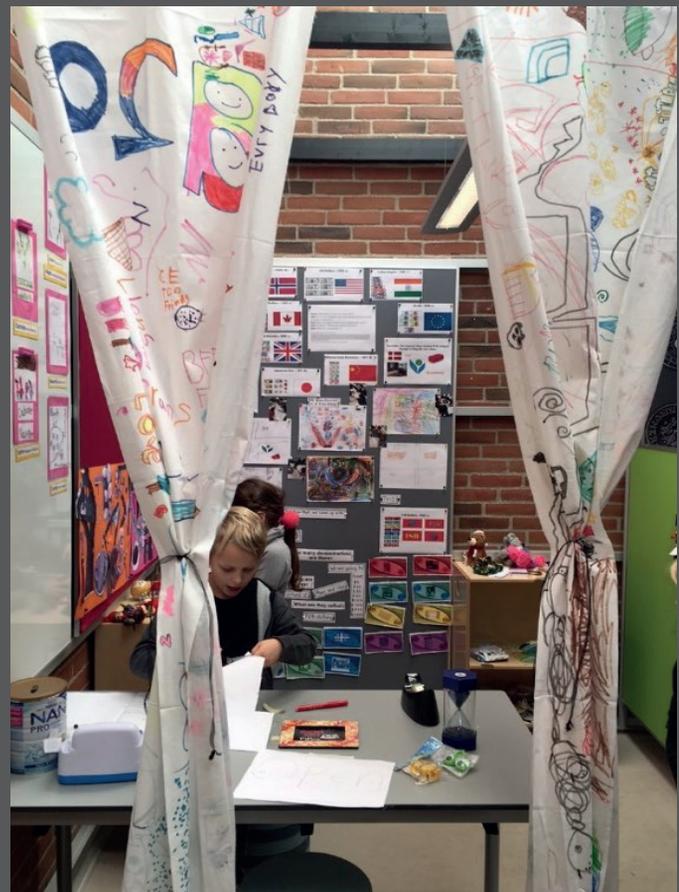


Playing with Money: Playful Learning Meets Curriculum Goals

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What does learning through play look like in a classroom setting? How can teachers foster learning through play as part of a larger inquiry that goes beyond individual lessons or activities? Idah Khan and Marc Thorup are two Primary 2 (P2) teachers at the International School of Billund (ISB) in Denmark who strive to create a rich environment where playful learning flourishes. They spend much of their time planning for and teaching the school's rigorous International Baccalaureate (IB) Curriculum. While the IB's inquiry approach to education is a natural fit for playful learning, teachers across grade levels at ISB articulate the difficulty in teaching core IB skills like reading, writing, and math in a playful manner that aligns with the children's interests. These teachers are not alone in experiencing this challenge. Indeed, it reflects one of the inherent paradoxes between play and school: In play children are in charge, yet at school, the agenda, including the curriculum, is generally set by adults. This picture of practice explores how Idah and Marc wrestle with the challenges inherent in this paradox in the way they plan their curriculum while remaining flexible and open to the students' ideas and desire to play.



Family Finances

Aarav¹ is a student in Idah and Marc's class. He and his family live in Billund, though they originally come from India. It is January, and they are shopping at a local store. When they get to the cash register, Aarav watches intently as his dad opens his wallet and begins to use his credit card to pay for their purchase. Aarav's dad explains how a concerned Aarav stepped in to interrupt the process, "Dad, why are you using your credit card instead of your debit card? You know that you may be paying a lot of interest on it!" A discussion ensues in which Aarav and his dad talk about the pros and cons of using a debit card versus a credit card for purchases.

Meanwhile, in a Danish home on the other end of town, another student in the P2 class, Mette, is having similar conversations. Her parents notice Mette's increased interest in how much things cost. She explains, "When using the credit card for payment, Mette looks at the payment process with great interest and often asks if there will be any money left. She clearly understands the idea with the credit card and that it works the same way as real money, so not just a card without limitation."

Why are these seven and eight-year-olds initiating financial management decision discussions with their parents? To understand the answer to this question, one must step back in time a few months.

¹ When referring to children, pseudonyms are assigned throughout this paper

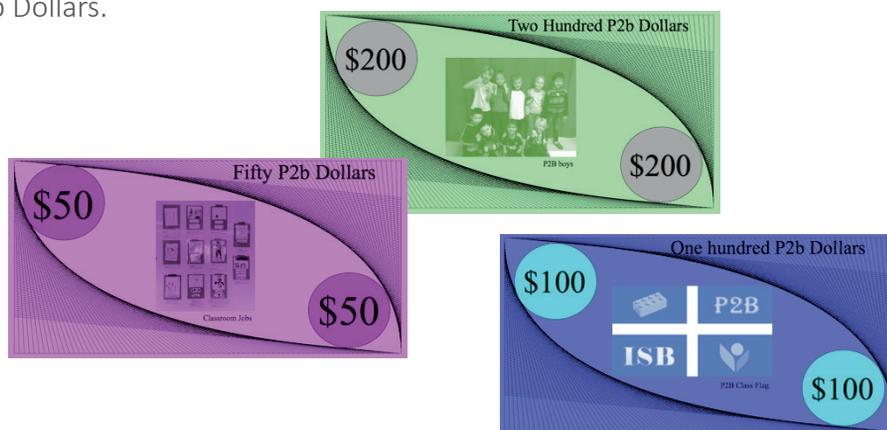
"Dad, why are you using your credit card instead of your debit card? You know that you may be paying a lot of interest on it!"

Planning for Playful Learning

It's mid-November in Billund, and the days are getting darker. Flameless candles are being lit across the school to compensate, and Idah and Marc are gearing up for their third transdisciplinary unit of the school year: money. Over the course of the school year, they teach six, 6-week units to the 24 students in their classroom. Idah and Marc begin planning with the central idea and learning outcomes of the unit. They consider math skills such as using whole, cardinal, and ordinal numbers in real life situations and using mental and written strategies for addition and subtraction. They also take into account social studies learning goals such as organizing money wisely, understanding how buying and selling is organized, and the difference between wants and needs. They think about how to incorporate play that is meaningful and relevant to students' learning and interests. Idah describes their process, "We always consider what would be fun for the kids to do. What would extend their learning experiences? So, while we have a central idea which forms the goal for the unit, and a summative assessment that will display the students' understanding of the central idea, what goes in between is purely a partnership between the teachers and the students." It is in this partnership between teachers and students that Idah and Marc strive to balance the paradox between school, where the adults are in charge, and play, where the children are in charge.

Earning Potential

The unit kicks off with the students examining currencies from each of the students' home countries and then creating their own class currency: the P2b Dollars.



Thinking carefully about what makes a currency and why currencies are needed helps students explore one of their conceptual mathematical understandings: "standard units allow for a common language to identify, compare, and order and sequence objects and events." Once they print the class currency, Idah asks the students, "What are we going to do with all this money?"

The students suggest that they could earn P2b dollars for the jobs they do around the classroom. Idah thinks this would be a good opportunity for students to learn about the value of earning money and how much things are worth, as well as a chance to practice thinking about bar graphs in an authentic way. She reports,

“We discussed how much each job is worth. Lunch manager has a lot of things they need to do. The toilet manager might have to scrub the toilet and flush the poo! So, they should be paid more. The banker needs to pay people money, and needs to be good in counting. Higher paying jobs were of course much sought after.”

The class implements salaries which are paid each Friday. Without prompting from their teachers, the students are quick to look at their job for the week and begin using addition strategies in their heads: as a class member, one student will earn P2b\$5 for the week. In addition, being the snack manager makes him an additional P2b\$10 a week. That’s a total of P2b\$15! The salaries are a big hit. When asked to reflect at the end of the unit on what he liked best, Aarav declares (Aarav): “Friday!”

What happened on Friday?

(Aarav): “Salary! You get salary...[So far,] I make P2b\$170!”

P2B Salary Scale

\$30																
\$25																
\$20																
\$15																
\$10																
\$5																
Earnings per week	Line Manager	Caboose Manager	Snack Manager	Lunch Manager	Calendar Manager	Wardrobe Manager	Class Manager	Library Manager	Creator Space Manager	Toilet Manager	Play Agent	Class Member	Mail Manager	Bank Manager	Shop Manager	
Job/ Role																

As the dramatic play unfolds, Idah and Marc think the children's salaries should mimic getting a salary in the real world in as many ways as possible. Together with the students they look at a sample teacher's salary slip from ISB. The students note that the teachers get taxed on many things in Denmark, and the class discusses the benefits that everyone gets from these taxations. The students look around their classroom to see what their income could be taxed on, and settle on a table tax, a chair tax, a water tax, a paper tax, and a toilet tax. When later asked what they liked best about the money unit, one student, Lene, reflects a very Danish idea, "Paying taxes, because I like to help people."

The Shop

With earnings mounting, the students need somewhere to keep their salaries. It is not just the curriculum goals that influence Idah and Marc's pedagogy, but also their understanding of why and how children play. To make the students' possession of currency more realistic, Idah sets up an optional provocation during choice time with found materials and a YouTube video about making wallets. Intrigued, the students decide they will keep their money in wallets like many adults do, and get to work making wallets from scratch.



Aarav shows his homemade wallet



Yet, the students want to extend their play even further. What good is their class currency if they have nowhere to use it? The students approach Idah with their problem and ask to start a class shop. Idah and Marc had not envisioned a shop when they planned for the unit, but find the students' arguments compelling. Idah asks the children, "What's going to go in the class shop?"



The students are ready with a solution: they could make things to sell and also bring in unwanted objects from home! Idah sees connections between the central concept of the money unit, “We have purchasing choices in our local and global community,” and the students’ desire to use their money.

She says yes to their request for a shop. There is also a connection with one of the social studies learning outcomes: to recognize how one’s choices affect the marketplace. With a class shop, there will also be opportunities to explore the lines of inquiry that would be assessed in the summative assessment: how buying and selling is organized, the ways people shop, and the difference between wants and needs.

The students use both class time and their free time to ready the shop, thinking carefully about what they and their classmates might want to buy and creating items and negotiating their value before assigning a price tag. They add another class job, “Shop Manager,” to their pay scale. Because the idea for the shop came from the students, the engagement, intrinsic motivation, and sense of excitement and belonging are high. Idah and Marc note that in readying their dramatic play, the children are doing many of the things the teachers want them to do: setting their own goals and challenges, choosing and adapting to a variety of roles within a group, and exhibiting focused attention for long periods of time as they improvise, invent, imagine, and pretend. Just days before the shop’s grand opening at the end of the week, the anticipation is growing. Miguel opens a discussion by asking,

Miguel: “When is Thanksgiving?”

Idah: “Thanksgiving is on Thursday.”

Miguel: Yay! That means this Friday is Black Friday!

Idah: Black Friday? What’s that?

Miguel: It’s when things in the shops are much lesser!

Miguel is referring to the Friday after the US Thanksgiving holiday when many retail and online shops both in and out of the US offer major discounts. Idah and Marc see an obvious connection between the students’ interest in Black Friday and percentages, a math skill the class is scheduled to study later in the school year. Wanting to capitalize on the opportunity to bring real-world market experiences into the classroom, Idah and Marc decide to introduce percentages ahead of schedule.

Idah explains,

“We took the idea of Black Friday and the shops ...having huge discounts, and we introduced it in our class shop too! 50% discount on all items on Black Friday, which also happens to be their pay day!”



Students shop during Black Friday



Shop managers record Black Friday sales in the shop log

Students shopping look at the price of the item in the shop and divide it in half in order to calculate how much of their money they would need to buy an item.

Miguel’s brother, Juan, is also in the P2B class, and their mom later sees the boys using their new knowledge of percentages and their understanding of the value of money outside of the classroom setting. She observes the boys making decisions about how to spend the €10 each that their parents gave them on a family trip to neighboring Germany:

“Juan wanted a toy but...deduced it was too expensive for him to buy. He decided to get a fossils box. He paid for that. When we checked the receipt, we noticed the % sign. [Upon seeing the % sign], he said that it was half off! But [then] we noticed a number [2] before the sign. Miguel noted the box had 20% off, and that’s why he got some money back.”

Miguel: “When is Thanksgiving?”

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Miguel: Yay! That means this Friday is Black Friday!

Idah: Black Friday? What’s that?

Miguel: It’s when things in the shops are much lesser!

The role play present in the money unit motivates the children to apply their learning in multiple contexts so that how the children choose to use their time in class aligns well with the skills Idah and Marc need them to practice. Once open, the class shop, affectionately named Billy the Shop after the town of Billund, affords more opportunities for the children to work on curriculum outcomes of recalling addition and subtraction number facts, solving problems in real-life situations, using mental and written addition and subtraction strategies, and practicing important social skills.



Juan and Miguel as thoughtful consumers on their family trip to Germany

Evidence of using these skills in their play comes one afternoon when Christian, that week's Shop Manager, and Sebastian, the Assistant Shop Manager, open the shop. A queue immediately forms. The managers strictly keep track of the maximum two-person limit in the shop at a time, while the other students wait patiently in line. Daniel is in the shop and wants to make a purchase, but did not bring enough money and needs to go to the bank first. He asks the shop manager,

Daniel: "Can I quickly get more money?"

Christian: "Then you have to stand in line again."

Daniel: "It will be real quick."

The role playing the students take on in their classroom economy is serious business. Christian acts the part and does not budge, "Then you have to stand in line again. I'm sorry. No."

He moves on to let another student into the shop. The shop purchases and negotiations continue in a mix of English, French, and Danish. Daniel retrieves his money, waits in line, and returns to the shop, pleased that the small chicken he had planned to purchase for P2b\$30 is still available. He hands the shop manager P2b\$100, explaining, "The price is 30, so I get 40 back." Christian responds excitedly, shouting, "100!" Then he pauses, looks at the money and the change he is readying, and a confused look crosses his face. He asks, "Are you giving me 100?"



Christian, Sebastian, and Daniel negotiate in the shop

Daniel consults with Mette who is waiting to pay for her purchases. He shows her his money. They confer for a moment about the appropriate amount of change, and revise their mental math calculations. This time Daniel asks Christian for P2b\$70 back. Still unsure, Christian asks, "70 back? What did you pay me?"

Daniel responds explaining the math calculation he used to arrive at P2b\$70 in change from the P2b\$100 he gave Christian. After the shop managers confirm, everyone seems satisfied, and Daniel gets his change. The shop managers are visibly excited by the influx of cash, count it, and record it in the shop account book after a reminder from Idah.

No pens and paper were taken out during this exchange, and all questions and mathematical calculations occurred verbally and in the students' heads. Mental math strategies are just one curricular skill that Idah observes the children learning and practicing in their budding class economy. Idah also sees the students working on another social studies learning outcome, exhibiting skills and strategies for organizing money wisely.

Idah: “[They are] starting to make informed choices about how they purchase things, or how they want to spend their money, and what key factors they consider when making those decisions, from peer pressure, or [their] own thinking.”

Idah reflects that making room for playful learning is like “a ping-pong game. You have to serve it back constantly to the kids. They throw something back at you all the time.”



Daniel pays Christian while Sebastian looks on

The Bank

As life surrounding the class shop and bank play an increasing role in the students’ lives, Connor and Kendall are next to throw something in Idah and Marc’s direction:

Connor: “What if we don’t have money to buy things or pay our taxes?”

Kendall: “You can borrow money from the bank?”

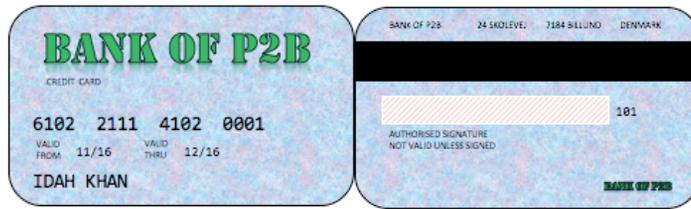
Idah and Marc see an opening to investigate how adults face this situation, and introduce the children to the concept of credit cards. Students can take or spend money on the card, but there is interest to be paid when you pay the bank back. The P2B bank charges 10% interest. So, for example, if one takes P2b\$10, one must pay back P2b\$11. For homework that night the children write their full names, address, and provide a picture of themselves for a class credit card application. The next day they line up at the bank, waiting patiently in line, a feat for excited second graders, to apply for the credit card. Once all applications are in and the credit cards have been mailed to their home addresses, Idah sees the anticipation build:

Idah: “They are quite anxious now that the credit cards have not arrived yet. And last week’s salaries have all been used. They are itching to buy stuff and they don’t have money to spend. The credit card is not here. So, they can’t wait for payday tomorrow. The bank manager is very on the ball this week. She is very strict, ‘Can you read the sign? The bank is closed. You can’t get money.’”

The credit cards eventually do arrive, and excitement grows. Even months after the unit concludes, students proudly show them off to a visitor to their classroom:

Emily: "Here's our credit card, see? It has my name on it!"

Riya: "Mine has my name on it too! See? And here is the front of the card. I keep it in my wallet!"



P2 credit card as mailed to the students



The week's bank manager counts her money.



The children demonstrate their knowledge of credit cards when the visitor is offered her very own P2B credit card. Once the cards are issued, Riya and Emily laugh and laugh as they point out that the visitor would be unable to use the card,

Riya: “Because you don’t have any money! Real money doesn’t count in here.”

Emily: “You have to get a class job so you can use it!”

Idah notices how the students’ use of the credit card changes over time as their understanding of the purpose of credit cards becomes more nuanced. As the newness of the card wears off, some students with cash saved begin to report to Idah and Marc that the card feels redundant and unnecessary. Christian remarks, “I don’t want to use the credit card. I am going to have to pay more if I use the card.” Isabel, another student with a large cash flow, takes a different approach, “I don’t care [about the 10% interest]. I have so much money.” Her classmates are quick to question her logic, “But then why do you need to use the credit card if you have so much money?”

Supply and Demand

The students' play begins to take on a life of its own, growing and changing like any economy, and in the process, providing more opportunities for learning. Due to low inventory, there is a lull in the activity in the shop for a number of weeks. With fewer things to buy and the average accumulated wealth in the class going up with each week's salary, prices of the few items in the shop skyrocket. A small teddy bear that once would have been worth less than a dollar was going for P2b\$100! And because they had so much money, at least some students were willing to pay these prices. With the scarcity of goods to buy, a bit of a black-market forms. Sam buys a sparkly stud in the shop for P2b\$30 and then offers to sell it for P2b\$300 to classmates. Upon hearing this exchange, others quickly calculate the P2b\$270 price differential in their heads, and are outraged. Cries, of "Hey, it's not fair!" fill the room. Daniel and Connor try pooling their money together to purchase the stud, offering Sam a counter offer of P2b\$250, which is quickly rejected. When Sam finally agrees to this price, Daniel and Connor decide they no longer want to negotiate and do business with him. Looking on, Juan explains their reasoning by citing an underlying class norm of social conduct, "That's not good trading." The black market abruptly ends as quickly as it began, and the students are left having practiced life skills of negotiating, cooperation, and valuing goods and business norms in their play.

Reflections on Playful Learning

The students' playful learning did not end in the classroom, and was visible not only to Marc and Idah, but also to the wider school community. Parents saw children's interest in economics and money management extend beyond the required math skills and basic social studies understandings. Christian's dad elaborates,

"Christian has really paid a lot of interest in this unit, which has been visible at home in many occasions. He likes to earn and count money, and he has learned in a very good way how investing (time/effort) can result in earning. He has also learned that saving money can make it possible to either re-invest into something bigger or buy something he really likes."

Comments from Evie's parents reflect similar sentiments, "Our daughter was very enthusiastic, asked questions at home, and explained what they did in class. We could see [that] she got a better understanding of the concept of money...[and] the circle between – you (and your job) – bank – shop – cost, and why you need to consider what to buy as it is 'hard'-earned money of [your] own. [She] also reflected on differences between jobs and salary paid."

The students were also able to articulate learning that took place through their play: They offered the same visitor some advice on money management, agreeing that it was best to keep money in the bank and save it "because at the end of the week...if you keep saving, you will get more money." "Unless there is something you really want to buy," one student added. Another chimed in, "Yeah, then you go to the bank and take your money out." A third student weighed in, "Oh, unless you don't have enough, then you use your credit card," he paused, "but you pay more back later."

Much to Idah and Marc's surprise, the classroom economy does not wind down when the money unit is over. "We are just keeping the bank and store because we like it. And we are getting our salaries now too!" Aarav explains. The students' enthusiastic interest in the topic and their dramatic play continue, and with those, so do the opportunities for playful learning.

Idah reflects back on what made it such a successful unit, with students not only learning curricular concepts and skills, but also being deeply engaged in the process and motivated to learn more. She explains, "I think inquiry's most powerful when it's current and instant. So, when the kids have an idea and you are fueling that idea, you can't quite wait for next week for it to happen. You have got to give it your all for it to really take hold." In the ping pong game between the students and Idah and Marc, there was room for both the adults' and the children's goals, room for both the teachers and students to be in charge. Idah and Marc navigated this paradox between curricular learning goals and play, between agendas set by the adults, and play where the children are in charge, by not being bound by its binary nature. In forging this partnership, Idah and Marc created the conditions for choice, wonder, and delight, indicators of playful learning, to thrive.



Queue at the bank

Moving Beyond P2B

As the school year comes to a close, and the students ready to leave the P2B class and economy behind, some students have begun to think ahead to what will become of their accumulated money. Idah notices that to some, their money and their identity as wage earners with savings and the ability to make their own financial decisions has become so real that they sometimes forget that the money they earn is of no value outside of P2B. The students then catch themselves and remind each other that they cannot make purchases outside of the classroom. “What will happen to all of our money when we move to P3B next year?” Daniel asks Idah. Christian has a solution: he has already decided that he will leave some of his money to the one person he knows might be able to use it in the future, “Idah, don’t worry,” he explains, “I will give you some before I go!”

“I think inquiry’s most powerful when it’s current and instant. So, when the kids have an idea and you are fueling that idea, you can’t quite wait for next week for it to happen. You have got to give it your all for it to really take hold.”

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Pedagogy of Play is a research collaboration between the LEGO Foundation and Project Zero, a research organization at the Harvard Graduate School of Education. The project launched in 2015 at International School of Billund, Denmark, and expanded to research sites in South Africa, the United States, and Colombia. In each site, educators and researchers work together to explore culturally relevant models of playful learning.

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