy and School Leadership (including getting his certificate to be a superintendent), he came across some of Steve Seidel’s work at PZ. At that time, Jeff was also an art teacher at the Quaker Valley Middle School, and he attended the PZC with his principal and Quaker Valley District superintendent. He was able to attend for many years, due to funding that Pittsburgh educators had received from the Heinz Endowment. At his first PZC, Jeff met Jim Reese and Steve Seidel. Steve kept him and his colleagues connected to the PZ network. Jim invited Jeff to DC in order to see the network that he was building. In 2012, with support from the Grable Foundation and partnerships with institutions like the Children's Museum of Pittsburgh and the Allegheny Intermediate Unit, Jeff founded Agency by Design Pittsburgh. The program has expanded significantly, with the current cohort consisting of about 40 educators from both Allegheny and Beaver counties.

This network hosts regular conferences modelled on the PZC, each with its own throughline, and with a plenary session led by a PZ researcher. These conferences introduce regional public school teachers and administrators to PZ ideas and instructional practices.

The network also builds teacher leadership capacity by sending to the PZC groups of teachers (including department chairs), and building-level administrators (hand-picked by Jeff), and department chairs. Some teachers then go on to become coaches in the PZ online courses. These teachers develop deep understandings of PZ ideas and practices, and as a result they become the most valuable regional assets to spread PZ ideas in schools.

Jeff brings in a new cohort of 30 educators from 20 different organizations each year. Teachers from the Quaker Valley, South Fayette, and Northgate School districts are involved, and some of them are profiled in Ritchhart and Church (2020). *AbD* is used for educators to learn about their practice, thinking together about what learning outcomes they value and how to design for these outcomes to occur. Members of Jeff's learning group document learning in their classrooms and meet monthly to discuss. Jeff also hosts a conference twice a year, making sure to do this on school holidays so that public school teachers can attend. When school leaders leave (as they did in Quaker Valley and Northgate), teachers are left isolated, and Jeff brings them to his learning group and conferences to support them. Jeff noted that while *AbD* attracts educators who are eager to innovate and grow their practice, challenges still arise, particularly around teacher agency. Many teachers struggle with rigid school structures that stifle creativity and flexibility in teaching. *AbD* Pittsburgh provides a space for these educators to find support, share frustrations, and work collaboratively to overcome these barriers.

Jeff offered an example of how educators in the *AbD* Pittsburgh cohort integrate the framework into their classrooms: one teacher focused on developing a literacy unit around cultural identity and worked with students to create artifacts representing their heritage. Jeff emphasized the hands-on, collaborative nature of this framework, noting how the teacher's value of student agency and creativity shaped the experience. "We really push our teachers to design *with* students, not *for* them," Jeff explained, highlighting how the teacher empowered students to explore their own cultural identities through the creation of these artifacts. This project, like many others within the *AbD* Pittsburgh framework, allowed students to take ownership of their learning, which Jeff described as central to fostering agency in the classroom.

Since its inception, the *AbD* Pittsburgh program has grown beyond its local roots. In partnership with Peter Wardrip, a researcher now at the University of Wisconsin, Madison, Jeff has helped turn *AbD* Pittsburgh into an online certificate program called the [Maker Educator Leadership Certificate Program in Maker Educator Learning Certificate](#) based on the *AbD* project.

Over the years, this network has impacted more than 100 educators and 10,000 learners.

Jim Reese: Agency by Design: Making Across the Curriculum.

[Agency by Design: Making Across the Curriculum](#) is part of Jim Reese's [Professional Development Collaborative](#) at the Washington International School in Washington, DC (discussed in Chapter 15). This project has created a network of educators (the Making Across the Curriculum Consortium) using a maker-centered approach at all grades and across subject areas. Jim called this initiative "making across the curriculum" to counter the assumption that *AbD* is only relevant for STEM learning. In this [video](#), teachers from WIS discuss the benefits of maker-centered learning in various subject matter areas.

JusticexDesign

Another impact of AbD is a spin-off project led by Sheya at PZ called [JusticexDesign](#) begun in 2019. This project aims to sensitize students to design injustices and activate maker empowerment. Students learn to use their knowledge of concrete systems (such as the phones and TVs they took apart in the AbD project) to make sense of abstract systems (like hospitals, prisons) and to think about these in terms of social justice. Sheya works with educators that have been exposed to Agency by Design as well as those who have not had previous experience with the work. This project began with a collaboration with a small group of educators across Washington, DC and later a collaboration with the [Detroit Institute of Arts](#). This work continues as of 2025.

Instituto Catalisador (Catalyst), Brazil

[Instituto Catalisador](#) (Catalyst Institute) is a professional development organization in Brazil founded in 2015 by Rita Carmago and Simone Lederman focusing on maker-centered learning to transform science education in public schools in Brazil. Rita and Simone took the AbD course in 2018 and attended the PZC. They found the combination of hands-on activity with the AbD thinking routine to be a winning combination and consequently translated the AbD thinking routines into Portuguese. The institute supports technology teachers working with elementary and middle school students, helping them demystify technology and make it accessible to all. They blend hands-on, maker-centered learning with digital activities that foster coding skills and computational thinking. Thus far, Catalyst reports that it has worked with 32,500 students.

One of the main challenges Rita and Simone noted was for teachers to shift from using thinking routines literally, as structured lessons, and instead embrace them as a mindset. Initially, teachers applied the thinking routines in a more literal, step-by-step manner. Actually they found that students catch on to this thinking and questioning mentality more quickly than the teachers!

Paola Ricci: Transformative Learning Technology Lab

After working for two years with Catalyst, Paola Ricci enrolled in the MA program in education at Teachers College in New York, working in the [Transformative Learning Technology Lab](#) (TLTL). Paola is now (as of 2025) a TLTL researcher working with elementary and middle school teachers in São Paulo and Rio de Janeiro helping them to incorporate technology and maker-centered learning, always with the use of AbD thinking routines to help teachers and students think more deeply. Teachers appreciate how the routines provide a structure for reflection and organization. These routines are “so simple yet very powerful,” Paola said.

Paola has worked with 26 science and technology teacher trainers in São Paulo. These trainers work with approximately 598 schools and 1200 teachers of science and technology at the primary and middle school level. In Rio, she has conducted professional development for the Ginásio Educacional Tecnológico, reaching 200 new schools with maker spaces – as well as 150 teachers and 150 pedagogical coordinators.

The work of TLTL and Catalyst are similar in many ways. Both organizations are influenced by the same education innovators – Seymour Papert and Mitch Resnick from MIT and Paolo Blikstein at Teachers College, Columbia. TLTL focuses on constructionist learning aligned to the science curriculum, and works directly with teachers, school leaders, teacher trainers, and policy makers, but rarely directly with students. In contrast, Catalyst focuses on “creative learning,” and often works directly with students. Both organizations include PZ’s thinking routines in their professional development.

Belle Liu and Jennifer Cheng: Victoria Education Organization, Hong Kong

A 13-week online PZ course called Thinking and Learning in the Maker-Centered Classroom has been offered since 2017, led by Edward and Jen Ryan. This course is still running as of 2025. Early childhood educators who took this course raised questions about how AbD could be useful in early childhood education. The interest of early childhood educators in AbD spawned a two-year project from 2018-2019 in Hong Kong, Agency by Design: Early Childhood in the Making, led by Edward. This project worked with early childhood educators from the Victoria Education Organization (VEO), a network of schools in Hong Kong, to develop a maker-centered learning for children from ages 2-6.

The VEO runs seven kindergartens, one nursery, and three playgroup centers serving over 4,000 children in Hong Kong. While these schools already embraced hands-on, inquiry-based learning (and used the International Baccalaureate Primary Years curriculum), maker-centered learning was new to them. Twelve teachers and one head of curriculum participated. The goal, as in the original project, was to stimulate sensitivity to design via close looking and exploring complexity.

During Phase 1, the educators took the online PZ course on the AbD framework. In Phase 2, PZ researchers supported the teachers experimenting with instructional interventions (including thinking routines, close looking, and perspective taking) and conducted focus groups to find out about lessons learned, pictures of practice, and instructional tools. Thinking routines were adapted from those developed by the original AbD project, using somewhat simpler language.

Focus groups revealed that teachers began to think differently about their students' abilities as makers and thinkers. They felt that their students demonstrated agency and independence, and that they engaged in deeper thinking, because they (the teachers) slowed down and gave students more time to develop their own ideas rather than the teacher making repeated suggestions.

For example, during a unit on inventions in Belle Liu's K3 class, students modified systems as part of a problem-solving activity – how to move a heavy object upstairs. One group of students decided to make an elevator to solve this problem. As they worked, they became familiar with the various parts and purposes of an elevator system: the floor, ceiling, and walls, the ropes, and the pulleys. They also became aware that parts of the system were not functioning well. Instead of giving up or relying on the teacher for answers, Belle's students used the "Reframe" making move (think, refocus, or re-define a problem, opportunity, or procedure; hack or repurpose how things work) to figure out how to hack their existing system to make it work better. After some trial and error, students successfully modified their system to make it work smoothly by using a different type of rope and attaching support ropes to the corners of the elevator. After facilitating this activity, Belle noted, "From this activity, students kept thinking and learned a lot about how to use a pulley to save energy. The [Reframe making move] helped them explore deeper."

According to Jennifer Cheng, a VEO leader,

We have excitedly observed our kindergarten students as they used screwdrivers to take their toys apart, analyzing how complex the inner workings are; or as they redesigned the Hong Kong MTR (Mass Transit Railway) system to be safer and more efficient for all citizens. Through maker-centered learning, we have seen our students develop important skills such as creativity, observation, problem solving, and collaboration – which will all be necessary for their future pursuit of school, work, and personal development.

The AbD framework is now a central part of the VEO curriculum, used throughout their entire network of schools. A full description of the work in Hong Kong, including many tools and resources, can be found in the *Maker Centered Learning Playbook for Early Childhood Education* (Clapp, Solis, Ho, & Laguzza, 2020, available [here](#)).

A Global Community of Practice

By now there is a global AbD community of practice with subgroups in Hong Kong, Australia, Chile, and Brazil. As a result, Edward, Jen, Jessica Ross, Shari, Andrea, Jeff Evancho, and Julie Rains (an educator from Michigan who has been a coach and co-instructor for the AbD course) have run about a dozen off-site PZ institutes all over the world (e.g., Australia, the Netherlands, South America, the UK), as well as conferences in Pittsburgh and Oakland.

A number of school districts have hired AbD researchers to work with educators: the Oakland County district in Michigan (not to be confused with Oakland, California!); the Troy district in the suburbs of Detroit (which funded a three-year project called Maker-Centered Learning for Media Specialists run by Mike Cottoni); and Bloomfield Hills, Michigan, which funded a project to use maker-centered learning to address issues of race and racism. At this time, Sheya (see above) was running Justice by Design in Detroit.

In the Edward's words, the ideas of AbD are "in the water."

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FOSTERING INNOVATION IN THE WORKPLACE (begins in 2020)

The next research area focuses on the development of the adult work force.

Chapter 50

Next Level Lab Projects

2020-2024

The Next Level Lab (NLL) was developed in order to raise the level of conversation in the field of Workforce Development. It focuses on how research in the learning sciences could benefit the workforce, now and into the future. The lab is the initiative of Tessa Forshaw (then an advanced doctoral student at Harvard and now a post-doctoral fellow in the lab and an expert in workplace learning), along with PZ's Tina Grotzer, the NLL Faculty Director, and Megan Cuzzolino, the NLL Project Director. Other team members include Chris Dede, a Senior Research Fellow at HGSE and faculty emeritus, Eileen McGivney, an Assistant Professor at Northeastern, and researchers Ashley Etemadi (now an Assistant Professor at University of Toronto), and Lydia Cao.

The lab engages in four areas:

- Mining existing research at the intersection of the learning sciences, cognitive sciences, neuroscience, educational technology, and career services
- Rethinking the framing and possibilities from existing research to develop new lenses on the problem space
- Developing and conducting research related to these new lenses
- Disseminating research to relevant practitioner and academic audiences

There continues to be a critical need for this work due to several factors: (1) job disruption and inequity due to the COVID-19 pandemic, (2) systemic racism, (3) discrimination by gender and disability, and (4) the disruptive forces of climate change that impact the world's most vulnerable people. (And as I write this, in March 2025, I would note the disruption that is around the bend with AI.) The lab was established in September 2020 with funding and collaborative support from Accenture Corporate Citizenship (ACC). ACC has played a key role in facilitating the grounded contexts of the research conducted by the lab.

Core to the work of the lab is the concept of Next Level Learning. Since the lab was established, the team has articulated the following core principles of Next Level learning. It assumes that learners are:

- agentive in their learning and in adjusting their contexts to support their learning and performance
- focused on developing flexible expertise that they can apply and transfer across contexts
- integrated emotional and cognitive beings with embodied minds who bring their whole selves to learning and performance

- informed and effective users of their own minds who regularly seek out information about how embodied minds work and leverage it in learning and performance
- cultural beings who reflect upon their own cultural and contextual assumptions, seek to be aware of those of others and consider how to navigate between and across cultural contexts

The lab has multiple projects completed and/or underway. Five of those are described below, followed by brief mention of others that are in earlier stages of progress.

The Next Level Learner Moves Project: Fast Fish Learning (2020 – ongoing)

The goal of the Fast Fish Learning Moves project is to help learners become more agentive in their learning by figuring out how their minds work. (See these [slides](#) for an overview.)

Why is it called Fast Fish Learning? Here is a quote from these [slides](#):

For years, scientists studying fish were puzzled. Fish could actually swim much faster and more efficiently than any of their fish models could explain. It wasn't until they put the model into water and studied the interaction between the fish and the water that things made sense. They came to realize that fish create vortices as they move to push off from. Suddenly the performance of fish made sense. Scientists understood how fish and their environment interact to enable "fast fish"!

At the center of this new model is the idea of a learner who attends to the contexts in which learning and work performance occurs. The project develops interventions that enable learners to become more metacognitive and thus more agentive.

For instance, one study offered two versions of a reflection survey to youth in a summer internship program. The fast fish version of the survey asked participants to reflect on the interaction between the self and the context and to plan for how they could modify their own behavior and their contexts in the future. The control version did not include this kind of reflection prompt.

Analysis of the survey responses found the following: while both sets of interns used the surveys to reflect on their learning contexts, interns in the fast fish group were more likely to reflect on the specific ways in which they adjusted (or failed to adjust) aspects of their work environment to support their learning and to think more expansively about the dimensions of context they might modify. The study findings indicate that reflection exercises can be effective when they include 1) specific guiding questions, 2) sample responses that provide a clear model of what quality reflection looks like, and 3) an explanation or rationale for why reflection is useful for supporting learning and performance.

More specifically, the differences between the two conditions reveal that prompts focused on contextualized agency are effective at directing the learner's attention to features of their context that can be managed and modified to best support their learning and performance. In light of these promising findings, the internship directors opted to implement the fast fish version of the survey program-wide the following summer, which gave over 100 interns across the country access to this reflection tool. The intern reflection survey and an accompanying supervisor checklist are available on the Next Level Lab website [here](#):

One study focused on what is called “amygdala hijack” – when implicit memories can take over our emotions, thinking, and behavior (see [here](#)). This can occur for all individuals but is especially important to understand for those who have traumatic memories. Ways to avoid amygdala hijack are discussed [here](#). The research found that teaching people about amygdala hijack and how to manage it, even in a brief intervention, results in greater awareness and ability to address it, and that those who learned about the fast fish moves were more likely to modify contexts than those who did not.

Experiences of Awe and Meaning at Work (2023 - ongoing)

Over the past two decades, the emotion of awe has become an increasingly popular topic in social science research. Evidence suggests that awe has a unique impact on individuals’ well-being, beliefs, and behaviors, in large part because the emotion evokes a sense of being connected to something larger than the self – not unlike the concept of Engagement as one of the 3 Es of Good Work discussed in Chapter 18. Though we often think of awe as a momentous, all-encompassing emotion that can only happen on rare occasions in one’s life – such as when we visit a natural wonder like the Grand Canyon or witness the birth of a child, milder forms of “everyday awe” also exist and can be elicited with greater frequency and less effort.

While most of the empirical research on awe has been focused on the personal realm, a small but growing body of research makes the case that these milder forms of awe also can, and should, be elicited in workplace contexts. The Next Level Lab seeks to understand how experiences of everyday awe manifest in work contexts, particularly those that have not been well-studied in the existing literature, and how these experiences may contribute to a sense of meaning and purpose at work.

In one study, a survey of 100 US workers across over 30 sectors, the NLL team found that the most common source of awe reported by respondents was observing inspiring behaviors or qualities of other people. Over half identified moments of awe that were driven by witnessing the strength, courage, dedication, kindness, and/or abilities of individuals they interacted with at work. Another common elicitor of awe was the perceived meaningfulness of the work or observing that one’s work has value and makes a difference to other people.

The main outcomes of awe experiences identified by participants were a new understanding or perspective on their work, as well as increased motivation, inspiration, and a sense of affirmation of one’s career trajectory. Nearly two-thirds of participants said their awe experiences helped them understand something new or made them think differently about their work. Many participants also described feeling validated in their career path as a result of their awe experience and said that these moments inspired and motivated them to strive harder at work.

The finding that awe was most commonly elicited by other people highlights the importance of prioritizing interpersonal connections at work and viewing others in the community as sources of knowledge and inspiration. The findings also point to the value of inviting reflection on “aha moments” in the workplace and cultivating a workplace culture in which workers feel secure in acknowledging gaps in their understanding and changes in perspective. A learning module on experiences of awe and meaning at work is available at this [link](#).

The Pedagogy of Modern Apprenticeship (2022-2023)

Apprenticeships are increasingly supported by policymakers and educational institutions. They constitute beneficial models for workplace-based learning, with potential for expansion into roles traditionally requiring a bachelor's degree. This model is gaining traction in the US, with over 800,000 apprentices in 2021. According to Department of Labor apprenticeship data, fewer than 1 percent of these apprenticeships were in digital-related fields, thus highlighting opportunities to align modern apprenticeships with digitalization needs. While beneficial, traditional apprenticeships often focus narrowly on skills without integrating learning designs for digital competencies. More contemporary apprenticeships require curricula that address cognitive demands rather than just technical skills.

The WorkLearn Project: Transfer in a Situated Context (2022 - ongoing)

The rapid pace of change – driven by COVID-19, technological advancements, and global challenges – is reshaping jobs worldwide. Workers must now adapt to a synergistic digital economy characterized by constant evolution and the need for agility. The traditional single-career path is fading, requiring individuals today to transfer skills and knowledge to new roles and tasks. The goal of this transfer project was to develop a new model of transfer of learning based on cognitive science, one that can be adopted to support those working learners and learning workers who are already in the workforce and facing disruption of existing jobs, roles, or tasks – or just being asked to take on novel ones.

Studying this phenomenon requires looking at environments where workers frequently transfer their existing skills to new types of work. Consulting firms offer this opportunity. They involve individuals who adaptively apply skill sets across different types of projects and manipulate their environments to set themselves up for success in each role. The researchers encountered dozens of stories of consultants who, in one year, managed to perform roles spanning an IT systems tester, private equity analyst, change manager, marketing strategist, and supply chain optimizer, with no formal learning during the transitions from one role to the next. Surprisingly, these environments often involve deeply situated, on-the-job learning and yet also foster far learning transfer. This co-occurrence reveals tensions in the conventional wisdom on learning transfer.

This design-based research study involved partnerships with two multinational consulting firms in order to understand how these firms prepare their workforce for work that is constantly changing and novel. The firms were intentionally different so that it would be possible to determine whether the same behaviors emerged regardless of the culture and norms of each organization.

This work evolved across three design cycles, with a continual focus on improving both the theory of transfer and the design of an educational intervention to foster transfer, as well as on working in partnership with consulting firms.

The first cycle involved 75 interviews across the two firms. These interviews lasted about an hour and were coded using inductive and abductive strategies that looked for codable moments. The researchers identified the features and practices that individuals exhibit when going through frequent and successful novel role transfers. While initially only looking for individual-level features and practices, it became clear that meso- and macro-features were also important to the experiences of the participants.

These features and practices were then taken into design cycle two, where a coaching intervention focused on improving meso- and micro-features and practices was developed and tested with

consultants transitioning into a novel project in business development. The participants' case studies in this design cycle revealed that the individuals who described a more positive managerial experience also mentioned that their manager performed more meso-moves.

Design cycle two highlighted a need to focus on the meso-level moves as the primary set of features to influence. Thus, design cycle three included an amended study design, new instruments, and updated coaching modules to align to the meso-focus.

Design cycle three, also conducted during a transition into a novel role in business development, revealed that a working learner's perception of the number of meso-level moves their "experienced others" complete is the only significant predictor of their belief in transfer. Additionally, those who received the coaching intervention had a higher final score on the novel project and discussed far more meso-level moves during interviews. Furthermore, portraits of team meeting observations of the groups also revealed that those who received the intervention performed more meso-level moves.

This study provides a new perspective on learning transfer at work – suggesting that such transfer is mediated by witnessing more experienced others transition to novel roles and tasks.

Project Overcome: Leveraging Immersive Technologies for Next Level Learning (2021-2023)

Talk about the Metaverse is in the air. Employers and educators may be wondering how emerging technologies like virtual reality (VR) can enhance learning and workforce development. Immersive technologies have a range of potentials for learning skills and dispositions, but there remains little evidence about their impact in real-life learning environments. To understand how these technologies can be used for workforce development and to support vulnerable jobseekers, NLL researchers partnered with Goodwill Industries International to study the VR program Project OVERCOME, developed by Accenture and Goodwill.

Project OVERCOME is a VR simulation that enables jobseekers who have been impacted by the criminal justice system to practice interviewing, discuss their past, and learn about others who have been in their situation. In 2022, more than a dozen Goodwill job training centers piloted the application in their reentry services programming, reaching more than 1200 jobseekers as of this writing in the fall of 2024. The NLL team partnered with these centers to study how this VR simulation was being used and the impact it had on the participants – through analysis of data across sites, as well as case studies.

Findings showed that the immersion and the realism in the VR program led participants to report that the experience was enjoyable and that they felt more confident. After using the program, there was a significant decrease in participants' negative emotions about their job search. Due to its brief use and because many participants did not engage with all parts of the simulation, the program was unlikely to impact more core dispositions or skills. These findings suggest the importance of clearly articulating the learning goals of VR interventions at the outset and focusing evaluation on how well these are being achieved. If the intended goal was to improve participants' emotions and anxiety, the tool was effective. However, the team concluded that to affect skills and dispositions, the program would need to be used often and over time.

Three other new and in-process projects are briefly described below.

Project LIFTUP: Leveraging AI for a Future of Turbulence, Uncertainty, and Possibility

As artificial intelligence and machine learning become more prevalent, workers must cultivate judgment and decision-making skills complementary to the reckoning skills of machines in order to meet the needs of – and thrive in – a 21st-century labor market. Examples of human judgment skills include decision making and negotiation under conditions of uncertainty, deliberation, and ethical deliberation. The specific goal of this project: to enhance current workforce training and identify possible ways in which employers can best support jobseekers from diverse backgrounds in honing job-related negotiation skills through an asset-based approach. Using interviews with diverse workers, the researchers analyzed the interaction of culture and negotiation and then leveraged the findings to develop authentic materials and curriculum for negotiations training in a workforce development context. The NLL Team has developed an online pilot module to teach negotiation skills (available [here](#)) and is currently seeking funding for testing its impact.

Regenerative Hope

How can we avoid despair when we are confronting the realities of climate change? Being able to function well at work and not lapse into despair requires finding hope. NLL Team members have defined a concept called Regenerative Hope for the workplace. Understanding the features of such hope and how it is generated should be helpful in building the workforce on a changing planet. A study on "regenerative hope" is currently being carried out. By interviewing professionals in mission-driven fields, the researchers are trying to understand how hope is renewed in the face of difficult work intertwined with seemingly insurmountable social issues. This research will guide interventions for green jobs workers, helping them foster and sustain hope as an antidote burnout and to maintain motivation.

EarthXDesign

Design in the workforce often focuses on Human-Centered Design (or UX Design). In this project, the NLL Team (including Tina Grotzer, Lydia Cao, and Sarah Montroll) worked with a broader lens – design for the planet, with a focus on sustainability, which they dubbed EarthXDesign. Information about this project's Earth Resonant Design Moves can be found [here](#).

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PART IV

FRAMEWORK CLUSTERS

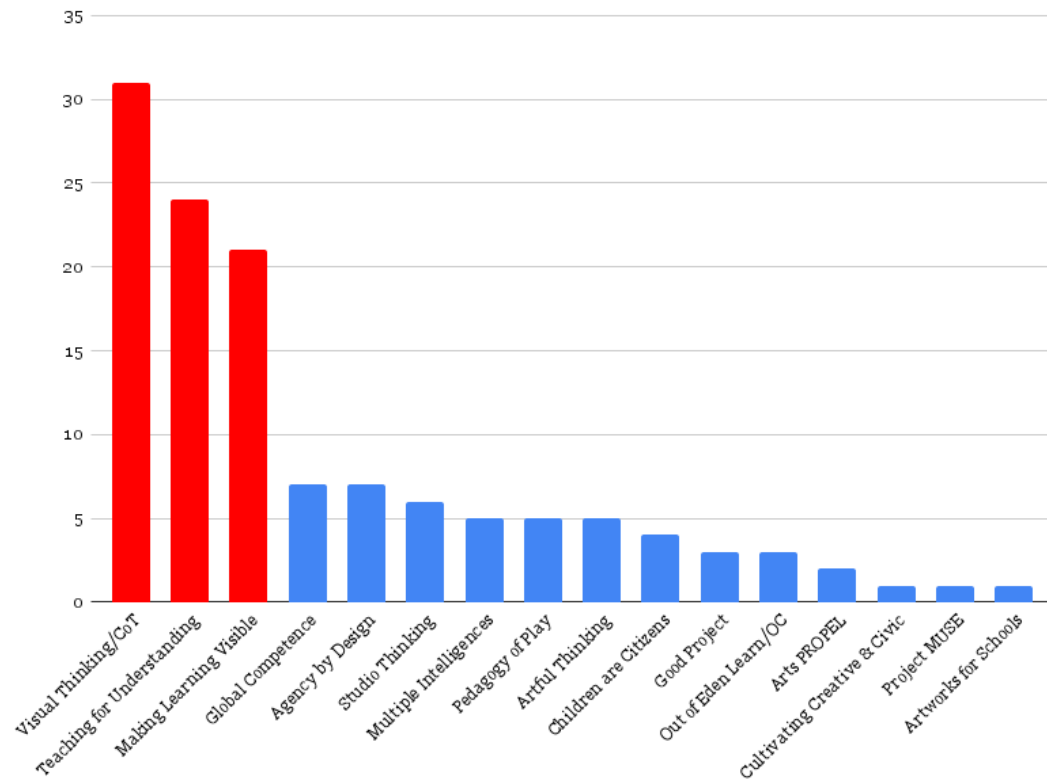
It is common for PZ frameworks to be used in clusters – demonstrating how educators build their own approach by combining the frameworks they want to use. This works well because PZ frameworks tend to complement one another. For example, as David Perkins and Jim Reese (2014) write, Visible Thinking/Cultures of Thinking complements Teaching for Understanding because it offers tools to develop specific kinds of thinking that promote deeper understanding of specific kinds of content. Making Learning Visible fits easily with Teaching for Understanding and Visible Thinking because its goal is to deepen children’s (and teachers’) understanding.

In Part IV, I profile schools, school networks, and other organizations around the world that have adopted clusters of PZ frameworks – with one caveat: I do not include cases in which thinking routines are used alongside a primary framework as a way of helping students dig more deeply into that primary framework. Instead these cases are to be found in the chapter focusing on that primary framework.

Part IV is organized as follows. I begin with individual schools, followed in this order by school networks, professional development programs, museums, and individual educators.

The chart below displays the frequency of 16 frameworks found in framework clusters (summed across 14 schools, 11 school networks, four professional development organizations, one art museum, and nine individual educators). As revealed, the three most frequently used frameworks in clusters are Visible Thinking/Cultures of Thinking, Teaching for Understanding, and Making Learning Visible (three of the four foundational frameworks, shown in red). Although Multiple Intelligences is also one of the foundational frameworks, it was seen far less often in these clusters – most likely because MI is an overarching idea rather than a practical framework with specific pedagogical implications.

Frequency of Individual Frameworks Found in Framework Clusters



Chapter 51

Nine Schools in the US

I spoke to educators at nine schools in the US that were saturated with PZ frameworks. Cambridge Rindge and Latin High School in Cambridge, Massachusetts, Sacred Heart School in Washington, DC, Presbyterian Day School in Memphis, Tennessee, Atrium School in Watertown, Massachusetts, Montecino Union School, Santa Barbara, California, San Francisco Day School, San Francisco, California, School within a School at Goding, Washington, DC, and Weston High School, Weston, Massachusetts.

Cambridge Rindge and Latin High School, Cambridge, Massachusetts ***TfU and MLV (with some SHoM)***

Joan Soble and Jennifer Hogue were both English teachers at Cambridge Rindge and Latin High School (CRLS). They first met in the early 1990s, when CRLS was still divided into “houses” that students could choose to enroll in. Jennifer was Joan’s student teacher in the Pilot School, a democratic, student-centered “house” close in spirit to the values of PZ. After the house system was eliminated, the school was divided into “learning communities” to which students were assigned. Joan and Jennifer went on to teach in several of these learning communities.

The student population at CRLS was bifurcated. Many students came from intellectual households and considered themselves successful students. But many also came from families experiencing some degree of financial stress whose parents did not have college degrees and/or for whom English was a second language. For a significant portion of this latter group, school had never been a place of success. Joan said that many of these students had learned the strategy of trying to be under the radar, thinking that the less they said, the less likely they were to get into trouble.

Around 2003, both Joan and Jennifer were invited to join a group of teachers working with Steve Seidel, Mara Krechevsky, and Melissa Rivard at Project Zero. The focus was on teachers using Making Learning Visible (MLV) at higher grades – up through high school and even at the college level. The CRLS teachers were interested in using MLV in conjunction with Teaching for Understanding (TfU). Joan had also been asked to critique a draft of the TfU Handbook. CRLS was using TfU to guide teaching and learning. The group met regularly at Project Zero for a number of years, often with dinner served. Extensive support was provided to group members as they were experimenting with both MLV and TfU. Jennifer said that the group aimed to “push forward the boundaries of what we know about education.”

Joan was the primary initiator and official support system for the use and integration of these frameworks into learning practice at CRLS, given that her job was to support professional learning at CRLS and Jennifer was carrying a full teaching load. But she and Jennifer worked hand-in-hand with the MLV project as experienced TfU classroom practitioners. Many CRLS teachers, Joan said, were great with strong students. But she saw the use, particularly of TfU and MLV, as a way to help teachers to become just as effective with less confident and more at-risk students.

Teaching for Understanding

Joan first used the TfU structure in the mid-1990s to improve her introductory course in writing for 9th graders needing to develop their expository writing skills. (A full description of Joan’s

journey in developing this course according to the principles of TfU can be found in Wiske [1998], Chapters 4 and 11.) These students thought of writing as something they could not do well enough to succeed in high school. Joan said that her job was “to help them transform their expectations of themselves” (Wiske, 1998, p. 91). She wanted to focus the curriculum on understandings about writing. Her PZ research partner for developing this course was Karen Hammerness, and Joan and Karen met weekly for several hours over the school year.

Joan and Karen developed a generative topic (“place,” both concrete and abstract), understanding goals (Joan’s fundamental goal was that students understand how to express themselves in writing), and performances of understanding. At a meeting with other teacher-researcher pairs, Joan discussed how to link skill development with performances of understanding. She realized that the skill of vocabulary development was related to her understanding goal, because vocabulary development encourages revision to enhance self-expression through writing.

Together with the other teacher-researcher pairs, Joan also discussed formative assessment, and she came to see that such assessments help students take more responsibility for their learning. She developed complex peer-editing sheets; helped students maintain their work in writing portfolios; and supported them in defining their personal goals for improving writing, and, at the end of each unit, to choose writing samples for their portfolios. For each piece, students wrote a cover sheet stating how the selection showed progress toward the goals they had set for themselves.

The most challenging parts of TfU for Joan were designing performances of understanding and designing ongoing assessments along with public assessment criteria (and she included her students in defining what should count as good writing). After one year of intensive work, TfU was so much a part of Joan’s thinking that she used the TfU framework to improve the literature courses that she taught, including a class designed to help the same group of 9th grade students she’d originally supported as developing writers to strengthen their skills as literary and analytical readers.

At the urging of the dean of the Pilot School, Joan introduced TfU to her Pilot School colleagues during their weekly common planning and professional development periods. Later, after the Pilot School no longer existed, she offered a five-week after-school mini-course (TfU Level 1) that CRLS teachers could use to fulfill professional development requirements. Joan realized the importance of having teachers self-select into learning about TfU. She also recognized the importance of presenting it as connected to other school priorities. By doing so, it would not be seen as one more thing to do, though she insisted also that the components of TfU be labelled with their original specific wording. Seven teachers joined: two math, two history, one Spanish, and two English teachers. During the weekly planning periods, teachers discussed their TfU plans and the challenges they faced.

In spring 1995, Pilot School students presented the performances of understanding they’d created in conjunction with their teachers’ new TfU learning in an open house at the school. Joan then prepared a videotape about TfU, featuring interviews between teachers, thus allowing them to show their understanding of TfU. TfU came to be seen by the school as a shift from a “skills deficit mode” view of students to an emphasis on developing student understanding. Joan was able to continue to offer individual consultation with teachers during the year, having been granted a course release for this.

In the mid-2000s, a block schedule was instituted CRLS-wide that lengthened classes to 90 minutes. The administration decided that TfU was the way to make the block schedule improve

student learning and outcomes. To prepare them to teach for understanding in the block, teachers were required to take two after-school 5-week mini-courses, several of which were taught by former Pilot School teachers who had learned the framework in the mid-1990s (for which they received either a stipend or credit toward next salary levels). After completing the TfU mini-courses, teachers were actually required to use TfU to plan their instruction in the new block schedule.

At around the same time that this shift to the block schedule was being planned, Jennifer was realizing that the things she was doing in class were not aligned to what she wanted the students to understand. She realized how challenging it is to come up with a strong understanding goal and then to be able to articulate this to the students. Sometimes it took her many iterations of teaching the same class to get it right. She ultimately came up with the understanding goal that writing is improved by multiple drafts. She tells this to students at the beginning of class, and by the end of the class, after revising multiple times, they get it.

Resistance to TfU in the mid-2000s. Joan explained that many CRLS teachers had themselves attended traditional schools – often parochial schools – with authoritarian teachers, and they trusted and taught in the way that they themselves had been taught. These teachers were often bothered by the idea of performances of understanding that showed progress toward understanding because of their own orientation toward identifying right or wrong answers (though there were the levels, or dimensions of understanding, to help them understand this issue (discussed in Chapter 4). The English teachers Joan found most challenging were those who viewed their role as correcting student grammar rather than developing student thinking. She also said that some math teachers really grasped the idea of understanding existing along a continuum, but initially found it challenging to come up with performances of understanding in math. Once teachers began working together, however, the idea of performances of understanding really took off, as collaboration helped teachers to envision demonstrating understandings on something other than a test.

One way around these forms of resistance, Joan said, was teacher groups meeting together to share their practices, asking one another “Is this a performance of understanding?” Often it was. In conversation with the librarians, the question of how a book report could become a performance of understanding was discussed extensively.

Likewise, some administrators had difficulty with the idea of performances of understanding. Joan felt that had each administrator co-planned and co-taught a TfU unit with a classroom teacher, they would have more quickly come to appreciate the nature and power of understanding performances – and would have been better able to support the teachers they supervised as they developed facility with Teaching for Understanding.

Making Learning Visible (MLV)

The other major influence of PZ at CRLS, in addition to TfU, was MLV. Jennifer spoke about how TfU and MLV “completely go together.” Why? Because, she asked rhetorically, “how do you know what students are understanding without documenting their process?”

As described [here](#), after 25 teachers from CRLS attended the PZC over two summers in the mid-2000s, a number of them, including Joan and Jennifer, formed themselves into a learning group in which the pedagogy of listening, so central in MLV, was at the core. Interested teachers identified a focus question for faculty and students: “What did it mean to listen to learn and what did it mean to

learn to listen?” The teachers in that group quickly realized that they themselves were not so good at listening, and they tended to judge students by what they said, rather than by how they listened.

As the group leaders, Jennifer and Joan transparently employed MLV practices with their fellow teachers – presenting “provocations” and inquiry questions, and documenting what teachers said as they were grappling with these difficult questions and challenges. After each meeting, the teachers went back to their respective classrooms, tried things out, and returned with examples to discuss. Sometimes members from Project Zero filmed teachers’ classes, bringing the film back to the group to discuss. The group leaders were frank. Jennifer recalled Steve Seidel once telling in response to a new idea she suggested, “No, that’s not going to work.” She talked about the power of having like-minded people to bounce ideas off of. She described her years in the group as inspirational, mentioning the intellectual and emotional support it provided. She said that it is only when teachers are learning that positive transformation can take place.

Thinking about a pedagogy of listening really changed things, Joan said. One teacher did an exhibit called “Listening at 15” in which she quoted extensively from students whom she interviewed in order to model the idea of good listening. Teachers learned to listen for important learning moments that fly by quickly, to document them in writing, or audio, video, or in notes right after class, and then show them back to the class. Surprisingly, when teachers joined “listening and learning groups” across disciplines, they often felt they learned the most from teachers in a different discipline from their own.

In the mid-to-late 2000s, teachers learning to use MLV had access to an instructional support coach for their subject area to support their learning. In some classrooms, students were sometimes designated as the documenter for the day. Sometimes students just wrote down things that they noticed and found interesting. Later they were asked to look at their notes and think about what should be talked about more and which things they wanted the class to return to.

Joan incorporated MLV in her AP English language literature class. She asked students to reflect on the topic of human “greatness.” Students discussed what this term meant to them and discovered that they did not all share the same perspective. Some thought it had to do with moral greatness, others with great achievement. Some thought every person could be great, others thought greatness could only be achieved by some. Joan noticed that the students did not seem to be listening closely to each other to really grasp others’ perspectives. She wanted to get her students to engage more deeply with each other’s ideas. And so students were asked to interview one another and then write short essays about each interview. The interviews were video-taped. Watching the videos helped students take each other’s viewpoints seriously. Eventually students were able to come up with fourteen kinds of statements about greatness.

The videos had made their thinking visible, and students said that the class taught them how to think. Students deepened their own thinking by attending to others’ ways of thinking about the topic. “We learned a lot more about the thinking process and about how to learn...how you sort of go about thinking about something,” one student said.” A description of this class (and the comment I just quoted) can be found in Chapter 3 of *Visible Learners* (Krechevsky, Mardell, Rivard, & Wilson, 2013).

Teaching exhibitions. In 2007, this collaborative learning of the teachers who had attended the PZC culminated in a public exhibition representing all of the learning communities at CRLS. This exhibition (and the later ones that followed) made teacher learning visible. TfU also played a role

because teachers viewed these exhibitions as their performance of understanding – where teachers showed their understandings of innovative ideas, often in classrooms in which instruction and assessment were designed with the TfU framework. These exhibitions not only showed teachers’ understanding, but they also “pushed our learning,” Joan said.

Every year for the next six years, more such teaching exhibitions were mounted and were kept up for about five weeks – where teachers showed what they had taken away from the PZC and what they had learned from experimenting with new PZ frameworks in a supportive environment at CRLS. Teachers met for eight two-hour workshops to prepare for each exhibit, and two more after the opening. All of this was overseen by Joan until she retired in 2014. Teachers involved in these exhibitions ranged across the learning communities at CRLS and across the disciplines: Spanish, English language learning, history, math, science, special education, and one orchestra teacher. One year a dance teacher came to Joan asking for help in getting her students to give more useful critiques, and this became one of the exhibits.

Over 200 faculty typically came to see the exhibits, some multiple times, including some from other schools. An exhibition entitled *Listening to Learn, and Learning to Listen* centered on the CRLS-wide overarching question “How can listening better improve teaching and deepen learning at CRLS?” The exhibiting teachers also solicited responses from their colleagues in the form of post-it notes.

What has stayed with Jennifer ever since is the importance of the pedagogy of listening, as well as learning to ask the right questions. These were things she said she had never been taught in her education classes. She spoke to me about the power of really listening to students. For example, she thought that one student was unengaged, but when she documented what he had to say to the group, she realized he actually had a deep understanding.

When asked about the effect of MLV and TfU on student learning, Jennifer said that when students listen to each other (rather than just listen to the teacher), this inclination creates a strong, safe, and supportive classroom community. Everyone in the group feels valued and heard, and so students feel able to open themselves up and take risks. Nowhere in the national or state standards do you ever hear anything like this, she said. And parents loved it, because when they met with her, they realized how much she knew about the thinking of their child.

Support from Project Zero was seen as crucial for practicing both MLV and TfU. So was support from the school, which provided time for teachers to reflect together. Thanks to Joan Soble, a former English teacher at Cambridge Rindge and Latin who became in charge of professional development, the school created a collaborative space for teachers after school and also arranged for teachers to get professional development points for participating. After Joan retired, there was no longer support for structured time for teachers to work together, and the focus on MLV and TfU at the school is no longer present – despite the strong conceptual level of the teachers at this school.

As the high school became more regimented, with an emphasis also on quantitative data-driven teacher evaluation, Joan said, there was less flexibility in the curriculum, and this was in tension with their listening work.

What remains? Joan asked two former colleagues at CRLS the following question: *What PZ ideas are alive and well and in action at CRLS these days?* Deborah Milligan, photography teacher replied as follows:

I'm not in very many other classrooms when people are teaching, but I do talk with my colleagues a lot and particularly I talk with my 20 colleagues in the Visual and Performing Arts Dept. about curriculum, values, methods, etc. Our department uses a lot of PZ ideas and language in their curricula but also in both formative and summative assessments.

I mostly use inquiry questions during critique and continually all semester in my AP 2-D Art and Design (emphasis on Photography) class. The inquiry questions are the most talked about thing over the semester and we basically use the language that I learned when working with understanding goals. There's a lot of "Why" questions. I do this so that students can figure out WHY they are studying, learning and doing what they are doing, WHAT we are thinking about, WHERE we are headed, and HOW to dig deeper. I find it promotes agency, deeper thinking, and engagement.

My colleagues use PZ thinking routines often to help engage students around critiques. We have protocols in Professional Development meetings and I'm so glad that I took Tina Blythe's course, and also Doug McGlathery's course. I co-taught one with him [Doug] using protocols because I am a big believer in them and try to hold the groups I participate in responsible for the ways they are supposed to be done (timing, kinds of questions at what point, endings, etc.). There tends to be a skipping over of parts, or not timing parts of the protocols which makes them sloppy and not as powerful. But they are used in almost every meeting that the Learning Communities have and sometimes in all school meetings in shortened versions.

So that's my take on what's happening at CRLS around Project Zero ideas. Making Learning Visible is used by colleagues in the Visual and Performing Arts department. We had a professional development day at the Museum of Fine Arts and they used a MLV routine and everyone there from the Visual and Performing Arts Departments in the Cambridge Public Schools seemed familiar with MLV.

Joan also recalled a course as recent as 2022 that made use of TfU. This was a course taught as part of the Kimbrough Scholars Program, where CRLS students were with Northeastern University's Civil Rights and Restorative Justice Project. The students researched (in Cambridge and on site in Mississippi and Florida) cold cases of racial violence from the 1920s-1960s to see if there might be civil suits that could still be prosecuted. Included in this program was a history course designed with Teaching for Understanding. It was taught by Kathleen FitzGerald (one of the CRLS teacher learning exhibition teachers), Diane Tabor (a former PZC faculty member and retired CRLS teacher), Poppy Milner, Larry Aaronson, and Janet Moses. Joan, who was by then retired, helped them develop their understanding goals and to critique some of their performances of understanding.

Sacred Heart School, Washington, D.C.

Multiple Intelligences, Visible Thinking/Cultures of Thinking, Making Learning Visible, Artful Thinking, Children are Citizens, Agency by Design, Justice by Design (small project not reviewed in this report)

The Sacred Heart School in Washington DC is a member of the DCPZ network described in Chapter 55, a network whose schools have adopted CoT/VT and TfU. The Sacred Heart School has adopted many other PZ frameworks as well.

Sacred Heart is a Catholic school that primarily serves low-income Hispanic students from pre-K through grade 8. Though it is an independent school, many students attend for free due to a DC voucher program. I spoke to Elise Heil, the principal, to learn about how her school became imbued with PZ ideas.

Before she became principal, Elise was a teacher at the same school. Her principal at the time, Stephanie Margetts, had worked in international schools, and she believed that the PZC offered the best possible professional development. And so she sent Elise to this conference in 2011. There Elise met Jim Reese. She returned again the next summer, the year when Jim pulled 40 DC area educators into a room and invited them to join a network of DC schools. Elise joined and has been working and growing with Jim Reese ever since. Elise became principal of her school in 2015.

Elise told me that when she attended her first PZC, she was “awestruck” and felt it was a powerful idea to have teachers be treated as researchers, developing their own inquiry questions, and becoming students of their students. She learned that the elite independent schools in Washington, DC, such as Sidwell Friends and the Washington International School, were using PZ ideas, and she felt that if this is the kind of education our “future leaders” are being given, she wanted that for Sacred Heart students, too. Elise Heil replaced Jim Reese as Director of the DCPZ network in 2025. Elise has been going to the PZC regularly and is now on the faculty. For the past two years she has been leading a learning group of school administrators, working with Wayne Walters, superintendent of the Pittsburgh Public Schools.

The school uses many PZ frameworks, as described below.

Multiple Intelligences

The themes Elise encountered at the PZC changed her mindset. First there was the idea of multiple intelligences. This worked against the prevailing idea that low-income students are behind in their test scores, leading teachers to teach to the test. Instead, she felt that while her students may have been below average in standardized test scores, they were bright, curious, and had good ideas. She knew they needed more than test prep!

Making Learning Visible

Elise was also influenced by the ideas she encountered at the PZC about the Reggio approach to documentation of student learning.

Artful Thinking

From there, Elise started to look for frameworks. The first one her school tried was the Artful Thinking palette. This was an easy fit because the DC area is filled with great art museums including the National Gallery, which was already using this framework. Artful Thinking gave them a “language for thinking.” The school did a lot of the See-Think-Wonder routine for one full year. This led to a shift among teachers. They felt this was enjoyable. They felt they were making their students’ thinking visible. They enjoyed listening more and talking less. What they heard fueled their beliefs about their students being insightful.

Visible Thinking/Cultures of Thinking

Elise was struck by David Perkins’ insistence that if you want students to learn baseball, you don’t teach them about the game, you have them play the game, as David Perkins (2010) has argued in his book on “making learning whole.” Elise realized that students needed opportunities to think, explore, and create in order to become thinkers, explorers, and creators themselves. And so she

and her teachers began to incorporate the other kinds of thinking routines developed by Ron Ritchhart. They used his “understanding map” of thinking moves important to understanding which thinking routines to use – observing closely and describing what’s there, building explanations and interpretations, reasoning with evidence, making connections, considering different perspectives, capturing the heart and forming conclusions, wondering and asking questions, and uncovering complexity and going below the surface (Ritchhart, Church, & Morrison, 2011, pp. 11-13). They gave parents thinking routines to try at home, and parents discovered a way to have easy conversations with their children about books they were reading, among other things. Thinking routines were, simply put, very accessible to teachers, students, and parents.

Children are Citizens

After Jim Reese hosted an event about the Children are Citizens project, this program also became hugely influential at her school. Her students like participating in the world as citizens by thinking about what is happening in the world now. Jim’s network of schools all worked on this, and the National Gallery of Art hosted a display of their work.

Agency by Design: Making Across the Curriculum

When Elise encountered Making Across the Curriculum (at a PZ Perspectives conference in San Francisco, California), she asked Edward Clapp how to incorporate making without a budget for a wood shop and 3-D printers. Making Across the Curriculum (discussed in Chapter 49) is a spin-off from Agency by Design. Edward showed her that she could use broken computers, iPhones, and TVs and have students take them apart to study them, using the thinking routine of Parts-Purposes-Complexity. He also encouraged her to have students make things out of foil. With this material, students were asked to engage in metaphoric thinking – e.g., making something to represent an abstract idea.

Elise believes that her school can easily add new PZ frameworks. This is because the foundation is now in place, with multiple intelligences, the Reggio idea of 100 languages of children, thinking routines, the social justice work and, in general, putting students at the center.

Learning groups at the PZC are a collaborative learning experience in which members think about what PZ ideas could look like in a school. On the second day, members develop an inquiry question. As mentioned in the introduction to this report, Elise told me what a powerful idea it was to have teachers be treated as researchers, developing their own inquiry questions, and becoming students of their students.

I asked Elise whether there has been full buy-in at her school. She said that the main criticism she gets from district level leaders and other principals is “How do you know kids are learning? Where are the data?” It is her intuition that seeing the documentation of children’s learning convinces people that important learning is going on. She also explains to parents that the thinking dispositions they are trying to develop in students will lead to success in life and are more important than test scores.

I asked her about art in her school. She said that in some schools she has visited, all of the student artworks on the bulletin boards look the same, with, for example, identical rows of penguins. In her school, this is avoided. Students make their own representations of penguins, and each one looks different. This must be due to the culture of the school – putting children at the center.

Presbyterian Day School, Memphis, Tennessee

Visible Thinking/Cultures of Thinking, Teaching for Understanding

The Presbyterian Day School (PDS) serves a population very different from that served by Sacred Heart. PDS is an Christian school in Memphis, Tennessee, enrolling boys from the age of two through 6th grade. This school has been deeply transformed by Project Zero, as I learned from Lee Burns, head of school (2000-2014), Susan Droke, assistant head for teaching and learning (2001-2015), Emily Lequerica, director of research and innovation (2022-), Alice Parker (Wilson) , one of the teacher-leaders (1997-2018), Jamie Baker, executive director of the Martin Institute for Teaching Excellence, Laura Dearman, director of the Martin Institute's apprenticeship program, and Julia Porter Foxworth, one of first residents at Martin Institute.

PDS underwent a transformation under the leadership of Lee Burns, Susan Droke, and Debbie Isom Todd (Head of Early Childhood), shifting from a traditional, teacher-directed approach to a more progressive approach which is now fully ingrained. The school became less textbook driven and developed a more learner-centered approach, with teachers as guides rather than directors. Shifting the focus from teaching to learning sparked the rest of the changes.

It all began with Lee Burns attending HGSE's master's program in educational administration. There he learned about the work of Howard Gardner and David Perkins and was challenged to think broadly about learning and education. When Lee became head of PDS a few years later, he introduced teachers to some of the ideas he had encountered at Harvard. At first, he experienced push back: people were stuck in their ways and did not see the need for change.

Lee then began to research PZ, and he was able to raise funds from a generous donor to start sending teachers to the PZC. Alice Parker (Wilson) was one of the teachers in the first group to go, and she remembers Lee telling the group to be the school's eyes and ears and to think about how what they learned at Project Zero might change PDS. This first group of teachers came back and started enthusiastically sharing what they had learned with their colleagues. Assistant head Susan Droke went with a group of PDS teachers the next year and felt that this was the best professional development she had ever received. Over the next several years, Lee sent the entire faculty to the PZC, and he went along as well. He said that the teachers felt honored to go to Harvard (all expenses paid!). Having been treated as professionals at the PZC, they felt invigorated and excited to be teachers.

Changes Made

The school did not change on a dime without a lot of hard work. On the plane home from the PZC, Susan Droke told the teachers that their new goal was to implement what they had learned, asking her teachers to think about "what we are going to do about this." And it turned out that thinking routines were the gateway for teachers. Below are the other new practices that were implemented by Susan:

Making thinking routines prevalent. Teachers met together to think about how thinking routines could be used in each subject area. Eventually all of the teachers developed a shared vocabulary – bringing teachers together. Susan began to use thinking routines regularly in faculty meetings, and soon teachers also began to do the same in their classrooms.

No more mindless activities. One of the first changes Susan made was to convince teachers to eliminate activities that did not cause students to think and to reflect about how to develop a

culture of thinking at the school. By using a PZ lens to examine their curriculum the teachers started to realize that some of their units (like a unit on Johnny Appleseed) did not encourage their students to think deeply and make connections. They also started to see that some projects they had assigned for many years (like making dioramas) did not assess understanding.

Classroom visits from Susan. Susan would regularly visit classrooms. In advance she would ask the teachers to tell her *not* what they were going to be *teaching* that day but rather what the students were going to be *learning* that day. This, she said, led teachers to think about redesigning instruction. During these visits she often modeled the use of thinking routines.

Visiting other teachers' classrooms. Teachers were given release time to visit others' classrooms, allowing them to discuss the learning that they saw going on. In addition, once a week all classroom teachers had lunch together in a room where they could talk (with their students covered by specialist teachers). At these lunches, Susan asked them what they were doing that week reflecting what they had absorbed at the PZC.

Time to reflect together. Teachers at PDS now have time weekly to reflect and plan with one another.

Teacher journals. Susan asked teachers to keep a reflection journal that no one would ever check. At the end of the year when she met teachers individually, she asked them to reflect on what they saw in their journal about how they had grown.

Formative assessment. PDS teachers built formative assessment into their teaching practice, and report cards were changed from letter grades to mastery assessment. It became clear that this kind of assessment provided students, teachers, and parents better, more targeted and individualized information than a single letter grade.

Visible Thinking/Cultures of Thinking

Two PZ frameworks can be seen at PDS today: Visible Thinking/Cultures of Thinking is the most pervasive one. In addition, Teaching for Understanding is used in the social studies curriculum. Because Visible Thinking was not just used as a tool to support TfU, but had a very independent life of its own, I include PDS in this chapter rather than in the TfU chapter, Chapter 6.

Today thinking routines are “part of the school’s DNA.” On the school website:

Across all subject areas, PDS boys are asked to participate in thinking routines and make their thinking visible by using oral and written language to describe their own thoughts and the thoughts of others. Boys work together to research, evaluate, analyze, and synthesize their ideas.

Importantly, Susan reminded teachers often that thinking routines can become mindless activities unless they are aware of the kind of thinking they are trying to develop with each routine they use.

Among the most commonly used are: See-Think-Wonder; I Used to Think, Now I Think; What Makes You Say That; Tug of War; Looking: Ten Times Two; Sort it Out; Sentence-Phrase-Word; 3-2-1 Bridge; Question Starts; Headlines; Claim-Support-Question; Think-Pair-Share, and Circle of Viewpoints. New teachers learn these practices by observing seasoned teachers using the routines. In the EDGE Design Studio, students from 2nd grade through 6th grade actively used the Ladder of Feedback, a protocol first introduced by David Perkins for listening and responding to others' ideas

or presentations. According to the protocol, participants first ask clarifying questions, then say what they like about it, then state some puzzles, and finally make suggestions.

Parents reported that students came home and taught thinking routines to their parents – like See-Think-Wonder, or asking their parents “What is your support for that claim!?” Teachers overheard students outside of the classroom asking, “What makes you say that?” or “Tell me more,” unwilling to accept one word answers from their peers.

Emily Lequerica told me that teachers felt that thinking routines were like magic. They get students to feel valued and get even the quietest ones to talk. They also reveal higher level thinking than might have been expected by these young students. The routines made students more collaborative, communicative, and creative in their thinking, and they familiarized them with different points of view.

Teaching for Understanding

Teaching for Understanding is used in the social studies curriculum, which was reimagined by the Teaching and Learning Committee. Susan Droke facilitated this committee, which served as the think tank/vision team for the school’s academic program. Teachers at each grade level agreed on a broad theme and set of seven essential questions (throughlines) that guide their social studies curriculum. All of the inquiry is carried out through the lens of these themes and essential questions, shown below.

Social Studies Grade Level Theme

Cooperation: Pre-K, Junior K and Senior K

Similarities and Differences: 1st Grade

Connections: 2nd Grade

Systems: 3rd Grade

Innovation: 4th Grade

Perspective: 5th Grade

Conflict: 6th Grade

Social Studies Essential Questions Across Grade Levels

Who am I?

Why is where important?

Why is when important?

How does change affect our world?

How do you know if you weren’t there? (This led to the introduction of primary sources.)

Why doesn’t everyone think the same way?

What does it mean to be a global citizen?

Performances of understanding are used for assessment. For example, every year there was a unit on US presidents. Prior to the PZC-inspired school changes, students picked a president’s name out of a hat and dressed up as that president for a day. Susan Droke wanted the teachers to look at this unit in a different way: It needed a redesign to reflect a connection to big understanding goals. The teachers changed the project so that it had an understanding goal – what it takes to be a great leader. The book, *What Are Presidents Made of* (Priven, 2004) served as a springboard for deeper conversations about leadership and presidents. Students had to learn about leadership and about their president both by reading and by interviewing leaders at PDS. They then had to rate their

president on various dimensions of leadership – thus applying what they learned about leadership to the specific case of their president. A genuine culminating performance of understanding!

Spreading the Wealth: Martin Institute for Teaching Excellence

Lee Burns wanted to spread these new practices more widely, as did the donor who had funded all of the teachers going to the PZC. Thus was born the Martin Institute for Teaching Excellence, whose goal was to share with local public school teachers what the PDS teachers had learned. The institute at first held summer conferences for about 100 local Memphis teachers. The conferences were soon opened up to teachers from across the US, with participation of up to 300 educators. Alice Parker (Wilson) told me that people from Teach for America came to learn about thinking routines at the institute.

A residency program of the Martin Institute at PDS invited five or six teachers a year to spend a year at the institute, where they participated in the following activities:

- Observing and teaching classes
- Attending a weekly seminar to discuss instances of thinking observed
- Helping facilitate seminars for teachers from the “New Teacher Network,” – open to local teachers in their first 3 years of teaching
- Running a summer conference open to the public presenting PZ frameworks. One year 755 people attended from 13 states and two countries (Japan and the UK).

The Martin residents then found positions in other schools in Memphis where they could bring what they had learned about the “PDS way.” These teachers were highly sought after and some were even hired during the second semester.

Julia Porter Foxworth, now a principal at Columbia Primary School, said that the Martin Institute made her who she is now as an educator. Thinking routines, she told me, give her the tools to have an equitable classroom. Students who could not read could nevertheless think, and she drew them out using routines. Thinking routines also help her teach writing: By questioning students about what they were trying to say, the routines made the writing process visible. When working with a student on writing she uses routines including What Makes You Say That, See Think Wonder, Think Puzzle Explore, Tug of War, and Headlines. At the end of our interview, she said that I had reengaged her with thinking about PZ ideas, and I encouraged her to think about sending some of her teachers to the PZC.

Because of the number of conferences run by PDS, both those of the Martin Institute and a PZ institute PDS hosted in 2014 (called How and Where Does Learning Thrive), a large number of people came to PDS and could see something of what was going on there. All PZ Institute participants were able to sign up for classroom visits.

No evaluation of the Martin Institute was carried out, but Jamie Baker heard from many teachers who came back year after year to the Martin Institute summer conference, and these teachers reported that the conference had changed their world view and their basic assumptions about teaching and learning. Jamie said she had a hunch that this had an “under the iceberg effect” and that it would not be possible to “unknow” something that had such a profound impact.

Unfortunately the Martin Institute no longer exists. Lee Burns retired and (as so often happens with leadership change), the new head of school had other priorities.

Ingredients for the Whole School Change at PDS

Three ingredients were needed for the kind of whole-school change seen at PDS.

- Leadership that really believed in these new ideas. Lee Burns was described as “the kind of leader that makes things so challenging you almost want to quit but so exciting that you can’t.”
- Getting the whole faculty on board. Thus it was very important that the entire faculty attended the PZC.
- Holding teachers accountable for making changes. Teachers were given additional professional development opportunities to ensure that they used the best practices of Visible Thinking and Teaching for Understanding.

Atrium School, Watertown, Massachusetts

Multiple Intelligences, Visible Thinking/Cultures of Thinking, Teaching for Understanding

Liz Caffrey teaches math at the Atrium School, an independent, progressive school in Watertown, Massachusetts. She attended the PZC around 2006 or 2007 and has been influenced by the following PZ approaches:

Teaching for Understanding and Making Learning Whole

Liz’s biggest takeaways from the PZC were throughlines and whole game learning – both aspects of Teaching for Understanding and Making Learning Whole (related to TfU, as explained in Chapter 4). After encountering PZ approaches, Liz decided to frame her math classes with these four essential questions as understanding goals:

- What is math?
- What is the pattern and how many ways can I represent it? (*because one is always looking for patterns when doing math*)
- How is math connected to the world around us?
- How am I a mathematician?

These are big questions, and they aim to teach students the “whole game” of math rather than isolated parts. They also aim to engage students by giving them questions worth understanding, and by showing them how math connects to the real world of their own experience. At the start of 6th grade, her students have a limited understanding of these questions, responding to the “what is math” question by saying, for example, that “math is a way of calculating the answer to a problem with numbers.” By the start of 8th grade, after two years of Liz’s teaching, students have a deeper understanding of math and respond with definitions such as these: math is a lens; math is a question not an answer; math is a guide to learning about big ideas.

After hearing Dave Perkins talk about whole game learning, Liz changed her teaching so that all of her projects revealed how math applies to the real world. For example, when teaching about ratios to 6th graders, she created The Absurd Dolls Project. Each student selects a doll with absurd proportions (either one they brought from home or one that Liz shows them from what she found online) – like a He-Man doll, or an LOL doll (Google them and you will see they both have exaggerated proportions).

Students measure their doll's ratios (e.g., waist to hip, waist to shoulder, head to body, etc.). They then scale the dolls to their own height and compare the doll's ratios to the ratios of their own bodies, thereby recognizing how absurd their doll's ratios are. They then write a critique to the toy company behind their doll, asking for more realistic kinds of dolls. Some of the toy companies even write back.

Liz's test at the end of 8th grade is framed around her four essential questions. For example:

The what question: What is algebra? What is it that connects all of the topics we have explored this year? You may give examples, add diagrams, etc.

What is the pattern and how can I represent it? She gives them a partially filled in table of values and asks them to fill in the rest to create a pattern that is a) linear, b) exponential, c) quadratic (c is a bonus). Then find the domain, range, and equation for each function you created. Prove that it works by plugging in 2 points into each equation.

How is math connected to the world around us? Students are given a graph (e.g., one showing Covid spread) and are asked what they notice, what they wonder about, and are then asked to analyze the rates that they see in the graph.

How am I a mathematician? She provides students with an answer and asks them to create the question for that answer.

Liz is well aware that her approach is very different from how most students are taught math, including her own students before they enter her classroom. Typically, students are taught the skills but not the concepts. For instance, slope is about rate of change. But what students learn about slope is typically how to calculate it, without being taught to grasp this concept.

As discussed in Chapter 6, some teachers find it difficult to implement TfU. Liz told me that grasping the essentials of TfU is difficult at first and teachers need time to reflect and reconfigure. She was fortunate that in her first position, her mentor was a progressive math educator and she got on the job training in this kind of teaching even before coming to the PZC..

Entry Points (from MI)

Students learn to see math patterns everywhere, and Liz finds that the idea of pattern provides an artistic entry point for students who lack math confidence. The idea of entry points comes from Howard's work on the educational implications of multiple intelligences theory, as discussed in Chapter 4. Liz started thinking about entry points when she was teaching middle school in a heterogenous classroom, causing her to focus on differentiation.

Rubrics for Assessing Learning

After attending a workshop led by Heidi Goodrich Andrade at the PZC on rubrics (see Chapter 28)), Liz began to design her own rubrics. She was struck by Heidi's point that each category should include accurate descriptors and not sound the same as the others. Whenever she used rubrics, students used them as well to self-assess and to peer assess. For each assignment, she walks through the rubric with the students and explains what each level would look like for that assignment.

Visible Thinking/Cultures of Thinking

From Ron Ritchart's PZC session on Making Thinking Visible (see Chapter 4), she took the See-Think-Wonder routine which she now uses. She told me that Notice-Wonder has become very popular in the math teaching world, with [Annie Fetter](#) being one of the most well-known proponents.

Here is an example of how Liz uses a Notice-Wonder routine: "We start by watching a video or looking at some data – something visual. For example, in our Oreo investigation, I show them nutrition labels for regular and Double Stuf Oreos. Then I ask students what they notice and wonder. They notice so much! Once they have brainstormed lots of questions, I say "What would be a mathematically interesting question to explore?" They usually want to examine exactly what I hope they will (a well-chosen task is critical here), and they are really engaged in figuring out the answer. (So Act 1 is the hook, Act 2 is the investigation, and Act 3 is the reveal – it's supposed to be like a good movie!) In the Oreo investigation, they usually end up asking "so are Double Stuf Oreos actually double the "Stuf" compared to regular Oreos? They investigate this using different methods: weighing the cream in each cookie, finding the volume of the cream, etc."

Montecino Union School, Santa Barbara, California

Teaching for Understanding, Visual Thinking/Cultures of Thinking

Anthony Rani and Nick Bruski are the leaders of the K-6 Montecito Union School in Santa Barbara, CA. Anthony is the superintendent of the Montecito Union School District, a one-school district, and Nick is the principal of the Montecito Union School. Their school is grounded in PZ's reflective, inquiry-based frameworks – specifically Teaching for Understanding, Cultures of Thinking, and Making Learning Visible, all with the goal of nurturing critical thinking, student agency, and authentic engagement across grade levels.

Nick's journey with Project Zero began the moment he joined Montecito Union. He joined a cohort of forty staff members who collectively committed to embedding Project Zero ideas into the school culture. Anthony also attended the Summer Institute. What sparked his initial excitement was the clarity and structure that thinking routines offered. Nick and Anthony have led their school in treating Project Zero not as a toolkit but as a way of thinking.

Teaching for Understanding and Visible Thinking/Cultures of Thinking

The Teaching for Understanding framework undergirds curriculum design, supporting generative topics and deep, performance-based assessments.

Nick described a 5th-grade social studies unit where students use the Peel the Fruit routine to analyze the Boston Tea Party. "It helps them get beyond names and dates," he said, "and into the core questions—what was this really about?" Students across the school are regularly prompted to explain their thinking, engage in critique, and apply their learning to real-world contexts.

Professional development plays a central role in sustaining this work. Every teacher attends the PZC, many more than once. In addition to intensive pre-service sessions, the school holds monthly staff meetings and weekly grade-level meetings where thinking routines are used to engage in topics like literacy and math. "Even when we're not directly discussing Project Zero," Anthony noted, "we're still using its language and habits in our conversations as professionals. It's in the water."

Both leaders emphasize adaptation over standardization. Teachers are not expected to implement frameworks by rote but to “play with ideas,” adjusting them to meet the needs of different grade levels and classroom cultures. As Anthony described, “We ask teachers: ‘What would this look like in the classroom? Or how might it shift to address questions of social justice?’” Teachers are encouraged to talk about how they’ve modified routines, creating a collaborative culture of experimentation and learning.

In the classroom, these ideas take root in projects that prioritize depth over breadth. Parents have praised how their children articulate their thinking and they like how students are asked to explain their thinking in math class. Ultimately, Nick and Anthony model what it means to lead with a commitment to reflective practice. Their work at Montecito Union School demonstrates how PZ frameworks can move beyond theory to create a lived culture of thinking – one where teachers and students alike are growing, questioning, and making meaning together.

San Francisco Day School, San Francisco, California

Teaching for Understanding, Studio Thinking

Visual artist and art teacher Jennifer Stuart has worked to combine TfU with Studio Thinking to deepen learning in visual art – having learned about these approaches by attending the Summer Institute for many years.

As one of three K-8 art teachers at the San Francisco Day School, in San Francisco, California, she worked with the team to create throughlines for the art program and understanding goals for shared units. She was able to take what teachers were already doing and show them how to deepen understanding in these projects.

During the summer, before the start of each school year, the three art teachers meet to propose artists of the month for students to study. Prior to the infusion of TfU and Studio Thinking, the art department used to consider medium, style, time period, gender, and ethnicity in order to create a list of eight artists that the whole school would learn about that year. The lessons developed asked students to “create a piece in the style of X artist.”

Looking at this curriculum through the lens of TfU, the three teachers began to think deeply about what they wanted students to understand by the time they left the Day School. Lessons were expanded to include the kinds of thinking and choices the artist made. Students were given more flexibility to play with ideas and techniques that the artist used. TFU helped to create a strong scope and sequence for the K-8 program, and provided a new way to talk about and assess student artwork using understanding goals.

Jennifer worked with all of the middle school teachers across subject areas to develop integrated curricular units using TfU, Studio Thinking, and thinking routines. This was hard work. This came to be called the collaborative curriculum at Friends. One example of an integrated unit was called Light and Perception. This 8th grade unit was taught by the science teacher and the art teacher with some help from the math teacher. It focused on these questions: What is the nature of visual perception? And how do humans engage with light? Lessons included how artists and scientists build and use their understanding of visual perception and light. The culminating project asked students to create a hands-on science exhibit that conveyed some aspect of light or perception to a 4th grader. Students learned about exhibit design from real-life experts at the Exploratorium Museum.

To assess the success of the K-8 program, Jennifer developed a performance of understanding using the components of TfU. For this capstone project, 8th grade students were asked to pick an artist, develop two understanding goals for their own project, investigate and experiment keeping records of their process, and then create a piece or series of pieces that expressed what they learned in their investigations. One student chose Todd Hido as his inspiration. The student's questions were: How does lighting affect the emotional expression of a photograph? And what are places that have shaped my experience of the world? For the exhibition he wrote a short essay on Todd Hido's work, why he felt drawn to it, and how it influenced his own project, as well as what he learned about his two questions. The work displayed consisted of a series of images from the student's own neighborhood where he played with light and perspective to create a personal and emotional connection.

Jennifer also co-founded a non-profit organization, Out of Site, whose mission was to work with underserved high school students to teach them art in a new way – understanding-based rather than skill-based. For example, a central project, Mapping the Mission, was focused on the two questions; What is a map? How do maps tell stories? While students learned map making skills (both conventional and nontraditional), the skill development was in service of understanding more about how artists can use maps as a means of investigation and expression.

During this time, she also led workshops focused on TfU and Studio Thinking at the Bay Area Teachers Collaborative (BATDC).

Later, Jennifer was an adjunct faculty member at the California College of the Arts and the Mills College Graduate School of Education, where she used TfU in teacher education programs. She was also the Art Education Program Manager at the California College of the Arts Center for Art and Public Life. There she worked directly with students and teachers in public schools and provided coaching instruction to "Fellows" learning to become visual art coaches.

At that time, Jennifer also began to work with Lois Hetland, Louise Music, and Ann Wettrich, who had formed a collaboration between Project Zero, the Center for Art and Public Life, and Alameda County Office of Education (as discussed in Chapter 55). The goal of this collaboration was to support public schools in strengthening art education using both Studio Thinking and TfU. Together they developed the Teaching Institute and ran summer institutes for public school teachers on the model of Project Zero's institutes and the SMART Teaching Concentration Program at CCA that offered a certificate in arts integration.

Retired from teaching as of June of 2023, Jennifer is a consultant, running workshops with teachers and artists on TfU and Studio Thinking, all with the goal of getting teachers to think more deeply about their work.

Weston High School, Weston, Massachusetts

Out of Eden Learn/Open Canopy with Thinking Routines, Agency by Design

Kimberly Young teaches 9th grade world history at Weston High school, a public school in Weston, Massachusetts. Her students have focused on human migration as they participate in Out of Eden Learn's Learning Journey on Stories of Human Migration. She said that this participation strengthens students' research and civic action projects on migration, providing the hook as well as the background knowledge for their projects. After OOEL's Learning Journey on "Remembering the Past" was created, she changed the theme of her course to "historical memory."

Out of Eden Learn/Open Canopy with Thinking Routines

Kim learned about OOEL in a global studies workshop (Global Migration in the 21st Century: Understanding How and Why People Move) she attended at the Harvard Global Studies Outreach Center in 2015. PZ partnered with the Outreach Center, and presented OOEL as well as PZ Thinking Routines. She loved OOEL, she said, and piloted it the next year and after that suggested that the 9th grade team at Weston High School all adopt OOEL, which they did (resulting in about 125 students per year over ten years). In addition, at various points, some 10th graders have piloted OOEL materials.

Kim responded to a National Geographic Society RFP in 2018 asking for submissions to scale the implementation and ideas of OOEL. Her proposal was accepted and during her time as a 2019 National Geographic Explorer, she facilitated a New England regional cohort of teachers, training them in OOEL and PZ thinking routines to amplify the work of Paul Salopek.

Thinking routines are used as part of OOEL in the 9th grade world history course, with See-Think-Wonder as the core routine. This routine is used when students look at monuments (in the “Remembering the Past” learning journey), when they are looking at art or historical maps, when they discuss news articles about current events, and when they engage in immersive technologies using virtual reality. (However, the students do not necessarily refer to PZ thinking routines by their official names.) PZ thinking routines are also used in the environmental nonprofit Kim founded, Earthrise Education, when, for example, examining illegal mining in Yanomami territory in Brazil.

Her 9th grade team chose to use OOEL for a variety of reasons:

It integrates well with their history curriculum, allowing OOEL to be the thematic basis of the entire 9th grade world history course.

It is both open-ended and organized and thus fosters critical thinking. It pushes students in their thinking, giving them transferrable tools they can use in any kind of independent inquiry.

It makes connections between past and present.

It provides students with an authentic audience, and audience of actual students around the world reading and commenting on what they post. Kim noted how eye-opening it was to see her students compare their understanding of Columbus with that of students in Italy and compare their perspectives on the former Soviet Union with the perspective of students from Latvia, annexed by the Soviets in 1940.

Student feedback indicates that OOEL makes them feel engaged and purposeful.

When we asked about parents’ responses, Kim noted that parents do not get involved in *what* their students learn. Their primary focus is on grades.

Kim stressed that the use of OOEL at her school is teacher-driven, not system-driven. All of the training for OOEL and thinking routines comes from PZ, not from Weston High School. On their own time, and with their own funds, teachers explore the PZ website, find what they might want to

use, and bring it to their history team to discuss. Or, they see it modeled during a PZ professional development seminar they attend. Kim has attended two brief online training courses from PZ. Using her grant from National Geographic, Kim has trained five other teachers to use PZ routines in the Weston schools.

When asked about challenges faced in using OOEL, Kim said that there were none specific to OOEL. The challenges are those that always exist when teaching: having limited planning time when you are trying to do something new and do it meaningfully. The history teams at each grade meet 45 minutes once a week, which is all that the schedule allows.

Agency by Design

Agency by Design is used to support OOEL participation and is integrated throughout the 9th grade curriculum. Kim noted that Agency by Design's thinking routines are exciting because they provide a way to talk about current events that is very accessible to teachers. "People, Systems, Power, and Participation" is one of the core routines used. They use this, for example, when researching monuments and studying medieval European Feudalism. They also use "Voice and Choice" to structure initial background research into monuments. Both are also used for a case study of the Christopher Columbus monument in Boston. As major world/news events happen, Kim recommends that teachers return to this thinking routine as a structured way for thinking critically about current events.

In the next chapter, I profile three international schools, one in Turkey, one in Pakistan, and one in London, each using multiple PZ frameworks.

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Chapter 52

An International School in Turkey, Pakistan and London

I spoke to educators at three international schools using multiple PZ frameworks: the Bilkent International School in Turkey, the Edopia School in Pakistan and the American School in London.

Bilkent Laboratory and International School, Ankara, Turkey

Multiple Intelligences, Visible Thinking/Cultures of Thinking, Making Learning Visible, Artful Thinking

The Bilkent Laboratory and International School (BLIS) is an International Baccalaureate school in Ankara, Turkey, founded in 1993. The school, which is independent but non-profit, now enrolls 1200 students from pre-K through 12th grade. All classes are taught in English, and each class is taught by two teachers, with about 17-20 students in a class. The school is very progressive and has been deeply influenced by Project Zero.

I spoke with two early childhood educators at the school, Alona Yildirim and Dilek Duman.

Alona had been on a Reggio study group in 2013 and had read *Making Learning Visible* (Project Zero and Reggio Children, 2001). In 2014, Alona had enrolled in a HGSE online course on Visible Thinking. In 2018, Dilek spent a sabbatical year in Boston where she deepened her understanding of documentation by attending workshops with Stephane Cox Suarez and reading Project Zero's *Visible Learners* (Krechevsky, Mardell, Rivard, & Wilson, 2013). In 2023, Stephanie came to BLIS and helped them to establish a documentation studio for the entire range of grades at the school. This is now a resource for educators in Turkey to learn about the practice of documentation. [Here](#) is one of the newsletters of the documentation studio.

Since encountering Project Zero approaches, Bilkent school had undergone the following shifts:

- From a focus on outcome to a focus on process
- From using displays to using documentation
- From a fixed approach across children to taking individual differences in intelligences into account
- From lesson plans to provocations with “intelligent materials” (i.e., open-ended materials)
- A new focus on inquiry-based and co-constructed learning
- A changed understanding of children as curious, capable, imaginative thinkers, and co-researchers
- More time for teachers to reflect together

Multiple Intelligences

The idea of MI is important to the school. Teachers don't believe in the average child, and they recognize that children have different strengths and interests. They like the Reggio idea of “100 languages of childhood” – the many ways that children can express their understandings. Teachers try to learn about each child in detail, helping students to see themselves as experts in particular areas.

Teachers also think about their own strengths – who is good at music, math, interpersonal skills, the digital world, etc. – and try to put a good team together. They find out about parents’ strengths as well so that they can invite parents in to help children learn. When children wanted to learn about the tallest building in the world, a parent engineer came in to talk to them. When children asked about robots, a parent electrical engineer came in to talk. Alona and Dilek were also struck by the importance of naturalist intelligence, bringing children out into nature to observe and bringing open-ended natural materials into the classroom.

Visible Thinking/Cultures of Thinking

Alona and Dilek were influenced by the PZ online course on thinking routines where they read Ron’s book, *Creating Cultures of Thinking* (Ritchhart, 2015). The course presented thinking routines to be used at the middle- and high school levels, but Alona and Dilek wanted to try them in the early years. While not every routine worked for 4- and 5-year-olds, they found some that worked very well, and adapted others and created their own. They told me that thinking routines blend seamlessly into their planning. Using thinking routines, they said, makes children want to stay longer in the conversation, helps them become wonderful listeners, respect each other’s ideas, and gain in open mindedness and empathy. The routines also spark children’s curiosity and wonder, and they make them more observant, for example noticing the details of form and function in natural objects.

Thinking routines are used in a space they call the Exploratorium, created in 2017. This space contains lots of intelligent materials – meaning loose parts, natural, and artificial objects – a room filled with sensory provocations to help children understand the world around them.

Here are some of the thinking routines Alona and Dilek developed to support inquiry in the early childhood years:

- How can we use this in other ways?
- What do you think will happen if you do this?
- What would you do differently?
- What do you think is the problem here?

They also came up with the idea of a question of the day to support meta-cognition. Examples of these big deep questions appear below, and Alona and Dilek were amazed by the depth of children’s responses.

- What/who is a child?
- Offer them intelligent materials and ask: What stories live here?
- What brings you peace?
- How did you grow as a learner?

Posing these big questions stimulates the children and also helps teachers to learn about how children think. Lois Hetland commented to me that these kinds of big questions are less like thinking routines and more like understanding goals from TfU. Were the teachers using TfU without knowing or naming it?

Thinking routines are now used as protocols in faculty meetings where student work is discussed. In 2016, Alona presented thinking routines at a conference on progressive education – the 4th Intelligence and Talent Congress. She titled her talk “Little People Think BIG.” There were many

educators and scholars in the audience, and Alona and Dilek began to see published articles by some of the attendees about the value of thinking routines, which have now been translated into Turkish. In 2012, Alona and Dilek introduced thinking routines for early childhood teaching candidates at Zonguldak Bulent Ecevit University.

Artful Thinking

Since 2014, Alona and Dilek have also been using Artful Thinking routines (including ones they developed, as shown in the image below) on art museum field trips. Alona learned about Artful Thinking when visiting the American School in London, and she has trained teachers from all over the world with a course called Global Learning Studio. At BLIS, students are shown slides of the artwork they will see prior to going to the museum, and then children look for the those works when visiting the museum. The children are then excited to find these works when they get to the museums, and when they do, they have long conversations using thinking routines, amazing the teachers with what they say. At the end of the year teachers reflected with the children about everything they had learned. When children were asked what they remembered from the museum they had visited six months ago, they all remembered the specific images they had seen – even the 4-year-olds!

Daily Routines (Thinking Routines, Artful thinking, Concept Based/Big ideas) "

SEE
THINK
WONDER

<http://www.pz.harvard.edu/resources/see-think-wonder>

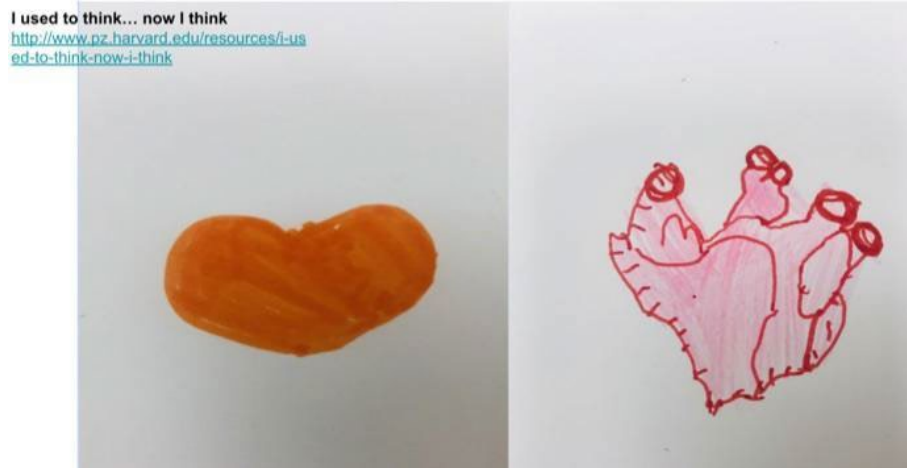
What do you see, think and wonder?
What does this picture remind you of?
What difference do you see between the two pictures?
How do you visually imagine the artist creating these?
How did the artist feel in the creating process? Can you name emotions related to this artwork? Why?
What tools do you imagine the artist using while creating?

What could this be now?
What words would you add to describe what you see?
Have you changed your mind about what this is?
What are you wondering now?
What questions come to your mind?

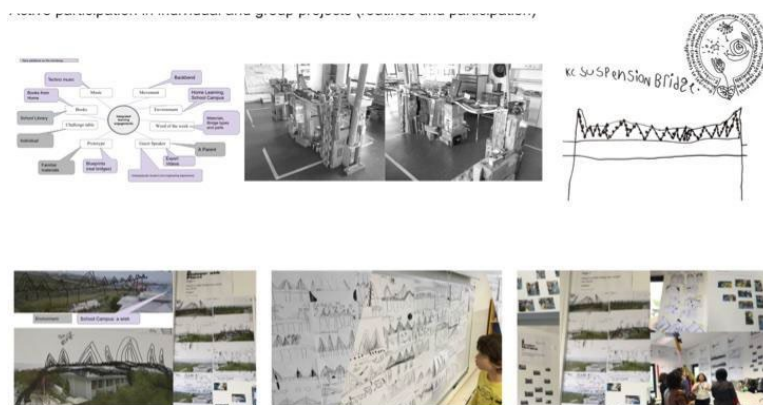
Making Learning Visible

Documentation of children's learning is all over the walls of the early childhood classrooms. Their documentation studio can be viewed [here](#), and the first newsletter of the documentation center can be viewed [here](#). The teachers created a "wonder wall" with all of the children's questions and theories. Children created their own wonder journals and wonder boxes in which they documented their own learning, including dialogues with themselves. They do this by taking photos and recording their conversations using classroom ipads.

Drawing, including drawing from observation, is used as one way for children to display their understanding. When learning about weather, children are asked to draw the wind and to draw it again using a light stick. In the example below, a cardiologist parent came in to talk to 4-year-olds about the human heart. Before the visit, children were asked to draw a heart. Typically they drew the kind of heart shown below on the left. After the visit, when children had seen images of a real heart, the teacher asked the children to again draw a heart (see the image below on the right, as one example). The transformation in the drawings of the children was striking.



Students work on projects that span a long period of time, as in Reggio, and these are documented in detail, often with student's drawings and constructions showing their understanding. Five- and 6-year-olds spent one entire year studying bridges (see images below),



Alona and Dilek believe that students are positively affected in many ways by documentation. Because they are asked to talk about their thinking, children become better communicators and take more agency in presenting what they have learned. They also become more organized in their thinking as they reflect. They become self-aware as they begin to understand their own growth, achievements, and challenges. Children feel valued, and it also helps them see diverse perspectives and supports their social and emotional relationships to one another.

Documentation became one of the most important reporting tools about each child's learning progress. At the end of the year, students present their learning process to parents in a large exhibition. Parents, of course, are thrilled by seeing their own children understand their own learning.

The examples I have given are all from pre-K and K classrooms (4 and 5-year-olds), but middle and high school classrooms are now starting to do documentation as well, and this is helped by the new Documentation Studio that opened in May, 2023. This is a resource for everyone. Stephanie Cox Suarez offered several documentation workshops for BLIS teachers in January, 2023. Eight middle school and two high school teachers are now using documentation, and Alona and Dilek intend to keep pushing for all teachers to use this approach. This coming year, workshops on documentation for teachers at BLIS and other schools will be offered in the Documentation Studio. Thus far, the sister school from Bilkent University (the private Bilkent University School) has visited the studio and attended the BLIS mini-exhibition where they had a chance to talk about building cultures of inquiry in early years. This school also invited them to present to their faculty in August 2022.

Dilek and Alona post regularly on Instagram (see [here](#)) to share their approaches with other teachers.

A final note on Bilkent. When Lois Hetland read this chapter, she commented as follows:

I notice elements of TfU in their total program. The natural world serves as a generative topic. The new thinking routines they use are actually understanding goals. They have a variety of ongoing performances of understanding – thinking routines, artful thinking approaches, explorations with open-ended materials. And they use documentation as their ongoing assessment. It's fascinating to me that they actually work with all the elements of TfU.

Edopia School, Pakistan

Visible Thinking/Cultures of Thinking, Making Learning Visible

Jaweria Sethi is a visionary educational entrepreneur in Pakistan. In 2013, after getting her undergraduate degree in Economics from Lahore University of Management Sciences, and motivated by her dissatisfaction with traditional education in Pakistan, she founded the Edopia school in Islamabad, a school heavily influenced by PZ. I spoke at length to Jaweria and five of her long-time senior colleagues, Maryam Siddiqua, Sara Jonaid, Emen Shakir, Nida Khan, Tazeen Obaid, and Samreen Fawaz.

Edopia is the only “democratic” school in Pakistan, based on the Summerhill model of democratic education. It is an independent, small community school of about 250 students, with mixed age learning. There are 16-20 children and two teachers in each class. There are no grades, the assessments used are mostly formative ones, and students have a great deal of choice in electives. Compulsory subjects are minimized. Every other week there is a democratic assembly where children discuss and vote on school rules. From ages 9 to 16, students engage in individual self-directed projects on a topic of their choice. This is called Project Portfolio and takes place on a separate campus. Not surprisingly, parents who send their children here are disgruntled with traditional schools. Tazeen told me that her motivation for working in Edopia was so that her children could get a different kind of education from the one she got – where students did not feel

safe or respected, are asked to do a lot of rote memorization from books and lectures, and were motivated to study only because they feared bad grades on exams.

In 2013 Jaweria attended Project Zero's Future of Learning Institute, her first introduction to PZ ideas. There she learned about Making Learning Visible. Her study group read the [Ohio Visible Learning Project](#) book (Burton, Krechevsky, & Rivard, 2011) with Fred Burton as their coach. Later, during a visit to the Reggio schools, Jaweria read the [Making Learning Visible](#) book (Project Zero and Reggio Children, 2001) which she found best for the early years, while the *Ohio Visible Learning Project* worked best for older students.)

After attending the Future of Learning Institute, she and several of her colleagues took Ron Ritchhart's online course, Creating Cultures of Thinking. She then enrolled online at Harvard Graduate School of Education to get her master's degree from 2020-2022. There she studied with Rhonda Bondie (affiliated with the PZC for many years) who impressed upon her that teachers need to spend more time looking and listening and less time talking. She also learned a great deal from David Perkins' concepts of lifeworthy lessons (learning that really matters for today's learners) and making learning whole (rather than learning about something complex element by element).

Thinking Routines and Documentation of Learning

The two key practices from PZ that Jaweria has introduced into Edopia are thinking routines and documentation of learning process. She and her colleagues found that thinking routines are a practical way to achieve their goal: for children to learn from discussions with their peers.

Jaweria noted that these ideas take a lot of time to carry out well. They are not in place after one workshop. Teachers need to keep revising and simplifying over several years. For example, Nida told me that when she first tried out documentation to make learning visible in her preschool class, she just put flow charts on the board to show everything they were doing in the class. But she slowly came to understand that the goal of documentation is to get the children to understand their own thinking. She said that the teachers started to change their expectations, realizing that their goal was to get children to understand rather than just gain knowledge, and that thinking and discussing are to be prioritized.

Every year Jaweria runs a rigorous training program of workshops in which teachers take on the role of students. These sessions give teachers ample time to reflect together, asking each other questions such as "How would a math teacher use thinking routines?" or "How would this work for religious studies?" After trying out the thinking routines, they lengthened their classes to 70 minutes and divided class time up into mini lessons, with each lesson based on one routine. They found that this helped children focus and gave them time to reflect. And sometimes the teachers developed their own routines. These training sessions have varied in length from 20 to 60 hours. The teachers appreciate this. Emen said that teachers want to "unlearn," and that Jaweria's workshops are transformative. These training sessions allow teachers to keep exposing teachers to the key ideas which helps them stay passionate.

Some teachers found it difficult at first to use thinking routines with children under ages 7 or 8. But with sufficient professional development, being allowed to try things out and then get feedback from peers, Edopia teachers figured out how to use these routines for even the very youngest, pre-K children. A similar issue arose for math teachers, who at first felt the Visible Thinking toolbox was not applicable: these teachers ended up developing a separate set of routines for math.

Edopia leaders realize that teachers can't implement these new ideas on their own. They must have colleagues to reflect with. And so teachers meet together for about three hours every week to reflect and plan. Emen told me that teachers are learning and growing every year from what worked in the classroom and what did not. They plan to try out "Lesson Study," which Jaweria learned about at Harvard from a course on Continuous Improvement in Education – where a teacher presents a lesson to the school and everyone gives feedback – essentially teachers watching each other teach. She called this ongoing professional development.

Teacher Feedback

Below I report verbatim responses by Jaweria and seven of her close associates to questions about how encountering PZ changed their ideas and practices, and how they perceive these changes have affected their students. These responses reveal the deep effect of PZ ideas on Edopia leaders, teachers, and students:

From Jaweria

Before encountering PZ, I had no prior teaching experience. My only exposure to education was as a student in a very traditional school. The focus there was mainly on test preparation, with little room for critical thinking or collaboration in our classes. It revolved around a system where raising your hand and being the first to answer meant winning. However, my encounter with PZ changed my perspective. I discovered the value of giving children time and tools to process their thoughts, which I found to be truly enriching. I realised that effective teaching shouldn't cover a broad range of topics superficially, but instead delve deep into meaningful content. I also learned that teaching approaches cannot be simply transplanted like flowers, without considering the unique learning environment. Transdisciplinary learning became significant to me, as I witnessed the profound impact of well-planned interventions. I came to appreciate the concept of "less is more" in education, and the importance of intentional design for effective learning experiences. I understood that change is not a linear process; it is cyclical and requires a lot of patience. Moreover, I discovered that creating meaning in education is a collaborative effort, rather than a series of top-down workshops. Over the past decade, I have absorbed PZ principles, making it difficult to separate my beliefs from what I have learned. Many of my personal principles and educational ideals are deeply rooted in my experiences with PZ and Harvard throughout these years. I was really fortunate to have a blank canvas and a supportive community to bring all these principles to life.

I established [Edopia] when I was 22. Prior to that, I had no experience in learning design, which often made it challenging for me to effectively convey my ideas and thoughts to the team during the initial years. I would try to share my ideas with them, but it felt like something was always amiss. Despite assigning books and providing extensive reading material, there was still a significant disconnect in our understanding. Edopia was not just a commercial venture; it embodied a movement and a desire to question the traditional concept of schools. To drive this movement forward, it was crucial for all of us to be on the same page and communicate effectively. It took me approximately five years to grasp effective communication with my team, and the strategies from PZ, alongside Rhonda Bondie's framework, played a pivotal role in this shift. I designed a workshop titled "How to Teach Our Students Without Asking Them to Raise Hands," where I handpicked routines and gradually introduced them during my training sessions. I made my lesson plans and learning design visible to the teachers, allowing them to comprehend the intentionality behind the framework. Instead of focusing on covering books, I assigned selected excerpts that encouraged reflection and collaboration using routines. We really slowed down and

made learning bite-size. I learnt the importance of making expectations visible and scaffolding. During my sessions, I created time and space to listen to teachers exchange ideas to evaluate the effectiveness of my strategies. We ensured that every staff member had a co-teacher for teaching, planning and reflection and dedicated time during the week for collaborative planning. By taking a slower approach and incorporating these practices into my own teaching design, I was able to help the team develop their sensitivity in applying these approaches.

I have observed that many teachers who have been at the school for the past few years are now able to discuss the nuances within these frameworks with some confidence, appreciating their effectiveness and simplicity. They often share how these frameworks have enabled them to listen and observe more attentively without requiring additional class time or physical effort. Rather than rushing from one child to another, they exude a sense of calmness and presence in their classrooms. For those teachers who couldn't find specific answers in the provided toolkit, they extended their learning by either creating their own routines or researching subject-specific ones from other sources. As a community, we have learned to prioritise slowing down, allowing both ourselves and our students ample time to comprehend and process our learning. We have also shifted our focus towards the learning process itself, valuing it more than the final outcome.

From Syeda Tazeen Obaid:

After encountering Project Zero approaches to teaching, my idea of a typical classroom with about 90% of teacher input changed along with my idea of a teacher as a dictator. I always thought there was something very wrong with our education of rote learning and shadowed thinking, but I could never express what exactly it was and why. Also, I didn't know any other way of teaching besides what I grew up with. After encountering Project Zero ideas, I was better equipped to practically encourage my students to think. The Thinking routines really helped me in facilitating my students to dig deeper in a fun and organized manner, leading to effective learning. But also for me to understand and document their thinking. I also practiced changing my role from a teacher to a facilitator. My perception of how children learned also completely changed.

From Nomana Malik

I have always learnt math by understanding the concept and practice on paper. I never experienced what these things really are in the real world. I had a huge change in my teaching practice in this last one year. From teaching math in a conventional way to helping the kids learn math in more creative, interesting and engaging way. PZ routines were really helpful.

From Nida Khan

Now it is more about the child learning and his/ her understanding. It is not just memorizing and just gaining knowledge. Now for us it is more about the child interacting with the information and then building on it. Initially, my teaching style was top down and lecture based where the children would not have enough discussion time and they would be time bound. After PZ, in 70 minutes class time, max lecture time is 15 and the rest of the 55 minutes the children are busy in discussions and questioning and answering each other. With the help of mini lessons and routines, the teacher becomes more of a facilitator.

From Sarah Jonaid

Encountering Project Zero routines has significantly influenced my teaching practices. I now prioritize keeping my lessons open-ended and not solely focused on delivering knowledge. Instead, I create an environment where students have the opportunity to express their opinions and engage in contemplation of the subject material. Routines like "Think-See-Wonder" and "What Makes You

Say That" have been invaluable in encouraging young students to think critically about topics that might otherwise be overlooked. I have also come to realize that learning is not one-dimensional, as different students respond to specific routines in various ways.

From Maryam Siddiqua

Project Zero includes a greater emphasis on promoting critical thinking, creativity, and deep understanding in the classroom. The frameworks and models offered by Project Zero have influenced my teaching style to incorporate more student-centered and inquiry-based approaches, focusing on Making Learning Visible and engaging students in authentic, project-based experiences. These approaches have helped me in shifting the focus from traditional lecture-style teaching to fostering active student participation and encouraging students to construct their own knowledge. Project Zero's frameworks, such as Artful Thinking, Visible Thinking, and Project-Based Learning inspired me to adopt more student-centered and inquiry-based approaches in their teaching. These approaches emphasize critical thinking, creativity, and deeper understanding, encouraging educators to make learning visible, engage students in authentic projects, and foster a more interactive and participatory learning environment. Implementing such ideas has had a transformative impact on my teaching practices by promoting active learning and nurturing students' thinking skills.

From Emen Shakir

When I started teaching initially I came up with my own routines and structures to help make the content more engaging, but when Jaweria taught us the routines of PZ, I was happy to know that I had been working with an approach toward learning that resonated with PZ. Later on, I started teaching PZ routines in my lessons along with the routines that I developed. It opened a whole new way of teaching for me where I felt that the PZ routines helped in attracting the students' attention and kept them excited about the topic. The simplified structure of the PZ routine made it easy for the student to follow the routine, and delve deeper into a prompt or idea. For me personally, it resonated with my own ideas of exploring deeper themes and helped me simplify my own routines to be more adaptable to the student level. It also helped me to realize that at the middle school level, it's not about how much material or concepts we can cover as a teacher but rather how much the student can take away from what you have tried to convey in a classroom. Also the repetition of these routines in training as well as in applying them to the classroom is the key for my own improvement as an instructor. I feel my teaching practice has become even more focused on what the student is understanding, it has shifted from a focus on what is being taught to what is being understood. It has made me pause more and also give students more reflection time to work on the routine, enabling me to have more visibility to where the student stands in their understanding of the concepts being taught. Also every year I felt like I understood how to use the same routines in various ways and that was exciting to me.

From Samreen Fawaz

I have realized that teaching and learning are both something that requires our awareness. PZ approaches help us become more present to our environment, notice and respond to the subtle changes in a learner or the overall class environment. Ever since I took the course Creating Cultures of Thinking I can vouch for the way it has made me more attentive to the needs of my students. Even though I haven't taken many classes after that, my daily interaction with my community has been influenced. Using the right language, promoting a growth mindset, creating a conducive learning environment, are just some of the ways I can think of how my practice changed.

Perceived Changes in Students

From Jaweria Sethi

I have noticed a positive shift in our students, as they have become more collaborative and less competitive in their approach to learning.

From Syeda Tazeen Obaid

The biggest change I feel is that they are more engaged. Thinking deeply about the topic helps them build connections between their prior learning and the information at hand, leading to better retention and understanding. They seem to enjoy discussing their ideas with their friends and listening to their friend's perspectives, which gives them a wider perception of the topic being discussed. Creating a safe and non-judgmental environment makes it easier for them to open up and effectively solve problems and make decisions as a product of thinking. This creates a sense of confidence within them and their ability to work with others. An amazing skill they get to sharpen through the thinking routines is being respectful of others' opinions and teamwork. Also, not constantly look up to the teacher for approval, instead taking charge of their own learning.

From Nida Khan

The students are more engaged, they take initiatives and have become responsible. They have started coming up with their own individual enquiries and throughout the class, they manage their time well.

From Nomana Malik

They got to know that math is not an alien or abstract subject as we used to feel throughout our student life. They got to understand and relate it to the real world around them and at times to their own routines and lives. Using PZ routines in teaching, the students start thinking out of the box and a lot of times the students come up with really interesting and creative answers. This whole process makes them think math is a lot more than just practicing the concepts on paper. The students remain engaged and enjoy such activities a lot.

From Maryam Siddiqua

By adopting student-centered and inquiry-based approaches [we] have enhanced student engagement in the learning process. Students become more actively involved, motivated, and invested in their learning processes. Also, changes in practice that emphasize critical thinking helped my students develop their analytical and problem-solving abilities. They learn to think more deeply, question assumptions, and make connections across different concepts and contexts. They may learn to work effectively in teams, express their ideas clearly, and listen to and respect diverse perspectives.

From Samreen Fawaz

I can't pinpoint the exact changes but I do believe that it has made them more interactive, feel more respected, and encouraged to ask questions (and then ask some more).

From Sarah Jonaid

Incorporating Project Zero routines has had a profound impact on my students. I have observed that they have become more curious and engage in deeper questioning about topics that fascinate them as mere details are no longer satisfying to them. Additionally, I have noticed a decrease in boredom when they participate in routines, as it breaks the monotony of traditional instructional lessons. In fact, the routines have become almost like an enjoyable game, as every student actively shares their responses collectively within the class.

From Emen Shakir

I personally feel that it makes the subject or concepts more attractive to the students, the routine enables the student to transition from being a passive learner to an active learner in their journey of engaging with knowledge, it gives them ownership of their ideas and thoughts, it teaches them how to approach problems and how thinking deeper and often thinking together gives deeper meaning to their learning. It has been a privilege to see the excitement that students have when applying these routines, especially group routines, like chalk talk, in grades 5 and 6. For higher grades “headlines” has been very useful, especially when interacting with complex reading materials, and I can go on and on about it. I feel my students when engaging with routines take charge of their own learning, and that is what a teacher is aiming for.

American School in London, UK

Visible Thinking/Cultures of Thinking, Teaching for Understanding, Arts PROPEL, Project Muse, Agency by Design, Global Competence

Beginning in 1997, Project Zero began a professional development project with a number of international schools in northern Europe, later joined by additional schools in Europe, Asia, and the US:

- American School in London
- American School of the Hague
- Antwerp International School
- International School of Amsterdam
- International School of Brussels
- International School of Stavanger
- International School of Düsseldorf
- American Robert College of Istanbul
- Washington International School in the US.

These schools formed the International Schools Consortium where members of PZ were frequently invited for professional development sessions. Many of these schools (London, Amsterdam, Brussels, and Washington) have been strongly influenced by Teaching for Understanding, Visible Thinking, Making Learning Visible, and PZ’s approaches to arts education. Here I profile the American School in London (ASL).

The ASL is a prestigious international pre-K-12 school with 1,350 students. Pete Lutkoski, the middle school principal at ASL since 2015, explained to me why and how the ASL has become infused with PZ philosophy. He told me that Coreen Hester, who was head of the school from 2007-2017, had previously become acquainted with PZ ideas when she headed the Bay Area Teacher Development Collaborative, where members of PZ often came to consult on professional development (see Chapter 55). When she left for the ASL, she brought PZ ideas with her, and continued to bring in PZ consultants Veronica Boix-Mansilla, Howard Gardner, Lois Hetland, Dave Perkins, and Ron Ritchhart.

Meanwhile, Pete had first encountered PZ ideas — specifically Arts PROPEL — when he was a music teacher at the American School of The Hague. He created a large map of a PROPEL music portfolio and put it up on the wall. He wanted students to use this to visualize the journey of compiling their artifacts of musical learning. Separately, the head of department, Jim Yarnell, was a

proponent of PZ work and Arts PROPEL in particular, and supported this in the arts department and the wider school. Pete recognized the power of PROPEL as an advocacy tool for the arts as involving intellectually rigorous thinking.

Pete attended the PZC in the early 2000 and was a fellow at the PZC in 2007, 2008, and 2009. He attended the PZ Future of Learning Symposium in 2010. and then was on the PZC faculty as a study group leader from 2012 - 2016.

So that I could learn more about the uses of thinking routines and TfU at ASL, Pete connected me to two two 6th grade ASL teachers, Jessie Twiest (teaches English) and Alex Asafi (teaches social studies), both of whom had a liberal arts undergraduate education at Yale, Jessie concentrating in American Studies, Alex in history.

Visible Thinking/Cultures of Thinking

Jessie first learned about PZ approaches when she was an apprentice teacher at Shady Hill School in Cambridge, where thinking routines were deeply embedded. Alex first learned about PZ approaches while doing graduate work in comparative and international education at Oxford University. His field work for his dissertation was carried out at ASL. Before becoming an ASL teacher, Alex had only worked in traditional, top-down settings. At ASL he met Gene Quezada, Kendra Daly, and Susan Young – three leaders who helped change ASL, moving it from a traditional to a progressive, Deweyan approach. (Gene and Kendra are featured in Chapter 59.) Gene and Kendra brought Alex to Budapest in 2016 to hear Mark Church, where he learned about thinking routines, which he now says are strategies in his back pocket that he uses all the time.

Both Jessie and Alex talked about how thinking routines allow them to discover what students are thinking about, and allow students to think about their thinking. They view thinking routines as a method and as core to their belief that the purpose of school is to engender reflection and deep learning. To that end, they also use rubrics on which students score themselves, from beginning to progressing to leading.

Teaching for Understanding

The TfU framework is used in all grades – including the idea of performances of understanding and the teaching of broad generative topics.. Every one of the 250 faculty must document their lesson plans in detail, which the principals and assistant principals review and provide feedback on. In the school's *Teaching and Learning Handbook*, the performance view of understanding is highlighted as the philosophical framework for all of the grades:

Developed at Project Zero at the Harvard Graduate School of Education, the performance view of understanding states that learners have created meaning and developed their own understanding when they can apply their learning in novel and authentic ways or can teach it to someone else.

Understanding is being able to carry out a variety of actions or 'performances' that show one's grasp of a topic and at the same time advance it... Our 'performance perspective,' in brief, says that understanding is a matter of being able to do a variety of thought demanding things with a topic—like explaining, finding evidence and examples, generalizing, analogizing, and representing the topic in a new way... It is being able to take knowledge and use it in new ways (Perkins & Blythe, 1991, p. 6; 1998, p. 13)

At ASL, the performance view of understanding is central to teaching and learning. We teach for

understanding. Students learn best when they have the opportunity to apply their learning in context. Students have understood when they can apply their learning in novel and authentic ways. Curriculum, assessment and instruction should be designed so that students have the opportunity to demonstrate their learning in this way.

There are about 30 new teachers each year, and all new teachers are introduced at the beginning of the year to the concept of performances of understanding as central to the school's philosophy. Alex and Jessie see thinking routines as the inroad to TfU for new teachers.

Arts PROPEL and Project MUSE

Pete talked to me about how PZ's work in the arts has been influential at ASL. Arts PROPEL (see Chapter 14) has been influential in getting teachers to move away from an outcomes-based approach in art education towards a focus on process: students now create portfolios in the arts to document their learning. The MUSE project (see Chapter 10), with its entry point QUESTS, has been used when taking students to art museums. Pete described both PROPEL and MUSE as offering very "practical" tools. Studio Thinking is the framework used by the visual arts, music, dance, and drama departments, and Pete noted that this framework helps teachers to investigate their pedagogy.

Making Learning Visible

The ASL has sent teachers to visit the Reggio schools, and PZ consultants (Daniel Wilson, Ben Mardell, and Mara Krechevsky) have introduced the MLV framework to the teachers, particularly through the *Visible Learners* book (Krechevsky, Mardell, Rivard, & Wilson (2013).

Agency by Design

A maker space was created a few years ago, allowing the school to use the Agency by Design (AbD) framework. A number of teachers enrolled in two of PZs online Agency by Design course. I spoke to three of them: Melanie O'Leary, kindergarten arts teacher, Belle Santos, middle school science teacher, and Colin McCarty, K-12 maker space teacher. Melanie uses AbD thinking routines to get her students to consider how things connect – as when in a unit on color they studied where color comes from and where paint comes from. Colin uses AbD routines every day. For example, "What if..." has become almost like a mantra for him. These routines are always used for the ultimate goal of making something better. Belle told me that the thinking routines from AbD give her concrete ways to get her students to become systems thinkers. For example, the thinking routine Parts-Purposes and Connections helps her students recognize systems.

Maker-centered practices are used as a part of the overall culture of the school rather than as a specialized class in engineering. The space is always booked by K-12 teachers, who use it to enhance learning in their classes.

Global Competence

The ASL is in the midst of adopting the Global Competence Framework developed by Veronica Boix-Mansilla (see Chapter 43). This decision was made after the school had considered many different models of teaching global competence and chose Veronica's as the best. Their goal is now to systematically embed global competency outcomes into the curriculum.

Re-imagining Migration

Jessie used the Re-imagining Migration curriculum (see Chapter 47) which she learned about from an internet search as she was developing a unit on migration. She developed a unit on migration that she was very pleased with, but this unit is not being taught now.

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Chapter 53

Three Schools in India

Riverside School, Ahmedabad, India

Multiple Intelligences, Teaching for Understanding, Visible Thinking/Cultures of Thinking, Making Learning Visible, Making Thinking Visible, Good Project

The Riverside School is an independent K-12 school in Ahmedabad, India, founded in 2001 by Kiran Sethi. Sethi trained in design and visual communication before becoming a school founder and education reformer.

At Riverside there are 30 children in a class, taught by two teachers, and thus the class is often divided into two groups of 15. In 2023 this school won the World's Best School Prize for Innovation. (Five prizes are awarded, one for each of the following: Community Collaboration, Environmental Action, Innovation, Overcoming Adversity, and Supporting Healthy Lives. This prize was founded in 2022 by [T4 Education](#) in collaboration with Accenture, American Express, and the Lemann Foundation.

Riverside is particularly known for using "[Design for Change](#)" to develop an "I CAN Mindset." Children as young as six design practices to solve day-to-day problems they face, and through this come to realize that they have (as their [website](#) states) "the power to intentionally design a more compassionate, sustainable and empathetic world."

Kiran attended the PZC around 2004 and brought back several PZ ideas to the Riverside faculty: Teaching for Understanding (TfU), the thinking routines from Making Thinking Visible (MTV), Making Learning Visible (MLV), and multiple intelligences (MI). These ideas fell on fertile soil because, from the school's founding in 2001, the faculty focused on understanding the mind of the learner. When they encountered these PZ frameworks, they found language for what they were trying to do, and they discovered the research behind their intuitive approaches were consistent with these PZ frameworks.

I spoke to seven educational leaders at Riverside (Deepa Avashia, Itchha Chainani, Monisha Purohit, Priti Patel, Bhavika Chandnani, Vidhi Rajdev, and Archana Todi). When I asked them about how their ideas and practices had changed as a result of encountering PZ frameworks, they began by talking about TfU. TfU has shaped the way they plan curricular units. They design units collaboratively by asking questions of themselves: Why are we teaching what we are teaching? Why is this topic important? They pointed out to me that this approach went against educational tradition in India where teachers do not question very much and are likely to submit to hierarchy. Thinking about the purpose of teaching a particular concept leads teachers to think about the learner – the learner's background knowledge, and how that learner can become engaged. Thinking about relevance leads teachers to think of real-world applications of whatever they are teaching. A math teacher spoke of how teaching math in a TfU way led to going beyond math to connect to other disciplines. Interwoven with TfU were thinking routines and the practice of making learning visible, as illustrated below. These educators also noted that MI influenced them as well by leading them to try to nurture all of the intelligences in children in whatever they teach.

Inquiry Projects Infused with PZ Frameworks

An inquiry project on the digestive system was developed for 1st graders. It consists of 25 sessions, over six or seven weeks and focuses on three understanding goals:

- There is a hidden system at work inside the body.
- Every part of this system has a specific function.
- When any system does not function properly, there are causes and effects that occur.

The initial “hook” to get students engaged was to get them to think about how pizza turns into poop. Thinking routines are used here to get students to come up with questions about how this happens. Students observe, question, do research (including look up videos on the internet), experiment (with electric blenders, their own saliva), take notes, illustrate their hypotheses at the beginning and throughout the unit through drawings, and present their understanding (three things understood, two things they want to know more about, one thing they remain confused about), all in collaboration with others. They then move into understanding what systems are in general by thinking of other systems, such as train tracks as a system, a car as a system, a school as a system, home as a system, etc. – all of which have parts that must function together for the whole system to work. Students compare these systems in terms of their similarities and differences. In their performances of understanding, which are presented to older students, other teachers, their parents, students present their own hypotheses about the cause and effect of each of the parts of systems beyond the digestive system. A video of this project in action can be found [here](#). Two examples of performances of understanding in math can be found [here](#) and [here](#).

Two of the 31 slides to train teachers in how to carry out this complex sequence are shown below:

Program of Inquiry – Digestive System ‘The Hidden System’ Grade 1

Duration

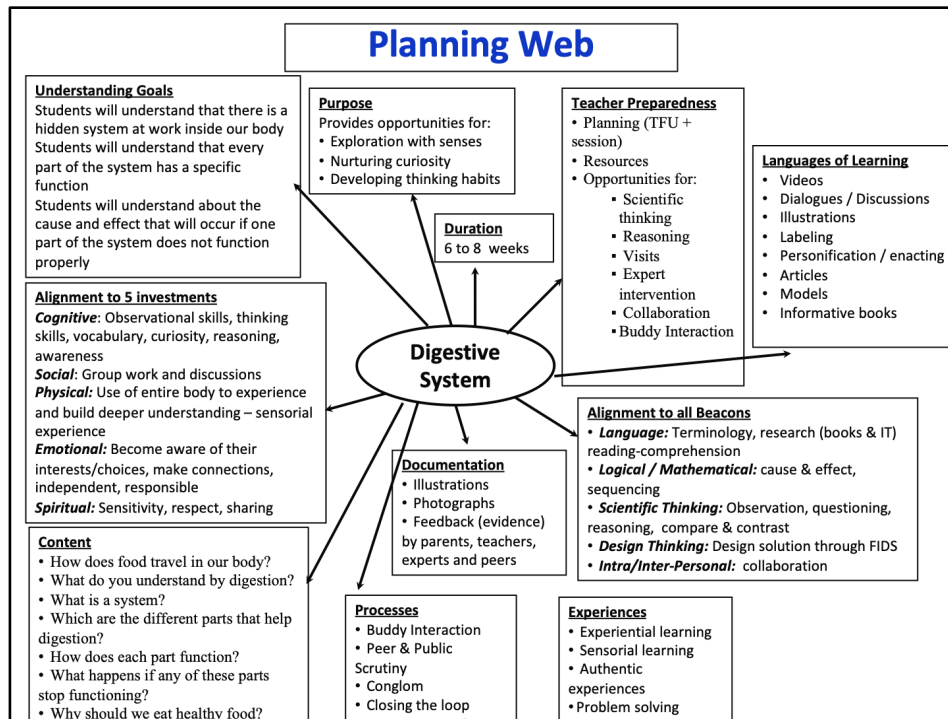
6 to 7 weeks (approx. 25 sessions)

Understanding Goals

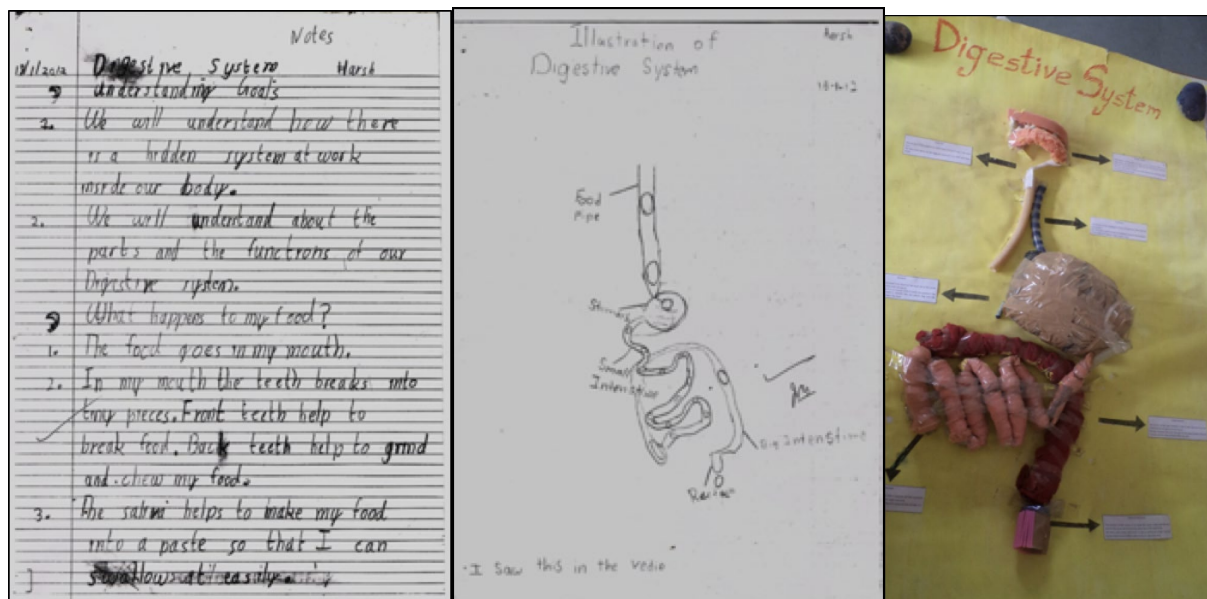
1. Students will understand that there is a hidden system at work inside our body
2. Students will understand that every part of the system has a specific function
3. Students will understand about the cause and effect that occurs when any part of the system does not function properly

Purpose/Big Idea:

- Students at this age start making independent choices about their likes and dislikes. This inquiry will help them understand the cause and effect of the choices we make and thus make better choices.



Below are examples of how students have represented their understanding verbally, in a drawing, and in a model:



At the end of the project, they are guided to make their understanding visible by designing meals that are balanced and thinking about the cause and effects of parts of a well-balanced diet.

Another unit I learned about for young children focuses on the concept of how animal parts are adapted to their environment. Students study camels (including observing a live camel brought to school) to understand how each body part of the camel is there for a reason and has a survival function (e.g., its leathery lips allow it to eat thorny plants; its two layers of eyelashes allow protect them from sand storms). Students also study polar bears (after they go to an ice cream factory and enter the freezer) and other animals, creating Venn diagrams about the similarities and differences across animals in terms of their body parts and functions of these parts, as shown below:

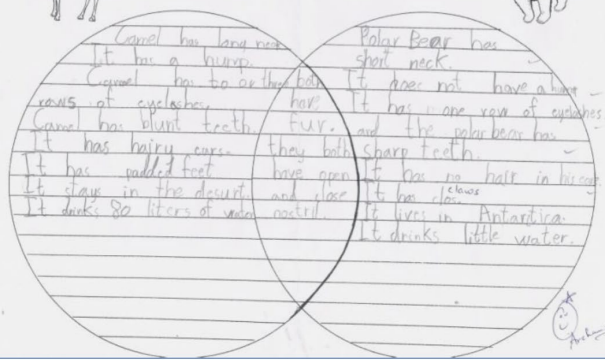
Writing the similarities and differences between the camel and the polar bear

Worksheet of K-2 (Compare and contrast between the Camel and Polar Bear) RIVERSIDE



Name: Aarav
 Date: 9/12/13





Other TfU projects can be viewed in the supplementary materials:

Full set of slides for the digestive system and camel projects can be found in the supplementary materials, along with:

- A 4th grade project on our restless earth
- A 7th grade project on religion focused on questions not answers
- A grid showing the hook, guided inquiry, and performances of understanding for a 9th grade chemistry project. The understanding goal for this project was "The periodic table is a convenient way to arrange the atoms in nature according to their chemical and physical properties. By understanding the patterns that determine their behavior, we can predict their position in the table."
- An 11th grade project on marketing.

The teachers spontaneously brought up the question of the effects of these kinds of learning experiences on students. They mentioned two important things. First they believe that the use of lessons planned around TfU helps students make more connections across school subject areas. They also said that they ask students in grades 8 and 9 what they remember about their learning in younger grades. Students new to the school hardly remember anything except being lectured at. But those who have been at Riverside since pre-K (the majority of students) remember a great deal about the observations and experiments they engaged in since they involved so much bodily, sensory, hands-on learning. A video of students discussing what they remembered can be found [here](#).

Students do four units like this in a year. These projects are very demanding for such young children and I wondered whether these are students accepted for high intellectual ability. However, I was told that Riverside students are “regular” students from various demographics, including 25 percent from underserved communities. The school uses differentiated instruction in class to help support students when needed. Almost all work on these projects is carried out in school so that teachers can make sure that students’ parents are not doing half the work! What students are asked to do at home is “teaching as learning,” where they explain their understanding to their parents, and parents report back to the teachers about this.

The Good Project: Ethical Dilemmas

Riverside is just beginning to introduce some of the Good Work ethical dilemmas to students starting in the 6th grade. Here is one example of a dilemma they presented:

The class protocol is that students should always have at their fingertips a pencil, a sharpener, and paper. When students forget one of these and have to ask another student to borrow what has been forgotten, this takes up time. Sometimes a student might refuse to lend the missing material stating that this is not allowed. Now suppose that there is a new child in the class sitting alone, who does not have all three of these materials. What should you do?

Instead of the teacher asking students to put themselves in the shoes of a new student, as many teachers might do, the teachers asked the students to think of the best and the worst ways to respond to that new student. This imagining revealed to the students that they are capable of knowing what the right thing to be done is, and they do not need to be told.

Learning Centers, Bangalore, India

Teaching for Understanding, Making Learning Visible, Studio Thinking

While the Riverside School is an independent school, a very different kind of learning experiment was started in India, as told to me by Arzu Mistry. Arzu, an arts educator featured in Chapter 56, had worked with educators in a low SES district in Oakland, California on arts integration using Studio Thinking, Teaching for Understanding, and Making Learning Visible. In 2008, Arzu returned to her native Bangalore, in India, where she worked with Geetha Narayanan. Geetha had worked with Project Zero on Teaching for Understanding through the PZ online course on TfU. In Bangalore, Geetha developed a group of “learning centers” for children who had dropped out of government (public) schools, and she began to train teachers for these centers. While children are mandated to remain in school until the age of 14, this rule often falls by the wayside for impoverished children who live in slums or on the streets, sleeping on doorsteps, as was true of the children who came to the learning centers. These children were often migrants from another state. Since each state has its own language, these children could not learn because they did not speak the language of their new state.

Teaching for Understanding, Making Learning Visible, and Studio Thinking

In these learning centers, children were divided into three groups: elementary, middle, and high school. Arzu told me that in these centers, Teaching for Understanding, Making Learning Visible, and Studio Thinking all came together. The learning centers were not subject to school rules, which can inhibit interdisciplinary learning. Thus the programs could set up richly interdisciplinary projects for as long as they wanted, with no school bell signalling time to change classes. They

made sure that their projects were “place-based,” meaning of relevance to the local community in which the children lived. Arzu worked in these centers for over ten years.

Arzu told me that the teaching at these centers was “amazing” and that she has never been in a situation in which the learning was as robust. None of their teachers had a college degree in education. Why? Because, she said, these degrees set in place certain ways of teaching that we did not want. They hired people who were interested in children, and they trained them in their teaching methods. Their teachers included phone operators, experts in raising silk worms, and car mechanics (who were excellent at teaching physics). Students were taught skills that could translate into jobs – animation, natural methods of building, textiles, and print -making.

When Lois Hetland visited, on entering, she saw about 30 students sitting on the floor with candles and organic materials that they were arranging in a mandala pattern. She later learned that when these children came to school in the morning, they washed and changed into school clothes which were kept at the school. That was the first step in separating the learning environment from the trauma of their lives. The second step was collaboratively making a mandala each morning, using a variety of materials each day. They also ate a milk porridge that had about 500 calories – their main nutrition for the day. They could have as much as they wanted. After the mandala session, they broke into work groups to continue their ongoing research projects, which were designed using Teaching for Understanding and carried out with the vocabulary of Studio Thinking. The walls were covered with students’ drawings and reflections, connecting threads, and overarching questions connected to the projects’ throughlines. Later, the children gathered again on the floor to reflect on what they had accomplished that day and what they still wanted to understand. She also saw older students presenting their projects for review to outsiders in their native language. Lois described the ambiance as a simple, natural flow of learning that felt like a family focused together on coordinating ideas that synthesized complex information to achieve novel, practical solutions.

Arzu’s work in India demonstrates the successful application of PZ frameworks in diverse, underserved contexts. The teachers were paid because Geetha and Arzu were able to get donors to fund them, as well as social service organizations. The children were trained to take their high school graduation exams and when they graduated, some went to regular colleges in the area and got jobs later. Others went right on to jobs, often in art and design because Geetha ran Shristi College of Art, Design, and Technology.

These learning centers (now discontinued, likely because of Geetha’s retirement) had no website because they did not want their students “on show.” But many teachers were trained by Arzu and Geetha.

The kind of learning that went on in these centers is proof that Project Zero frameworks are not simply for elite independent schools. These learning centers show that PZ frameworks can be implemented in the most under-resourced schools.

Sparkling Mindz Global School, Bangalore, India

Visible Thinking/Cultures of Thinking, Making Learning Visible

Sreeja Iyer was a young engineer in India who realized that she was not doing what she wanted to be doing in her life. Seeking something more meaningful, she began to research the state of education in India and was shocked to learn about 5th graders severely deficient in basic math and reading. Inspired to go into education, she joined a company to implement technology in schools.

She soon came to realize that adding technology alone was not enough. Schools had not changed since she went to school, and thus schools needed to rethink their goals.

She started with an afterschool program to help children learn thinking, communication and emotional skills in order to complement the school curriculum. While researching about education innovations, Sreeja learned about MI theory and Project Spectrum. These resonated with her. She wanted to help children develop each of their intelligences. “Every child can” became her rallying cry. Having MI theory behind this was important, she realized, in order to get parents on board.

She later received a newsletter about the PZ Future of Learning Institute (FOL), and in 2012 she came to Cambridge to attend this conference. Half of the participants were from outside of the US, and it was there that she met Jaweria Sethi, described above. Attending the Future of Learning Institute showed her that others were thinking like she was and wanted to make deep changes.

In 2014 she founded the Sparkling Mindz Preschool in Bangalore, India, an English speaking school based on process-oriented learning. The preschool is Reggio-Emilia inspired in its philosophy and aligns with MI quite well. She told me that the school was an outcome of attending FOL. Now the [Sparkling Mindz Global School](#) extends all the way through 12th grade and is affiliated with the Cambridge Syllabus (both IGCSE and A levels). The school has won numerous awards, as stated on the website:

- *Awarded Top SME Businesses of 2021 by Great Companies*
- *Awarded Top Innovative and Creative Skills Related Initiatives in 2021 by Career Guide's Career Changemaker Awards*
- *Awarded the Top 20 Primary Schools 2020 by ECA-APER (Association for Primary Education Research) Hall of Fame Awards*
- *Awarded Top 50 Educational Organizations by GFEL (Global Forum for Education and Learning) in 2019 for innovative approach to learning and empowering children*

Today the school has 15 teachers for 200 students. In the preschool classes, there is one teacher for 8-12 students; in the older grades, the ratio is 1 to 25. Teachers are not called teachers – they are “facilitators”. Every day after school, teachers meet together to reflect and to plan.

Children come from educated, professional families, but the school offers scholarships too. Sreeja said that the next thing she hopes to do is to create access to her materials and curricula for more schools including government schools in India (these are the public schools, which most children in India attend).

Sreeja took away three key frameworks from FOL: Visible Thinking, Making Learning Visible, and Game-Based Learning. The latter was not developed at PZ but was presented at the conference by the [Institute of Play](#) in New York City. This institute shut down in 2019 but resulted in a school called [Quest to Learn](#). These three frameworks were infused into her school.

Visible Thinking

Thinking routines are often used, particularly See-Think-Wonder and I Used to Think-Now I think, which are also used with parents too as they respond to their children’s works. To foster empathy, the school uses the Step in, Step back routine, which Sreeja learned about in the FoL institute. There they were shown a picture of slaves and a white slave owner, and were asked to step into the

shoes of the slave owner. Children at Sparkling Mindz use this routine when someone is upset: they go find the Empathy House facilitator or seek out the empathy scout, and they try stay present to their own feelings and needs about the situation they are experiencing. If in conflict with their parent/another child, they also learn to put themselves in the shoes of the other person to empathize and find strategies to arrive at a resolution. Children and team members have the autonomy to resolve conflicts among themselves with this kind of strategy, rather than have this imposed externally. The school also facilitates a parent workshop to support parents in learning the empathy framework and applying it at home. This enables parent and child to resolve conflict using empathy-based strategies too.

Making Learning Visible

Sreeja and her teachers read the [Visible Learners](#) book (Krechevsky, Mardell, Rivard, & Wilson, 2013) to learn about documentation. At the end of the year, glimpses of children's learning are displayed so that parents can see how their child's thinking has evolved. In one project, children explored mistakes made, and how children reacted to these mistakes, eventually creating a mistakes wall built out of erasers to celebrate and embrace mistakes instead of erasing them.

Gamification: The games are used for all subject areas, and students get immediate feedback and points, just like in a video game. In this way they learn what they need to get better at. Peers score each other based on rubric-based metric for the relevant work they are assessing each other for. For example, if they are assessing each other on presentation or ideas or investigation or writing structure, the respective rubrics are made available for them to use. As just one example, here is the game designed to foster reading comprehension: Reading is divided into Before Land, During Land and After Land. Before Land, students practice skimming the book and learning about the context. During Land students are not mindlessly reading, but using specific comprehension strategies. Students get points for catching a character's creative expressions, for example. Comprehension becomes an active exercise. After Land students take information from what they have processed and analyze what they have learned. This is all very motivating for students.

Sreeja told me that they assess children's learning through the use of detailed rubrics that come from the games, and that they have shown a shift upwards in scores after introducing game based learning outcomes.

Game-based learning is combined with both thinking routines and making learning visible. For example, See-Think-Wonder (they call it Observe-Think-Wonder) is used as a part of a scientific inquiry game. Game based learning is very process oriented: students discover the process of how they learn and how to approach learning through the games.

Teachers (called facilitators) have learning area (subject) classes on alternate days in the morning hours. This frees up time for them to research, design, reflect and document their experiences. This is made possible by having more facilitators available for a given group of students so that school continues to operate every day.

Much like at the Riverside School, children are taught to be change-makers in their communities (also like the Children are Citizens project described in Chapter 40, though this school developed these ideas independently of PZ). Four missions connected to real-world problems emerged as a result of a modified See-Think-Wonder routine in the form of Connect-Wonder-Research. A concept is suggested to the children (e.g., waste, food) and children use design thinking to come up with ideas and solutions. They discuss and wonder about their ideas about the concept and follow

up their wondering with research that allows them to go more deeply into the concept. They then test out solutions, often circling back to more Connect-Wonder-Research again on this issue.

Once in 6th grade, children read adult newspapers and learn about real world problems and discuss these. Children are asked to think about problems larger themselves (e.g., why are there beggars; how to prevent stray dogs from getting hit by cars) and to use design thinking to come up with solutions. They came up with a solution to dogs getting hit by cars: they raised funds to buy glowing dog collars and then then put the collars on dogs that they saw in their local neighborhoods.

Chapter 54

A School in Colombia

Colegio Anexo San Francisco de Asis

Multiple Intelligences, Teaching for Understanding, Visible Thinking/Cultures of Thinking

In 1985, with help from her Franciscan Sisters, Patricia León Agustí founded the [Colegio Anexo San Francisco de Asis](#) (Anexo) school for children living in a very impoverished neighborhood of Bogotá, Colombia. The children had had no opportunity to attend any kind of school. A brief video of images of this neighborhood can be found [here](#).

Patricia's first step in creating the Anexo school was to visit the El Codito neighborhood in the northeastern hills of Bogotá with the goal of finding 30 children for kindergarten and 1st grade classes. She walked through the neighborhood with a bull horn offering free school for the children. Soon she had 120 eager applicants. The school started with 80 children in kindergarten, 1st, and 2nd grade in the afternoon after regular school hours. Now 400 children, from preschool through high school, are attending full day at the Anexo.

To support the school, a sustained fundraising effort was begun. The Community of Franciscan Sisters of Rochester, Minnesota was a founding donor as were many individuals, businesses, and organizations. Fundraising events were especially successful in generating money and building a strong cooperative community spirit in support of the Anexo.

Initially the school was held on the grounds of Colegio Santa Francisca Romana (Santa Pacha), the Franciscan Sisters' school, where Patricia taught and lived. The children were bussed from their barrio to the school and, for the first year, Patricia had to be on the bus each way – so that parents would not be afraid that their children would be kidnapped and sold. Two years later, the school moved to the site of an old unused castle and became a very visible part of the barrio community.

The Anexo teachers worked after normal school hours. The first teachers at the Anexo were also teachers at Santa Pacha, helped by the senior students as part of their required community service. Two years after founding the Anexo, Patricia became the director of Rochester School, a private institution of grades pre-K through senior high for upper middle-class students. Some of the Rochester School teachers, administrators and senior students joined their colleagues from Santa Pacha as part of the Anexo team.

Teaching for Understanding

Patricia and her colleagues wanted the Anexo to be a pedagogical innovation, based on TfU. She had learned about TfU from Rosario Jaramillo, a friend who in 1986 had come to Project Zero on a Fulbright Fellowship to work with David Perkins. Rosario suggested to Patricia that they introduce TfU to schools in Bogotá. At nearly the same time, another friend, Ana Maria de Samper, director of Colegio Santa Maria, also approached Patricia about the idea of having a conference where they could invite researchers from Project Zero to present the TfU framework. The spark was lit.

Multiple Intelligences

Patricia felt that one of the biggest problems in Colombia was a feeling of dependency: People depend on the government, they attack scapegoats, and do not take responsibility for themselves. She wanted her schools (both Anexo and Rochester) to build autonomy, and this led her to become interested in the interpersonal and intrapersonal intelligences that formed part of multiple intelligences theory. She wanted to develop intellectual, social, and moral autonomy in children. She realized that TfU could help develop all three of these autonomies, because to develop autonomy one needs to think and reflect. She felt this was especially important for the Anexo children who would not have other learning opportunities outside of school. In Patricia's words, "Clearly, the traditional transmission model of teaching does not work. We need people who think."

She formed a group of teachers from both Rochester and Anexo to learn more about TfU – which she would go on to infuse in both schools. The teachers worked together, first studying *The Teaching for Understanding Guide* (Blythe & Associates, 1999) and later translating other PZ documents into Spanish. They discussed the meaning of the terms used in TfU (on-going assessment was much discussed). Grades were eliminated for an entire semester until teachers had a greater understanding of the difference between on-going assessment (formative) and evaluation (summative).

Patricia and the Anexo team organized conferences on TfU and other PZ ideas every six months, inviting educators from both public and private schools. With the participation of private school teachers and administrators, they were able to pay for bringing Project Zero researchers to Bogotá. PZ researchers who came included Veronica Boix-Mansilla, Lois Hetland, Chris Unger, Daniel Wilson. Later on, Tina Blythe, David Perkins, Ron Ritchhart, and Steve Seidel joined this endeavor. These conferences became a way of fund-raising for the Anexo. Some of the researchers charged little or nothing for their time when they learned about the student population with whom Patricia was working.

In 1997, Lois Hetland invited Patricia to the PZC summer institute as a speaker. She proved to be a star speaker, and she has returned to the PZC every year since then as a faculty member, for many years teaching a mini-course in Spanish on TfU. Now she and her colleague, María Ximena Barrera, teach this in English. They also taught the TfU online course in Spanish and English.

At the beginning of the 1990s, the Anexo started a school-to-work program, in which the 8th, 9th, and 10th graders worked at the Santa Pacha campus in a bakery and woodworking shop that had been donated to the Anexo by private individuals. The 11th and 12th graders worked every morning in various businesses and schools interested in helping the Anexo students develop their work ethic in a real-world situation. This became a great opportunity for the students and, in some cases, the institutions where they worked helped them pay for their university studies.

Visible Thinking/Cultures of Thinking and Multiple Intelligences Entry Points

Eventually the Rochester and the Anexo schools transitioned from activities to performances of understanding, using Visible Thinking/CoT, Multiple Intelligences as well as TfU. Teachers were encouraged to be creative and think outside the box when planning the performances of understanding, which would go beyond having students repeat what they had learned. The use of entry and exit points (from MI theory) helped teachers use art, movement, music, language, numbers, etc. to allow students to learn and to communicate their understanding in modalities besides speaking and writing. Patricia told me that the teachers had clear understanding goals, and they thought about why these were important and how these connected to the students' own lives. She feels that teachers can have basic ideas of Teaching for Understanding without using the whole

framework. For her, the most important thing for teachers is to have both *understanding* and the *student* at the center of the teaching and learning process. Teachers need to be aware that thinking is essential in order to develop intellectual, moral, and social autonomy.

Here is one example of a performance of understanding at the Anexo. In a 3rd grade math class, the students started a little store, “La Tiendita.” Parents with carpentry skills helped to build this. This was a real store, not a pretend one. It had specific hours of operation, and the children managed the whole store. They learned how to engage with customers, handle money, and pay for goods. La Tiendita was a true performance of understanding: The children used what they had studied in math class and put it into action running the store.

Another example comes from a class taught by a lawyer. Students in 11th and 12th grades were studying the Constitution of Colombia and discussing what it meant to have rights and responsibilities. As part of the course and guided by the teacher, the students organized a mediation practice right in their neighborhood from a room in the castle. There they would listen to students’ problems or situations presented at home and in the neighborhood. The idea was to listen carefully, try to solve problems in a non-violent way, and/or give advice on where to turn for further help.

Although Patricia is now retired, the Anexo school continues at a larger campus in the barrio where, with the support of the Rochester Franciscan Community, construction was completed in 2011. There, the TfU framework continues to be the pedagogical focus.

On the current Anexo website, you can read the following:

Today we are a very solid, independent Educational Institution, which works on its Educational Project from the fundamental contents of TEACHING FOR UNDERSTANDING, and which projects itself towards the community, in order to seek the transformation of many children and young people eager to learn, but with lack of opportunities. We want to be an opportunity for them.

Patricia has started a foundation, FUNDACIES, with other educators that offers courses, talks, and professional development to schools in several parts of Latin America and Spain using different ideas from Project Zero. Patricia and María Ximena Barrera translated all but three of the PZ thinking routines into Spanish; three from the Agency by Design Project were translated by Yerko Sepúlveda. These three have also translated the following books:

- *Making Thinking Visible: How to Promote Engagement, Understanding and Independence for All Learners* (Richhart, Church, & Morrison, 2011)
- *Looking Together at Students’ Work: A Guide to Improve Students’ Learning* (Blythe, Allen, & Powell, 1999) (in the Spanish version, Patricia and María Ximena are authors).

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Blythe, T., Allen, D., & Powell, B.S. (1999). *Looking together at students' work: A guide to improve students' learning*. New York: Teachers College Press.

Richhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. San Francisco: Jossey-Bass.

Chapter 55

Ten School Networks in the US

2003-2012

In this chapter I describe 10 school networks in the US deeply infused with PZ ideas. As mentioned earlier, one of the most effective ways that PZ ideas have spread is through networks of schools, entire school districts, or professional development groups inspired by PZ ideas and committed to the implementation of PZ approaches in all member schools. These networks are complex and weave PZ ideas together with those from the local community.

Alameda County Public Schools in California

Studio Thinking, Teaching for Understanding, Making Learning Visible

The Alameda County Office of Education (ACOE) serves 18 school districts. The ACOE was the arts education leader for seven counties in the East Bay of California: Alameda, Contra Costa, San Mateo, San Francisco, Solano, Marin, and Santa Clara. The network began when educator and artist Jennifer Stuart attended the first PZC in 1996. Impressed by David Perkins, she mentioned him as a potential presenter to Janet McGarvey, who ran a professional development network with about 50 Bay Area Independent Schools (The Bay Area Teacher Development Collaborative [BATDC]). Janet brought Dave, who asked Lois and Ron to accompany him, and the three of them ran institutes with the BATDC for eight consecutive summers. Through that work, Jennifer introduced Lois to Ann Wettrich, then the Arts Education Director at the Center for Art and Public Life at the California College of the Arts (CCA). Ann introduced Lois to Louise Music, then the Arts Learning Manager at the Alameda County Office of Education. Thus began a nine-year collaboration funded by three US DOE grants. The goal was to use PZ frameworks to make creativity and artistic practice central and to integrate the arts with other school subjects. Achieving this required building teacher- and district-leadership in curriculum design and arts-integration practices.

PZ worked collaboratively with ACOE and CCA from 2003-2012 on three projects. PZ contributed frameworks, ACOE oversaw and managed the projects, and CCA convened a group of arts educators to work with Lois in coaching art teachers in the use of the PZ frameworks. The grantees interacted with the Alliance for Arts Learning Leadership, an umbrella organization established by ACOE that facilitated connections among arts learning leaders in schools, school districts, county offices of education, community organizations, and institutes of higher education.

Three Projects

The infusion of PZ frameworks took place through three projects:

Project 1: Visual Arts Learning for Understanding Education in Schools (VALUES). The first grant (2003-2006) was called Visual Arts Learning for Understanding Education in Schools (VALUES). This project had two strands:

Strand 1 involved five art teachers who piloted ways to think about assessment using the Studio Thinking (ST) framework:

- Arzu Mistry, art teacher and arts integration coordinator at ASCEND in Oakland

- Sara Stillman, art teacher at Conservation Corps Charter School in Oakland
- Jamie Knight, art teacher at Arts and Humanities Academy (a small school within Berkeley High School)
- Lucinda Daily, photography teacher at Berkeley High School
- Kathy Crow, art teacher at Emeryville Unified High School.

These teachers piloted ways of assessing learning by looking at students' work and working processes using the ST framework. Arzu designed the Studio Habits Wheel (shown in Chapter 17). The teachers realized that they needed to assess their own art practice and curriculum using the ST framework before they could use it to assess their students' learning.

Strand 2 involved three progressive schools in the small schools movement within Oakland USD:

- Urban Promise Academy
- ASCEND
- International Community School

These small schools were established to end a chronic achievement gap in low socio-economic communities. The teachers planned their units with Teaching for Understanding, and integrated Studio Thinking and Making Learning Visible documentation into these units. Art teachers and teaching artists worked with teachers of mathematics, science, and social studies, as well as with those who taught multiple subjects, some in bilingual contexts. The arts were integral; they were not treated as a handmaiden to academic subjects.

The initiatives at the three schools are described in booklets within the [Art IS Education series](#), published in 2013 by the Alameda County Office of Education. All three frameworks were integrated at all of the schools, but each booklet highlighted one of the three frameworks:

- [*Teaching for Understanding: A Common Language for Planning, Assessing, and Improving Instruction \(the story of Peralta Elementary School\)*](#)
- [*Making Learning Visible: Connecting Arts Learning Strategies Directly to Issues of Equity \(the story of TARI in the San Leandro School District\)*](#)
- [*Studio Habits of Mind: Arts Learning Strategies to Deepen Student Learning Across the Curriculum \(the story of the Arts and Humanities Academy at Berkeley High School\)*](#)

Project 2: SPREAD. The second grant (2006-2009) was a dissemination initiative called SPREAD. The art teachers from the VALUES project worked with Oakland, Berkeley, and Emery school districts to recruit and identify 30 schools in Alameda County as Arts Learning Anchor Schools (ALAS), expanding from the schools that had already been involved in the previous grant. This initiative was funded by the US DOE, the CA Arts Council, the Ford Foundation, and funding from the school districts. Over time, many other schools applied and received funding to join the network.

The Arts Education Manager in Oakland Unified School District, Phil Rydeen, has continued a robust and well-funded version of the ALAS program for 20 years, continuing to the present day. Arts teachers and teaching artists involved in earlier phases of the project became coaches in the Arts Learning Anchor Schools and took on new leadership roles, forming a coaching network to serve the evolving needs of schools and arts integration projects over time.

Project 3: Teacher Action Research Institute (TARI). During the third grant (2009-2012), art teachers worked with 4th grade classroom teachers from eight elementary schools in the San Leandro school district. The goal was to develop arts integration practices that might help close the district's racial achievement gap. The teachers used Studio Thinking, Teaching for Understanding, Making Learning Visible to integrate the arts and to allow students multiple ways to engage with content and perform their understandings.

Tana Johnson and Carolyn Carr worked with Lois to design monthly, culturally responsive, inquiry based, contemporary arts-integrated professional development days. With substitutes paid for by the district, art teachers partnered with 4th grade generalist teachers once a month to use PZ frameworks and contemporary arts practices to redesign curriculum into culturally responsive units of study. They designed units to integrate arts into mandated curriculum, taught the units, and gathered and assessed data relating to their efforts. They posted documentation of student learning on school walls and also used visual displays to show their own professional learning. Each TARI teacher selected two or three focus students, and they shared and discussed these students' learning in documentations, at individually arranged group meetings, and in the monthly professional development sessions. In these ways, they collectively reflected on and improved their teaching practices.

In one 4th grade unit, students read *Journey to Topaz*, a novel about the internment of Japanese Americans during World War II. Students were asked to imagine that they were being interned and had just two suitcases. Which of their most important personal belongings would they bring with them? They drew and wrote about what they would take and why. They then went on to read historical fiction about the civil rights struggles in Alabama, discussed big questions like, "Can separate be equal?" and created art about what they had learned. One teacher told Lois that she was struck by the complex thinking in some English Language Learners who could not yet write at grade level. Students' artworks and writings made their learning visible both to the students themselves and to the teachers. Teachers became action researchers as they reflected and revised together. By the conclusion of the three-year funded project, all eight principals had made this approach part of their school instruction plans.

Integrated Arts Learning Specialist Program (ILSP)

After six years of US DOE projects, the Integrated Arts Learning Specialist Program (ILSP) was established to move beyond a school by school, district by district approach. Lois served as a resource and a coach for this initiative. The goal was to transform schools by formalizing what had been learned from the previous three projects. CCA supported the work by establishing a Fellows program for coaches to work with the 30 Anchor Schools of the ALAS network and to serve as instructors in the new ILSP program; the first six Fellows were Todd Elkin, Liz Harvey, Laurie Poltzer, Debbie Kaufman, Trena Noval, and Dafne Leblanc.

The ILSP consisted of three core courses (providing 30 hours of higher education credit), with additional electives and personalized coaching available:

- Course A, Arts Learning Resources and Strategies introduced the Studio Habits and featured contemporary artists and arts practices
- Course B, Assessment and Accountability Practices, focused on Making Learning Visible
- Course C, Collaborative Curriculum Design, focused on Teaching for Understanding.

Teachers and teaching artists who successfully completed the 30 hours of course work and a required set of arts learning electives earned an Integrated Learning Specialist Certificate awarded by the ACOE and were honored at annual public awards ceremonies.

Four Teacher Snapshots

Below are four examples of teacher and practitioner leadership that emerged at school sites and that had an impact on the arts education field because of the network. These arts learning leaders all started working with PZ ideas during the first years of the US DOE grants. As the work developed, so did their roles: They worked at their schools as well as with the Integrated Learning Specialist Program and became players in the national and international field of arts education. They describe below their perspectives on the work as both they and it grew.

Linda Carr and Miriam Stahl, school founders at the Arts and Humanities Academy at Berkeley High School. Linda Carr and Miriam Stahl created the Arts and Humanities Academy (AHA), a small school within Berkeley High, after noticing that many students succeeding in their art classes were failing in academic subjects. AHA was created using TfU to design its throughline: How can we create artistic scholars and scholarly artists? The arts teachers worked with the science, history, math, and literature teachers to develop arts-integrated units using the Studio Habits as a common language. Teachers worked together to determine what each habit of mind would look like in their own disciplines. For example, in English class, the Studio Habit Envision focused on learning to visualize characters in literature; in science it focused on imagining the functions of things that could not be observed; in history it focused on imagining the past, and in mathematics it focused on envisioning multiple ways of solving a problem. After four years of this program, graduation rates soared to an unprecedented 100 percent.

Sara Stillman, Art Teacher at CCC Charter School, Emery School District and International High School.

Sara Stillman, an arts educator and award-winning artist, was one of the original Studio Thinking teachers in Oakland who continued working with the project through all of its phases. She took the project's ideas with her, explicitly through language and practices and also in her own behaviors – particularly the central role of thinking and the value of students using the clarity of rubrics.

Sara had just begun teaching at an Oakland charter elementary school in 2003, the year Lois began making frequent trips to the Alameda County Office of Education to introduce teachers to the Studio Thinking framework. The county office wanted to implement arts integration using Studio Thinking with PZ thinking routines like See-Think-Wonder woven in. Art projects were to be integrated with other subject areas. For example, in a project integrating art and local history, Sara had her students do research about what the school neighborhood looked like hundreds of years ago, leading to art showing what it looked like then and what it looks like now.

Sara described how Lois and other teachers looked at student art together to figure out what each Studio Habit looked like at different grade levels. They also investigated ways to evaluate how well a student in a particular grade was using each habit. Lois also guided teachers in thinking about what each habit might look like in non-arts subject areas. For example, in science, reflection is used in writing a lab report; when an experiment fails, one has to stretch and explore to move on.

When Sara moved on to teach middle- and high school students at Emeryville School, she used the Studio Thinking framework to develop rubrics with four levels for each habit, describing what levels 1, 2, 3, and 4 would look like for each habit given a particular class project. "Rubrics are quite magical and sometimes kids don't get it till the end of the project, but we used them throughout the

work.” She also used Art21 videos of contemporary artists talking about their art, asking students to look for the Studio Habits that these artists were using.

Sara described the experience of working with Lois as the richest professional development she had ever had and spoke about how much she valued being part of an “incredible” network of K-12 elementary school classroom and art teachers. She came to understand the Studio Thinking framework as a language to reveal to students what they were actually doing when making art.

Asked how her teaching changed after working with Lois on Studio Thinking, she said her art classes involved more thinking and getting students to speak and write about their work, going beyond description or a mere “I like it” to thinking about how a particular work came about. “So many people get it wrong about learning, because they don’t look at the process, asking were you challenged, did you have to try something new? Studio Habits helped me unpack what I knew was going on and gave me a language.” When I asked Sara whether she had colleagues at her school who understood what she was doing, she said that no one cared about arts integration. “The Alameda group was my group,” she said. She eventually left her school because she felt lonely with no like-minded colleagues.

Sara’s new position is at Oakland International High School, a school for recent non-English language immigrants who have missed at least two years of school. Because so much of her time has to be spent teaching the basics of the English language while engaging her students in art projects, she has not found it possible to talk to her students about the habits. Despite the huge challenges of being newcomers to the United States, her students are succeeding on all metrics.

Arzu Mistry, arts teacher at ASCEND. Arzu Mistry (featured in Chapter 53) was one of the five original arts teachers in VALUES. When she moved back to India, she disseminated the ideas of the VALUES project (Project 1, above). She worked as a faculty member for many years at both the PZC and at the Shristi College of Art, Design, and Technology (now Shristi Manipal University). Her story shows how a young teacher developed through supported leadership opportunities. She started as an arts teacher and became a teacher-leader within her school, advanced to cross-district leadership through convening a coaching network of school-site leaders and then emerged into leadership in multiple settings (Bangalore’s Shristi College, the Drisha Learning Centers in Bangalore, teaching at PZ institutes). She went on to achieve her doctorate at Columbia’s Teachers College and is now teaching at the university level. Arzu internalized PZ frameworks and values about thinking and melded them with her own values and skillsets.

Arzu was the arts integration coordinator for the SPREAD project, managing visits from artists to the classrooms. Students working with Arzu chose a particular Studio Habit to work on and write about. At the end of each class, students reflected in writing about what they had done, and at the beginning of the next class, Arzu read back to the students what they had said in their reflections. This helped students develop a vocabulary about artistic thinking, describe challenges they faced in making their artworks, and show each other ways to push through and solve challenges. Having these reflections at the end and the beginning of each class made students’ thinking visible to themselves: They listened and often annotated their previous reflections. They also discussed how each habit differed when used in art versus science. For example, envisioning in art was connected to prediction in science. In the 5th and 8th grades, students used the habits to set goals and assess themselves with respect to these goals twice during the semester.

ASCEND was also one of the three initial turnaround schools in the VALUES project. Teaching for Understanding was used as the underlying structure for curriculum development. For example, one

unit focused on the generative topics of change, adaptation, and transformation in nature. Students studied a creek near their school that had become a trash dump, doing prediction and hypothesis testing. Each student chose a creature or part of the habitat to focus on. For their performance of understanding, students created a shadow puppet show for city council members to draw their attention to the state of the creek and what it could become, with students creating characters for the show based on what they had studied.

Making Learning Visible was used as well in these arts integrated classes. The walls were covered with exhibitions of the process of student learning, with drafts of work and quotations from students talking about their thinking as they were working on their projects. Community exhibitions brought parents and community members into the school to view this documentation and other performances.

Arzu referred to the non-arts teachers she and Sarah worked with as “teacher researcher collaborators.” She said that the teachers were all engaged together in teacher inquiry, and they documented their own thinking as well. Documentation of process, she feels, demystifies learning. While Arzu is no longer working at ASCEND, the Museum of Children’s Art, which was also involved in the initiative, still works closely with this school, coaching the teachers in arts integration.

While working at ASCEND, ACOE asked Arzu to convene art and non-art teachers from the 30 Arts Learning Anchor Schools. This professional learning community shared their successes, frustrations, and learning curves, focusing on Studio Thinking, Teaching for Understanding, and Making Learning Visible. Participants learned a lot from the monthly convenings of these school site arts learning leaders. Within a few years, the Arts Learning Coaching meetings morphed into a series of professional development courses for educators given around Alameda County, and ultimately were a rich resource of arts learning electives for those earning an Integrated Learning Specialist Certificate.

When Arzu returned to her home in Bangalore, India, she continued to coach at the PZC and lead faculty professional development on Studio Thinking at Shristi Manipal University. She also helped design and implement, with Geetha Narayanan, the Drisha Learning Centers, a network of three learning centers for children from impoverished communities in Bangalore discussed in Chapter 53.

Trena Noval, coach and teaching Artist at Maya Lin, Wood Middle, and Peralta Elementary Schools, manager of the Principal Leadership Network, and founder of IDEAL. Trena Noval began working with the Alameda County Public Schools project during the VALUES grant and continued through all its phases. She explored ways to use PZ frameworks to sustain whole-school values over time. This led her to supporting principals’ understanding as a pathway to further whole school goals. She now leads the IDEAL non-profit, which continues building these ideas after ACOE withdrew. Her story focuses on her early work at the Peralta School.

Trena was an artist-in-residence at the Peralta school, working with Pam Lucker, a 1st grade teacher. They chose “taking care of our environment” as a school-wide generative topic and built an arts-integrated unit around this theme. Students learned about the history of the land around their school 100 and 200 years ago and they imagined the neighborhood 100 years into the future. Students made inferences about the past by studying historical images of the land around their school and by reading stories about the past. They used the See-Think-Wonder thinking routine to

go deeply into these images and stories, documenting their thinking by posting their observations on the walls. Then, paired with a partner, students envisioned the future using writing, drawing, and thinking routines. In one writing assignment, students wrote poems about what they might have seen, heard, smelled, tasted, touched, and felt about life in these past time periods. Students also studied artworks depicting landscapes, as well as drawings of animals that were found in their neighborhood in the past, such as beached whales, coyotes, bears, and mountain lions.

As their final performance of understanding, students created a cut paper [animated film](#) about their neighborhood over time, after viewing examples of such animations made by artists such as Michel Gondry. Students created a landscape with animated characters and animals as they slowly made the landscape change over time. Trena and Pam also made understanding goals for themselves (action research questions to guide their reflection) as they led this unit. One of these was, “Is it possible to build deep and lasting understanding around land stewardship in young children through an artistic process?” Trena wrote me about the animation project:

What TfU gave us in this project was a new lens focusing on learning being about process, not about the end product. What was created in the end was a big product (the animation), but the process of having understanding goals that peaked students’ own inquiry and using thinking routines all along the way to check for understanding really changed the outcome of students’ learning. When these students were in 2nd grade, we interviewed them at the end of the year and asked them what they remembered about this learning. We were so surprised about what they remembered in detail and that they had new questions and inquiries about the places they lived. It was proof to us that teaching with TfU was really transformative!

This also changed the way teachers at Peralta started to talk to parents about their children’s learning successes and challenges. Parent meetings were no longer about end products but became conversations about parts and pieces of how their child chose to learn: how they completed tasks, the questions and ideas they offered, and how these led to new understanding. It was a very exciting time there for learning! Pam even started to use See-Think-Wonder to have parents explore the work of their child during conferences! Today the throughline for Peralta is, “How do we see, think, and wonder so that we can do things that matter?”

Peralta created their own goals for their students, drawing on the Studio Habits, as shown below in their Peralta Graduate Profile:

Collaborate	I can work cooperatively and respectfully with all members of my community.
Inquire Creatively	I can wonder, observe, ask questions and use creative thinking to deepen my understanding of the world.
Engage and Persist	I can be resourceful and persevere even when things are hard and have confidence to learn from my mistakes.
Think Critically	I can analyze, compare and connect ideas to grow my thinking.
Communicate	I can express my ideas through writing, speaking and creating, and consider the ideas of others.

Continuing Influences

Following the success of the ILSP, ACOE continued to focus on whole-school, district-wide, regional, and national development. In 2012, twenty-five schools in Alameda County sent their entire faculty through the thirty-hour program of the ILSP and became demonstration schools. As new staff were hired at the schools, they also went through the program. Trena worked with principals of these schools, and that work confirmed how essential the role of principal leadership is in this kind of whole-school change. A participating school principal reported that the teachers at her school were now writing their curriculum using the Teaching for Understanding framework as a result of going through the ILSP coursework. This principal also reported that students were learning to be better thinkers and could often be overheard using the Studio Habits of Mind to understand their thinking. One class of 4th graders, she noted, were so engaged in critiquing their artwork that they elected to skip their recess. The principals of these schools were surveyed and they identified having a shared vision for arts integration across their schools as one of the ingredients needed for school wide improvement.

More than a decade later, a robust leadership collaboration that grew out of that work continues with the UC Berkeley Principal Leadership Institute, which is responsible for cultivating school administrators for the entire state of California. Trena Noval and retired arts integration school principals, Judy Goodwin and Cammie Harris, consult with and teach in this program, influencing a new generation of school administrators with the creative strategies from ILSP and arts integration schools, as realized in the projects described above.

Together, Trena, Judy, and Cammie have an abundance of shared experience about how PZ ideas influence schools, both firsthand and through experience with the many school leaders with whom they have now worked. They realize that the work can't be measured by strict adherence to a PZ framework. As the frameworks interweave with practice in different settings, they merge and meld and adapt. Trena suggested something like this after reading this interview write up about how schools integrated TfU, Studio Thinking, Making Learning Visible, and Thinking Routines (CoT):

Some of the schools like Maya Lin really started to develop their use of SHoM by creating a teaching evaluation rubric for themselves, but they also continued to use TfU to plan learning and thinking routines to support ongoing assessment during the process. They also have and continue to do these amazing learning walls that are up all over the school. So I think for schools that got really deep, there was not really any separation between the frameworks. They saw them as operating in tandem as a necessary process that attended to the different parts of learning ... When learning Studio Thinking, they did it through working on separate parts of SHoM one at a time, but as time went on ... they grew their understanding of how they all operate at the same time, how our human brains form understanding.

Practices developed and used in the 2012 ILSP whole-school initiative continue at many schools across Alameda County, including at Maya Lin Elementary School and Wood Middle School, where Judy Goodwin and Cammie Harris were principals who brought their entire staffs into arts integration under their tenure.

The ILSP was dismantled in January, 2020, after Louise Music resigned in December, 2019, also bringing to a close the Alameda County Office of Education's 20 years of regional, statewide, and national leadership in the arts education field. According to Louise Music, who shepherded the various initiatives over that time period, the ACOE's distinction was due in large part to the scholarship, research, and practice-based aspects of the work grounded in PZ frameworks. When I asked Louise why the program was dismantled, she wrote me the following (email of May 22, 2024):

The Superintendent at the time had assured me and my staff that the work was a valued priority and would be sustained beyond my twenty-year tenure. No explanation was ever given by the then-superintendent about why the program was dismantled and ILSP instructors contracted by the ACOE were dismissed. School and district leaders were confused and disappointed. Trena Noval, along with a brilliant team of other ILSP instructors (Constance Moore, Indi McCassey, Lyndsay Shepherd) established an LLC called IDEAL (Integrated Design for Learning and Arts Leadership) that continues with ILSP professional development practices for teachers and school leaders to this day. In fact, ironically, the current Arts Learning Manager at the Alameda County Office of Education has hired IDEAL staff back to conduct arts integration professional development for Alameda County teachers.

It is disheartening to see the successful work of over 20 years undone by leadership change. However, the influence of these initiatives is still strong and present in a variety of ways.

Many national and international arts education leaders have emerged from the work at Alameda and continue to influence schools, communities, newly established non-profits, and institutions of higher education: Arzu Mistry at Columbia University, Trena Noval at IDEAL, Sara Stillman at International High School, Mariah Landers at Studio Pathways, Todd Elkin at Washington High School, Chip McNeal at Brandeis University, Derek Fenner at the University of South Carolina, Michelle Holdt at Creative Compassionate Classrooms, and too many others to track or name here. As national and international leaders, they are creating their own non-profit organizations, earning advanced degrees, training the next generation of teachers and school site administrators, and establishing national professional reputations as ongoing resources for this work. At the same time, untold numbers of schools, teachers, and community arts providers continue research based, arts learning strategies in their local contexts.

Louise Music said that PZ's frameworks gave Alameda practitioners a common language that sustained their work and provided a foundation on which to develop collaborative leadership. Perhaps what was learned after 20 years of this work is the value of putting thinking into the forefront of school change. Sometimes a PZ framework becomes so much a part of a school's thinking that it is no longer named. This is what Louise Music thinks has happened with TfU in the schools in Alameda County. In an email on April 25, 2023, she said:

I have observed after 20 years, and as the work has matured ... that people talk less and less about TfU ... What I mean is that they mention TfU less, because it has become second nature: the cycle of what is generative or important to learn, what we want to understand, what we do and ask children to do to develop, deepen, and demonstrate understanding, and finally how we know what has been learned and how that informs what we do next, that is embedded and is the foundation of everything.

California Teacher Development Collaborative

Visible Thinking/Cultures of Thinking, Teaching for Understanding

In 1999, Janet McGarvey founded the Bay Area Teacher Development Collaborative (now called the California Teacher Development Collaborative) in San Francisco, inviting all of the independent schools in the Bay Area to join. The collaborative was founded in order to provide independent schools with better professional development than they were getting. Much of the professional development they received was based on Visible Thinking (thinking routines) and Teaching for Understanding (TfU).

Visible Thinking/Cultures of Thinking and Teaching for Understanding

The first year, fifty schools joined. Every summer, beginning in 2000, the collaborative held a three day summer institute much like the PZC, with keynote presentations and small group break-outs. The first one had over 200 attendees, and the three keynote presenters were all from PZ: David Perkins, Ron Ritchhart, and Lois Hetland. A cohort was also formed of 12-18 fellows who met during the year in order to go deeper into the concepts and practices presented at the institute: Jennifer Stuart (featured in Chapter 51), was one of these fellows. Workshops were held throughout the school year, and teachers also met with one another during the school year to discuss what they were doing as a result of the summer institute.

Janet told me that TfU was more difficult for teachers than the Visible Thinking framework. However, the teachers used the parts of TfU that they could grasp. The basic premise of TfU, she said, is strong and makes so much sense. “Even if you just start with *What does it mean to understand and how do you teach to this*, that was enough to light a spark.”

She went on to say that the use of the TfU framework and thinking routines dramatically affected student learning. The Bay Area became known as the place that was committed to improving teaching through discourse, deep thinking, and learning together. Janet retired in 2017, but the institute continues (as can be seen [here](#)), and continues to honor the same priorities.

Virginia Paix and Malika Carter: Live Oak School

The Live Oak School (K-8) in San Francisco is one of the independent schools in the teacher development collaborative. On the school’s website it is stated that their curriculum is structured on essential questions and throughlines. They invite people to read the website to “Learn how students pursue deep understanding by exploring and constructing their own answers to big questions.”

This is a school imbued with both Visible Thinking and TfU. I spoke to the head of school, Virginia Paix, who was responsible for bringing TfU and Visible Thinking to Live Oak. Virginia was first introduced to the idea of backward planning and essential understandings as a master’s student at Teachers College in 1997-1998. (She did not recall whether these ideas were explicitly linked to Project Zero by her teachers.) She came to Live Oak in 2001 and realized right away that the kind of curriculum planning going on there did not involve backward planning and understanding goals. In about 2002, she attended one of the yearly conferences in San Francisco run by the Bay Area Teachers Development Collaborative, with presentations and workshops by PZ researchers. Ron Ritchhart was there and by the end of the conference he had trained “tons” of teachers in Visible Thinking and TfU.

She now sends groups of 3-4 faculty every year to the PZC, with the goal of ultimately getting all of the faculty trained at PZ. There they were introduced to thinking routines and TfU. Virginia would select summer reading books by PZ researchers, trying to get everyone “as fluent as possible.” When the school expanded their enrollment and doubled their faculty, she faced the task of introducing the Live Oak way of teaching to all of these new faculty. Support for this came initially from Malika Carter (see below), who served as an instructional coach, as well as from online resources. Four faculty went to the summer institute in 2023, and there is now a study group meeting every six weeks where teachers can think together. She wishes she could have an instructional coach at the school. Malika used to do this but has now moved into a high school placement role.

Virginia told me that her teachers have no trouble understanding and using thinking routines, but that the kind of curriculum planning called for by TfU is difficult for some teachers. They feel that they do know enough to do this. But Virginia said that they stick with these teachers and work with them and try to help them as much as possible.

I asked her if these approaches had changed student learning. “One hundred percent,” she replied. Students are more engaged, think more deeply and critically, and talk about big ideas. She sees a lot more sense making – students rarely ask why they need to know something because what they are learning is meaningful, and connected to what they are learning in other areas of the curriculum. The curriculum is less siloed. And students not only learn more, but what they learn lasts.

Malika Carter began to teach humanities at Live Oak in 2006. She had attended The Bush School, an independent, progressive elementary school in Seattle, and later attended a progressive high school – Concord Academy in Concord, Massachusetts. She received her MA in teaching at Mills College, where she was introduced to a constructivist, inquiry-based teaching approach, something she was already familiar with from her own education.

Malika’s first teaching job was in a public school where she did things differently from most of the other teachers: she liked projects, she encouraged students to ask questions, and she recognized learning as messy. Each year she re-constructed her curriculum, taking students’ interests into account. Her curriculum was emergent, even though her learning objectives remained the same. She did not know the words used in the TfU or Visible Thinking frameworks but she had the same mindset as those at PZ who created these frameworks. Thus, when she got to Live Oak and was introduced to both TfU and Visible Thinking, these frameworks just made sense to her. She went on to attend the PZC several times, after which she became a Fellow. And every year, the school sends a few more teachers to the PZC.

Malika eventually became the head of curriculum at her school. In this capacity, she spent an entire year with her whole faculty on learning TfU – a huge effort, she recalled. It became an expectation that TfU would be the framework that all teachers would use. She also developed a sequence of thinking routines for all teachers to use, even though they were also free to use others.

Teachers are required to document their curricula to show that they use TfU and Visible Thinking. Malika told me that some teachers found these approaches more difficult than others, but for the most part, the whole school endorsed and used these approaches. Malika now does her own independent consulting on the use of these two frameworks.

Professional Development Collaborative

Agency by Design, Global Competence, and Visible Thinking/Cultures of Thinking

Jim Reese founded and directed the [Professional Development Collaborative](#) at the Washington International School where he taught. Elise Heil (featured in Chapter 52) became the director in 2025. While the PDC is not a direct arm of PZ, it has been a powerful spreader of PZ frameworks. How did this all come about?

In 1997, Jim Reese was teaching in an international school in Brussels that belonged to the European Council of International Schools. Howard had given an address to the Council's annual conference in 1996. In 1997, the head of the International School of Amsterdam formed a consortium of international schools and built connections between this consortium and PZ. PZ researchers Lois Hetland and Steve Seidel were hired to run a small professional development institute for consortium schools twice a year. Jim Reese first attended as a teacher but in 2001 he was brought on board as a facilitator along with Mark Church. In addition, the consortium sent teachers to the PZC. In 1999 Jim was one of these teachers, and in 2001, he was a visiting scholar at PZ for a year. At that time, Jim was brought on to the PZC staff, where he served for 16 years (with 11 of these as Education Coordinator). During these years, Jim also coordinated an average of two off-site PZ conferences per year from 2010-2017. The focus changed slightly for each conference depending on who the keynote speakers were.

Jim founded his Professional Development Collaborative in part to be able to work more continuously with teachers than was possible at the PZC, which only lasted for a few days, and which for some teachers was a one-time encounter. In addition, Jim wanted to get more evidence for the implementation of PZ ideas than could be gained from the PZC; knowing what teachers were doing with the ideas they were exposed to at the PZC was possible only when a formal collaborative project between PZ and a school (or a teacher) had developed, or in cases where schools stayed in continuous touch with PZ members.

The PDC's mission, as stated on their website, is to nurture deep thinking and understanding. The collaborative offers free and paying workshops, professional development, consulting services, and a summer institute with inspiring speakers. Jim contracts with over a hundred local educators to serve as faculty members for the PDC summer institute, to serve as workshop providers for conferences and professional development days the collaborative organizes, and to serve as consultants. He also systematically reaches out to schools to get them involved and keep them involved.

As with the PZC, early adopters are brought in to run workshops and present at conferences. Jim expects teachers who attend the institute to bring the ideas they learned about back to their classrooms. When Jim is able to learn (from word of mouth or school visits) that the schools of the faculty members have not adopted any of these ideas, the teachers from these schools do not get invited back to the institute as faculty.

The PDC summer institute, first held in 2014, began with grant funding from the Edward E. Ford Family Foundation. It became self-funding within three years, and this despite offering a subsidized registration fee and scholarships to Title 1 teachers and reduced fees for schools sending three or more teachers. The PDC institutes were modelled after the PZC, and included some PZ staff as faculty. At each institute, participants spent an entire day at a museum (the National Gallery of Art is one of the 12 museum sites involved) learning about using thinking routines in front of works of art, science or history displays, monuments, memorials, etc.). With the pandemic in 2020, the

institutes became virtual, opening them up to educators all over the world. By 2022 the institute was back in person but kept a separate (non-hybrid) virtual track. These always fill up.

The collaborative also offers coaching support – often needed for schools that are in transition, moving through the following four phases:

- Learning about a model
- Persuading their schools to implement such a model
- Actually trying out the model
- Sustaining the adoption of this model in the school or schools

Supporting schools through these steps is a recipe for expansion, as discovered by the Idea into Action project led by David Perkins (see Chapter 31). Jim also provides coaching for teachers who are in schools that do not support the implementation of PZ practices.

The PDC does not run workshops on TfU, Jim told me, but TfU underlies everything they do. Thinking and understanding are everywhere, but Jim felt it would take too much time to teach the complex framework of TfU (and in addition wanted to make the focus different from the PZ institute which often included TfU). Once again, I heard the observation that while some teachers quickly grasp TfU, others find it too complex. Thinking routines are an easy pathway into creating a culture of thinking and understanding. Thus, Jim focuses on the *concept* of understanding rather than the TfU framework.

The institutes and workshops also have focused on global competence (see Chapter 43), and Agency by Design (which they call Making Across the Curriculum) (see Chapter 49).

The PDC is supported by a strong infrastructure: a Google drive folder for every project, a mailing list, website, and staff to manage the finances and the organizing. None of this would be happening were it not for the Washington International School's willingness to serve as host, and for Jim's vision, commitment and strong networking skills.

When I asked Jim how all of this can be sustained, he said that WIS is proud to host the collaborative, feels it makes them stand out, and remains very committed. In addition, as of February 2023 when I interviewed Jim, eight schools in the collaborative are, like WIS, now defining their mission with these core PZ ideas: Sacred Heart School (featured in Chapter 51), St. Thomas More Catholic Academy, Van Ness Elementary School, Washington Yu Ying Public Charter School, School Within School [a Reggio-inspired public elementary school], Belvedere Elementary School, Oakton High School, and Briya Public Charter School.

Quaker Valley and Northgate School Districts, Pennsylvania

Visible Thinking/Cultures of Thinking, Making Learning Visible,

Agency by Design, Good Work

As discussed in Chapter 49 Jeff Evancho runs a school network called Agency by Design Pittsburgh. In addition to Agency by Design, Jef has also become a disseminator and implementer of PZ ideas – particularly Making Learning Visible and Visible Thinking/Cultures of Thinking. By 2015, Jeff was the PZ Programming Specialist for the Quaker Valley School District where he introduced these two frameworks. Teachers (particularly teachers from pre-K through 6th grade) find these frameworks inviting, Jeff said, because these are not additional things for them to do but rather

provide a way to rethink their own practice. In contrast, high school teachers have more difficulty integrating these frameworks into their teaching.

After the superintendent of the Quaker Valley School district left, Jeff left too and in 2021 became the Assistant Superintendent for secondary education in the larger South Fayette Township School District, where he was head of the curriculum. There he implemented the Cultures of Thinking framework as well as Making Learning Visible, Agency by Design, and Good Work. Some South Fayette teachers have become regional leaders of these ideas, including Tara Surloff, and Melissa Unger.

Jeff then went on to become the Director of Partnerships and Equity at the Northgate School District, in which role he continues to partner with PZ. One important innovation was that the high schools in his district switched from a 40- to an 80-minute block schedule, giving teachers more time to incorporate thinking routines into their classes.

Challenges. Jeff talked about a general challenge when introducing new ways of teaching in high school: high school teachers seem to be inclined to want to teach like they were taught either in high school or college — that is, via lectures, valuing content over process, hence valuing *what* to think over *how* to think. In addition, because standardized tests are high stakes in high school, there is pressure to teach how to take and pass these tests rather than how to be a good thinker/learner.

Jeff talked about how TfU has not really taken hold in his schools, and speculated why. First, the vast majority of Pennsylvania schools use Grant Wiggins' Understanding by Design framework, and this is seen as a rival to TfU. And second, the TfU framework is not easy for teachers, who struggle with developing understanding goals and building essential and guiding questions.

Successes. Jeff also talked about successes. He told me that some of his star teachers from the network (he mentioned Tara Surloff, Melissa Unger, Eric Lindeman, Matt Little, Andrea Croft, and Brian Veshio) are still implementing MLV and Visible Thinking/Cultures of Thinking. As mentioned, one way that these teachers get support is that they become coaches in the PZ online courses. He mentioned three people who have played important roles in sustaining his network: Nicole Smith, a high school principal at Northgate, who fosters building level implementation, Brian Veshio a math teacher, and Wayne Walters, superintendent of the Pittsburgh Public Schools.

DC-PZ

Visible Thinking/Cultures of Thinking, Teaching for Understanding

The [DC-PZ network](#), founded in 2012 by Jim Reese and run out of his [Professional Development Collaborative](#), became a powerful tool for the spread of Visible Thinking (Chapter 4) and TfU (Chapter 4). How did this come about? In 2012 at the summer institute, 40 teachers were from the DC area – the largest group from any one area. Jim invited these teachers to a meeting at the institute, and together they decided to form the DC-PZ network to share ideas and meet throughout the year. Jim began with no staff assistant, but by 2023 as I write this, the group has two full-time staff members working with Jim and over 2,300 educators.

The participating educators work in the DC region in public, public charter independent, and religious private schools, as well as museums and early childhood centers. Today (as I write this in 2023), the majority of the teachers are from public schools, with Title 1 Catholic schools also

involved. One reason why there are not more independent schools, Jim speculated, is that because these are schools of privilege, many have felt the need to focus in their professional development almost exclusively on issues of diversity, equity, and inclusion. I also speculated that independent schools may feel they do not need help in instruction as – in contrast to many public school teachers – their instructors have typically had liberal arts educations and may even have doctoral degrees and could be teaching in a college.

How does Jim monitor impact? Jim works regularly with the teachers in the DC-PZ network holding numerous workshops and informal meetings in which teachers discuss their teaching (bringing in student work), show evidence of impact, discuss what they are struggling with, what is working well, what they will do next, etc. Jim also visits many of their classrooms and follows them on twitter to see what they are sharing. Thus Jim is able to see the kind of influence he is having.

[An article](#) about the PDC and the DC-PZ network appeared in *The Washington Diplomat* in 2023.

DC-PZ-EC

Making Learning Visible, Children are Citizens, Pedagogy of Play

DC-PZ-EC is an ongoing professional development group in Washington, DC for early childhood educators, meeting monthly and led by Kirsten Schmidt, an administrator and former early childhood teacher at Briya Public Charter School (discussed in Chapter 48). This group is a spin-off of Jim Reese's DC-PZ. This group started in 2016. Their focus is on Making Learning Visible, Children are Citizens, and Pedagogy of Play.

EL Education

Visible Thinking/Cultures of Thinking, Teaching for Understanding

EL Education is an educational nonprofit founded by Ron Berger that provides professional learning services and educational materials to schools and districts nationally. EL Education has a network of K-12 schools based on a particular progressive school model deeply influenced by PZ ideas. EL came about because in 1991, the New American Schools (NAS) Development Corporation put out an RFP for teams to develop proposals for whole school change (as discussed in Chapter 29). Eleven proposals were funded (out of nearly 700). The challenge was to create a new school design in Year 1, create a small network of demonstration site schools in the next two years in partnership with districts (funded by NAS), and after that to scale up broadly by recruiting districts and schools to pay for the school transformation and improvement process to adopt the new model.

One of the winning proposals was called Expeditionary Learning Outward Bound (now called EL Education). One of the authors of the proposal was Meg Campbell, who at the time was at the Harvard Outward Bound Center at the Harvard Graduate School of Education. Meg became the founding director of EL, working closely with Ron Berger (now EL Senior Advisor for Teaching and Learning), who had been affiliated with Project Zero since 1989). Many other founding staff members at Expeditionary Learning Outward Bound were educated and shaped by PZ's ideas and practices.

The core principles of EL schools are as follows: a rejection of the transmission model of education in favor of students constructing their own understandings, the expectation of high quality student work scaffolded through multiple drafts and critiques, and the importance of character education and work for social justice. EL schools use project-based learning, portfolios, performance

assessments, and thinking routines. EL Character education does not mean only moral character (e.g., honesty, kindness, and good citizenship) but also academic character – collaboration, curiosity, ingenuity, perseverance, and tolerance for others’ perspectives). This emphasis on character stems from German-born progressive educator Kurt Hahn, founder of Outward Bound in 1941 in the UK and a principal mind behind the International Baccalaureate and the United World College schools.

Out of the 11 teams funded by NAS, only two of these are in existence today, and EL Education is one of these. EL Education today is thriving and includes about 150 schools across the US. EL has learned not to try to scale up too quickly, but to partner with schools only when at least 80% of the teachers have expressed a commitment to joining. In addition to the 150 schools that use the full EL Education model, many schools and districts use EL Education’s open source K-5 [English Language Arts Curriculum](#), which embodies key aspects of the model and uses many practices and protocols born from the work of Project Zero. Currently the EL Education curriculum is used by over 450,000 students in at least 35 states, including all the students in a number of urban districts, such as Detroit, Oakland, Charlotte, Des Moines, Chattanooga, and Raleigh.

The curriculum is quite specific. At first Ron felt it might be too prescriptive but he now realizes how important it is to provide teachers with a model that they can work off of. Only the very best teachers can create these from scratch. He notes that having these models keeps teachers from talking too much to the group. Instead, after a few words, teachers immediately turn to PZ tools such as having students pair off to discuss an idea, critique each other’s ideas, engage in slow looking routines to make inferences as well as thinking routines. When Ron visits these schools, teachers tell him that having these tools has made all the difference to them.

In sum, EL Education has been deeply infused with PZ ideas: thinking routines, small group learning, protocols for discussing student work, performance assessment, and portfolios which are used for student reflection and critique. While these practices may not be labelled as coming from PZ, many of the current leaders at EL Education, including Ron Berger, current CEO/President Scott Hartl, and Chief Partnership Officer Christina Brown, were deeply influenced by PZ’s perspectives and practices and make sure those practices stay at the heart of EL’s work. A look at the EL open source curriculum will reveal these PZ practices everywhere in great detail, step by step, though these are not named as coming from PZ.

When I asked Ron how it was that EL became so successful, he had an interesting response. In the early 2000s, there was a push in the US for standardized testing, standards and accountability. Many progressively-oriented educators rejected this and refused to track test scores. And EL’s leaders agreed that annual test scores were a reductionist, insufficient assessment of students, teachers, and schools. But EL realized that they would soon go out of business if they did not take test scores seriously: whatever EL Education believed philosophically about high-stakes testing, its school partners were being held tightly accountable for their students getting good scores (and if they failed to do so, they risked deep trouble). Therefore, EL improved its literacy and math practices, became expert in the common core standards, and built a curriculum based on these standards without neglecting the core EL principles listed above. EL has conducted studies showing that students who have had three years of EL education outperform non-EL students on math (by ten months) and reading (by seven months).

Hawaiian Charter Schools

Visible Thinking/Cultures of Thinking, Teaching for Understanding, Making Learning Visible

The state of Hawaii has 30 charter schools. A few years ago, the Early Learning Program team of the Hawaii State Public Charter School Commission received a grant to develop ways to improve the quality of instructional support in their schools. And out of this grew a collaboration between the Hawaiian charter schools and PZ. I learned about this when I spoke to members of the Early Learning Program Team: Deanne Goya, PJ Foehr, Kathi Takakuwa, Caitlyn Kryss, and Puhala Kamalamalama.

After researching various approaches, the Early Learning team came upon PZ. \ To explore whether PZ ideas might be a good fit, they sent 20 people to the PZC in 2017, and another group the next year. They then offered four PZ online courses to all 30 charter schools.

The next step was to invite PZ researchers to conduct coaching sessions with the participating teachers. Mark Church (a long-time PZ affiliate) began working with the early childhood teachers, focusing on Visible Thinking. Tina Blythe, Mara Krechevsky, and Mark Church worked with teachers across grade levels from nine schools to create what they called “The Thinking Classroom” where MLV, TfU, and Visible Thinking were introduced. Every Thinking Classroom school has two facilitators whose job it is to make sure that teachers across the school have conversations about teaching and learning.

The leaders of the charter schools began to use thinking routines in their own meetings to make sure that all voices are heard. And in teachers’ professional development, thinking routines also began to be used – so that leaders, coaches, and teachers all carried out the practices that they wanted the children to use – everyone was “walking the talk.”

At the beginning there was some concern about implementing a “Western” approach because, as Puhala told me, anything that comes to Hawaii is viewed as an “invasive species.” But teachers (and parents) seemed to immediately recognize the value of asking children open-ended questions, in contrast to the kind of rote learning many of them had grown up with. They saw how open-ended questions could make visible a child’s mind. They also valued the fact that PZ was offering frameworks that could be adapted rather than fixed curricula that are imposed.

Scarsdale Public Schools

Visible Thinking/Cultures of Thinking, Teaching for Understanding, Making Learning Visible, Pedagogy of Play

Scarsdale, a town outside of New York City, is known for having one of the best public school systems in the US. For over 20 years, Lindsey Hicks, now retired from teaching and a member of Project Zero, was a Scarsdale elementary special education teacher there for many years. Lindsey had attended the PZC, and she told me that she incorporated thinking routines with her special education students. She found that these routines helped her students slow down and uncover complexities. In her words, “PZ has informed who I am as teacher, person, colleague.”

Reggio Study Group

Lindsey founded a Scarsdale Reggio study group 18 years ago, and, as I heard in May of 2025, they are still going strong. The study group is open to K-12 teachers and, in addition to elementary teachers, has drawn in middle and high school music, art, and English teachers. The study group has followed PZ projects through the years. Teachers come in and out of the group, and the model is one of teachers teaching teachers, and sharing their work with their departments. In the year

2025-6, they will be celebrating their 20th year, and are dedicating the year to Carla Rinaldi, the visionary Reggio leader who died unexpectedly in the spring of 2025. They will spend the year revisiting her writings.

Lindsey told me about a high school art teacher inspired by MLV and Pedagogy of Play. She inspired the high school English teachers to use these approaches, and the English teachers have now rewritten the 9th grade English curriculum with the goal of deepening student engagement by making learning more playful and more relevant to students' lives.

Lindsey also told me about a photography workshop that she helped run for high school seniors inspired by Pedagogy of Play and the idea of empowering students. The workshop was called "Close Encounters with Objects." Students selected objects to photograph, practiced slow and close looking, built a narrative, and experimented with photographs from different viewpoints to capture their visual stories. PZ protocols and thinking routines were incorporated during the discussion that followed.

Lindsey wrote me the following:

My Scarsdale high school colleagues wrote up a description of their curriculum change based on their explorations in the Reggio study group for you (see attached). You will see that they describe their work through a Reggio lens. The study group over the years has explored many PZ concepts and studies. We have recently read (and reread) Visible Learners and A Pedagogy of Play. After having read A Pedagogy of Play in the study group, the 9th grade English teachers are collaborating with an art teacher to modify the 9th grade English curriculum based on their desire to promote learning that is "more creative, positive, and in-depth," and to nurture student agency through student voice, choice, and playful learning. The Pedagogy of Play ideas of exploring the unknown, leading learning, and finding joy in particular have resonated with the teachers.

Participation in the study group, Lindsey said, has changed teachers' mindsets. They have come to see the child as highly competent and the culture of their classrooms has changed. They have developed a culture of listening, and a culture of making learning and thinking visible. The new superintendent has been influenced as well: the idea of sharing power with the students, and giving the students voice, is now in the new strategic plan.

Pedagogy of Play

In 2023, the study group read *A Pedagogy of Play* as their main text. The Scarsdale elementary literacy coordinator is a member of the group and after reading this text, asked if someone from the Pedagogy of Play project might provide professional development on playful learning for a group of elementary ELA teachers. Yvonne Constant-Liu volunteered.

On Oct 24, 2024, Yvonne emailed the PZ PoP team the following:

I was at Scarsdale NY the past two days doing the first of a year-long PD series on PoP, and the superintendent stopped by serendipitously. He sat in on a group of K teachers after a classroom observation, talking about what they saw as playful learning using the cross cultural indicators as a guide. Then he sent this email to all the principals in the district,

October 22, 2025. Hi all - I was just at QR and ran into Sue just as the K teachers were convening their CRG with the Project Zero consultant Yvonne Liu-Constant ([Pedagogy of Play](#)). After observing a model lesson in Karen R's room, they debriefed the lesson. The key question was, "How

do you see learners leading learning, exploring the unknown, and finding joy in the process?" There are SO MANY components of the strategic plan in that question alone I was speechless. As I listened to the debrief, I was struck by the connections between the pedagogy of play (first graphic below) and the [DR framework](#) (below that), particularly Share Power. These teachers were describing how, by sharing power, they saw deep student engagement and joy. Sue can explain more, and yes, legos were involved, but the play was intentionally connected to drawing and writing. This seems like an incredibly valuable learning opportunity for teachers and kids. Thank you for facilitating these teachers to be out of their classrooms- it seems to me this will pay off! And gratitude to Sue and Michelle as well! I look forward to reading the book.

Visible Thinking

Lindsey advised me to speak to Christine Boyer, a fifth grade teacher in Scarsdale, who has used thinking routines for a number of years. Christine was introduced to thinking routines by Lindsey Hicks as well as to like-minded teachers on social media and from Ron Ritchhart's online PZ course on thinking routines. Christine told me that one of her favorite routines was See-Think-Wonder, which she used when students were looking at art, history images, and the covers of picture books. She also often used Parts-Purposes-Complexity when they were studying issues in government such as the articles of confederation. When students were studying texts, Christine used a routine altered by Erik Lindemann (see below) to become Parts-Purposes-Messages. Students first identified the parts (title, characters, settings, etc.), then the purpose of each part, and finally the message the author is trying to convey.

Another routine that she used was Parts (e.g., what is the most important part), what are you finding challenging, puzzling, or difficult to understand, what question would you most like to discuss, what is something you find interesting.

During the pandemic, Christine was able to stay with the same group of students for three consecutive years. In 2019 she was given a 3rd grade class. These students then stayed with her through fourth and fifth grades, allowing her to note the impact of three years of working with thinking routines. Her students used thinking routines when investigating how to read non-fiction – looking at the covers, the titles, and the boxes that the text contained. When 4th grade came around, 16 of the 20 parents were thrilled to be able to have their students stay with Christine, while four wanted a more traditional experience. Three new students were then added to Christine's 4th grade class. These new students found themselves being taught by the other students, who explained to them "this is how we do things here," and who introduced the newcomers to the thinking routines.

Christine told me that sometimes she would ask students to look at something and the students would say "This feels like a See-Think-Wonder" and they would then initiate this routine on their own. During a unit on the American Revolution and the Boston Tea Party, she had her students build a boat (18 x 16 feet) in the school garden (which later became a reading boat). The students designed the boat, and then built it using real tools (drills, hammers, wood which they measured and sanded) They used thinking routines as they worked. For example, they first studied the tools they would use, examining their Parts-Purposes-Complexity so as to fully understand the tools and be able to use them safely.

They investigated the symbols of flags for the boat, they made a pulley for the boat's flag (they had studied pulleys in science), and they then decided to make new symbols for the boat, painting on big white pillow cases. They used thinking routines to think about what freedom means to you today.

By fifth grade, Christine's students were very comfortable with thinking routines. They had no problem with looking for 30 minutes at an image. They took a deep dive into studying and writing non-fiction, and they wanted to use Parts-Purposes-Complexity again. For complex nonfiction they used Parts-Purposes-Message. As just one example, when looking at secondary characters (a part), they decided that the purpose of one of the secondary characters was to introduce the concept (message) of racism.

Christine has recently retired. I asked whether thinking routines would remain in the Scarsdale schools, and she was not sure that the school system still really valued this approach, a situation she found frustrating. After she retires she will be consulting for the Hudson Lab School, an independent school in Scarsdale run by Cate Han, a school which does value this approach.

Teaching for Understanding

Lindsey found the TfU framework helpful in her work with special education students. For students who have a difficult time getting engaged, generative topics that are interdisciplinary made a big difference. As one example, she worked with several third grade boys on the autistic spectrum who were strong readers and writers but had difficulties focusing and connecting with other students. One day they came into her resource room and noticed a book on the Titanic. They started reading it and then spent the rest of the year on a Titanic project (where Lindsey used understanding goals). At the end of the year they presented to the entire class in a way that "awed" the other students, and which ended up changing their relationship to the other students.

Visible Thinking South Florida

Visible Thinking/ Cultures of Thinking, Teaching for Understanding, Making Learning Visible, Artful Thinking, Out of Eden Learn/Open Canopy, Pedagogy of Play, Global Competence

Angela Salmon, originally from Ecuador, is a professor of early childhood education at Florida International University of Miami. She learned about Howard's work while a doctoral student at the University of Cincinnati. After reading about PZ, she attended the PZC in 1998, where she "fell in love with these ideas." She then enrolled in a number of PZ's online courses, attended the PZC again as a fellow in 2001, 2002, and 2003, and as a study group leader from 2004 to 2017. Angela's chapter [in this book](#) presents a number of PZ frameworks that she believes contribute to authentic teaching and learning for pre-K up through 5th grade. Almost all of Angela's publications (listed [here](#)) are related to PZ ideas.

When Angela moved from Ecuador to Miami in 1999, she founded and directed a Reggio-inspired school called The Joy of Learning. When a colleague visited the Joy of Learning school, he invited Angela to teach at Florida International Universities, where she was hired in 2002. She directed the early childhood education program therefrom 2001-2021 and incorporated many PZ frameworks into this program. (When the Joy of Learning school was sold in 2023, the school became a Catholic school and its name was changed to Shelton Academy Angela does not know whether this school remains a Reggio-inspired school, but I saw no evidence of this on their website.)

Soon after she was hired as a university professor, Angela co-founded [Visible Thinking: South Florida](#) (VTSF), a non-profit community of practice network and support group for early childhood educators from schools in Miami-Dade and Broward counties. She founded VTSF because she realized that when her students went on to be early childhood educators, they were often isolated in their schools, with no "soul mates" to talk to. They needed a learning community. VTSF included

both early childhood practitioners as well as teachers-in-training and doctoral students. Gradually, teachers from more and more schools joined.

As of the date of my interview with Angela (August 26, 2024), there are about 300 network members. The primary (but not the only) focus of this network is on creating cultures of thinking at the early childhood level, with teachers serving as action researchers, trying things out, then sharing and revising their practices, and thus learning from their own experience. This network is the first to bring the practices of the Cultures of Thinking framework to the early childhood classroom. The aim is to transform traditional educators into progressive ones who promote deep thinking in their students, and to support those already in the progressive/deep thinking mode. An article about this can be read [here](#). A testimonial by a once traditional educator can be viewed [here](#) (scroll down).

VTSF members meet monthly (formerly in person, now online), and during these meetings, one teacher presents a video of something from their classroom, which is then discussed, as shown [here](#). VTSF also holds an international conference every other year for participants worldwide, with simultaneous translation into Spanish. PZ researchers who have present at these conferences include Tina Blythe, Veronica Boix-Mansilla, Edward Clapp, Liz Dawes Duraisingh, Howard Gardner, Tina Grotzer, David Perkins, Jen Ryan, Shari Tishman, and Daniel Wilson.

When I asked about challenges she faced, she said that at first, the teachers in the network were stressed by the idea of being teacher-researchers. “We are just teachers,” they said. Gradually, however, teachers came around to the idea of being researchers. When, at one of her early conferences, five teachers presented about what they were doing in their classrooms, teachers in the audience felt empowered. From then on, they were researchers. Starting on p. 15 of this [pdf](#), Angela describes how teachers engaged in action research to develop ways of making student thinking visible. Angela cited David Perkins as her mentor in how to form and sustain a learning group.

When I asked about challenges in using thinking routines with preschool children, she said that this was not difficult. [Here](#) is a video about using thinking routines in kindergarten. [Here](#) is a brief video (with captions in English) showing the use of See-Think-Wonder with very young children exploring bubble bath foam. [Here](#) is an adaptation of the Chalk Talk routine. Step Inside is also easy.

Now most of the teachers Angela has trained at Florida International University are leading early childhood programs in Florida, Washington DC, Costa Rica, Colombia, and Greece. Over 20 early childhood schools in Miami have incorporated cultures of thinking as a result of having joined VTSF. In 2014 she was invited by the Independent Schools of Victoria in Australia to introduce the visible thinking approach to preschool teachers, which she wrote about [here](#).

VTSF has introduced teachers to a number of other PZ frameworks besides cultures of thinking: Artful Thinking, Making Learning Visible, Out of Eden Learn (in collaboration with Kiriaki Melliou), Pedagogy of Play, and Teaching for Understanding. Of course, OOEL is adapted for non-reading non-computer using pre-K students: the teacher presents ideas from OOEL, the children discuss them, and then engage in OOEL activities such as making maps of their communities. VTSF is also working with Veronica Boix-Mansilla and VTSF colleagues in Greece, Poland, Colombia, Costa Rica, and the Dominican Republic on global competence, including initiatives to help immigrant children.

This chapter has documented the spread of PZ frameworks through ten school networks in the US – networks that were not founded by PZ but rather by educators inspired by PZ. In the next chapter, I document the spread of PZ frameworks through school networks outside of the US.

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Chapter 56

Four School Networks Outside of the US

Nazaret Global Education Organization

Multiple Intelligences, Visible Thinking/Cultures of Thinking, Teaching for Understanding, Making Learning Visible, Artful Thinking, Good Project, Out of Eden Learn, Agency by Design, Global Competence

The Nazaret Global Education Organization, founded by nuns, is a global network of schools using a cluster of PZ frameworks.

The Col·legi Montserrat is a school in Barcelona, Spain serving students from 2 to 18 years of age, offering an IB program for the middle and high school years. This school is described [here](#) as “one of the most innovative schools in Spain.” The Col·legi has had a close relationship with PZ for the past 20 years, with many visits exchanged to and from PZ.

The Col·legi. was founded in 1926 by the Missionary Daughters of the Holy Family of Nazareth with a vision to shape both the mind and the heart of its students. Today this is a school deeply imbued with PZ ideas and frameworks. The Nazaret Global Education organization, to which Colegio Montserrat belongs, has founded 37 other schools around the world, all modeled on what the Collegio has become. (See this [article](#) on Nazaret Global Education.) Howard Gardner, who has visited the Col·legi several times over the past few decades, believes it to be one of the best schools he has seen that are imbued with PZ ideas.

In July of 2024, I spoke to Sister Monika Horch, one of the school leaders (and a fluent speaker of English). I learned that in 1993, the leaders of the school began researching and visiting innovative schools in order to make changes in how their students were educated. They had grown concerned that so many high school students in Spain were unmotivated, unengaged, and often dropped out of school. Deciding that the problems must start in the early years of life, they began reforming their preschool in 1994 to make it an engaging place where students wanted to learn, a school for “passion-based learning.”

But reforming preschool would not suffice. School leaders realized that they needed to make school more engaging at all levels. And so they continued their research, and in the process learned about the theory of multiple intelligences, writing to Howard to find out more. After some exchanges, Howard recommended that they engage Patricia León (discussed in Chapter 6) to introduce them to TfU. “It was a revolution for us to hear about Teaching for Understanding,” Sister Monika told me, which she considered to be a change in paradigm. Instead of just designing activities, teachers now needed to begin with understanding goals, and then consider activities that would foster these goals (all with the use of planning templates).

Frameworks Used

Sister Monika went on to relate how she and her colleagues began to design project-based learning focused on understanding but enriched with MI, thereby linking these two frameworks. With

striking speed, she said, students who were not succeeding before were now succeeding because they could “enter with different entry points, and show their understanding through multiple intelligences.” TfU and MI were used as overarching frameworks that could incorporate other PZ ideas as well. Sister Monika and her colleagues incorporated the two other foundational frameworks described in Chapter 4 – Visible Thinking/Cultures of Thinking and Making Learning Visible. Also drawn on were Artful Thinking, the Good Project, Out of Eden Learn, Agency by Design, and interdisciplinary projects with a Global Competence lens. These approaches were tried out and often revised and refined. “We were always revising,” Sister Monika told me.

A sample Teaching for Understanding project. Here is a [link](#) to a TfU project for 4-5-year-olds focused on the topic of light, beginning with the generative questions, “What is light? How do we see it? What would the world be without it?” The project (which could have been found in a Reggio classroom) began with children experiencing the world blindfolded and discussing whether this was a pleasant or unpleasant experience. Then the blindfolds were removed but the room was dark – and thus children realized that to see one needs not only sight but also light.

Next, children experimented with shadows – going outside with an object and a piece of paper, placing the object on their paper and tracing the shadows made. In small groups, they discussed how the direction of the shadows changed if they were on one side of the school building or the other, and how the length of the shadows changed with the movement of the sun.

They also experimented with the effects of ultra-violet light, and the effects on different kinds of materials – transparent, translucent, and opaque.

Expert parents were always brought in for these kinds of projects. For the light project, two parents demonstrated refraction (a straw in a water class looks bent, for example). They also discussed the mixture of colors that make light.

Finally, the synthesis activity: A blind person with a guide dog and white cane came to talk to the children. Children practiced using the cane (with their eyes closed) to experience how a blind person navigates the world.

This project also included activities using different kinds of intelligence: linguistic, when children reflected and discussed and wrote; spatial when children made paintings with ultra-violet light or when they tried to navigate with a cane blindfolded; intrapersonal when they became aware of how they experienced being blindfolded; and interpersonal when working together.

The Professional Culture of Nazaret

Howard described the faculty at the Col·legi as professionals. They thought for themselves, and when he spoke to them he was speaking to peers. When Steve Seidel from PZ visited the school and spoke to the faculty about assessment (looking at student work reflectively, portfolios), he noted that the teachers were genuinely intellectual and attracted to the ideas of PZ. And here is what Patricia León wrote me about the school:

Let me begin by telling you about my experience with Col·legi Montserrat in Barcelona. I spent an entire week with Sister Monika and fellow Sisters including Mother Montserrat, who was then the director of the school. I remember vividly their enthusiasm and desire to try new approaches in education. They were very interested in the Theory of Multiple Intelligences and how it could be applied in the classroom. I had the opportunity to introduce them to the Teaching for Understand

Framework and how those two frameworks were very complimentary. After the week in Barcelona and during that visit I met with many other faculty members of the other schools run by the same religious community and it was a very stimulating experience. What called my attention was to see how most of the teachers and administrators were actively curious and intellectually nimble. Undoubtedly the leadership of Mother Montserrat has infused the culture of all their schools, not only in Spain but around the world. She is now the Superior General of the Community and continues to work with ideas from Project Zero as well as other progressive methodologies and frameworks. While I don't currently work with them directly, I always look forward to encounters with Mother Montserrat, Sister Monika and other members of their community. Each time I learn more about their successes in their new endeavors.

Sister Monika quoted Sister Montserrat as saying, “What are you going to do on Monday?” Teachers at the Nazaret schools were expected to put what they had learned from the workshops into practice the following Monday. They simply “jumped into it.” Teachers were often worried about doing this, but team teaching made this less threatening.

At first there were some difficulties explaining the changes to parents, who were worried that children were playing too much and thus could not be learning. But when parents saw the final projects, they could see what their children were learning, and many became enthusiastic supporters. Howard has noted the sympathetic involvement and good questions from parents at Montserrat with whom he met when he visited.

The Col·legi Montserrat has always been a pilot school for the many other schools in their organization. PZ-style innovations were first implemented in the Col·legi and then introduced to the other network schools. There are ten such schools in Spain and 27 in other countries. In Latin America, they are in Brazil, Colombia, Ecuador, Paraguay and Venezuela, as well as a Capacity Building Center in Venezuela; Cameroon in Africa; Indonesia and East Timor in Asia, and a Teacher Training College in East Timor, which offers professional development to teachers in one of the poorest countries in the world.

Going Outside Their Network

Starting in 2003, the Col·legi began to share their PZ-inspired approaches widely, outside their own network, via three or more early professional development workshops. In these workshops, teachers collaborate to design learning experiences. The workshops were designed for new Col·legi teachers, for all teachers at the other Nazaret schools in Spain, and were also open to teachers from anywhere in Spain or from other countries, whether in Catholic, independent, or public schools. Little by little, teachers from all over Spain came, with about 150 teachers attending each session. Recently, Col·legi leaders has been offering workshops in Argentina, Bolivia, Chile, Mexico, and Peru, countries where Nazaret has none of its own schools. “These ideas work everywhere,” Sister Monika said.

By 2024, the Col·legi leaders have run workshops with over one thousand schools outside of their organization, and have reached over 10,000 educators. Public schools have more difficulty changing because they are not as free as independent or religious schools, but with a strong leadership team championing change, public schools also change. These off-site workshops are very much like the off-site institutes that PZ has run (mentioned in Chapter 2).

Change need not take decades. In one experiment, Sister Núria, one of the Col·legi Montserrat school leaders, was assigned to take over a traditional school and turn it into a school based on the

Nazaret principles. She and her team held teacher training workshops three times a year to turn around the teachers. During Year 1, there was excitement about the possibility of change. Year 2 was difficult, because genuine changes had to really be effected, especially changes in assessment. By Year 3, the changes were clearly visible. This was a demonstration proof: It should be possible to transform a school in three years, assuming strong and consistent leadership.

At the time of our conversation, Sister Monika told me that many schools in Spain are changing to become more innovative – and this trend was likely launched by the workshops run by the Col·legi. With these PZ approaches, she said, education becomes more inclusive: students who might have failed in traditional settings go on to succeed at Montserrat and go on to university.

When I asked about why the Nazaret schools in Spain have had such a powerful influence, Sister Monika explained as follows:

...because there was an organization that acts as a network of Catholic schools in Spain, which did an initial promotion and schools trusted the ideas. We could do a lot of workshops within this organization and from those schools it spread to others all over Spain. In other countries it has been through other kinds of organizations, NGOs or foundations.

When I asked about challenges faced, Sister Monika noted that designing a good performance of understanding is not easy. When I asked whether any country had proved more resistant, she said that teachers in some of the Latin American countries (who often did not have a strong basic education) were afraid of change and wanted to stick with the presumably more traditional (drill and kill) national curriculum. Sometimes these teachers made small changes but continued to assess as always with exams, not noticing or being unable to deal with the clash of the new and the old. This example is not surprising.

It is certainly more difficult to implement PZ kinds of approaches in schools in communities living in poverty, with less educated parents and teachers, in contrast to schools in middle and upper middle-class communities which are likely to have more educated teachers and parents. However, Sister Monika said even in such schools they have been successful. Why? Here is what Sister Monika told me:

We have been working with organizations like Fe y Alegría which work with very impoverished communities, especially in Ecuador. (Fe y Alegría is a Jesuit organization, founded in Venezuela in 1955. Now in 19 countries in Latin America, this organization strives to improve educational opportunities in the poorest sectors of society by providing teacher training.) And we see that the ideas work in any kind of community while we are working with impoverished communities in our own schools in Cameroon, Indonesia, East Timor...teachers working in communities with very limited resources have found clear and practical strategies. What is also true is that there has been a strong organization behind it, setting the guidelines to support them and ensure sustainability. So we think it is very important to provide teachers with actionable strategies while relying on an organizational leadership to sustain these efforts.

Sister Monika made it clear that the schools in their organization are not expected to operate like a franchise, with all of them doing things in the same way. They see their approach as providing tools that other schools can adapt to their own context. And teachers appreciate not being handed a fixed curriculum. This flexible approach is very much in the same tradition as PZ, where it is

expected that educators who adopt PZ ideas will also adapt them to their local circumstances and needs.

Sister Monika concluded with this comment regarding impact:

We believe there is quite a bit of skepticism toward religious schools in Spain. However, the leadership, professional competence, and openness of Montserrat have helped dispel many prejudices. In Latin America, it has been the Spanish language, but also the collaboration with organizations that have invited us and connected us with schools seeking innovation.

AaeioTU, Colombia

Making Learning Visible, Pedagogy of Play

This story begins with the individual path of Maria Adelaida López, who became the atelierista for a Reggio-inspired school in Miami in 2001 called Joy of Learning. (She is also discussed in Chapter 4.) Maria had a visual art background (she had been in the Art Department of St. Johns in Minnesota), and had not previously worked in early childhood education. She told me that she fell in love with the Reggio style of teaching, and that this position changed her whole life.

Maria attended the PZ institute in about 2004. There she showed some of her documentation and learned a great deal from the kinds of questions people asked her about documentation as well as group learning. In 2007 Maria co-founded (with Angela Salmon) Visible Thinking Miami (which later became [Visible Thinking South Florida](#)), affiliated with Florida International University (this network is discussed Chapter 55). This is a learning community of early childhood educators from schools in the Miami-Dade and Broward counties providing professional development in the Reggio approach to educators around the world. South Florida became a leader in Making Learning Visible.

In 2017, Maria left Miami to become the executive director of [aeioTU](#) in Bogota, Colombia, a non-profit organization founded in 2008. The mission of this organization was the improvement of early childhood education in Colombia, Mexico, and Panama via the implementation of the Reggio philosophy (described in Chapter 4) and the Pedagogy of Play (described in Chapter 48). This organization developed a Reggio-inspired early childhood curriculum called aeioTU Educational Experience (see López, 2022; [pdf](#)). In 2021, this curriculum was recognized by [HendrED](#) and the Inter-American Development Bank as one of the 15 main innovations in education in Latin America and the Caribbean fostering 21st century skills.

aeioTU has four major activities:

- They operate early childhood education centers for families. As stated on their website, this group has helped to implement best practices (based on Reggio and Pedagogy of Play) in 1,242,239 families with children under five, and for 87,851 early childhood.
- They offer professional development for educators through online courses and in-person and virtual internships.
- They manage a global, on-line learning community for parents, caregivers, teachers, and educational organizations.

- They advocate for the importance of early childhood education.

A study using a randomized design compared two groups of children in two centers. One group received the aeioTU curriculum and one did not. After eight months, the group receiving the aeioTU curriculum showed significantly more cognitive growth than the control group (Nores et al., 2018; Nores et al., 2019).

For her work with aeioTU, Maria won the Lego prize in education in 2022.

Avanguardie Educative, Italy

Visible Thinking/Cultures of Thinking, Making Learning Visible

In 2017, an Italian research group, [Istituto Nazionale Documentazione Innovazione Ricerca Educative](#) (INDIRE), approached PZ with an interest in disseminating both Making Learning Visible as well as Visible Thinking in Italian secondary schools. INDIRE's goal was and is to transform teaching from a traditional, passive, transmission approach to a progressive, active, constructivist approach. INDIRE has an ever growing network, [Avanguardie Educative](#) (AE) of schools. For an article about AE, see [here](#).

PZ and INDIRE began an 18 month project, Making Learning and Thinking Visible in Italian Secondary Schools (MLTV) (as described in [Aquilino & Krechevsky, 2019](#)). Fifteen teachers from three Italian secondary schools met monthly, participating in three workshops and six cross-school webinars, as well as visiting others' classrooms and participating in group discussions and student focus groups. Teachers were asked to see themselves as researchers of student learning, and to engage in reconceptualizing student learning through dialogue with other educators. Shared documentation of student learning prompted deep discussions about what thinking and learning looks like, and how documentation involves going beyond the final product to the processes that led to this product. Discussions were guided by PZ protocols. The project developed a set of practices, tools, and guidelines to help Italian secondary schools make use of MLV and Visible Thinking. The guidelines are available in Italian on Indire's Avanguardie Educative [website](#).

To date, 84 schools in the network state that they are using MLTV. However, Sylvia Panzavolta at AE told me that she believes that there are many more using this framework (Sylvia Panzavolta, March 24, 2023, personal communication). The growing numbers can be checked here: <https://innovazione.indire.it/avanguardieeducative/integrazione-mltv> This site also contains information and materials about the project.

Teachers saw value in being challenged, and in reexamining their initial assumptions. They reported that MLTV taught them to listen more to their students and think about their learning. They noted students' unexpected ideas. The use of thinking routines helped them to diagnose problems that students were having in understanding something, which then led them to design lessons to help students overcome these problems.

A survey was conducted to assess teachers' responses to MLTV. The statement they agreed with the most strongly was "I am highly motivated to share this work with colleagues." (Aquilino & Krechevsky, 2019, p. 12). At the end of the project, a teacher wrote "I have learned more about my job in the last two years than in the previous thirty-eight." (p 12).

The researchers at AE edited a book about this in Italian, called [MLTV: Making Learning and Thinking Visible. Rendere visibili pensiero e apprendimento](#). The aim of the book, as stated on the Amazon website, was “to provide teachers and school administrators with useful guidance to support the processes of transformation and innovation in teaching and overall school organization.”

Roberto Castaldo, one of the Italian teachers working with INDIRE, was named Teacher of the Year in 2022 and again in 2023 by [JA \[Junior Achievement\] Italia](#). He recently emailed Mara Krechevsky (April 16, 2023) stating that thanks to his work with Making Learning and Thinking Visible, “everything transformed..my personal way of seeing the teaching profession, the way I and many colleagues work in the classroom, the way of designing educational activities by putting students at the center. This has made our school even better, and thanks to MLTV, we can say that we have innovated not only the curriculum and the professional profile of reference but also, and above all, our way of conducting school, which we have been exporting throughout Italy for many years.”

In June 2023, Roberto’s school, [ISIS Europa](#), made it to the top 10 of most innovative schools in the world. He wrote the following to Mara:

A lot of years have passed since back in 2010 we started a long process of rebirth. It began by redefining our students' professional profiles (what to learn) and continued with the adoption of new teaching methods (how to learn). Your contribution in this has been exceptional. Learning MLTV under your guidance was a real milestone for each of us, both as individuals and as professionals in education...“MLTV was a real game-changer for us at ISIS Europe. Since that distant 2017, hundreds of teachers that I've trained in MLTV, year by year, have fundamentally and permanently changed their approach to teaching. We will always be MLTV teachers ... I initially couldn't grasp the true meaning of "documentation," but you managed to make me understand it, even with firm and confident voices. You've taught me so much, and you've also changed the school experience for thousands of students: ours, at ISIS Europe, but also students all across Italy who now have teachers trained by us, and who have undoubtedly benefited from your teachings.

‘Fundamental and permanent change’ refers to the paradigm shift that learning MLTV with you facilitated: because the focus has changed, we're no longer concentrating on teaching, but on learning, not on students' memory, but on their thinking, we don't spend class time talking non-stop, but observing our students as they reason together with others, maybe in silence ...

In this way, every student immediately realizes that everything changes, and they feel at the center, but concretely, not just in words.

Nieves Segovia: SEK Education Group

Good Project, Pedagogy of Play

Nieves Segovia is the president of SEK Education Group in Spain, a family company founded in 1982. This group works with eleven Pre-k-12 international schools in Spain, France, Ireland, Qatar, Saudi Arabia, and the Camilo Jose Cela University (UCJC) in Madrid. Nieves also works in higher education as the chair of the steering committee of a network of universities (Talloires Network of Engaged Universities), a network committed to raising awareness of the social responsibilities of universities and garnering support for the movement towards civic engagement in universities. I spoke to her as well as Carmen Sánchez, Dean of the School of

Education at UCJC and Isabela Garcia Senent, Director of Innovation and International Partnerships at SEK and UCJC School of Education.

SEK is involved with three PZ projects: the Good Project, Pedagogy of Play, and a recent one called Learning Outside-In.

Good Project

For the second consecutive year, three teachers from the SEK schools are using [lesson plans](#) from the Good Project for middle and high school students (described in Chapter 18).

Pedagogy of Play

Isabela was in Boston for a number of years. There she met Ben Mardell and Megina Baker and learned about the Pedagogy of Play (described in Chapter 48). Pedagogy of Play is taught at UCJC to preservice teachers once a year as a 75-hour, 3-credit course. Eighteen students took the course in 2023 and thirty in 2024. The plan is to teach it at SEK schools and make this part of teachers' professional development. UCJC School of Education has received grant funding in 2024 to conduct research on the indicators of playful learning in countries besides those studied by Ben and Megina. A team of four UCJC professors are involved in the research that will be conducted at SEK schools.

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Chapter 57

Five Professional Development Programs

Absolutely Fabulous Theatre Connection, Hong Kong

This is a story of how the PZC radically transformed an arts educator, turning her into a pioneer working to radically change schools in Hong Kong. It's hard to believe that a five-day conference (that's how long PZ conferences used to last) could have such a powerful effect, but Lynn Yau is certain that she is who she is today because of that week at PZ.

Prior to attending the PZC, teaching and learning was not even a glimmer of an idea on her career horizon. Lynn has a background in English and comparative literature and an abiding interest in the arts. In 1998, she wanted to contribute meaningfully to Hong Kong and took a huge plunge by turning her lifelong passion for the arts into her career. In 2002, Vicki Ooi, a leading theatre director in the city and one of Lynn's colleagues, suggested that they both attend the PZC. At the time, Lynn knew something about PZ but did not know about the PZC. She described a transformation in her mindset as a consequence of her week at the PZC:

That week truly changed my thinking. That week was like being out of my skin and out of the world. I had never thought about arts in education til that week. A totally new way of thinking. They threw open questions at us that I'd never thought about in my life. It is no exaggeration that suddenly a lightbulb went on in my head. And it has lit my path forward to this day.

After the PZC, Lynn went on to get a masters degree in education, and also enrolled in PZ's online courses in Multiple Intelligences, Teaching for Understanding, and Assessment, and eventually served as a coach in some of these courses.

Educators in Hong Kong, Lynn said, do not think of the arts as a mode of thinking. I call her a pioneer because she went against the grain, taking the arts seriously as cognitive enterprises. PZ founder Nelson Goodman would have approved! Most local schools in Hong Kong use traditional teaching methods rather than inquiry-based learning. Inspired by her experience at the PZC, Lynn wanted to change this – helping children and young people learn how to learn rather than filling them up with information that they can easily get from the internet. When she approached a university suggesting they offer a degree in creative teaching and learning, the door remained firmly shut.

In 2008, Lynn founded a company called [The Absolutely Fabulous Theatre Connection or AFTEC](#) – a professional development non-profit. Its mission is to change the thinking behind teaching and learning through the arts, moving away from traditional teaching to a PZ-like model of inquiry-based learning.

In a 2023 [blog](#), Lynn described her company as “researching pedagogies that could be adapted to the local context, respecting Chinese values yet applying them with an innovative lens.” She explained to me, “We extract what we need and then we localize,” – a stance akin to Tina Blythe's conception of adaptation with integrity (mentioned in Chapter 1). Her company brings teachers

and teaching artists together to co-design lessons that integrate academic subjects with one or another art form with the goal of motivating students and fostering student-centered learning. Teaching artists are called “creative practitioners.” One of Lynn’s goals is to raise the profile of teaching artists as a profession – to be considered just as valuable as being a full-time practicing artist.

PZ Frameworks Used

The company has adapted aspects of Visible Thinking, Studio Thinking, and Teaching for Understanding to promote creative learning and thinking through authentic arts integration. See-Think-Feel-Wonder has become manna to the teachers, Lynn said, but it takes time to know how to use this well. Teachers who have gone through her program use this every day, and it has become a habit of mind for the students.

Inquiry-based learning is at the heart of the company’s model of creative learning and their curriculum. Lynn said that this was due to the influence of PZ. The curriculum is designed to foster the five Creative Habits of Mind proposed by Bill Lucas and Guy Claxton from the [Centre for Real-World Learning](#) at the University of Winchester in the UK: Collaborative, Inquisitive, Persistent, Imaginative, and Disciplined. The company uses PZ’s Visible Thinking strategies (i.e., thinking routines) to foster these habits of mind.

The first *Studio Thinking* book, published in 2007, provided a foundation for professional development in Lynn’s company and is used for teachers of the visual and performing arts. Observe and Reflect are constants. Express and Envision have adapted to become Listen, Feel, and Imagine. Stretch and Explore has been adapted to become Interpret. The seventh skill added, Value, encapsulates the remaining Studio Habits.

The company works intensively with schools over long periods of time. Funded by the Jockey Club, the company piloted the “Jockey Club Arts-based Cross Curriculum Creative Learning Project” for three school years, from 2021 through 2024. The curriculum was tried out in ten primary schools that included a range of SES backgrounds, with 20 teachers (two at each grade level per school), 13 teaching artists (called “creative practitioners,” and 600 students. Participating teachers had all chosen to participate, and all of the schools had principals interested in exploring student-directed learning. Lynn describes their three-year pilot program in her blog as one of “deep observation and continuous trial and error.”

The key part of this new curriculum was arts integration. Teachers of various academic subjects each chose a core subject and an art form (most often visual arts) as well as another applied creative domain (e.g., architecture, costume and prop design, woodworking) with which to link their curriculum. Working with creative practitioners, teachers developed units integrating the arts and creative activities with their subject area.

The curriculum radically shifts the school environment:

- Students are given choice. For example, when involved in a visual art project, they can choose from different stations each featuring different kinds of materials.
- Teachers engage in process-oriented teaching rather than “chasing after products” which, Lynn writes in her blog, “lowers the value of teaching for creativity.”

- Students learn by doing, punctuated by pausing to discuss and reflect.
- Less is more: Content coverage is reduced to allow for deeper engagement “as students cultivate a habit of thinking for themselves by themselves.” Lynn writes that this gives “teachers breathing and head space. For too long, teachers have been bound by timetables that support boxed-in thinking and textbooks that seldom look beyond its content albeit they attempt to provide a worldview. Real and authentic learning is the key.”

The children in these classes were “waking up and becoming motivated because they were given choice and were being heard,” Lynn said. The teachers who were involved began to train the other teachers at their grade level so that the entire grade level was engaging in the same kind of pedagogy.

The company is now embarking on a four-year scale-up project (2024-2028) to train creative practitioners at tertiary faculty and postgraduate levels and in arts companies as well. In turn, these practitioners will go on to train 80 teachers a year in primary and middle schools (with preference given to those in low SES communities).

In sum, Lynn Yau has created an organization not unlike PZ. Both organizations share the goal of making significant, lasting school change. Both share a focus on the arts, though not all of PZ’s projects involve the arts. And both carry out long-term professional development in the hopes of creating lasting change.

Ativa, Brazil

Visible Thinking/Cultures of Thinking, Teaching for Understanding, Agency by Design

In 2019, Julia Pinheiro Andrade founded [Ativa](#), an educational consultant organization in Brazil focused on “making learning innovative and visible.” She had had experience as a geography teacher at the elementary level and had gone on to conducting teacher professional development teachers at the [Instituto Singularidades](#) in Brazil.

Julia first encountered PZ pedagogical practices when, with [Instituto Catalisador](#) (an organization devoted to transforming public schools in Brazil), she visited one of the [Lighthouse Community Public Schools](#) in Oakland, California. After returning to Brazil, she and other researchers from Instituto Catalisador began to read PZ publications on Cultures of Thinking, Visible Thinking, Agency by Design, and Teaching for Understanding. They also enrolled in PZ’s online courses (Teaching and Learning in the Maker-Centered Classroom and Making Thinking Visible). Julia also learned about the work of Grant Wiggins and Jay McTighe ([Understanding by Design](#)) and John Hattie ([Visible Learning](#)), noting that both of them were also influenced by PZ, though they proposed different approaches.

According to Julia, prior to 2017, only bilingual and elite schools in Brazil knew about PZ. Her goal with Ativa was to work with public schools in Brazil to spread PZ ideas. Ativa focuses on Cultures of Thinking, Agency by Design, and Teaching for Understanding. These ideas are still very new in Brazil, she said, and not widely known. But educators interested in pedagogical innovation know about these ideas, though they sometimes confuse Visible Thinking with John Hattie’s Visible Learning. Julia is trying to differentiate these approaches and get PZ ideas “out there” for teachers. She has a [blog](#) on her Ativa website where teachers can share their work and their reflections as well as a [youtube channel](#) where educators can learn more about these approaches. She also has an online course about pedagogies for deep learning.

Julia sees TfU as the most difficult paradigm for teachers to grasp. If you adopt this framework, you must redefine your objectives as a teacher and as a learner, which takes time and meaningful experience to achieve. Thinking routines are tools and thus easy to understand. These tools help you go deeper inside the TfU framework, she said.

Julia believes that the power of PZ frameworks is due to their having been developed from classroom observations. She sees them as a systematization of good teacher practice. *PZ takes “the best of what teachers are already doing and systematizes these practices,” she said.*

As a geography teacher at the elementary school level, she had already been focused on thinking and understanding and fostering metacognition (which she sees as a central aim of education). When she encountered the frameworks of PZ, she realized that they were ways of organizing and deepening approaches that she was already using. She had been trying to do the same things without the name, she said. PZ, she said, “was life-changing research.”

Julia has worked directly with more than 10,000 teachers in Brazil. Of these, she estimates that probably 10 percent are trying to apply these ideas in their classrooms. If so, this means that she has changed the practices of at least 1,000 teachers in Brazil over the past six years.

I Am A Teacher, India

Visible Thinking/Cultures of Thinking, Teaching for Understanding

Two visionary educators in India, Smriti Jain and Tapaswini Sahu, were dissatisfied with the traditional model of education in most Indian schools – teacher-led, focusing on rote learning, exams, and grades. Tapaswini had studied developmental psychology and saw little connection between what is known about how children learn and what teachers were doing in standard Indian schools. Smriti and Tapaswini realized that if schools were to change to become more progressive, teachers needed to change first. They found the standard way in which teachers became certified to teach – simply by taking a series of online courses, with no requirement for engaging in (and receiving coaching in) practice teaching – to be inadequate. Moreover, they said, most people in India realize that the traditional teaching degree is much like a rubber stamp and does not mean much. And so in 2014, in the city of Gurugram, they founded a non-profit organization called [I Am A Teacher](#).

As stated on their website:

For teachers to be able to create an effective environment for children to learn, they need to be leaders of learning themselves. Teachers need to continuously grow and evolve in order to help their students develop. Unfortunately, our existing education system has limited our capacity to be lifelong learners and in many ways dulled our spirit of inquiry; curiosity and inquisitiveness.

To develop competent and effective teachers, compelling changes need to be made in the teacher education programmes of our country. We feel that once teachers see themselves as learners and understand the importance of letting this natural capacity flourish, they will consciously create the same space for children in the classrooms.

I Am A Teacher provides an alternative method of certification – a full time, intensive, one year practice-based program in Delhi offering a post-graduate Diploma in Learning Teaching. Students take courses in educational theory and engage in practice teaching. They receive feedback and

there is time for reflecting together. Students do their practice teaching in highly rated progressive schools in the country.

Both founders have been inspired by PZ ideas, as well as by educational ideas of Mahatma Gandhi (who advocated for experiential learning through real world engagement and service as a means of character development) and the Indian philosophers Sri Aurobindo and J. Krishnamurthy (who emphasized self-awareness and spirituality). They had not visited PZ or attended the PZC, but learned about PZ from its online courses, videos, and publications. Smriti took the PZ online course on Visible Thinking when she was teaching 5th grade, and found that using thinking routines really helped her understand her students. She also took a PZ online course on Leading for Understanding (based on Teaching for Understanding). Tapaswini learned about MI from reading *Frames of Mind* (Gardner, 1983), and learned about TfU from a colleague. She then took the PZ online course on TfU and watched many videos of David Perkins presenting TfU. She said that while MI helped teachers to understand each child's potential, TfU provided a strong framework to organize children's learning.

Smriti provided me with a number of rich examples of how she used thinking routines and TfU with fifth graders. After learning about and practicing writing poems, students engaged in "I used to think...and now I think." Smriti wrote me:

Many children, who didn't enjoy writing poems earlier and found it difficult, reflected that now they like to write poems and have discovered that they can write. Almost all of them wrote that earlier they used to think that rhyming is extremely important even if the poem doesn't make sense. Now they feel it is more important to convey your thoughts and a poem should be meaningful.

Also some children reflected that earlier they felt their poems were not good and were very scared of reciting them. But now they feel good reciting their poems. Earlier they felt while reciting you have to read them in a sing-song voice, or very fast without a break. But now they think that it is important to bring out the feelings and emotions and to read it slowly, imagining yourself in that mood while reciting.

Some also shared that earlier they thought that poetry is primarily written for others. Now they think that it is primarily written to express one's feelings to oneself. Also some reflected that earlier they thought that poems with humor are better. But now they like serious poems as well.

After learning about Rosa Parks and discussing discrimination against racial or ethnic groups, Smriti had children reflect on discrimination using the Connect-Extend-Challenge routine. They then came up with many thoughtful questions:

*Why do some people disrespect children?
Why do people discriminate when they know that it is cruel?
Are animals also discriminated against?
Is discrimination only about living objects?
Do I discriminate?
Can there be a world where people do not discriminate?*

After a unit on listening, she asked them to raise questions about listening as they experience listening in their lives. Some questions that came up were:

Why do we listen?
How do we listen?
Why does good music soothe some people?
Why do many people get bored in a lecture?
Why can't we talk in a sign language?
Is it necessary to listen to people?
Is it necessary to listen to everything?
Why do some people wake up in the morning by listening to the roosters/crows?
How does our mind know what to say?
Why is listening so important?
What is listening?
Why do we listen from our ears?
Why do we have to hear things to know them?
Why can't grown-ups stop talking?
Why do children have to listen to adults?
Why do some people enjoy listening to some things and others don't?
Even with a mike, why do some people talk so softly that we can't hear?

And here is a TfU unit with these understanding goals:

Students will understand that they are not only physically different but also think differently.
Students will understand that it is okay to have different points of view.
Students will understand that we all have different strengths and appreciate their own strengths.
Students will accept and love themselves as they are.
Students will accept and love others as they are.

A final example: Smitri began with an abstract piece of art, using See-Think-Wonder so children would see that the others perceived the same artwork differently. She then gave the students a short story about a conflict and asked them to take the side of one character or another, to convey the idea that there is often no right or wrong answer and people have different viewpoints and preferences.

Some are recent graduates with a Bachelor's degree (the minimum certification required for entrance into the program), but most participants come with a post-graduate degree in another field (e.g. medicine, dentistry, engineering) and have gone into education in search of something more meaningful. This latter group averages between 30- and 40-years-old. All those who attend come because they seek an in-person program with coaching, practice teaching, and time for reflection among learners – a combination of educational theory and educational practice.

The teachers who come to this program were, of course, educated in the traditional way, and the program aims to shift their attitudes about teaching and learning. One of the courses, Mindful Personal Leadership, is focused on helping students understand themselves: they are prompted to think about and to question their desires, their fears, their beliefs, their conditioning, and their aspirations.

Forty to fifty students graduate from this program each year. They go on to teach students from ages 3 to 13 in private schools, which are attended by 50% of Indian children from all different socio-economic levels. A degree from I Am A Teacher is valued, and almost all graduates get a teaching position.

In addition to Eastern philosophy, the curriculum is also inspired by PZ. No one from PZ had visited this program until 2024 when the leaders invited Mara Krechevsky and Yvonne Liu-Constant to visit and give a talk, in the hopes of developing a collaboration.

The curriculum is also inspired by Expeditionary Learning, and in the EL spirit, students carry out “real-world” projects needed by the community, such as designing a path where people can ride bikes. Both Visible Thinking and TfU are introduced. Students discuss and reflect on these approaches, and when they practice them, they are coached and mentored. Teachers use PZ protocols when they discuss student work, particularly the Looking at Student Thinking routine ([LAST](#)), and they convene for ROUNDS on student work (as described in Chapter 26).

What this program takes from PZ is adapted to the Indian cultural context. For example, the generative questions in TfU units are aligned with the goals of the Indian National Curriculum Framework.

When I asked for an example of what participants might learn about TfU, they mentioned “light and shadow” as a generative topic. The preservice teachers are asked to do a mind-mapping exercise about what a particular age group could learn about light and shadow and what they would want their students to understand. They learn about performances of understanding in courses on formative and summative assessment, and learn how to use guided questions, moving from simple to complex. Teachers could demonstrate their understanding in an observable way that would make their thinking visible to others.

The philosophy of this program reminded me of the Riverside School (discussed in Chapter 53). Smriti and Tapaswini were familiar with Riverside but had never visited it and were not in contact with this school.

When I asked whether they had looked at whether their graduates continue the progressive practices they learned when they have their own classroom, Smriti and Tapaswini said that they have not tracked this. However, because many of their graduates become collaborating teachers with the program, welcoming their student teachers into their classroom, they know what many classrooms look like. Program leaders visit these classrooms and see a lot of dialogue and questioning happening. Some teachers go off to become “lone warriors,” the only ones in their schools teaching in this way. And that of course is difficult.

When I asked how parents react when they see their children being taught in such a non-traditional way, Smriti and Tapaswini told me it is an uphill task to convince parents that this is a good way to teach.

They concluded by telling me that “PZ tools and writings have given us a culture of thinking, a common language for communicating ideas and practices, a way of approaching the teaching and learning process.”

Mills College, Oakland, California

Teaching for Understanding, Making Learning Visible, Studio Thinking

In his work with teacher trainees at Mills College (now part of Northeastern University) in Oakland, California, Dave Donahue and Jen Stuart push teacher education students to move away from coverage and towards *uncovering* and *discovering*. Instead of trying to rush through a curriculum, they ask teachers to slow down and go deeper. They ask them to begin a teaching unit with understanding goals, and then to think about what would count as a performance of this kind of understanding. Teachers found this conceptually exciting. They were eager to move away from formulas or routines for teaching that only get at the surface features of learning — remembering, paying attention, and repetition. When they graduated and became teachers, they reported having conversations with other teachers about slowing down and going deep. When other teachers did not appreciate this approach, they tried to engage these teachers in thinking about the purpose and methods of learning rather than just dismissing those who taught in a different way.

I asked Dave whether the students he taught went on to use understanding goals (as well as two other PZ approaches he introduced them to – Studio Thinking and Making Learning Visible). Sometimes these new teachers found themselves in schools with a very different kind of culture and accordingly found themselves isolated. Dave encouraged them to find support with those who had been in their cohort in graduate school. In addition, Dave connected them to people beyond their own school so they could talk to teachers with similar orientations to theirs. He encouraged them to find their own like-minded people, and even to teach their own workshops to influence other teachers.

I asked whether he has encountered opposition to the approach that he tries to instill in his future teachers. His answer was interesting. Teaching is very hard work, and sometimes student teachers become frustrated. They want to be told “what to do,” even when they firmly believe in more constructivist approaches to learning. They want specific lesson plans and step by step strategies rather than an overall conceptual approach. He tells his students that his class is designed to help them figure out how to have a good first year of teaching. But to become a great teacher is a life’s work.

He went on to say something else that I found interesting. The students he taught at Mills had come to study education after their BA. They had all had a liberal arts college education and had not majored in education. He speculated that the PZ approach appeals to people who value thinking and research rather than lesson plans. And a liberal arts education is likely to instill such values.

Telescope Network, Boston, Massachusetts

Looking Closely and Collaboratively at Teacher Practice, Protocols, Making Learning Visible

Paul Tritter, Director of Professional Learning at the Boston Teachers Union, is an educational leader working to improve the kind of professional development offered to Boston Public School teachers. Paul’s approach has been influenced by a variety of education reform movements including some of the ideas developed at PZ. Prior to his current position, Paul taught high school English in the Boston Public Schools.

Paul encountered PZ approaches when, as a master's student at Harvard's Graduate School of Education, he took a course from Tina Blythe. He later attended the PZC and after that served as a study group leader for a number of years. All of which is to say he is very familiar with PZ..

Looking Closely and Collaboratively at Teacher Practice

When he first took on his new position, he convened educators and listened to what they said they needed. The most important need they identified was time and space for teachers to be able to talk to others teaching the same things. But the system was simply not set up for this. And so Paul created the [BPS Telescope Network](#) to connect teachers across schools who share a common challenge or learning interest. The most important component of the network is the [Independent Learners Learning Site](#), where educators come together for a full day to unpack a particular teacher's practice – thinking together about what is working, and what might be tried out. Unlike typical professional development workshops where the “professional” picks the topic, here a teacher chooses the topic, presenting the others with a full, authentic lesson from his/her classroom. This is followed by a discussion focussing on why and how choices were made.

He analogized this to Dave Perkins' idea of [Making Learning Whole](#) where he argues that education should not be about learning discrete skills one by one, but should instead be about “playing the whole game.” Teaching is like this too, Paul said – becoming a good teacher is not about mastering discrete skills. Rather, it is about providing students with authentic challenges. In the Learning Site, teachers are exposed not to discrete issues but to a full lesson.

I analogized the Learning Site to ROUNDS (Chapter 26), but Paul said it was different. Learning Site does not use the Collaborative Assessment Conference protocol in which one must look at the student's work without any prejudice and without looking for anything in particular. In Learning Site sessions, there is a shared question for everyone to focus on. Still, though I can see the differences, the idea of looking closely and collaboratively at a teacher's lesson seems to me to be very much in the spirit of ROUNDS.

In addition to hosting the Learning Site, the Telescope Network facilitates one-on-one peer observations (one teacher wrote that this empowered her “to become a researcher and change my practice”). Paul also hosts a podcast called [Teachers on Teaching](#), another arena for teachers to think collaboratively about teaching practice. One teacher on the podcast's website comments, “I truly feel like I'm at the table in a conversation between two professionals.” All of this is much in the PZ spirit of listening to teachers and treating them as professionals.

PZ-Type Protocols

Every discussion that Paul facilitates follows PZ-type protocols. For example, after a teacher has shared a lesson, the floor is not simply opened up for discussion, as this often leads to one person dominating. Instead, there is first a pause. This is then followed by a thinking routine (e.g., what is one insight and one question you have; or I used to think and now I think). He also provides questions for teacher-participants and for the facilitator to guide the discussion productively.

Paul said that he was first introduced to protocols for facilitating discussions in Tina's class, but was also influenced by Jean Thompson Grove's XRI School Reform Initiative, where protocols were also important. Paul thinks that the use of protocols has become wide-spread in “education speak” and he is not sure what their origin is. Paul has modified PZ's protocols as well as generated his own.

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Chapter 58

An Art Museum in the US

Columbus Museum of Art

Visible Thinking/Cultures of Thinking, Making Learning Visible, Cultivating Creative and Civic Capacities

In Chapter 42, I described the role of the Columbus Museum of Art in the development of the Cultivating Creative and Civic Capacities (C4) framework. The museum has also implemented two other PZ frameworks: Visible Thinking/Cultures of Thinking and Making Learning Visible (which they call Making Creativity Visible).

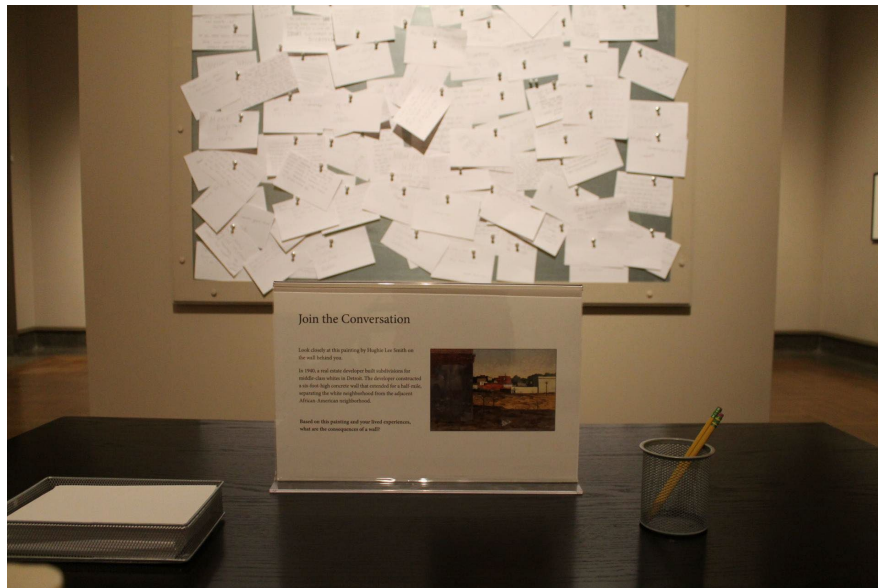
I spoke to Cindy Foley, now at the Grand Rapids Art Museum, who was the Executive Director of Learning and Experience at the Columbus Museum, Jennifer Lehe, Associate Director of Learning Innovation at the Columbus Museum of Art, and Caitlin Lynch, the Lead Teaching Artist and Coordinator for Young Child Programming at the [Wonder School](#), a laboratory school connected to the museum.

Documentation

After Cindy met Fred Burton (featured in Chapter 8), she hired him as educator at large at the Columbus Museum of Art. The museum began to use documentation in its educational programming, setting up “Join the Conversation” stations in the museum, with each station bearing a question to invite visitors to reflect with museum educators. Cindy also set up a station asking visitors to reflect about what they had learned that day. She documented visitor reflections and used this documentation to guide reflection about the department’s mission and programming. The documentation used here is not modelled precisely on Making Learning Visible, as it does not try to get at specific moments of learning but rather focuses on the end result of learning. Here is one example:

Look closely at this painting by Hughie Lee Smith. In 1940, a real estate developer built subdivisions for middle-class whites in Detroit. The developer constructed a six-foot-high concrete wall that extended for a half-mile, separating the white neighborhood from the adjacent African-American neighborhood. Based on this painting and your lived experiences, what are the consequences of a wall? Below is a photo of this station and the array of responses posted on a bulletin board.

A bulletin board was then completely filled with thumbtacked notes.



Later, through the museum's Teaching for Creativity Institute, Cindy, Jennifer, and Caitlin began running regular meetings with local interested K-12 classroom teachers to dig deeply into the purpose of documentation. This group of teachers became a learning community, with teachers joining as news of the group spread by word of mouth from teacher to teacher. This group used the [Visible Learners](#) book. Jennifer told me that teachers could relate better to the examples in this book (compared to the [Making Learning Visible](#) book), because the *Visible Learners* examples came from American rather than Italian schools. In addition, the *Making Learning Visible* examples showcased work that seemed so advanced to American teachers that they felt their students could not produce anything like the Reggio students. Jennifer remembered Fred saying that documentation is about making *thinking* visible; it is not about making *doing* visible. Keeping this in mind was a way to help teachers realize that they should only document moments that reveal something about thinking rather than documenting everything.

One particularly effective chapter from *Visible Learners* was The Yellow Door. A conflict about using the one yellow wooden door in the block area led to a full-blown research project, complete with data collection, on kinds of doors, and ultimately the designing of new wooden doors for the block area.

Museum staff also joined a Reggio consortium called [Ohio Voices for Learning](#), where more study of documentation occurred.

Making Creativity Visible

In 2012, inspired by Project Zero's *Making Learning Visible*, and working with Mara Krechevsky and Melissa Rivard, Cindy instituted a program at the museum called [Making Creativity Visible](#), which became (and still is, as I write this) the foundation for the museum's K-12 work. This program prioritizes looking closely and documenting the process of creative thinking. The program also uses a framework called [Thinking Like an Artist](#), based loosely on the Studio Habits of Mind described in the *Studio Thinking* books (see Chapt. 17).

Once the museum decided to focus their education work on cultivating thinking and creativity, they eliminated traditional education programs (like lesson plans on Impressionism) in favor of programming dedicated to making creativity visible.

Documentation is also a central practice at the Wonder School, the Columbus Museum's laboratory school (for 3-5 year olds) in conjunction with Columbus State Community College's teacher training program. Caitlin Lynch told me that documentation at the school is used to help teachers plan, train student teachers, and educate families about the children's learning. Teachers and student-teachers use documentation to expand how they assess early learning standards, to plan child-centered learning, and to track their own learning about teaching.

Caitlin described the curriculum as "emergent" – meaning that the curriculum emerges over time as documentation informs teachers where to go next. Faculty at the college and student teachers learn from museum staff about how documentation needs to be purposeful. One faculty member gives her student teachers a documentation assignment and the student teachers submit and resubmit until they really grasp the purpose of documentation – not to show pretty pictures but to reveal thinking. Jennifer and Caitlin both talked about the difficulty of getting teachers to slow down, notice, not look for the flashiest moment but instead for the moment connected to the kind of thinking they are hoping to foster. They used the term "lighter lift" and "low friction" documentation" – ways to document moments of learning rather than creating a fully polished document telling an entire story. For instance, they ask teachers to record one ten-minute learning experience, then listen to the recording immediately after class and reflect on it.

An informal evaluation of student teachers was carried out by asking them to respond to some open-ended questions. I list these below, with a few sample teacher responses, testifying that their understanding of teaching and their understanding of children's minds had changed.

Asked to complete this sentence, "As a result of my experience at Wonder School I am able to..."

- *"...better reflect on my planning, intentions, and activity ideas. I have allowed myself to embrace flexibility, while relinquishing control to children's interests and developmental needs...."*
- *"...take my time and observe children in their moments so that I can truly capture developmental skills that are coming naturally."*

Asked to complete this sentence, "As a result of my experience at Wonder School I plan to..."

- *"...allow children to take the lead as much as possible, cater curriculum to children's interests when I can, promote inclusive environments, and include conversations about "touch" or "controversial topics that affect our world and society..."*

And here are some responses to "What have you learned about young children?"

- *"My biggest takeaway from this experience at Wonder School is that children will always surprise me with what they know and what they are capable of. I have learned new ways of looking at play, creativity, and academics from these children."*
- *"...A final thing I have learned about working with young children is to never underestimate their abilities because they can do and learn incredible things."*
- *"I learned that we can talk to them about bigger subjects like upstanders and how they can really understand these concepts. It truly amazes me."*

- *“A lot of times we underestimate what the children should and shouldn't know, but I have realized that with the proper communication skills children are ready for any information you throw their way.”*

Visible Thinking/Cultures of Thinking

Educators at the museum also turned to Ron Ritchhart's work on creating cultures of thinking – often using routines on tours such as See-Think-Wonder (see Chapt. 4). They used this work to focus their documentation – helping them to consider the kinds of thinking documented in particular moments as well as how to plan for the thinking they wanted to foster.

Chapter 59

Educators Deeply Influenced by Project Zero

In the course of researching this report, I encountered numerous educators deeply influenced by Project Zero. They make use of multiple PZ frameworks, taking them with them to whatever schools they go to. I describe eleven of these educators here, listed in alphabetical order by their last name.

Georgina Ardan, Washington, DC

Visible Thinking/Cultures of Thinking, Making Learning Visible, Children are Citizens, Pedagogy of Play

Georgina Ardan, a kindergarten teacher at the Janney Elementary School in Washington, DC, had an “aha” moment when learning about PoP: “that we can do what we are expected to do by the DC school system, but we can present it in a way that is more deeply meaningful to children.” She looked at every aspect of her classroom, trying to find a way to integrate the indicators of playful learning into the curriculum. For her, the most important indicators are joy and agency, and she makes sure that these are present during every moment of the day. As one example, she teaches math through board games, domino cards, dice, and bowling. When asked about the effect of PoP on her students, she leaned back and said, “It is the most wonderful, joyous, fantastic class.” Georgina became a coach for the online PoP course. She has also facilitated a year-long study group on play with Washington, DC educators who are part of a Catholic school consortium.

Georgina is deeply involved with three other PZ ideas as well: Visible Thinking/Cultures of Thinking, Making Learning Visible, and CAC (see DeZutter, 2023, p. 197, where Georgina and Jim Reese write about CAC).

María Ximena Barrera (previously discussed in Chapter 54, Colombia) is an educator born in Colombia, with a career spanning several decades across Colombia, Spain, and the United States. Her journey with PZ began in the 1990s when she was introduced to the Teaching for Understanding framework while working at Rochester School in Bogotá. At the time, María was exploring ways to address what she described as a “mediocre” evaluation system, where students focused on passing tests rather than engaging in meaningful learning. The Teaching for Understanding framework provided a much-needed shift in her perspective, emphasizing student-centered learning and understanding-based assessment practices.

In the early years, María and her colleagues faced challenges, such as the lack of Spanish-language resources. To address this, they formed a study group to adapt and translate materials, making the framework accessible to Spanish speaking colleagues. Their efforts led to the integration of Teaching for Understanding across diverse institutions, including schools serving underprivileged students. This work was further enriched by PZ faculty visits to Colombia. Steve Seidel introduced collaborative assessment protocols and performance-based assessments. María described this period as a “revolution” in education that fundamentally transformed teaching practices in her school.

In 2001, María became deeply involved in PZ's online learning initiatives. Alongside Patricia León Agustí, she translated and adapted PZ's online courses, such as Teaching for Understanding, into Spanish. For nearly two decades, María coached educators across Latin America, Spain, and South America through these courses, fostering a culture of collaboration and reflection. She noted how the courses empowered participants to rethink their teaching practices and embrace frameworks such as Teaching for Understanding and Cultures of Thinking. Through these courses, educators from contexts ranging from classroom teachers to school leaders developed a shared language for discussing and improving teaching and learning.

María emphasized the transformative impact of the PZ online courses, particularly their focus on collaboration and reflection. Participants worked in teams, experimented with ideas in their classrooms, and received feedback from peers and coaches. María observed that these experiences often inspired educators to create spaces for reflection and collaboration within their own schools, despite the common challenge of limited time. She recalled many “light bulb moments” where teachers realized the power of making student thinking visible and the value of learning from their colleagues.

Beyond her work with PZ online courses, María has contributed significantly to education in Latin America. Through FUNDACIES, an organization founded by Patricia León Agustí (featured in Chapter 54), she helped make PZ ideas more accessible to educators who could not afford to enroll in Harvard's courses. María and her colleagues developed their own courses and conferences on Cultures of Thinking and Teaching for Understanding, which they delivered to educators across the region.

Reflecting on her years of experience, María highlighted the profound impact PZ has had on her teaching philosophy. She credited PZ frameworks with shifting her focus from teaching content to understanding student thinking. For example, in her early career teaching technology and computers, she used Teaching for Understanding to integrate technology into interdisciplinary projects, emphasizing creativity and synthesis over rote learning. María also emphasized the importance of documentation in early childhood education, drawing connections between thinking routines and executive functions. She worked with preschool educators to adapt PZ frameworks for babies and toddlers, demonstrating how even the youngest learners engage in meaningful thinking processes.

María's current work involves a new initiative with public schools in Panama, where she is collaborating with educators to implement inquiry-based and collaborative learning practices. She described this project as a “dream come true,” as it allows her to explore the application of PZ ideas in a new context.

Amos Blanton, Denmark

Visible Thinking/Cultures of Thinking, Making Learning Visible, Pedagogy of Play

While typically seen in schools, the impact of PZ ideas is also manifested beyond schools in maker spaces designed for children and adults alike. Amos Blanton is a Denmark-based, American designer of such environments that are set up to support interest-driven learning. In the spaces and activities that he designs, learners of all ages can tinker, working collectively to solve meaningful problems. These kinds of spaces bring together several PZ frameworks: the Pedagogy of Play, Making Learning Visible with its focus on both documentation and group learning, and Visible Thinking.

Around 2012 in a workshop on AbD, Amos first encountered PZ ideas. One of the activities was taking apart an old phone as a way to understand how it worked. The idea of taking something apart to explore what makes it “tick” resonated with Amos, who had previously been a therapist (the analogy should be clear!) and had also been very interested in inquiry-based, exploratory learning, and the concept and practices of “unschooling” as articulated by John Holt.

In 2016 Amos, then working for the Lego Foundation in Denmark, became the Lego “partner node” to the Reggio Emilia schools and made his first of many trips to Reggio. He was then asked to run a research project, “Tinkering in the Digital Age (TiDA), along with Reggio, Mitch Resnick’s Lifelong Kindergarten group at the Media Lab at MIT, and the Tinkering Studio at San Francisco’s Exploratorium museum. (Amos had worked with Mitch Resnick on Scratch from 2009-2015.) He also became very interested in the kind of documentation practiced in the Reggio schools, particularly as interpreted by the MLV book which was discussed by the TiDA research group. The kind of group work that he saw at Reggio and read about in the MLV book inspired his interest (and the focus of his doctoral work) in creating the conditions for “collective creativity” and using documentation to understand in micro detail just how collective creativity works. At the Malaguzzi Center at Reggio, and in collaboration with the Lego Foundation, Amos joined with colleagues in the Reggio Children Foundation to design the [Scintillae Research Atelier](#). This is a space for “exploration and research on play and learning in the digital age, open to children, adults of all ages, teachers, educators, researchers” (as stated on the website).

In 2023, with Ben Mardell, Amos ran a conference at the Atrium School in Watertown Massachusetts called *Playing and Sustainable Energy*. There he presented pedagogical activities designed for learners to figure out, intuitively and with playful, open-ended tinkering, how to work with sustainable energy – for example, by playing with solar powered drawing machines that move when the sun shines on mirrors attached to the machines. These materials allow people to collectively devise new designs to solve problems as well as come up with new problems to solve. He has been able to trace through documentation how new ideas emerge from collective explorations. Below is an example drawn from a [manuscript](#) by Amos.

Amos describes a workshop in which pairs of people tinker with solar powered drawing machines. He documents (in writing and in video) the thinking of each pair, as shown live [here](#). This “history” allows him to capture when a new idea emerges and then look back in time to discover what led up to the new idea. He describes a moment when one of the tinkerers appeared to “have” a good idea – to make the machines interact with one another by having one machine reflect sunlight onto another machine. But the moment-to-moment documentation history shows that this idea was not due just to the person who appears to have had the idea. Instead, he shows how previous contributions by other people in the workshop actually led to the idea of making the machines interact. Herewith is an example of documentation of collectively creative innovation.

Amos hopes to be able to use this kind of work to engage students across sites on collective design exploration (using open source design), with documentation always central to this work. One idea he has is to help libraries create maker spaces where people can come together to produce objects that people need in their lives, objects that help people solve problems such as how to live sustainably (for further explanation, click [here](#)). When I asked him why libraries, he said that learning in libraries has always been driven by the curiosity and initiative of learners. Today, libraries are reinventing themselves, and they might begin to offer creative learning experiences beyond books that are meaningful and relevant for the communities they are part of. Amos imagines an invitation like this: “Want to live sustainably but don't know how? Come down to the

library and see what your fellow citizens, working in a context that's likely very similar to yours, have come up with." His goal with this kind of pedagogy is for people of all ages to work together towards goals that they themselves have defined and that they share with one another.

Amos attributes the development of his vision for education to encountering Reggio and PZ's work on MLV. In addition to the influence of the Pedagogy of Play and Making Learning Visible, Amos told me that he regularly uses PZ's thinking routines to get discussions going in collaborative learning environments. The use of thinking routines in tinkering is described in this [blog](#) from the Exploratorium.

Faraday de la Camara

Visible Thinking/Cultures of Thinking, Teaching for Understanding

Faraday de la Camera is an early childhood and primary school educator who has taught in international schools around the world for over 45 years. She has been deeply influenced by Project Zero's frameworks, particularly Teaching for Understanding (TfU), Multiple Intelligences, Cultures of Thinking, and Making Thinking Visible.

In 2000, Faraday was a 2nd grade teacher at the International School of Brussels, and about to become director of the school's early childhood center, when she attended a small PZ conference. Attendees were from six schools from the International Schools Consortium in Northern Europe founded in 1997. Led by Tina Blythe, Ron Ritchhart, and Lois Hetland, the conference introduced Faraday to Teaching for Understanding and Multiple Intelligences, both of which resonated with her passion for cultivating student thinking and understanding. "I was always a teacher who cared deeply about my students' thinking, and the Project Zero framework aligned with what I already valued as an educator," she recalled.

In her administrative roles, Faraday found these frameworks to be transformative not only for her students but also for her colleagues. She used Teaching for Understanding strategies with her teachers in the same way she used them with her students, engaging them in reflection and discussion about their own understanding of educational goals. Faraday explained that in her leadership positions, she emphasized big understandings over rote knowledge acquisition, facilitating a shift in focus towards deeper learning and the development of thinking skills. "What do we want our students to understand?" she would ask her teachers. "It wasn't just about learning the content; it was about understanding."

Faraday also implemented student-led conferences. Inspired by Project Zero's emphasis on giving students voice and agency, she helped design a system where students curated samples of their own work and presented these to their parents as evidence of their learning. This practice shifted the traditional parent-teacher conference model, making students active participants in explaining their work.

Over the course of 15 years, Faraday served as a coach for three of Project Zero's online courses – Teaching for Understanding, Making Thinking Visible, and Cultures of Thinking, and she has been a PZC minicourse and study group leader. She described the experience as "fantastic," as it allowed her to connect with teachers from all over the world, each bringing unique perspectives and challenges to the table. She said it was very rewarding to guide educators through the process of applying Project Zero frameworks in their own classrooms, helping them reflect on their practice and think about how to foster deeper student engagement and learning.

Challenges. One challenge Faraday often encountered at the PZC was the limited time available in workshops. “I always wished we had more time,” she said. “It’s difficult to slow down and really engage with the material in depth when you only have a two-and-a-half-hour session.” Despite this, she found that the collaborative and reflective nature of the workshops helped teachers begin to integrate Project Zero’s ideas into their classrooms.

Looking back on her long career, Faraday reflected that the concept of Cultures of Thinking was the most important aspect of her work with Project Zero. Thinking routines, she said, are most effective when used in the broader context of creating a classroom environment where thinking, questioning, and understanding are at the center. “It’s not just about using thinking routines,” she said, “Out of context they are just activities.... It’s about fostering a community of trust where students feel safe to think, ask questions, and understand the ‘why’ behind their learning.”

Kendra Daly and Gene Quezada

Visible Thinking/Cultures of Thinking, Teaching for Understanding, Arts PROPEL, Studio Thinking, Global Competence

Kendra Daly and Gene Quezada have taught at the American School of London as well as three other international schools. In all of these schools, they implemented Visible Thinking from kindergarten through 7th grade. They were first introduced to the idea of thinking routines over a decade ago, when a consultant (Teresa Belisle) came to the American Embassy School in New Delhi, where they were teaching. Theresa had worked with Jim Reese and came to work with teachers on thinking routines. Kendra Daly and Gene Quezada soon began playing with these routines in the classroom. Then, in both 2008 and 2009, they attended the PZC summer institute. On the way home they encountered Mark Church, long affiliated with PZ, and asked if he would come to New Delhi to do professional development with the teachers. This was the start of a fruitful partnership. For six years, Mark came to the American Embassy School for one week every year. These visits deepened understanding of how thinking routines can create a culture of thinking. Daly said that their times at the Project Zero Institute and the subsequent years with Mark in New Delhi have helped to make them the educators that they are today.

Mark also coached a team of teachers about how to facilitate focus groups with their fellow teachers to introduce this new way of teaching. Daly and Quezada began to run regular meetings, using Project Zero protocols where they developed a shared understanding of teaching. The support from Mark was crucial, they affirmed.

At the International School of Kenya, Daly and Quezada currently serve as instructional coaches rather than classroom teachers. They have carried the thinking routine practice with them like a suitcase. This mental model helped them to become more metacognitive about the kind of thinking and learning that they wanted to happen over the course of a week or a unit. This approach, they said, builds a disposition to pause and think so that one can notice and name what one sees.

Prior to learning about creating a culture of thinking, they described their teaching as more content – rather than disposition – driven. They said they had never explicitly thought about how to help their students become deeper thinkers. Both saw their use of thinking routines as a “huge mind shift,” and they now “see their practice with a whole different lens.” Quezada described an incident when a “Tech Coach” came into his classroom in Beijing and, after observing what was going on, said, “It’s really different how you talk to the kids.” Daly reported that the language of her students has changed, and she is now hearing students talk about thinking and wondering. Parents report

that they have to think hard about explaining things because their children often ask them at home, “what makes you say that?”

Daly and Quezada also taught at the International School of Beijing, where they introduced thinking routines. Occasionally parents were not “mission-aligned.” Most of the Chinese students they taught had after school tutoring based on rote learning of content. Daly recalled one parent in Beijing complaining (non-contentiously) that Daly spent too much time teaching dispositions and not enough time on content.

In the four international schools in which this pair of teachers has taught, they always had the support of the head of school. The message from the schools’ leadership has been clear: We are moving away from covering content to teaching transferable inquiry skills. Most teachers in these schools have incorporated the Visible Thinking approach. Daly and Quezada both stressed the importance of having a critical mass of teachers with a shared understanding.

Susan Diachian, Museum Educator

Visible Thinking/Cultures of Thinking, Project MUSE, Art Works for Schools, Artful Thinking

Susan Diachian came from a studio background and became a museum educator deeply influenced by PZ frameworks. Susan was in the first cohort of the Arts in Education program at HGSE, a program that began around 1990. There she learned about Project Zero and many of its early frameworks. Susan has worked as an educator in six art museums: the Fuller Craft Museum in Brockton, MA; the Rose Art Museum at Brandeis University in Waltham, MA; the New Art Center in Newton, MA; the DeCordova Museum and Sculpture Park in Lincoln, MA; the Dallas Museum of Art, and currently the Fitchburg Art Museum in Fitchburg, MA. In each museum she uses the panoply of PZ ideas that she finds most meaningful and useful. At the Fitchburg Art Museum, she is now developing a new strategic plan for their department of education using ideas from PZ.

In her work training museum docents and teachers, Susan tries to move them from a traditional, top-down, transmission mode of teaching to a more progressive way, in which viewers construct their own understanding of a work of art. The PZ frameworks that she uses in her museum education work are the inquiry-based tools for looking at and thinking about art developed by Project Muse (Chapter 10), Art Works for Schools (Chapter 11), Artful Thinking (Chapter 13) and Visible Thinking (Chapter 4). These PZ tools are useful because they break down high level learning into bite size pieces. In so doing, they support higher level thinking.

Susan has also used these tools in her work with medical professionals. She used the Exploring Bias lesson from Art Works for Schools with a group of acute care nurse practitioner students at Northeastern University. There she ran a workshop on how close looking at works of art improves observational skills and can also heighten self-awareness around implicit bias. She told me that the lesson worked beautifully.

Shehla Ghouse

Visible Thinking/Cultures of Thinking, Teaching for Understanding

Shehla Ghouse, Principal of Stevens Cooperative School in New Jersey, has been involved with Project Zero for over two decades. Her first contact with PZ was as a kindergarten teacher at the International School of Amsterdam around 1997, when she participated in a week-long convening at PZ of the International Schools Consortium, a collaborative project involving six international schools across Europe. During this conference, Shehla and her colleagues worked closely with Ron

Ritchhart, Lois Hetland, and Steve Seidel. In 1999, she was invited to be a PZC fellow. Since then, Shehla has returned to PZ regularly, either as a fellow, study group leader, or coach.

Shehla's teaching has been strongly influenced by the Teaching for Understanding framework. At the International School of Amsterdam, which followed the International Baccalaureate (IB) Primary Years Programme, she said that TfU "helped strengthen the [IB] framework, because it opened up for me the idea of understanding and how it develops." This shift in perspective prompted Shehla to become more intentional in her planning, focusing on aligning classroom activities with broader learning goals.

One of the key changes in her practice was her approach to uncovering student misconceptions, especially in subjects like science and social studies. She described her realization: "So much of Project Zero, for me, was not about coverage but uncoverage... uncovering what students know so I can address the misconceptions." This awareness influenced her lesson planning, allowing her to design activities that not only engaged students but also revealed their current understanding. For example, during a lesson on the water cycle, her students described raindrops as coming down "magically," which indicated a gap in their understanding. This insight led her to adjust her teaching to clarify the scientific process, demonstrating the impact of Project Zero's approach to uncovering and addressing misconceptions.

Shehla has served as an online coach for the TfU and VT/CoT courses. For Shehla, coaching is as much about her own learning as it is about guiding others. In her words, "Project Zero is really, for me, almost like a teaching conscience... it helps me make choices about what's good, what's just."

She also observed that coaching requires cultural responsiveness and adaptability, given the wide range of perspectives and experiences participants bring. This diversity enriches the learning experience and challenges her to view Project Zero frameworks through different cultural lenses, further reinforcing her belief in the universal relevance of these practices.

Dolph Hardigree

Visible Thinking/Cultures of Thinking

Dolph Hardigree is an educator with 30 years of experience teaching in Georgia's public schools. He has taught at both elementary and high school levels, specializing in life sciences and International Baccalaureate (IB) education. He is currently the IB Coordinator and instructor of IB Theory of Knowledge and Anatomy at LaGrange High School. In 2025, he will become a professor of education at LaGrange College in Georgia.

Dolph's association with PZ began in 2017 when he was selected to attend the PZC through his district's professional learning initiative. Reflecting on his first exposure to PZ, Dolph described it as "life-changing," adding that it completely altered his approach to teaching. "I was doing way more thinking in the classroom than my students were," he said. This realization drove him to implement Visible Thinking routines and make student voices central to his classroom practice.

Dolph's second year at the PZC in 2018 deepened his commitment, solidifying his belief that the principles of PZ aligned with his core values as an educator. "I just felt an intense personal connection to what these people were doing.... I came back, and it was like, 'I can't do anything the same again,'" he said. Dolph particularly resonated with PZ frameworks that emphasize agency and collaboration.

Dolph's innovative use of PZ thinking routines in his biology classroom demonstrates how these frameworks can enhance both engagement and academic outcomes. He used the See-Think-Wonder routine to introduce complex scientific concepts. To spark curiosity, he presented students with unexpected artifacts, such as photos or videos that level the playing field by requiring no prior knowledge. Similarly, his reimagined approach to teaching DNA structure shifted the focus from rote memorization to hands-on, student-driven discovery. Instead of providing pre-made kits, Dolph invited students to design and build their own molecular models using a variety of materials, thereby fostering creativity and critical thinking. "By the time they get it right, they really know it," he explained.

Dolph serves in multiple roles at PZ. He is now a PZC faculty member, working as a study group leader and teaching the Power of Making Thinking Visible mini-course as well as his own mini-course – PZ Ideas in the Science Classroom. He has also served as a coach for the Visible Thinking in-depth course. Dolph explained that coaching keeps him engaged and growing professionally. "A lot of people wrestle with these ideas alone in their schools.... My voice, my encouragement, and my questioning help them move forward," he said. He emphasized the importance of creating a supportive community for educators experimenting with PZ approaches, especially for those in under-resourced schools.

Dolph has observed that PZ frameworks can have a profound impact in Title I schools, where students often face systemic barriers to success. "There's this learned helplessness.... Kids think, 'We're the dumb ones,'" he said. However, by using PZ routines, Dolph has seen students discover their potential, gain confidence, and engage deeply with learning. He noted that these practices are equally transformative for teachers, helping them recognize gaps in their own methods and inspiring them to make meaningful changes.

Evan Hastings

Teaching for Understanding, Studio Thinking

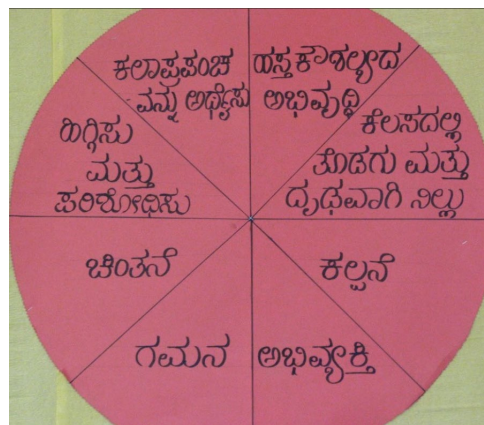
Evan Hastings is a theater practitioner, drama therapist, and educator with a deep commitment to using the arts as a tool for social change and creative inquiry. With a background in arts integration and interdisciplinary teaching, Evan has worked extensively in various educational settings, from traditional classrooms to conflict zones. His work is influenced by the Teaching for Understanding and Studio Thinking frameworks.

Evan began working with TfU and Studio Thinking in 2005 as an arts integration coach in Oakland, California. The goal was to support artists and classroom teachers to develop interdisciplinary units. He worked closely with Lois Hetland, Arzu Mistry, and Todd Elkin to train arts integration coaches who would then mentor school teachers across grade levels. He said the key benefit of PZ frameworks was creating a shared language for interdisciplinary collaboration. As a faculty member at Lesley University's Graduate School of Education, he incorporated both Studio Thinking and TfU to help educators use theater to teach critical thinking and literacy skills.

Since 2009, Evan has spent significant time in India, training teachers at private and philanthropic schools using the Studio Thinking framework. "In India, we've used Studio Habits of Mind to train teachers in schools and colleges," he noted. Evan also said that the Studio Habits of Mind wheel was translated into Kannada, the local language in South India, making it more accessible to local educators (see below). Additionally, during his time in New Zealand (2019-2021), Evan directed an educational theater company that toured nationally, introducing the Studio Thinking framework into professional development for drama teachers.

Evan also applied the Studio Thinking framework in the Alameda County Juvenile Justice System, where he collaborated with a math teacher to design Statistics and Ballistics, a statistics unit exploring the impact of gun violence. Evan's recent work includes training teachers in social-emotional learning in conflict zones, such as Kashmir. He has also pioneered Shadow Liberation, a fusion of Theater of the Oppressed, drama therapy, and shadow puppetry, to address gender-based violence in over 20 countries. "When I give my talk about Shadow Liberation, sometimes I'll include reflections from my students that are written using the language of the Studio Habits," he mentioned.

Reflecting on his experience, Evan emphasized that adapting PZ frameworks requires flexibility. "If I had tried to lay it as a rigid template onto other contexts, I may have had trouble, but I didn't take that approach," he explained. Instead, he adjusted the frameworks to fit specific settings, ensuring that students and educators could engage meaningfully with the material.



Studio Habits Wheel translated into Kannada

Tima Nisbet

Visible Thinking/Cultures of Thinking, Teaching for Understanding

Tima Nisbet, an International Baccalaureate (IB) educator, describes herself as having been deeply influenced by PZ approaches throughout her career. Tima was first introduced to PZ in 2011 while teaching in Zambia. Two colleagues from her school attended the PZC and returned with insights on Visible Thinking routines, which they eagerly shared with other staff. Reflecting on that period, she said, "The school really loved what they learned, [and] bought every single teacher the [Visual Thinking] book. We were encouraged to try the routines." This early exposure led Tima to adopt Visible Thinking routines in her classroom.

In 2013, Tima attended the PZC and explored additional frameworks like Making Thinking Visible, Out of Eden Learn, and the Good Project. As an International Baccalaureate (IB) educator, Tima found a natural alignment between PZ's focus on meta-cognition and Visible Thinking and the IB philosophy which emphasizes inquiry-driven, concept-based learning. As a result, she has transformed her classroom practices. "I talk less and do more... Now I talk, and we do things, but there's a lot more movement in my class," said Tima.

One example of this integration is Tima's use of the Circle of Viewpoints routine during a grade 10 history unit on the Holocaust. This routine enables students to adopt and analyze various historical

perspectives, such as those of a Jewish citizen, a bystander, a member of the Hitler Youth, and a propagandist. Through these exercises, students gain a nuanced understanding of historical events and develop empathy by considering multiple viewpoints.

Tima has implemented the Visible Thinking framework with students from K through 12. She emphasized that routines such as See-Think-Wonder and Color-Symbol-Image are versatile and can be tailored to various developmental stages without requiring extensive modifications.

Tima has served as a coach for the Visible Thinking in-depth course and a facilitator in The Power of Making Thinking Visible mini-course. She spoke about coaching as a learning experience for her, as participants often present fresh perspectives and innovative applications of thinking routines. Tima also noted that coaching challenges her to rethink established routines and try new approaches, enriching her professional growth and keeping her teaching practices current.

Tima noted the difficulty of assessing impact in terms of how deep the influence is or how long it lasts. She noted that while some schools, like the International School of Amsterdam, have successfully embedded these practices into their culture, other institutions view PZ routines as isolated activities rather than as integral parts of classroom routines. “I still see people using [thinking routines] as activities and not as routines... not understanding that difference,” she said. Tima believes that qualitative methods, such as interviews and surveys, may provide valuable insights into the broader impact of these methodologies on both educators and students.

Eduardo Pineda

Teaching for Understanding, Studio Thinking

Eduardo Pineda is a distinguished muralist and museum educator with extensive experience in arts education and community-based projects. His career spans museum education at the San Francisco Museum of Modern Art (SFMOMA), teaching mural arts at the California College of the Arts, and supervising student teachers at Mills College. Eduardo’s educational approach has been deeply influenced by PZ’s Teaching for Understanding and Studio Thinking frameworks, which have helped him articulate and refine his teaching methodology.

Eduardo first encountered Project Zero through his museum education work, particularly through connections with Lois Hetland. He recalls being introduced to PZ and Lois through museum education circles, specifically when she and her colleagues were developing the Studio Thinking framework. At SFMOMA, Eduardo played a crucial role in rebuilding family, youth, and teacher programs. As he became more involved with Teaching for Understanding, he found that it provided a structured language for what he was already practicing instinctively, allowing him to engage with other educators and refine his curriculum.

Though SFMOMA did not have formal partnerships with academic institutions, Teaching for Understanding significantly influenced how Eduardo designed educational experiences. He emphasized the importance of having a clear educational goal, even in short museum programs, ensuring that participants always walked away with an imaginative experience as the primary takeaway.

Eduardo also applied PZ frameworks while teaching mural arts at the California College of the Arts and supervising student teachers at Mills College. He adapted Studio Thinking to highlight specific habits essential to collaborative public art, focusing on Understanding Art Worlds, Envision, and Reflection. Since his students were already developing Craft and Expression in their disciplines, he

saw the need to engage them with community-based artistic traditions and collaborative processes. A key challenge Eduardo observed was helping students reconcile individual artistic identity with collective authorship in community projects. He noted that they had to learn to give up their egos but still remain invested in the final work, understanding that their murals were created for community spaces rather than personal portfolios.

In implementing TfU, Eduardo encountered several challenges, particularly in balancing structured learning with the unpredictable nature of community-based work. Since participants changed constantly in community mural projects, he had to ensure that the collaboratively developed theme remained the guiding principle. While teaching student teachers at Mills College, Eduardo found that many lacked exposure to the art traditions of the communities they aimed to serve. He recognized that they needed more knowledge about community arts history, as many students wanted to create murals without understanding the historical or cultural significance of the process. Using Studio Thinking, he helped them identify gaps in their preparation and provided resources to deepen their understanding of multicultural artistic traditions.

From museum education to higher education and community arts, Teaching for Understanding and Studio Thinking have helped Eduardo refine his teaching philosophy, articulate his practices, and foster meaningful artistic collaboration. His insights underscore the importance of structured yet adaptable educational approaches in fostering creativity and critical thinking in both formal and informal learning environments.

Aseem Tripathi

Visible Thinking/Cultures of Thinking, Teaching for Understanding

Aseem Tripathi has a degree in Educational Studies from Jawaharlal Nehru University in New Delhi. He has taught in all boys boarding schools for 24 years, and is currently Head of the Department for Accounts, Commerce, and Economics at The Doon School in Dehradun, Uttarakhand, India. After our interview, Aseem wrote in greater depth about what he called his “learning journey.”

Aseem’s encounter with the theory of multiple intelligences led to his introduction to PZ.

I was aware of its theoretical framework but was not fully aware of its applicability in classroom teaching. At that time, I was using mind maps (Tony Buzan’s technique) in my classroom to visually represent concepts to my students. In the summer of 2009, I visited the Institute of Education, London, where I had an interactive session on ‘What it means to be a schoolteacher in India.’ During my presentation, where I used handmade mind maps, an audience member mentioned the use of the mind mapping technique to promote visual and spatial intelligence. I started exploring the theory of multiple intelligences and its associated ideas in greater depth which eventually led me to Project Zero ideas.

He then enrolled in the Teaching for Understanding (TfU) PZ course. His coach for this course recommended that he be trained as a coach. He began coaching the TfU course in 2010 and then went on to complete a second TfU module as well as the Making Thinking Visible (MTV) modules. He has been working as a Project Zero Online coach since then and currently coaches the Visible Thinking in-depth course.

The TfU framework significantly redefined Aseem’s teaching philosophy. “It made me reorient my lesson planning... from merely instructional teaching to really asking, ‘Am I making sense to my

students?', thus making a transition from what I teach to what I communicate," he explained. Visible Thinking further enriched his pedagogy by providing "actionable" classroom strategies that put thinking at the core of pedagogical practice. "As I have gotten to understand the dispositional view of thinking, I have become more conscious of the purpose behind what we teach and the importance of creating a culture of thinking in my classroom, where thinking is celebrated," he said.

Aseem named routines like What Makes You Say That?, See-Think-Wonder, Sentence-Phrase-Words, Connect-Extend-Challenge, Compass Point, Step Inside, and Circle of Viewpoints as ones that transformed his classes into spaces of interactive and reflective learning. "Even my language in the classroom has changed," he noted, emphasizing how these routines foster deeper conversations and critical thinking among students. "I have become more mindful of the thinking moves which I make in class and have started noticing how my students respond to these thinking moves. These strategies "make the classroom more interesting" by encouraging student voice and collaborative learning. "The best part is that these routines are relevant across all curricula, whether it's the IB, the International General Certificate of Secondary Education or the Indian curriculum."

As a coach for PZ online courses, Aseem's perspective broadened through interactions with teachers worldwide. Despite cultural, geographic, and systemic differences, he observed that educators share the challenge of simplification: "How to express the most profound ideas in the simplest of ways so that you can trigger understanding in those you teach." He went on to talk about other challenges: "The singular challenge we all face is time, and the overpowering demands of complying with assessment specifications," adding that adapting teaching strategies within these limits remains a global struggle. Aseem finds inspiration in the universal mission of teachers to nurture critical thinking.

Aseem wrote the following:

Visible Thinking's broader impact is evident in its integration into IB's Theory of Knowledge curriculum, where the exhibition component [of IB] borrows from Visible Thinking the idea of working with provocation and artefacts. Many of the teachers I have worked with over these years are educators teaching the IB curriculum. Even teachers who haven't taken the courses are using these ideas.

Aseem stressed that the growing global adoption of Project Zero ideas emphasizes the importance of making its modules more accessible to a broader audience, especially by providing vernacular translations.

He added the following in an email:

Another challenge which I have encountered while coaching for PZ is that often teachers are more driven by the tangibles in teaching and are more focused on practice rather than purpose. Often taking them beyond the tangibles of teaching and learning and making them realise the importance of the intangibles of teaching and learning becomes difficult. They are looking for more measurables, which can help them to navigate through the curriculum and generate grades, as opposed to the purpose behind what we teach. The whats and the hows of teaching take precedence over the whys of teaching.

Maggie Van Camp

Making Learning Visible, Children are Citizens, Pedagogy of Play

Maggie van Camp is an early childhood educator who has been deeply influenced by *Making Learning Visible*, *Children are Citizens*, and *Pedagogy of Play*. She has taught in the classroom and has served as an early childhood coach in the Boston Public Schools and for PZ's online MLV course. She has also taught future teachers as a professor of early childhood education at Bunker Hill Community College in Boston. She is currently (2024) conducting research on playful interventions as a research associate at Boston College.

Maggie first learned about MLV when she was teaching young children in the Boston Public School System. She recalled that sometime around 2020, Mara Krechevsky and Maria Boni were offering a MLV seminar for Boston Public School teachers, and Maria urged her to join. She said this was her first glimpse into pedagogical documentation – not just taking beautiful photos to show something that your class did, but using documentation as a teaching tool. She saw how authentic learning could happen even in a system with strict standards and rules about the number of minutes teachers must instruct in math, reading etc. She learned she could make room for student questions and conversations about their interests by making adjustments within the curriculum. She found this kind of teaching much more enjoyable and never repetitive: Because teachers follow children's interests and questions, these always take teachers in new directions as they co-create the curriculum with their students.

Maggie went on to use both MLV and CAC in her teaching. When using CAC, she recalled asking children about how to improve the city of Boston. She expected to hear about more playgrounds or other fun things, but instead the children talked about making sure families had jobs and enough to eat. She spoke about how rare it is for children to have such conversations and to have adults assume that they are capable of answering such questions.

In her teaching at Bunker Hill, Maggie modelled documentation for her students and showed how using the Ladder of Feedback protocol is a fruitful way to look at a piece of documentation together. At Bunker Hill, she assigns the MLV book as well as other writings by Mara Krechevsky, Ben Mardell, and Megina Baker.

Maggie said her students at Bunker Hill are sometimes resistant to the idea of open-ended activities like play (considering it a waste of time), do not see MLV or CAC as valid, or it just does not fully make sense to them. But after they visit places like Charlestown Nursery School (see Chapt. 8), they come to see documentation as their favorite way to assess learning.

Often Maggie's students get teaching positions at one of the Harvard child care centers, all of which incorporate Reggio-inspired documentation. She is confident that these students then use the MLV approach, but does not know about students who get positions in schools not already using MLV.

When asked if she adapted any of these frameworks (MLV, CAC, PoP), Maggie said no adaptation was called for because these approaches are so open-ended.

Maggie said PZ influenced her philosophy and practice of teaching by giving her courage to teach in this way. And when a principal questions her and asks why she is not using flash cards and worksheets, it helps to say she is using an approach developed at Harvard. The Harvard stamp of approval gives her the opportunity to say that standardized tests do not assess everything that is important.

Ann Wettrich

Teaching for Understanding, Studio Thinking

When her daughters attended public schools in San Francisco, Ann Wettrich became deeply interested in education. Ann, an artist, saw that art played little or no role in the curriculum and when art was taught, it was often just considered a way to help students engage with other subject areas. By adding art, Ann wanted to make transformative change in public education.

In the early 2000s, she created a teaching certificate program for artists at the California College of the Arts. She hired Jen Stuart, an experienced artist/educator, to help develop the teaching program. Jen had been involved with the PZC summer institute and introduced Ann to Lois Hetland. Ann and her colleague Louise Music, then Arts Supervisor for the Alameda County Office of Education (ACOE), invited Lois to CCA, who introduced them to both Studio Thinking as well as TfU. “The rest is history,” Ann said. Louise and Ann went on to spread ST and TfU widely in the Bay Area.

At CCA, Ann infused ST and TfU into the program training future art teachers. More specifically:

- She founded the SMART (Subject Matter in Art) Teaching Program at CCA, which was accredited by the California Teacher Certification program and provided graduates with the subject matter accreditation part of their teaching credential. ST and TfU were core parts of this program.
- She ran a practicum (with Trena Noval) for artists in the Graduate Fine Arts Program to prepare them for their work as teaching artists. Again, ST and TfU were core parts of this program.
- She ran an Art Education Faculty Fellows program that provided professional development in ST and TfU to Bay Area teaching artists working in K-12 schools.

Ann also worked in several other roles to spread ST and TfU:

- At the Alliance for Arts Learning Leadership in the Bay Area, she helped run professional development institutes for thousands of teachers over the years, introducing them to many PZ frameworks, including TfU and ST.
- At the Integrated Learning Department of the ACOE, run by Louise Music (see Chapt. 55), Ann ran professional development programs on ST and TfU. The Department was gradually phased out around 2019, but a core group has continued to do professional development using ST and TfU.
- Finally, as an independent consultant, Ann offered professional development to entire schools and school districts, e.g., the Oakland Unified School District Schools Visual & Performing Art Education Program, where she worked with educators, artists, school board members, and parents to create their Arts Education Master Plan).

In all of these roles, Ann's goal was to help teachers teach the arts as a stand-alone discipline as well as integrate the arts into other subject areas. The ST and TfU frameworks were ways of deepening arts integration rather than, as is so often the case, using the arts in a superficial way to improve education in another area of the curriculum.

Ann noticed that TfU was more difficult for teachers to grasp than ST. Some were able to use it to develop units in arts integration. For example, an understanding goal might be to have students understand that art could be a tool for social justice, or that art could be a way to introduce different perspectives. Some teachers loved TfU. Some resisted it. Some just said it was too hard to do.

Everyone, however, caught on to ST. "Studio Thinking was the "right tool at the right time," Ann quipped. ST gave teachers a common language to use across disciplines. They used ST to develop curricula, to assess students' strengths and weaknesses. Students used ST for self-assessment, which gave them agency in their artistic development. Administrators used the framework to justify the importance of the arts to parents. Artists used ST as a way of assessing their own practice.

Ann told me that educators were very excited about these two frameworks. But this did not mean they were all using them in the best possible way. Sometimes Ann's visits to classrooms showed her teachers using all the right buzz words but implementing the frameworks superficially. But she felt that using these superficially was better than not using them at all. "We had to get less precious about people doing it right," she told me.

Reference Cited

DeZutter, S. L. (Ed.) (2023). *International perspectives on educating for democracy in early childhood*. Routledge.

PART V

TAKING STOCK

Chapter 60

Conditions for Educational Impact

Many hundreds of millions of dollars are spent on educational research every year in the United States alone. When the funding for a project ends, researchers typically go on to seek funding for a new project. Rarely is funding granted to allow for in-depth investigation into whether a program had its desired effect – especially over the long haul.

PZ is fortunate that two of our current funders, the Saul Zaentz Charitable Foundation and the Make it Better Foundation, believed in the importance of studying impact, and they provided support for this report. A list of our other funders – all of whom are greatly appreciated – is provided in the acknowledgements section.

This report has demonstrated what can be learned through largely qualitative methods about the impact of educational research. Through the use of personalized, in-depth interviews, I (with the help of my two research assistants) was able to show that teachers, heads of schools, and other educators and leaders have found that their encounters with PZ have had a profound and lasting impact on their practice and on their understandings and beliefs about effective teaching, learning, assessment, and other desirable outcomes. They have provided many examples of these outcomes.

I did not set out in this report to document the impact of PZ research on students. Such a task would require a very different methodology, administering learning outcome measures to students whose teachers had adopted PZ approaches, and comparing these students to others whose teachers had not encountered PZ. Of course, throughout the report, there are teachers' testimonials about what they saw as the effect on their students.

From this targeted study, and having worked and reflected on PZ over half a century, I believe I can provide a thoughtful answer to this question: How can researchers, working together with educators, effect broad school change that becomes a part of the school culture? The principles I list below apply not only to PZ but seem likely to be general, relevant for almost any rich framework.

Here seem to be the most promising ingredients for constructive change in a particular school.

The Role of Experiential Learning

Attendees at the PZC or in a PZ workshop or a PZ online course experience new frameworks as their students will. That is, they experience first-hand the kind of learning that they will then bring to their classroom. This is the best way for an educator to internalize a new approach – and thus to “own” it. The importance of experiential learning for children is well-known, but all too often education researchers neglect to incorporate this into professional development.

The Importance of a Critical Mass

There must be a significant number of teachers at a school who are interested in – or, better, intrigued by – the new approach. After learning about a new approach, these teachers form study groups at their school where they read and try out the new approaches, reflecting with one another

about what works and what needs tweaking. There must be built-in time for such reflection – essential for improvement.

The importance of “Deliberate Institutionalizing”

In Chapter 4, I quoted David Perkins’ concept of deliberate institutionalizing. Educators must be deliberate about keeping a new school culture going. This happens by making certain that new teachers are included in study groups, and by continuing to send teachers to professional development encounters. In the case of PZ’s frameworks, this would mean the PZC, PZ’s online courses, or workshops offered by PZ or by affiliates who have formed their own PZ networks (as described in Chapters 55 and 56 and their accompanying appendices).

Of course, institutionalizing is not just a matter of keeping teachers up-to-date. It also requires budget allocations and school schedules that allow for small group teacher meetings, and that these priorities be understood by school boards and written into profiles of the school.

I note here that institutionalizing should not be taken to mean that any school should sustain PZ practices (or any other practices). Perhaps something better comes along. However, the point about institutionalization is important because, as David has said, good practices often fade from the scene *not* because of some strategic decision to adopt a new and better approach, but because of more chaotic or unintended processes.

The Encouragement of Personalization

When educators are encouraged to personalize their use of a framework according to their experience and vision, the framework is more likely to stick in that educator’s practice. For example, one educator’s version of a performance of understanding (in TfU) may be quite different from that of another educator. This stands in contrast to rigid frameworks presented to teachers as exactly what they must follow.

The Attraction of an Innovative School Culture

When a school is seen as innovative and exciting, teachers who are open to new ideas seek to teach there. The school culture draws them to the school.

The Critical Role of School Leaders

For a new framework to last over time, it is essential that there be school leaders who are passionate devotees of a particular set of practices or philosophies. School leaders need to experience the new approach along with their teachers. They also need to appreciate the factors listed above and plan for and build upon them. Leaders need to understand how adults learn and how school culture is built. They know what kind of changes they want to see happen, they get their teachers on board, and they hold them accountable.

What makes these several ingredients so important? Simply that, as documented earlier, in Chapter 1 and later on under the repeated heading “challenges,” a number of familiar factors stand in the way of simply and easily “installing” new ways of teaching and making them last. Such factors are quite familiar to anyone who has been involved in educational change, among them introducing new practices that:

- address a problem teachers don’t care about,

- are seen by teachers as not feasible,
- that are presented in one-shot workshops,
- that are handed down as rigid steps to be followed, without allowing time for teachers to try them out and reflect together about what works and what does not.

Even in the best of circumstances, programs do not last forever. New approaches are particularly vulnerable when school leadership changes. But, as I paraphrased from TheodoreSizer in Chapter 29, even though a program may disappear, the educators who have been affected retain what they have learned and experienced. They will take their changed mindset with them to whatever organization they next join. This is why I believe it is so important that PZ offers broad and flexible frameworks rather than fixed curricula or content that should be taught. Those who have internalized a broad, flexible way of teaching are unlikely to go back to their old ways.

APPENDICES

1. Interview Guidelines
2. Sample Email Request for Interview
3. Consent Form
4. Projects Included/Not Included in this Report
5. Online Courses Offered by PZ Over the Years
6. HGSE Course on Project Zero: Course Descriptions 2013-2017
7. Sample TfU Projects from Instituto Modelo Bilingue Michelangelo in Brazil
8. Sample TfU Projects in Israel
9. Sites Using Cultures of Thinking
10. Sample Documentations from Worcester Head Start
11. A Typical Day at Charlestown Nursery School and Sample Documentations

Appendix 1

Interview Guidelines

Interview questions followed this outline, but were adapted for the particular framework and personalized for the individual interviewee.

How did you first learn about Project Zero?

What PZ framework(s) have you used in your organization?

What kind of professional development did you get in learning how to use these frameworks?

What kind of support did you receive from your organization as you began to implement these frameworks?

Did you make any adaptations to these frameworks to fit your particular needs?

Are other educators in your organization using these frameworks, and if so:

How many?

Do you and these other educators have time to meet, reflect on best practices and challenges?

How do you think these frameworks affected your philosophy of teaching and your teaching practice?

How do you think these frameworks affected your students?

How did parents react?

Is there anything else that I should have asked that you'd like to talk about?

Appendix 2

Sample Email Request for Interview

Dear NAME

I have been a researcher at Project Zero at the Harvard Graduate School of Education since 1973, and I am now studying the impact of many of our educational frameworks -- tracking where they have spread by interviewing educators around the world.

I understand from [NAME] that you have been using [NAME OF FRAMEWORK] in your classroom. I'd very much appreciate the opportunity to speak to you about this by Zoom.

If you are willing, could you tell me whether any of these times would work for you?
[SUGGESTED DATES/TIMES]

If none of these work, I will send more.

I'd like to write about what you tell me in the impact report. I would first send you a draft for your approval/edits, and you would get a copy of the report at its completion.

I very much hope we can connect.

Best wishes,
Ellen Winner

Appendix 3

Consent Form

Title of Project: Project Zero Impact Study
IRB Number: 24.002.01
Principal Investigator:
Ellen Winner
winner@bc.edu
Dept of Psychology and Neuroscience
Boston College, McGuinn Hall, Chestnut Hill, MA 02467

Purpose: I am conducting a study to document the impact of Project Zero's (PZ) educational research, and I am asking permission to interview you on this subject.

Risk: There are no risks to participating.

Confidentiality: I will make an audio recording of our interview to help me remember what you have said. These audio files will not be shared with anyone.

I will send you a write up of our interview for your editing/approval. Portions of this write up may be included in my final report. Only I will have access to my notes on your interview, and these will not be shared with anyone and will be stored in a computer system with password protection.

You will receive a pdf of the final report when complete; this report may take 1-2 more years.

By typing your name below, you indicate your consent to participate in the study.

By signing this consent form, you are indicating that

- you have read this form
- your questions have been answered to your satisfaction
- you voluntarily agree to participate in this research study

Signature

Date

Please check one of these choices below about whether you permit the use of your name in the final report.

___ I consent to the use of my name and affiliation in the final report

___ Please keep my contribution anonymous in the final report

Appendix 4

Projects Included/Not Included in this Report

Projects Included (N=48)

1. Agency by Design
2. Art Works for Schools
3. Artful Thinking
4. Arts as Civic Commons
5. Arts PROPEL
6. ATLAS
7. Center for Digital Thriving
8. Children are Citizens
9. Creating Communities of Innovation: United Arab Emirates
10. Creating Communities of Inquiry: Peru
11. Cultivating Creative and Civic Capacities
12. Developing Virtues through a Community of Practice
13. Digital Dilemmas
14. Educating for Global Competence
15. Envisioning Innovation in Education
16. Family Dinner Project
17. Fostering “HedCap” at the College Level
18. Global Citizens Initiative
19. Global Competence Projects in Schools Around the World
20. Good Play and Good Participation
21. Good Work/Good Project
22. Idea into Action
23. Inspiring Agents of Change
24. Interdisciplinary Thinking
25. Isabella Stewart Gardner Museum Project
26. Leading Learning that Matters
27. Learning Innovations Lab
28. Looking at Student Work: Three Related Projects
29. Making Learning Visible
30. Multiple Intelligences
31. Next Level Lab
32. Out of Eden Learn/Open Canopy
33. Pedagogy of Play
34. Portfolio Assessment
35. Project Co-Arts
36. Project MUSE
37. Quality Project
38. Reflecting on Your Life Seminars
39. Reimagining Migration
40. Reviewing Education and the Arts Project
41. Role of Museums in Fostering Global Awareness
42. Self-Assessment
43. Studio Thinking
44. Teaching for Understanding

- 45. The Quality Project
- 46. Understanding Causality
- 47. Visible Thinking/Cultures of Thinking
- 48. Visual Thinking Curriculum Evaluation

Projects Not Included (N=28)

Developmental Psychology Projects in PZs First Decade

- Early Symbolization Project
- Figurative Language
- Style Sensitivity
- Taking Advantage of Media
- Psychology of Creative Thinking

Not an Education Framework

- Aligned Programs for the 21st Century (ALPS)
- Arts Survive
- Learning In and From Museum Study Centers
- Lincoln Center Institute Evaluation Project
- Parent Partners
- Practical Intelligence for Schools
- Qualities of Quality
- Shakespeare and Company Research Study
- Singapore Project
- Talking with Artists Who Teach
- United World Colleges Evaluation (UWC)

Too Small/Too New

- Art Festival impacts
- Art Works at Work
- Good Starts
- Justice by Design
- Learning Spaces Lab
- Mather Afterschool Program
- Transformative Repair
- Witness Tree
- Story Work Project

Not Based Primarily at PZ

- Humanities and Liberal Arts
- Democratic Knowledge Project
- Assessing Historical Understanding Project

Appendix 5

Online Courses Offered by PZ in 2025

In-Depth Courses

[Look, Listen, Interpret, Teach: A Reggio Emilia-Inspired Approach to Supporting Individual and Group Learning \(LLIT\)](#)

COST: \$655 per person for teams of 3-6 people; \$699 per person for individuals

Drawing on the collaborative research between Harvard's Project Zero and educators in Reggio Emilia, Italy, this course offers you the opportunity to learn how to document student learning in ways that "make visible" what and how students learn and that provide useful data for reflecting on and improving teaching.

[Visible Thinking: Using Thinking Routines Effectively to Cultivate Dispositions and Support Learning \(VT\)](#)

COST: \$655 per person for teams of 3-6 people; \$699 per person for individuals

Learn a variety of thinking routines and how to use them effectively in classrooms and other learning contexts to support deeper learning and thinking for students, and to cultivate powerful and lasting thinking dispositions.

Mini Courses

[Creating Cultures of Thinking: Exploring the Purpose and Promise of Schools](#)

COST: \$310 per individual on teams of 3-6 people. \$395 for individuals without a team who will be placed on virtual teams.

To develop engaged and empowered learners, we need to change not only the curriculum and our instruction, but also the culture of our schools. In this course, learn about why classroom culture matters deeply to what and how students learn, and analyze the culture of your own classroom, school, or learning context. Explore the cultural force of "language" and its power to shape students' learning and thinking.

[Let's Play: Teaching Strategies for Playful Learning](#)

COST: \$310 per individual on teams of 3-6 people. \$395 for individuals without a team who will be placed on virtual teams.

Play is central to how children learn. Yet incorporating play into a formal school setting can be challenging because the nature of play and the nature of school are often at odds. This course, based on the frameworks developed in PZ's "Pedagogy of Play" project, (funded by the Lego Foundation), introduces core principles and practices of playful learning and gives you the opportunity to design and try out a playful learning approach in your own context.

[Investigating the Forces that Shape Cultures of Thinking](#)

COST: \$310 per individual on teams of 3-6 people. \$395 for individuals without a team who will be placed on virtual teams.

Effective teaching requires not only good planning and thoughtful instruction, but careful attention to classroom culture. In this mini course, learn about the eight cultural forces, with a special focus on four of those forces (modeling, opportunities, interactions, and environment) and how to leverage them to create cultures that support students in deep learning and thinking. Reflect

critically on your own work as an educator while acquiring new tools, practices, and principles that will help you promote the deep learning of your students.

Cultures of Thinking in Action

COST: \$310 per individual on teams of 3-6 people. \$395 for individuals without a team who will be placed on virtual teams.

The *Cultures of Thinking in Action* course builds on the ideas of Ron Ritchhart's new book of the same name (2023). Developed and taught by Ritchhart and colleague Mark Church, the course offers you the opportunity to explore the 10 mindsets that support deeper learning and thinking. You will also develop your skill with tools that you can use to turn your classroom or learning context into a community in which thinking is valued, visible, and actively promoted.

Maker-Centered Learning: Developing Student Agency & Sensitivity to Design

COST: \$310 per individual on teams of 3-6 people. \$395 for individuals without a team who will be placed on virtual teams.

What is maker-centered learning? How can educators of all grade levels and subject areas use this powerful approach to motivate students and engage them in the kind of deep and sustained learning that develops student agency and a sensitivity to design? In this mini course, explore a set of maker-centered learning strategies and tools developed by Agency by Design, a multi-year Project Zero research initiative.

Appendix 6

HGSE Course on Project Zero: Course Descriptions 2013-2017

T-600: Perspectives on Learning

Carrie James and Shari Tishman

Spring 2013 course, four credits; Tuesday, 1:00 p.m. - 4:00 p.m.

This course explores diverse perspectives on learning, drawing on over four decades of work from Project Zero (PZ), a research center at HGSE. Since its inception in 1967 as a center for research on learning in the arts, PZ's work has extended in new directions while maintaining a focus on learning and its surrogates, including thinking and understanding. Today, PZ's diverse portfolio includes research and pedagogical frameworks related to the following themes: teaching for understanding; multiple intelligences; making thinking and learning visible; creating cultures of thinking; thinking in the arts; group learning; cognition in science; interdisciplinary teaching and learning; engagement, excellence, and ethics in the professions and in civic life; and the implications of globalization and digital life for learning and learners today. The course will touch briefly on all these themes, and then focus more deeply on a selection that is representative of their scope. These diverse themes – and the topics to be explored in the course – are connected by three core questions: *What does learning look like? How and where does learning thrive? What's worth understanding today and tomorrow?* These questions will serve as throughlines and anchors for lead faculty, presenters, and students as they explore each PZ theme in depth. Senior Project Zero researchers will present on their themes of expertise. Lead faculty will frame each session and facilitate activities, discussions, and other core learning experiences aimed at connecting each theme back to the throughlines. *Permission of instructor required; enrollment procedure will be posted on course web site.*

T-600: Thinking and Learning in the 21st Century: Project Zero Perspectives

(a revised version of the Perspectives on Learning course)

Carrie James and Daniel Wilson

Fall 2013 course, four credits; Tuesday, 1:00 p.m. - 4:00 p.m.

Formerly titled Perspectives on Learning, this course explores diverse perspectives on thinking and learning, drawing on over four decades of work from Project Zero (PZ), a research center at HGSE. Since its inception in 1967 as a center for research on learning in the arts, PZ's work has extended in new directions while maintaining a focus on thinking, learning, and deep understanding. Today, PZ's diverse portfolio includes research and pedagogical frameworks related to the following themes: multiple intelligences; teaching for understanding; making learning visible; visible thinking; creating cultures of thinking; thinking in the arts; group learning; cognition in science; interdisciplinary teaching and learning; ethical issues and other dimensions of good work; and the implications of globalization, market forces, and digital life for learning and learners today. The course will touch on all these themes and focus more deeply on a selection that is representative of their scope. The course will connect study of PZ frameworks to a set of core questions such as: *What do thinking and learning look like? In what contemporary contexts do thinking and learning thrive? What are related opportunities and challenges? What's worth learning and understanding today and tomorrow?* Guest senior PZ researchers will present on their themes of expertise. Lead faculty will engage students in activities, discussion, and other core learning experiences aimed at connecting each theme back to our core questions about the nature of thinking and learning in the 21st century.

T-600: Thinking and Learning Today and Tomorrow: Project Zero Perspectives

(a revised version on the above course)

Carrie James and Edward Clapp

Fall 2014 course, four credits; Tuesday 8:30 a.m. - 11:30 a.m.

This course explores diverse perspectives on thinking and learning, drawing on over four decades of work from Project Zero (PZ), a research center at HGSE. Since its inception in 1967 as a center for research on learning in the arts, PZ's work has extended in new directions while maintaining a focus on thinking, learning, and deep understanding. Today, PZ's diverse portfolio includes research and pedagogical frameworks related to the following themes: multiple intelligences, teaching for understanding, making learning visible, visible thinking, creating cultures of thinking, thinking in the arts, group learning, cognition in science, interdisciplinary teaching and learning, ethical issues and other dimensions of good work, and the implications of globalization and digital life for learning and learners today. This course will emphasize selected PZ perspectives, including a dispositional view of thinking, a performance view of understanding, the role of documentation in learning, the importance of reflective practice. The course will connect study of PZ frameworks to a set of core questions such as: What's worth learning and understanding today and tomorrow? What are the design elements of rich thinking and learning experiences? What do thinking and learning look like? With support from a teaching team of PZ researchers, students will actively engage in activities, discussion, and other core learning experiences. Putting frameworks into practice in diverse learning contexts in the real world will be a major aspect of the course experience.

EDU-T600: Thinking and Learning Today and Tomorrow: Project Zero Perspectives

Carrie James and Edward Clapp

Offered both Fall 2016 and Fall 2017, four credits; Tuesday 8:30 a.m. - 11:30 a.m.

What is understanding and how does it develop? What do thinking and learning look like? What is worth learning today and tomorrow? Where, how, for whom, and under what conditions do thinking and learning thrive? This course will explore these questions and more by drawing on over four decades of work from Project Zero (PZ), a research center at HGSE. Since its inception in 1967 as a center for research on learning in the arts, PZ's work has extended in new directions while maintaining a focus on thinking, learning, and deep understanding. Today, PZ's diverse portfolio includes research and pedagogical frameworks related to the following themes: multiple intelligences, teaching for understanding, making learning visible, visible thinking, creating cultures of thinking, design and maker-centered learning, thinking in the arts, group learning, cognition in science, interdisciplinary teaching and learning, ethical issues and other dimensions of good work, and the implications of globalization and digital life for learning and learners. With support from a teaching team of PZ researchers, students will actively engage in activities, discussion, and other core learning experiences that emphasize select PZ perspectives, including a dispositional view of thinking, a performance view of understanding, the role of documentation in learning, and the importance of reflective practice. Students will be encouraged to view these perspectives on thinking and learning through the lens of specific populations and the conditions that affect the learning experiences of those individuals. In this way, students will be asked to foreground issues of access, equity, and inclusion in all aspects of their work with the course. Ultimately, students will demonstrate their understanding of course content through (1) a succession of mini-projects in which they put PZ frameworks into practice in diverse learning contexts in real world settings; and (2) a synthesis paper in which they reflect on their learning experiences throughout the course, including the mini-projects, course readings, guest presentations, in-class activities, and their personal lenses on learning.

Appendix 7

Sample TfU Projects from Instituto Modelo Bilingue Michelangelo in Brazil

Preschool Example

Yanina Remedi and Laura Campos use TfU with preschoolers at the Michelangelo school. One project with 4-year-olds was called “The daily life of people and animals according to the rotation of the earth.” This project had both understanding goals and performances of understanding, adapted for young children. Yanina wanted to transform her students’ daily experience into an object of inquiry. In her words, “The sky and the changes that occur during the day and night worry them. From different understanding performances they were able to learn how these changes occur, how these changes influence the daily lives of people and what the habits of animals are like depending on whether they are diurnal or nocturnal.” They began with a generative topic: What are the changes that occur during the day and night and what impact do they have on the lives of people and animals? The children chose a bat puppet to accompany them in their investigations. The unit integrated science and art. During the project children used thinking routines such as “I used to think...Now I think” and “Think, Puzzle, Explore.”

The unit began by asking children to observe the sky, guiding them with questions: What do we see? How can you know that place? The children commented: “You can see the clouds and the sun.” Sometimes it rains.” The sky is blue. The sun is yellow. Sometimes you can’t see the sun because there are clouds.” Then they visited a mobile planetarium – an inflatable portable dome – and observed the entire known universe. Later children were prompted with these questions: What is in space? Who travels to space? Children then visited the Antonio Serrano Museum of Natural Sciences where they observed a model of the solar system.

Children also discussed the habits of bats – the nocturnal animal that most interested them. A biologist visited the class and the children interviewed him about bats.

Children listened to stories that addressed night-time fears and looked at illustrations showing how artists represent the night (including Van Gogh’s *Starry Night*” and Yayoi Kusama’s images of night). They created their own images of night, based on Kusama’s images. They discussed how they feel at night, and when they feel afraid in the dark.

All of this led up to performances of understanding in which the children told their families what they now knew. Explaining in one’s own words what one has learned was considered a performance of understanding for this young age group. Children were divided into four teams, each of which was given a different task to present to their families.

Group 1 was charged with explaining what bats are like. Children rolled a die to answer questions about bats:

- What animals are awake at night?
- Why are we interested in knowing about bats?
- What are bats like?
- Do they have wings from birth?
- What do they feed on?
- What do they do during the night?

Why is it important to take care of them?
Where do we look for information about them?
Who are the people in charge of taking care of bats?

Group 2 was charged with explaining what people do at night. They created a story based on Van Gogh's *Starry Night*.

Group 3 was charged with discussing what they do before sleep, and they created a song to go to sleep by.

Group 4 was charged with retelling the story "Choc Choc el Camel" by Edgard Meriu, giving it a different ending.

This project aimed to get children to observe, investigate, compare, reflect, and synthesize information and then to be able to communicate what they had learned. The project was influenced by TfU, and is presented here to show how TfU was adapted for this young age group.

TfU High School Biology Projects

Generative Question

How can we know the composition of the cells of living beings?

Understanding Goals

- Students will understand the composition of cells, the biomolecules that make them up, and their functions.
- Students will understand the history of modeling the DNA molecule, with notable people, conflicts that arose, and the impact of research.
- Students will understand the importance of working with the science texts presented to them.
- Students will understand experimentation as a fundamental scientific procedure.

Performances of Understanding

Formative: They will carry out the "Look - Think - Wonder" thinking routine based on an image that is presented to them, from which they must ask themselves questions and share their interpretations. One image used, for example, was Watson and Crick's 3-D representation of DNA.

Summative: They will create a representation of DNA (in two or three dimensions) in work groups and explain the model in class.

5th Grade Unit on Explanations of Natural Phenomena

Students had previously studied texts that provided supernatural explanations for natural phenomena. They then read scientific explanations for these same phenomena. As a performance of understanding, students carried out a piece of research about these phenomena to demonstrate that the explanations they come up with contradict the supernatural explanations. In this way they grasped the difference between magical and scientific explanations.

One of the performances of understanding is for students to write a scientific report on a natural phenomenon that interests them, but that they did not previously know about.

4th Grade Social Studies

Generative Question

How have the Mayan, Aztec and Inca cultures influenced the way we live today?

Performance of Understanding (Summative):

Oral presentation about pre-Columbian civilization followed by questions which the student must answer clearly.

Appendix 8

Sample Teaching for Understanding Projects in Israel

Teachers start with big questions that shake things up, that may surprise students and really make students think. In a class on the Bible as a historical text, for example, one of the big questions was “How did God choose the kings?” (The “answer” is that God chose somewhat rebellious kings that would stand up to him.) In literature class as well as in the Bible class, teachers ask about the hidden ideas in the text and the hidden intentions of the writer.

The lessons under the umbrella of a big question are connected, with each one following logically from the previous.

Understanding is sometimes demonstrated in ways that do not call for transfer. For example, discussions may be scaffolded by educator Robert Marzano’s (2007) three questions: “What do you know? What would you like to know? What did you learn?” as well as by PZ thinking routines such as “Think- Pair - Share.” Teachers continually ask students “What makes you say that?” pushing for evidence in the text. Another example: students use thinking maps where they write down all of their prior knowledge at the beginning of a unit, and add concepts and ideas as the unit progresses, ending with reflections at the close of a unit. A third example: students think of questions that they would ask of the text, and questions that might be asked from the perspective of each character in the text, the writer, and students’ family members. After imagining the perspectives of each, students role play. The intention is for the students to present to the entire class the thoughts, insights, and feelings of the character they represent, and to engage in a substantive dialogue with the other “characters” represented by other students in the class.

An example of how TfU is embedded: on the walls of many classrooms there are posters of comprehension performances, and teachers explicitly mention specific performances during classroom learning in order to also embed the language of TFU.

Some performances of understanding explicitly call for transfer. For example, the Bible teacher asked this bonus question on an exam: “How is what you learned seen in your own personal life, and also in our country?”

Reference Cited

Marzano, R. (2007). *The art and science of teaching: A comprehensive framework for effective instruction*. Alexandria, VA: ASCD.

Appendix 9

Sites Using Visible Thinking/Cultures of Thinking

CoT Sites Where Ron Ritchhart and/or Mark Church Are Currently Working or Have Worked

United States

Albuquerque Academy, New Mexico
Bay Area (now California) Teacher Development Collaborative (discussed in Chapter 55)
Bemis Elementary School, Michigan
Chula Vista Learning Community Charter School, California
Del Mar Union School District, California (discussed in Chapter 7)
Denver Language Schools, Colorado
Danville Montair Elementary School
Dayton Ohio Network
Hawaiian Charter Schools (discussed in Appendix 21)
Intellectual Virtues Academy, California
Mandela International Magnet School, New Mexico (discussed in Chapter 7)
Middle and East Middle School, Colorado
Montecito Union School District, California
National Gallery of Art in Washington DC (discussed in Chapter 13)
Oxnard School District, California (discussed in Chapter 7)
Poway Unified School District, California
Presbyterian Day School, Tennessee (discussed in Chapter 51)
Quaker Valley School District, Pennsylvania (discussed in Appendix 21)
Rio Grande School, New Mexico (discussed in Chapter 7)
Richland College (now Dallas College Richland; VT was part of their accreditation plan)
Santa Fe Public Schools, New Mexico
Saginaw Intermediate School District, Michigan
Smithsonian Museums (discussed in Chapter 13)
Southgate School District, Michigan
Sulfur Springs School District, California
Trinity School, Texas
Troy Union Elementary School, Michigan.
University Liggett School, Michigan
Washington International School (discussed in Chapter 37)
Way Elementary School, Michigan

Canada

Edmonton Regional Learning Consortium, Canada
Holy Spirit School Division (Note: a Division is composed of multiple schools)
Lethbridge School Division
Palliser School Division

Europe

American School of London
American International Schools in Spain
American School in Milan
An independent school in London (asked to remain anonymous)
International School of Amsterdam (mentioned in Chapter 59)
International School of Luxembourg

TASIS Portugal (an international school)

Asia

Canadian Academy Kobe, Japan (discussed in Chapter 7)

Hong Kong International School (discussed in Chapter 34)

Xuedao, China (discussed in Chapter 7)

South America

American School of Lima (Roosevelt School)

Australia

Adelaide Partnership (A consortium of government schools)

Bialik College

Brisbane Girls Grammar

Brigidine College

Brighton Primary

Broken Bay Diocese (now called Catholic School Broken Bay)

James Ruse Agricultural High School

Kambala College (discussed in Chapter 7)

Luther College

Masada College

Melbourne Archdiocese of Catholic Schools

Melbourne Grammar

Melbourne Grammar Grimwaid House

National Gallery of Art Victoria

Penleigh & Essendon Grammar

Pymble Ladies College

Ruyton School

Spring Mountain State School

Somerville House

St. Leonards College

St. Paul the Apostle, Doreen

St. Peters Woodlands

Strathcona

Stretton State College

Stuartholme

Tintern Grammar

Waverley Christian College

Wesley College

Wilderness Academy (discussed in Chapter 7)

Ron has also discovered sites using VT/CoT where neither he nor Mark Church has worked. Educators pick up the ideas from PZ conferences, publications, and colleagues. The sites Ron has discovered where no direct PZ professional development has been carried out are as follows:

United States

Atrium School, Massachusetts (discussed in Chapter 51)

EL Education (discussed in Chapter 55)

High Tech High

Library of Congress

Scarsdale Public Schools, New York (discussed in Chapter 55)

Tinkering Studio in Exploratorium Museum, California (mentioned in Chapter 59)
New Tech Network

Europe

American School in Portugal
Emanuel School in London
International Thinking Schools Network, UK (discussed in Chapter 7)

Asia

Edopia School, Pakistan (discussed in Chapter 52)
International School of Beijing
Riverside School, India (discussed in Chapter 53)
Sparkling Minds Global School, India (discussed in Chapter 53)

Appendix 10

Sample Documentations from Worcester Head Start

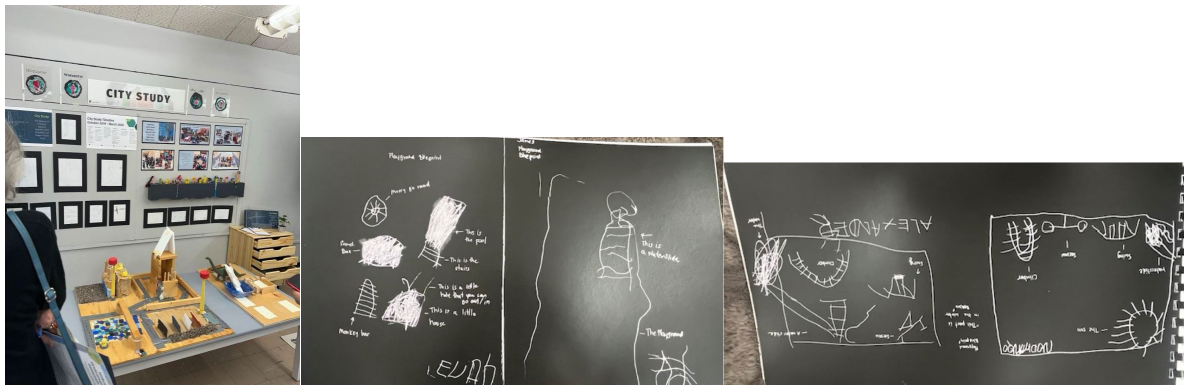
Color Mixing

Scan the code below to listen to atelierista Jessica Leake documentation of one child's thinking during the color mixing project:

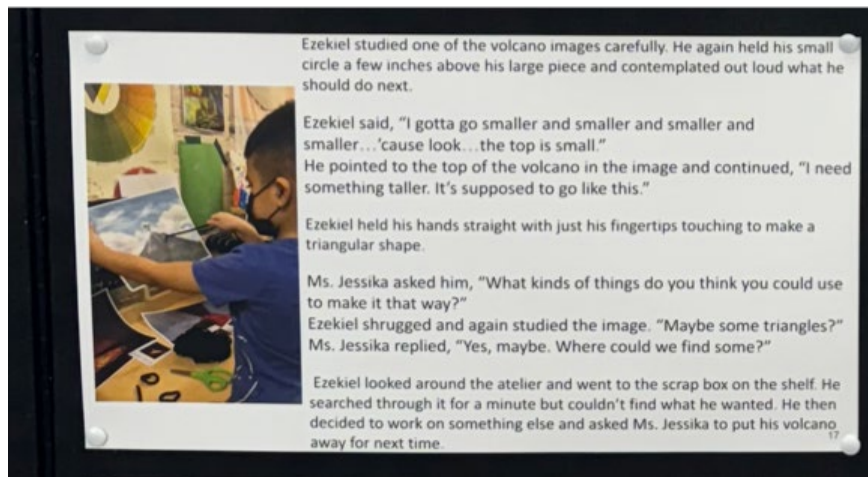


Mapping the City of Worcester

All of the steps taken in a five-month project on the city of Worcester are shown in the photo below. Children visited the various buildings in the city and looked at these from different perspectives, making sketches as they looked. Eventually, working as a group, they build a model of one of the parts of the city. A beautiful book was created about this project, showing all of the steps leading up to the final product. The teachers put together the book by printing and hand binding – showing how this can be done in a very low cost way, as shown in some of the images below.



And here is just one part of a large set of documentations of one child's thinking as he was trying to build a volcano:



Teacher Reflections

In addition to documenting students' thinking, teachers also keep a portfolio documenting their changing images of themselves as educators as they become adept at documentation. Here is one of the teacher reflections, posted in the Documentation Center:

Keeping in mind an image of the child (teacher) that rejects the notion of returning to normal. The realization is that, for our program to develop a cohesive image of the child, we must first understand our teachers' own images of themselves as educators and make space for new ways of thinking. How do we shift teachers' images of themselves as educators in a way that positively impacts practice?

Carlene said that rejecting the idea of returning to normal is a very powerful way of describing what teachers must do as they become noticers and documenters of student thinking. Teachers do not return to normal once they realize that their old ways of thinking about the child are replaced by a recognition of the child as a far more deep thinker than they had previously realized.

Appendix 11

Charlestown Nursery School: Examples of Documentation

Children arrive at the Charlestown Nursery School at 8:00 am. The class begins with a “provocation” – a question to get children thinking and wondering. The provocation is based on a research question – for example, why are shadows so captivating? The initial provocation was to ask, “What do you think a shadow is? What do you think a shadow looks like?” Children then went on to explore shadows in the classroom and outside; they drew shadows and they talked about them, often guided by teachers’ use of the PZ See - Think - Wonder thinking routine..

As children are investigating, one teacher asks the children questions about what they see and what they would predict, while the other is documenting (through writing and taking photos) what the children say and do. They do not try to document everything – they focus on the learning relevant to the initiating research question.

The environment is staged to provide the conditions for learning, set up with rich and often sophisticated materials – including microscopes to look at details of natural objects, which can then be projected onto screens. The children’s thinking is carefully scaffolded. While it looks like play, the role of the teacher as a guide is different from free play outside of school. The teacher is informed by an understanding of individual and group development as well as an understanding of skills, concepts, and interests. As a result, the teachers can meet the children where they are and facilitate their ideas in an emergent, co-constructed curriculum that takes the lead from children’s interests. The teacher is serving as a researcher, and the child also is researching. Often the children ask questions and make discoveries that the teachers did not anticipate. Teachers use the documentation to develop the emergent curriculum.

At noon, the children leave, and from noon until 4 pm, teachers engage in reflection and conversation about what they have documented.

In addition to daily conversation starters, teachers document the development of discoveries in what they call Learning Stories (as seen [here](#) and [here](#)).

Children’s thinking through the entire cycle of a group project is documented, resulting in a thick binder of text and color images, each in a plastic sleeve. Group projects grow from an interest that one or more children express. For example, in a class with teachers Pearl Abiti, Hilary Odoy, and Valerie Shulman, children showed an interest in gears and wheels and how things move. Eventually, the conversation turned to carousels. Hilary was well-versed in design thinking. She suggested that they try to make a carousel. But how could they make it spin, they wondered. Hilary laid out cardboard and paper fasteners (brads that allow spinning) and divided the children into small groups so they could mentor one another. They looked at the spinner in the playground; they went to the library to read books about things that spin; they learned about gears, axles, and ramps, with the throughline always being a carousel. See [here](#) for the documentation of this project.

In another class with teachers Jessica Tripp, Kate Carter, and Amanda McCracken, one child showed an interest in roller coasters, made drawings of them, and showed them to his classmates. The teachers decided to [provide the materials](#) with which to build a ramp that curved up and down.

As shown in this [video](#), children began to try out various ways to build the ramp, as teachers recorded what was happening and what was said. The teachers then invited children to talk about their ideas of a roller coaster, as shown in this [video](#), documenting their responses in writing in real time.

Teachers also create portfolios for each child. These include comments linking particular documentations to the state standards. Kelly noted that the Reggio schools focus more on the collective than the individual child. CNS parents want evidence that their child is learning.