

From the Editor

It has been almost two years since the pandemic took the whole world by storm. For the first time in our history, the world has a common enemy, a virus, invisible to the human eye except through the microscope. It reared its ugly head and caused chaos upon chaos. It is still not over. Some say our lives is changed forever. Maybe. However, here in Singapore, our preschools persevered and opened up again when we were allowed to do so, and since then, none of our centres closed again unless there was a good reason, for example, because of Covid cases. I marvel at the tenacity of our centre leaders and their staff. You may not be the frontline workers, usually referring to the medical professionals. But, to my mind, you are our frontline workers in our early childhood environment! You are there supporting the parents who have to go back to their work, whether in the office or still from home. Sending their children back to the preschools shows us how important our service is to society. Parents must have that confidence and faith and they see that our preschools are safe places for their children. 'I anticipate to see a rainbow after the storm' is a title of an article in this issue which I would like to borrow here. The rainbow will be there, when that actually happens may not really matter because we will always be working, teaching and looking after our young charges.

This issue shows us that the work never stopped. There are 11 articles chosen for your reading and I invite you into each of their reading rooms to be immersed in their topics, their reflections, their sharing. You may, like me, realise that the pandemic did not stop these people from writing or their teaching. Our front cover is a work by the oldest group of preschoolers, the Kindergarten 2s who drew themselves as graduands. Indeed, life still goes on!

I salute all of you.

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Editor

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Front Cover: "Celebrating Us" by K2 Children of Pre-School By-The-Park and Little Preschool.

A collage of self-portraits of their graduating cohort. This piece celebrates diversity and the uniqueness of each child. There are five hidden hearts, each symbolising one of our schools – spot them!

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Promoting Children's Play with Loose Parts

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Introduction

There is an increasing trend in using loose parts materials to facilitate child-led play in early childhood classrooms, particularly when such unscripted and open-ended play encourage children to experiment and design (Pelo, 2017). While loose parts is present in some preschools, the materials are absent in others – which suggests that loose parts play may not be as valued and widely facilitated by educators. This issue was apparent in the kindergarten that I was attached to when I had observed children engaging in loose parts play during learning corner time, with little to no support provided to extend their learning. Grounded in Piaget's idea of constructivism whereby children are active constructors of knowledge, the lack of support during children's loose parts play prompted this action research project to investigate how, as an educator, I can enhance and extend such unstructured and child-led play. This action research will focus on the use of questioning strategies, which are widely used as a technique to support children's learning and extended discourse in the classrooms during various activities (Callender & McDaniel, 2007).

This action research took place in a kindergarten classroom in Singapore, involving nine children aged 4 to 5. It intends to explore how the use of questioning strategies can extend children's loose parts play – specifically using open-ended and leading questions. Data was collected through the observations of children's loose parts play sessions as well as teacher journal records. Thematic analysis was conducted on the children's responses to the questions posed by the teacher-researcher, observations as well as teacher journal entries. This study demonstrated that the use of open-ended and leading questions could extend children's engagement in three ways: (1) verbally identifying details or properties of loose parts; (2) demonstrating logical and critical thinking; and (3) engaging in pretend play.

Literature review

Why loose parts play? Loose parts play is a term coined by British architect Simon Nicholson based on his Theory of Loose Parts, and is defined as open-ended materials being manipulated in multiple ways, enabling children to develop their own ideas in play (Nicholson, 1971). Other theories have also expanded on Nicholson's definition of loose parts play, suggesting that it has no fixed directions (Hewes, 2006). Some examples of such loose parts include: corks, ice cream sticks and buttons (Pelo, 2017). Additionally, theories suggest that such loose parts materials can be used alone or concurrently with other materials as well – such as those that children might

be more familiar with, including building blocks (Neill, 2013). Without a doubt, loose parts play is becoming increasingly prevalent in today's early childhood landscape, with various early childhood theorists suggesting that children's creativity is heavily impacted by child-led play (Daly & Beloglovsky, 2015).

The Theory of Loose Parts in play first came about in 1971, when Nicholson (1971) developed the theory with the underlying belief that loose parts play promotes children's creativity, particularly when there is a lack of evidence supporting the view that only some children are naturally blessed with creative traits while others are not (Nicholson, 1971). Meanwhile, loose parts are provocative in nature – being unscripted and open-ended – inviting children to experiment, design and combine (Pelo, 2017). Thus, as children are free to decide the direction in which they take their play, loose parts play allows children to unleash their creativity – highlighting the significance of play that involves loose materials (Maxwell, Mitchell & Evans, 2008).

Children can create play episodes with the loose parts materials based on their personal experiences, and explore ideas that they are interested in as loose parts materials provide children with the freedom to develop their own play experiences (Flannigan & Dietze, 2017). Loose parts materials encourage open-ended play as they do not require children to meet any outcomes since they do not have any pre-determined use (Flannigan & Dietze, 2017).

Questioning strategies to facilitate loose parts play One of the most crucial links between the teacher as the facilitator of children's learning and children as constructors of their own knowledge, is the questioning strategies that teacher utilises (Chaillé & Britain, 2003). There are many types of questions which can be posed to young children. However, in this investigation, open-ended and leading questions will be addressed.

Children's thinking can be scaffolded and extended through open-ended questions which encourage problem-solving and perspective taking (Chaillé & Britain, 2003). Examples of such questions include: "Can you think of a way to...?", or "Do you have any ideas about how to...?". These kinds of questions allow young children to provide a variety of responses to these open-ended questions as opposed to closed-ended questions which would usually call for a single answer. As *open-ended questions* prompt children to provide non-static and longer responses, children would be more likely to engage in extended discourse (Wasik & Hindman, 2013). These open-ended questions can be complemented by *leading questions*, which help children explore various ways they could combine loose parts (Pelo, 2017), which is similar to the concepts of 'prompts' or 'provocations' in the Reggio Emilia approach. A leading question is a question that suggests the anticipated response or leads to the desired answer (McLeod, 2014). Leading questions direct children's attention to specific aspects that teachers want children to focus on – which would be helpful in aiding

children in realising particular elements of their play ideas. Additionally, it is notable that leading questions allow for responses that are open-ended. Hence, some questions can be both *open-ended* and *leading* concurrently. Some examples of such questions include: “What kinds of lines do you see in this material?”, “Do any of these parts seem like a foundation?”, or “How can the other materials fit on the foundation?”. However, some leading questions can also be close-ended if they call for answers that offer a limited pool of options (i.e., yes/no questions; multiple choice questions). Some examples of these questions are: “Which material would make a better choice in acting as the base for this house – the cuboids or the cylinders?”, and “Since this material is lighter, would it move more easily?”. Regardless of whether they are open-ended or close-ended, leading questions draw children’s attention to the desired details. In realising elements in detail, children are growing a culture of inquiry as they identify physical properties of the loose parts, consolidate their thinking on the different aspects of the materials, and begin to categorise these elements cognitively.

Extended discourse and its benefits Extended discourse is defined as a conversation that involves back-and-forth exchanges between a teacher and any number of children, starting from one (Jacoby & Lesaux, 2014). When engaged in extended discourse – a form of social interaction, children are encouraged to narrate the thoughts they have with both coherence and cohesion (Silva & Cain, 2017). At the same time, teachers are scaffolding children’s higher-level comments and descriptions that requires higher-order thinking, which sets the foundation for children’s language development in later stages (Tompkins, Zucker, Justice & Binici, 2013). Higher-order thinking skills require children to go beyond lower-order thinking, which involves basic observations of facts or memorization (University of Connecticut, n.d.). By practising higher-order thinking skills, children would be evaluating, creating and innovating during their play. For instance, in response to the following question: “Why did you choose the yarn ball for the character to kick instead of the pine cone?”, a higher-level comment would be: “As the yarn ball is lighter, it would be easier to kick because it moves more easily.” On the contrary, a response to the same question using lower-level response may sound like this: “The yarn ball can move, so we can kick it.” In these examples, the higher-level comments from children demonstrate existing knowledge and comparison skills; whereas the lower-level comments state the obvious without taking into consideration that the movement may result in the movement of another object. Hence, encouraging higher-level talk and higher-order thinking is crucial in supporting children’s cognitive, linguistic and creative development, as well as their ability to initiate actions.

Results

Children’s responses to the open-ended and leading questions during loose parts play were observed and recorded. Thematic coding of these responses revealed three aspects of questioning that can support children’s engagement: (1) verbally identifying details or properties of loose parts; (2) demonstrating logical and critical thinking; and

(3) engaging in pretend play. In the following, we will include an example for each theme to illustrate children’s engagement as facilitated by open-ended and leading questions.

Theme I: Verbally identifying details or properties of loose parts

This theme consists of responses that focus on the characteristics of the loose parts chosen by the children. For instance, responses can be about the color or size of the loose parts, the sounds that the loose parts make, or the way that the materials move.

Example:

A child was using straws to hit against different materials, making different sounds. After having observed how the child was using straws to hit against the different materials, I decided to use a leading question to draw the child’s attention to the differences in the sounds made.



Photo 1: Child using straws to hit against different materials to create sounds

Teacher: “Do you think that it sounds different when you hit the straws against different materials?”

The child then imitated the sound that the straws made when hit against a wooden block. She then said, “Let’s try...”, and continued taking different materials – from other straws to toilet rolls and dried orange peels – to hit against using the straws to create sounds (Photo 1). Each time she hit the straws against a material, she would bring them closer to her ears. The leading question encouraged the child to continue using straws to hit against a variety of materials as she listened for the sound made each time, extending her engagement in the play.

Theme II: Demonstrating logical and critical thinking

This theme includes responses that show evidence of children’s reasoning skills after being asked questions such as “why” or “how”. Logical thinking is demonstrated when children’s responses to these questions indicate their thinking about various ways things can work. For example, children can explain how their structures work using

real life knowledge. In doing so, they are making connections between different domains of knowledge.

Example:

The children were using blocks, beads and papers to build an open enclosure to house animal figurines. Seeing that the animals were out in the open, I decided to ask the children what would happen when it rained; it was both a leading question and an open-question.

Teacher: “What happens when it rains?”

Children: “There will be shelter.”

Afterwards, the children proceeded to use paper plates and paper pieces to cover the animals.



Photo 2: Children placed paper plates as shelter for the animals

As illustrated in the excerpt, an open-ended leading question was posed to prompt the children to think about the possibility of rain upon the animal enclosure. The children's thoughts were then directed to how they could keep the animals dry in the enclosure. They then decided to use paper plates and paper pieces to cover the animals in the event of rainy weather. This demonstrated children's ability to conjure up solutions so as to resolve the problems.

Theme III: Engaging in pretend play

This theme consists of responses whereby children engage in pretend play – a form of symbolic play when children use loose parts to represent other objects and actions or ideas using their imagination. For instance, children can create a house with numerous furniture for an imaginary character from the loose parts they had selected.

Example:

Two children were working on building what they called a “dog house” using some wooden blocks. One of them then suggested making a dog which they named “Hamdog”; they drew a picture of the dog and cut the drawing out. Another child took a pine cone and a yarn ball, rolled them on the table and suggested that we could use the yarn ball for Hamdog to kick. I posed an open-ended leading question to prompt

children’s thinking to further engage them in their pretend play.



Photo 3: Child drawing a dog for their dog house



Photo 4: Child drew “Hamdog” and placed it in the house

Teacher: “Why did you choose the yarn ball for Hamdog to kick instead of the pine cone?”

Child: “It is lighter”.

Teacher: “Oh, since it is lighter, would it be easier for Hamdog to kick as he is so small?”

Child: “Yes.”

One of the children then suggested that we could also make a “red hanger”. I further extended their pretend play by asking the child to demonstrate how we could make a red hanger. As she demonstrated the process, she narrated, pausing after each step,

and continuing after I responded with an acknowledgement to each of her actions:

Child: "First, you hold it like this."

Teacher: "Okay."

Child: "Then, put the string inside."

Teacher: "Alright."

Child: "And then, loop it over. Then, put it in again." (Photo 6)

Teacher: "So that the red string wraps around the white hook?"

Child: "Yeah. If you want to take it out, it's just like this." (child then pulled the string out to demonstrate how to take the string out of the hook)



Photo 5: Child making a hanger for Hamdog



Photo 6: Child wrapping a string around a hook

I used both open-ended questions and leading questions in this example to extend the

children's pretend play. Upon posing the questions, the children's engagement was extended as they followed up with further actions. As I drew the children's attention to certain aspects of the play through the leading questions (e.g. "Oh, since it is lighter, would it be easier for Hamdog to kick as he is so small?") and elicit responses through open-ended questions (e.g. "Why did you choose the yarn ball for Hamdog to kick instead of the pine cone?"), the children were encouraged to engage in higher-level talk and higher-level thinking. These higher-level abilities were observed in how they provided reasoning (i.e. why one material was better than another for rolling) and demonstrated their actions along with verbal instructions (i.e. explaining the process of making a red hanger). Extending children's pretend play promoted critical thinking which is a higher-order thinking skill. It also demonstrated the child's cognitive ability to internally structure and then enact a sequence of actions to attain a goal.

Discussion

In this action research, the two types of questions used to engage children in extended discourse were *open-ended questions* as well as *leading questions*. By using both types of questions, I was able to support the children's play and increase their opportunities for extended discourse. The observation in this inquiry project supported the use of questioning strategies in engaging and extending children's loose parts play. Furthermore, when open-ended questions were used either by themselves or with leading questions, children were prompted to engage in extended discourse. For instance, the example in Theme III showed how children created an entire pretend play set-up from one character they invented. One of the children even started giving verbal instructions while demonstrating how to wrap a string around a hook. This indicated a high level of response and, consequently, an extended discourse. When children engage in extended discourse, they are prompted to verbally express their thoughts and ideas with coherence and cohesion (Silva & Cain, 2017). Concurrently, children are also practising higher-level talk that requires higher-order thinking, and thereby setting the foundation for their development of language in later stages (Tompkins, Zucker, Justice & Binici, 2013).

Recommendations

Both open-ended and leading questions encourage children to verbalise their thoughts and ideas during loose parts play, thereby extending their engagement in three ways. During the course of this project, the group of children at the loose parts corner were kept to a maximum of three children. This was as suggested by literature that teachers can better extend conversations with children when there is small group arrangement (Jacoby & Lesaux, 2014). As such, the project could allow for various opportunities for questioning strategies to be posed to prompt an extended discourse. Thus, teachers can consider the group size when applying questioning strategies in loose parts play in their classrooms. Future studies may conduct observations and implementation of the questions for a longer period of time for each session to possibly increase the length and depth of extended discourse. Future studies may also consider the use of

other types of questions to promote children's engagement. Additionally, we could extend this study by utilising the videotaped episodes – showing them to the teachers to promote their level of self-awareness, thereby assisting them in gaining a deeper understanding of how they interact with children during play.

Reflection

The action research was definitely one that was valuable and meaningful. It allowed me to gain deeper insight into how to best support children's learning, which has implications for my own practices in the classroom. With the ability to conduct an action research, I was able to continue doing research on strategies to support children's play in an inclusive setting with children of varying abilities. On top of that, I was also able to share the findings of the research with fellow colleagues and the children's families in the best interests of the children. As such, there was open home-school communication on strategies to support children's development, which greatly helped with further studies on the effectiveness of the strategies employed. It was very enlightening and encouraging to hear feedback from parents saying that the strategies had prompted their children to meet the intended goals that they had set! More notably, this action research improved my own teaching skills in extending children's discourse and facilitating loose parts play.

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Usage of Open-Ended Questions During Guided Play to Develop K2 Children's Geometric Knowledge

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Introduction

Over the past decade, mathematics has been an increasingly important component in early years education as it allows the development of problem-solving skills (Clements & Sarama, 2011). In spite of the shared view that early mathematics is essential, there are still discussions on the best method to deliver mathematics content. Didactic approaches are still heavily utilised as educators believe that rote learning is the most effective (Fisher, Hirsh-Pasek, Newcombe & Golinkoff, 2013). However, I noticed that such an approach often resulted in unengaged children and learning was often unretained due to the lack of opportunities to engage in meaningful activities. From my observations, children often forget what was taught after a short period of time. Therefore, with the knowledge that early mathematics lay the foundation for later academics achievement, I was motivated to explore more progressive strategies in the classroom so that mathematics teaching can be more effective and learning can be more sustained.

In light of this, this study aimed to examine how children's mathematical knowledge was developed through the use of open-ended questions during authentic guided play experiences.

Benefits of Learning Mathematics Through Play

Play-based pedagogies in the early years have proved to significantly influence pre-schoolers' mathematics scores. Findings revealed that such an approach is more effective than the provision of direct instructions or giving children full control of play (Honomichl & Chen, 2012). Mathematical activities through play serve as teaching opportunities if the educator takes part and actively engages in the naturally occurring phenomena (Björklund, Magnusson & Palmér, 2018). In early childhood, mathematical concepts such as numeracy and geometry can be developed through spontaneous play experiences, through a process of "mathematisation" where children build on their existing knowledge using mathematical objects (Sarama & Clements, 2009). Children are more engaged when learning through play and exploration of mathematical objects, thus retainment rate of the knowledge learned is higher. This is the result of being able to make discoveries of their own which in turn heighten their meaning-making processes.

Teachers' Roles in Guided Play

Adult guidance is crucial in children's development of knowledge and skills (Brown, McNeil & Glenberg, 2009). Educators' involvement in play is highly encouraged as they are perceived as opportunities to enhance children's learning (Pyle & Bigelow, 2014). We play a huge role in ensuring that learning takes place during play by introducing new content and extending children's thinking to broaden their experiences (Wager & Parks, 2016). It is essential that educators remain unobtrusive and respectful of children's play choices.

It is significant that educators facilitate their meaning-making process by scaffolding using enhanced discovery methods such as asking open-ended questions. According to Wasik & Hindman (2014), open-ended questions require responses of more than one word and have several correct answers. These questions encourage children to recognise inquiries that emerge from play, help them to mathematise their play and develop skills to solve problems using mathematical representations (Björklund et al., 2018).

Research has shown that open-ended questions help children think deeper and therefore allowing them to retain knowledge for a longer period (Clements & Sarama, 2007). Findings suggest that asking open-ended questions with explicit mathematical content could be the most effective in promoting mathematics learning during play (Trawick-Smith, Swaminathan & Liu, 2016).

Research Question

With ample research on the benefits of learning through play and gaining a better understanding of educators' role during child's play, I decided to use guided play as the context of my research. I focused on being a facilitator during play, where I scaffolded their learning process through the use of open-ended questions.

To narrow down on the mathematical topic for this research, I decided to focus on children's construction of geometrical knowledge, specifically on two concepts: 1) 2-dimensional and 3-dimensional shapes and 2) composing and decomposing shapes.

Therefore, the research question that guided this study was: *How does the use of open-ended questions during guided play develop K2 children's geometric knowledge?*

Methodology

Participants

Participants of my study included five 6-year-old children, two girls and three boys. These participants were chosen as they had varying mathematical abilities, which allowed me to collect comprehensive data on the effectiveness of open-ended questions on different children. They were also very developed in both their expressive and receptive language skills and this was ideal as they were able to effectively

understand the open-ended questions and express themselves and their mathematical thinking.

Procedure

Across the intervention period, each concept was explored for two consecutive weeks. There were four different play activities in total and each activity was conducted twice a week in sessions of 30 minutes each.

Activity 1: Exploring 2D and 3D shapes with wooden blocks and paint

The big idea that flat faces of solid shapes (3D) are 2D shapes was first introduced to the participants. In this activity, materials provided include wooden blocks, paint, paint brushes and drawing block. The goal of this activity was to help the children make connections between 2D shapes and 3D blocks as they paint the surfaces of the 3D blocks and stamp them on the drawing block. During the play sessions, the children were encouraged to explore with the materials they had and open-ended questions such as “In what ways are the wooden blocks and your painting similar/different?” were asked to guide children through the play sessions.

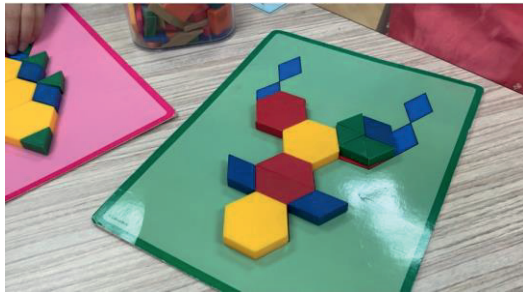


Activity 2: Exploring 2D and 3D shapes with wooden blocks and net shapes



In this activity, the same set of wooden blocks used in activity one was used. Net shapes – faces of the figure obtained when a three-dimensional shape is laid out flat – of the respective wooden blocks were also provided. The goal of this activity was to further enhance children’s knowledge of the big idea by providing them with a visual way to explore 3D shapes and its 2D properties when opened and laid out flat. Since the concepts of net shapes were relatively new to the children, guiding statements such as “Tell me what you observe...” were used for assistance. They were encouraged to take note of the surfaces and to make predictions of the product of the net shapes.

Activity 3: Composing and decomposing shapes using tangrams



The big idea that shapes can be combined and separated to make new shapes was introduced in activities three and four. In this activity, children were provided with tangrams of six different shapes and flashcards of varying difficulties. The objective of this activity was to construct and deconstruct the given shapes. As the

children explored with the tangram pattern blocks and flashcards, questions such as “How else can we form a hexagon?” were asked. Children were encouraged to share their thought processes as they examined different ways to construct and deconstruct the given shapes.

Activity 4: Composing and decomposing shapes using geoboards

In this activity, children made use of a virtual geoboard instead of a hands on geoboard from an online application - Geoboard, by MLC (The Math Learning Centre, 2020) due to safety concerns with the rubber bands. Each participant was provided with an iPad and an Apple Pencil. The main objective of this activity was to give children the freedom and autonomy to construct their own figures and to continue exploring with the concept of composing and decomposing. Through the use of the geoboard, their ability to see shapes within shapes was assessed. During the activity, questions such as “Can you describe your figure and tell me how you made it?” and “How will you separate the shapes in your figure to make new shapes?” were asked.



Data Collection

To achieve the specific aims of this inquiry project, I utilised classroom observations to identify how open-ended questions encouraged children's acquisition of content knowledge. During the intervention period, each child was observed twice a week as they participated in individual guided play sessions. Each observation lasted approximately 15 to 20 minutes and during each observation, the focus was on the open-ended questions asked, how children responded verbally and how they manipulated the materials in response to the questions. To ensure reliability and validity, each observation was video and audio taped so that no significant events were missed. The observational data provided a comprehensive outlook on the use of open-ended questions during play and how the children reacted to them.

Data Analysis

Based on the data collected, 40 video recordings ranging from 15 to 20 minutes (M= 16.9 minutes) were analysed in this study. Each video recording was transcribed into an anecdotal record before being categorised and coded. To address the research question, open-ended questions asked and children's responses were identified. During the coding process, the two categories were further narrowed down into 1) types of question asked, 2) children's verbal responses and 3) physical actions taken in response to the questions.

Findings

From the analysis of the 40 anecdotal records, two themes emerged: 1) purpose of types of open-ended questions asked and 2) efficacy of types of questions asked. My findings showed that open-ended questions were effective in three ways: encouraging reasoning; steering direction of play; and situating mathematical concepts within play. I realised that different learning opportunities emerged through the mathematical content present in the dialogues during play, and different types of thinking came out of different types of open-ended questions asked.

The excerpts below illustrate how the questions asked served different purposes in children's construction of knowledge of the geometric concepts and the efficacy of each type of question. These excerpts were chosen as they highlight the prominent features of each type of open-ended question and clearly present how the questions extended the participants' mathematical thinking during their explorations.

Encouraging reasoning

Teacher Cheryl	Looking at the net shapes and 3D blocks on the table, <i>how will you predict which 3D block the net shapes will turn out to be without folding them?</i>
Evan	Erm... You mean guess the shape it will become? I don't think that's possible.
Teacher Cheryl	How about we look at the similarities and differences between the net shapes and the 3D blocks? Let's try the triangular prism first. <i>How will you compare the 3D block of the triangular prism and its net shape?</i>
Evan	I think same because they become the same shape after I fold. But they are different because the net can open but the block cannot.
Teacher Cheryl	You're right! When you fold the net shape, it turns into a 3D shape. Similarly, if you open up a 3D block and lay it flat on the table, it becomes a net shape. So, in that case, <i>what do you think is important for us to take note of if we want to predict which net shape will form which 3D block?</i>
Evan	The shapes will be the same? (Deconstructs the triangular prism net shape and lays it out on the table) 1, 2 triangles and 1, 2, 3 rectangles. (Proceeds to count the surfaces of the 3D prism) It's the same for this too.

This excerpt shows the later part of Evan's first exploration with net shapes and 3D blocks. He was initially familiarising himself with the net shapes and trying to figure out how to manipulate them. He managed to subconsciously make connections between the net shapes and the 3D blocks by identifying the same shapes. To make the connection between 2-dimensional and 3-dimensional shapes clear to Evan, I invited him to ponder about how predictions can be made and encouraged him to reason it out using a "how" question. Initially, he doubted the possibility of predicting the shapes but managed to reason out independently at the end of his exploration when more guiding questions were asked to facilitate his thinking. It is apparent that his thinking was facilitated as he managed to conclude that the shape surfaces on both the net shape and its respective 3D block are the same.

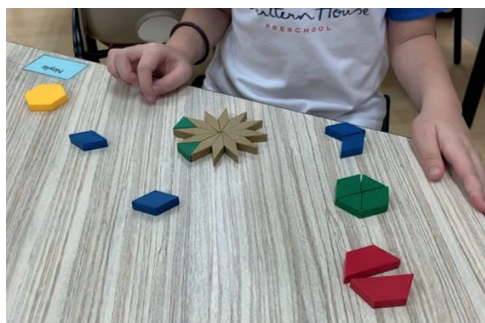


Based on my experience, when children were unfamiliar with the concept and questions asked were not specific, they had difficulties developing an argument. Breaking down the questions and using clearer terms help them come up with plausible explanations. Through my interactions with the children, open-ended questions that encourage reasoning would be more useful and effective when they have a better understanding of the concept in question. Otherwise, guiding questions that lead up to the main question should be utilised so that children are able to build up on their thinking and existing schemas, eventually developing an argument.

Steering direction of play

Avery	I made a flower using the hexagon and diamond. These triangles are leaves!
Teacher Cheryl	I love what you are doing there! I wonder if we can use different pattern blocks to create a similar flower. <i>What do you think?</i>
Avery	I think... maybe? I can try! (Reaches for triangle pattern blocks) Hmm... how can I use these triangles to change the flower? I am not so sure how to do it.
Teacher Cheryl	Let's think about it... right now you are trying to use smaller pattern blocks to replace the big hexagon, right? <i>How do you think you can make sure that both will be the same shape?</i>
Avery	Maybe I can compare them?
Teacher Cheryl	That's a good idea! <i>How will you do it?</i>
Avery	(Stacks the triangle on the hexagon and shifts them around) This way seems like a good idea. I can just match the triangles with the hexagon.

During her self-exploration, Avery used different pattern blocks to create a figure of a flower. To steer her direction of exploration to constructing and deconstructing shapes, I used an “I wonder” statement to evoke her curiosity. Through that statement, Avery understood that there was a possibility that the smaller triangles could be used to replace the hexagon as she reached out for them immediately, demonstrating that she had a vague idea that smaller shapes can be combined to form a big shape. However, Avery hesitated to try as she was unsure of how to construct the hexagon



using the triangles. By scaffolding her learning process through breaking down the questions into smaller segments, she was encouraged to move towards a solution. Eventually, she realised that she could stack the triangles on the hexagon as a “guide”. Subsequently, she utilised her stacking method to construct more hexagons with other pattern shapes such as

parallelograms and trapeziums, indicating that knowledge was constructed.

Steering children’s direction of play while indirectly providing strategies is a goal-oriented act that is useful in directing them towards a skill while still allowing them to explore independently. To steer the direction of play, I often make use of “I wonder” statements to get the children’s opinions regarding my statement. Doing so prompts them to think of the possibilities. I recognised that through verbalisation of my thought process and asking more specific guiding questions, children were able to relate it to the concept they were exploring. Steering the direction of play may not be successful if children are unaware of what is going on and are unsure of how to proceed. Therefore, it is essential that we are specific with our intention and make the mathematical procedure occurring in their play visible so that children are able to extend that.

Situating mathematics concept within play

Ron	Look at this empire I built!
Teacher Cheryl	It looks good! You were really concentrating on balancing the blocks. I really want to show your structure to the rest of the class but I don’t think it will stay upright throughout the day. <i>What do you think we can do to recreate this structure on a drawing block?</i>
Ron	Can we print it like what we did yesterday?
Teacher Cheryl	That’s a good idea! How should we do it?
Ron	Should I stamp the front view? I think it will be easier for my friends to see. If I see from here, maybe I can use the blocks that have the same shapes. I am going to use a cube to stamp this square.
Teacher Cheryl	Hmm... You used all the cubes for your structure. What can we do now?
Ron	I need a square shape; I will find one with square.

In this excerpt, Ron was initially having block play. Seen as a learning opportunity to situate the concept of 2D and 3D shapes into his play, I prompted him to think about how he could recreate the structure on drawing block with the use of an open-ended question. From the excerpt, it is apparent that Ron was able to relate his play back to what he explored with the day before – 2D surfaces and 3D shapes. He also engaged in self-talk and was able to rationalise his decision for stamping the front view of his structure. When challenged with the lack of cubes, Ron understood that he needed



a block with a square surface. Through further exploration, he used the base of a square pyramid as his stamp. This indicated that Ron successfully constructed knowledge between the relation of 3D blocks and their 2D surfaces as he was able to independently and confidently problem solve.

As educators, it is important to intentionally situate mathematical concepts within play as it adds meaning to the play and allows for joint exploration. Using “what do you think?” questions give children the autonomy despite having mathematical content situated in play. Using open-ended questions to situate mathematical concepts within play gives children the opportunity to learn and extend their existing knowledge of a known concept. It invites them to mathematise their play content, which leads to further exploration of big ideas. The use of such open-ended questions is effective when children are knowledgeable about a particular concept to a certain extent. Otherwise, guiding questions should be asked during the process of mathematising their play content to ease them into the process of learning.

Conclusion

In light of these results, the five participants were able to construct knowledge on both big ideas as they engaged in guided play activities and had their experiences scaffolded through open-ended questions. The findings clearly demonstrate the effectiveness of open-ended questions in three different ways: *encouraging reasoning; steering direction of play; and situating mathematical concepts in play*. This is in line with Van Oers (1996), where questioning is a key feature of mathematical learning as children are given the opportunities to mathematise their play and solve problems emerging from them.

This study contributes a clearer picture of how open-ended questions can be used to scaffold children’s learning process during guided play. It is essential for educators to be more intentional in integrating such an approach into the classroom by looking out for teachable moments and learning opportunities to include open-ended questions into daily classroom dialogues. As individuals react and respond differently to the types of open-ended questions asked, educators can take it as a learning process to understand their children better to utilise the suitable open-ended questions for different groups of children. With all that is said, it is important that in the midst of asking questions, educators maintain a delicate balance between facilitating and hijacking play (Pyle & Danniels. 2017). Besides the use of open-ended questions to guide and extend children’s play, there should also be periods of uninterrupted child-led explorations. With such opportunities, children will start to naturally integrate mathematical skills into their play, allowing an engaging learning process.

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Inspiring Children’s Creative Thinking through the Use of Open-Ended Questioning with Picture Books

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Introduction

Creativity is one of the 21st-century key skills for life-long learning and work. It refers to the ability to apply past experiences to produce novel and ‘out-of-the-box’ solutions for existing problems (Kereluik et al., 2014). Some studies suggest that preschool children have a higher likelihood of maximising their creative potentials, which will lay the foundation for their future endeavours. (Legget, 2017; Dere, 2019) However, Kiewra & Veselack (2016) found that children’s creativity level has decreased over the years.

In some preschools, I witnessed instances where teachers used art-based activities to develop children’s creativity, with many focusing solely on the end-products. I began to wonder, “What other resources can teachers use to develop children’s creative thinking?” This led to my teacher-based inquiry of using open-ended questioning during story time as a potential strategy to enhance children’s creative thinking, hence, formulating my main research question: “How would the use of open-ended questions enhance children’s creative thinking skills?” To narrow the scope of my inquiry, I set two sub-questions:

- What are the creative thinking skills that children exhibit with the use of open-ended questions in picture book learning activities?
- What are the types of open-ended questions that would enhance children’s creative thinking?

Literature Review

Creativity and Creative Thinking

Multiple studies (Prentice, 2000; Kim, 2018; Walia, 2019) supported the idea that “creativity” encompassed an individual’s imagination and inventiveness in the way he/she thinks or produces ideas. Wright (2010) further highlighted the importance of one’s experiences in impacting his/her development of creativity whereas Sternberg (2003) defined “creative thinking” as “thinking that is novel, and that produces ideas that are of value”. Building on this definition, the Australian Council for Educational Research (ACER) devised a creative thinking framework that emphasized that creative thinking precedes creative ideas (Ramalingam et al., 2020). It also suggested activities that can foster specific creative thinking skills (Ramalingam et al., 2020).

In Singapore, creative thinking is promoted in the Nurturing Early Learners (NEL) framework, specifically, in the domain of Aesthetics and Creative Expression (Ministry

of Education, 2013) through the use of art-related activities. This may cause a misconception amongst educators that developing creativity will also support the development of creative thinking skills, which might not be the case. Hence, in wanting to explore other contexts of learning to develop children's creative thinking, the possibility of incorporating creative thinking in the daily routine of story time in class arose.

Creative Thinking: Approach in Early Childhood Setting

ACER developed the creative thinking framework (Ramalingam et al., 2020) comprising three broad skills with accompanying indicators which are useable in promoting and assessing children's creative thinking. These three broad skills are (Ramalingam et al., 2020):

- Generation of idea – This strand looks into learners' generating the "number" and "range" of ideas.
- Experimentation of idea – This strand examines how learners "shift perspectives" and "manipulate ideas".
- Quality of ideas – This strand assesses learners' ideas for their "fitness for purpose", "novelty" and "elaboration".

ACER's framework devised a rubric that entails both process and product of creative thinking to help ascertain individuals' level of creative thinking (Ramalingam et al., 2020). The rubric can serve as a gauge to understand an individual's current development and the gap in reaching the next level. Thus, it provides a well-balanced perception of an individual's creative thinking, which is deemed as an appropriate framework for my inquiry project for assessing children's creative thinking.

Creative Thinking: Practices in Early Childhood Setting

Use of open-ended questions to encourage creative responses. The studies conducted with in-service and pre-service educators highlighted that the use of open-ended questions or activities were seen as a key component in developing children's creative thinking. (Eckhoff, 2011; Cheung, 2012). This is further supported by studies that encouraged the use of differing questioning techniques in promoting children's creative thinking (Riga & Chronopoulou, 2014; Kemple & David, 2020). The differing questioning techniques can be found in Bloom's Taxonomy, which comprised of six types of questions categorised into two groups (Strasser & Bresson, 2019):

- Lower-level questions – Questions that get learners to "remember", "understand" and "apply" responses to the situation.
- Higher-level questions – Questions that encourage learners to "analyse", "evaluate" and "create" ideas that are suitable for the situation.

Some studies showed evidence where using higher-level questions would prompt children to provide more complex and creative responses (Walsh et al., 2017; Ritchotte & Zaghlawan, 2019; Strasser & Bresson, 2019). Hence, the open-ended

questions in this teacher inquiry revolved around the six types of open-ended questions in Bloom's Taxonomy to ascertain their effectiveness in enhancing children's creative thinking skills.

Use of picture books as potential tool in supporting creative thinking. In pre-schools, picture books are commonly used to support children's emotional and language development as the illustrations stimulate children's imagination, provide an opportunity for children to share their observations and thought processes (Fettig et al., 2015). The studies by House & Rule (2005) and Kim (2018) found that effectively using storybooks would arouse children's curiosity and extend their thinking. A study conducted by Yang et al. (2016) found that using extended activities from books have the potential in developing children's creativity. This provided insights as to how it could potentially be used as a teaching and learning resource to support children's development of creative thinking.

Methodology

This study adopted a mixed-method approach whereby the quantitative aspect aimed to ascertain the intervention's overall effectiveness while the qualitative aspect focused on obtaining various responses from various sources and sought to understand the reasons behind them.

Setting and Participants

The research took place in 2020, in a private preschool with an intervention plan that spanned across seven weeks. A total of five six-year-old Kindergarten 2 children were randomly selected to participate in this study. Parental consent for child participation was acquired before implementing the research, whereas child assent was obtained before every intervention through verbal consent.

Procedure

Two picture books were introduced during the intervention period, namely – "Shape Shift" by Joyce Hesselberth, and "The Line" by Paula Bossio. Three activities were designed for each book, which comprised a picture book discussion and two idea generation sessions. There was an added hands-on activity in "The Line" whereby children were given strings to explore. The exploration provided children with an opportunity to test out the feasibility of their ideas as the illustrator of the book only used a line to illustrate all characters.

Data Collection

During the intervention period, the following data collection tools were used:

- Rubric rating scale: Adapted from the ACER's creative thinking framework, the rubric served as a pre- and post- record tool to assess children's exhibition of creative thinking skills.
- Audio recording: As a participant observer in this research, I was involved in asking open-ended questions to children throughout all the activities.

Audio recording was used to record children’s responses and transcribed to undergo thematic data analysis to uncover emerging findings related to the research questions.

- Teacher journals: The journals provided an outlet to jot down my observations and thoughts of the implementation, which provided insights into the effectiveness of the open-ended questions and notable findings regarding children’s behaviours.
- Children’s artifacts: Children drew their ideas on papers, these were used as evidence to support findings as these artifacts were used to assess the quantity and feasibility of ideas generated.

Results and Discussion

This study’s intervention entailed incorporating open-ended questions in two picture books and their accompanying activities to ascertain its effect on children’s exhibition of creative thinking skills. Based on the data collected, four major findings emerged.

1. Children demonstrated creative thinking in the process of creating ideas.

1.1 Generating ideas. The ability to generate ideas is a vital component in creative thinking. Based on the book “Shape Shift”, the initial session required children to generate ideas related to two semi-circles, and children gave a range between 2-6 ideas. In the final session, a circle on top of a rectangle were introduced with a twist of needing two triangles in the illustration of ideas. Despite the added challenge, there was an increase in the number of ideas generated, between 3 to 13, (Figures 1.1a and 1.1b), demonstrating children’s ability to generate more ideas.

Figure 1.1a

Child E1’s illustration of ideas for “Shape Shift” book first activity

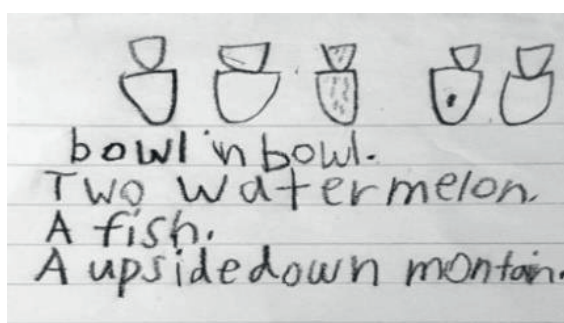


Figure 1.1b

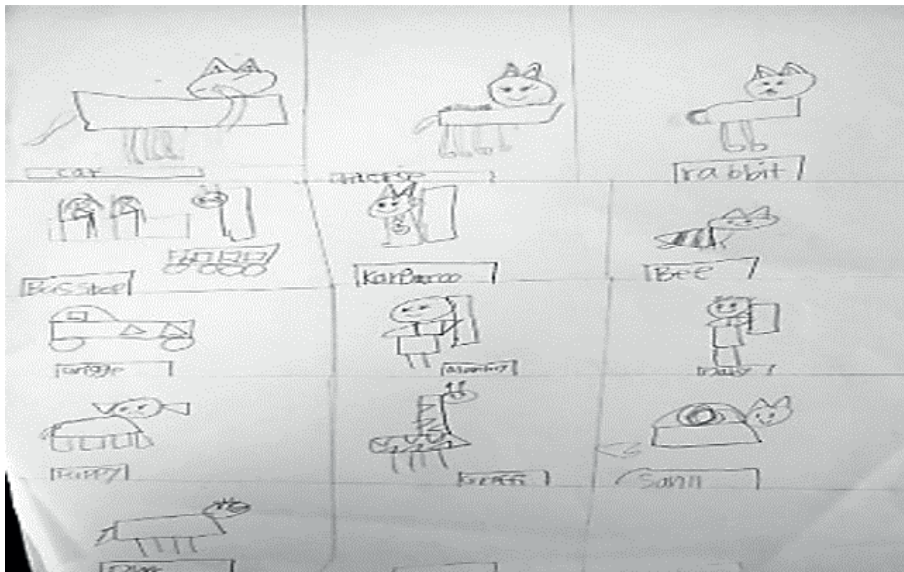
Child E1’s illustration of ideas for “Shape Shift” book second activity



1.2 Manipulating elements of tasks. Creative thinking can also be demonstrated through learners’ ability to devise strategies to work around the task requirements to generate ideas. As seen in the final “Shape Shift” session, a child attempted to perceive the circle as the “head of the animal”, and the rectangle as the “body” to generate the ideas (Figure 1.2). Additionally, the string exploration session in “The Line” had children tying the strings to increase the length, which provided an

opportunity for children to explore more possibilities, thus indicating that these strategies reflected children's manipulation of elements in the task.

Figure 1.2



Child E2's illustration of ideas for "Shape Shift" book final activity

Note. Child C's illustrations include cat, horse, rabbit, bus stop, kangaroo, bee, carriage

1.3 Quality of ideas linked to prior knowledge. Creative thinkers generate ideas that are practical, new, and elaborative. In this study, the practicality and novelty of the ideas were not as apparent compared to children's ability to elaborate on their ideas. Phrases such as "look like" and "thought of" were commonly heard in children's elaboration, indicating that they came up with ideas based on their prior experiences (Figure 1.3). The usage of prior knowledge to explain their ideas implied that children could connect the objects that they had previously seen, heard or experienced and applied the existing knowledge to the new situations thus suggesting that their prior knowledge played an essential role in their idea generation process.

Figure 1.3

Significant Quotes from Children on Elaboration Using Prior Knowledge

Theme:	Illustrative quotes
Elaboration based on prior knowledge	
"Shape Shift" activity	<p>"You see the top look like the top of the fountain where the water comes out and the bottom is the one that holds all the water."</p> <p>"I also draw blue paint because the semi-circles look like the shape of the paint bottle."</p>

“The Line” activity	<p>“Because the lines are like up and down then it looks like how waves move in the ocean.”</p> <p>“I drew the eyes and mouth and three lines to make it look like the person is talking and that is the mouth.”</p>
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Interestingly, Eckhoff’s (2011) study found that some teachers did not recognize children’s use of prior knowledge as an indicator of their creative thinking process. However, Sternberg (2003) perceived this contradiction of using knowledge as a dual-edged sword. He noted that knowledge is required to be creative, but in excess would hinder the creative process. Hence, children’s use of prior knowledge is justifiable in their creative thinking process to an extent.

2. The use of open-ended questions supported children’s creative thinking

The open-ended questions used in this study were based on the six types of questions defined in the Bloom’s Taxonomy (see Figure 2). Results showed that both analytical and evaluative questions helped extend children’s elaboration of ideas in both “Shape Shift” and “The Line” picture book activities. Creation-based questions were used as provocations to stretch the children’s imagination in each session. In the final activity of “The Line”, the children were asked, “What is one possible solution to resolve the problem?”. There were different opinions from children on how their earlier ideas could work. For example, one child explained that the string could form a house for the little girl to hide from the monster like ‘seeking shelter from hurricane’. Her idea was both unique and novel. Another child scrapped his earlier idea of introducing a new character, and instead, opted to use existing characters in the book. This showed that the question might have pushed him back into his comfort zone instead of exploring creative possibilities.

Figure 2

Selected Transcripts of Open-Ended Questions Asked During Sessions

Bloom’s Taxonomy	Selected transcripts of open-ended questions used
Remember	<p>What can you see from this picture?</p> <p>Do you remember what comes after this page of the story?</p>
Understand	<p>What makes you say so?</p> <p>What do you think happened?</p>
Apply	<p>What does it look like to you?</p> <p>What do you think will happen next?</p>
Analyse	<p>How do you tell them apart?</p> <p>What happens if we turn the shapes upside down?</p>
Evaluate	<p>What gave you the idea to make these designs?</p> <p>Why did you do that?</p>
Create	<p>How many designs can you see from the two shapes?</p> <p>If you are the illustrator, how will you continue the story?</p>

Overall, using the higher-level questions provided opportunities for the children to generate more creative responses, which supported previous studies (Walsh et al., 2017; Ritchotte & Zaghlawan, 2019; Strasser & Bresson, 2019). Notably, educators need to understand that the use of higher-level questions has differing influences on children's creative thinking. Hence, more fine-tuning can be done to meet their individual needs. Additionally, the use of lower-level questions, such as remembrance, understanding, and application questions that circled a child's prior knowledge, was equally important as Strasser (2018) pointed out that these lower-level questions support children's thinking towards a more complex creative thinking process.

3. Choice of picture books impacted children's exhibition of creative thinking

The rubric rating scale adapted from ACER's creative thinking framework was used to assess children's creative thinking skills before and after the intervention activities. A comparison between "Shape Shift" and "The Line" pre- and post-intervention results indicated a disparity in the creative thinking skills that the picture book activities promoted. The disparity could be attributed to the choice of books, as Walsh's (2003) study found that children have unique ways of interpreting the illustrations and meanings of the book. Furthermore, the objectives set for the activities might also contribute to the exhibition of different creative thinking skills. "Shape Shift" requested children to generate as many ideas as possible, focusing on quantity. "The Line" got children to generate possible solutions, emphasizing the feasibility of ideas. Despite the disparity, findings have shed insights on the types of creative thinking skills that children exhibited in both picture book activities.

4. Children's approaches to tasks influenced their creative thinking processes

Two noticeable groups of children emerged from the teacher's journals, viz spontaneous thinkers and careful planners. The spontaneous thinkers exhibited the ability to think on their feet as they were able to start illustrating their ideas immediately. Careful planners took the role of observers for a prolonged time, implying their need to have more time to plan. The data also indicated that careful planners used the phrase "I don't know" more than spontaneous thinkers. Walsh et al. (2017) found that such responses gave children time to think of appropriate answers, which might have stemmed from their perception of an ideal answer. Davie (2016) highlighted the importance of providing a safe environment to allow individuals to fail and develop the persistence to try again, highlighting the teacher's role in ensuring that children feel safe to demonstrate their creative thinking skills.

Conclusion

This teacher research aimed to understand how the use of open-ended questions in picture book activities could enhance children's creative thinking skills. The key findings concluded that a combination of open-ended questions could support children's demonstration of creative thinking, specifically – elaboration skills, which aligned with findings from previous studies (Walsh et al., 2017; Ritchotte & Zaghlawan,

2019; Strasser & Bresson, 2019). Hence, it strengthened my belief that utilising higher-level questions in picture book activities can better enhance children's creative thinking.

In brief, this teacher research has provided insights regarding the possibility of using open-ended questions with picture books to promote children's creative thinking. As an educator, it has shown potential strategies that I can adopt in my future practice to help children maximise their creative thinking capabilities.

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Sparking Creativity at BEEP LAB in Singapore

Architecture education may be able teach students more about real-life problem-solving than traditional subjects

BEEP Lab is the first school of design and architecture for children and youth in Singapore. The mission at this design thinking creative lab is to engage, enrich, and empower young learners to spark their creativity and nurture in them a sense of stewardship toward the built, natural, and cultural environments in which we live. Since its founding, BEEP Lab has curated over hundreds of interactive and intentional design thinking in-person and Zoom workshops, camps, and events, which have impacted over 1,000 children in Singapore, Taiwan, Malaysia, and China.

BEEP Lab was selected by the Finland-based education improvement platform HundrED as one of its top 100 global innovations in 2020 and 2021. HundrED also recognized BEEP Lab in its spotlights for employability skills and visual arts education.



Photos courtesy of BEEP Lab
Albert Liang Tsu Ying

The BEEP Lab Team of Design Facilitators

The team at BEEP Lab consists of teachers, coaches, mentors, and facilitators who are also architecturally trained designers. They see the everyday nature of the built environment around us as a fertile ground in which to engage young learners, helping them uncover the insights and intrigues associated with making buildings and cities.

Tapping into their professional knowledge and diverse design-learning experiences, the team transforms daily encounters with our living spaces into novel, refreshing, and captivating activities that challenge the children and teens.

In his book *Understanding by Design*, Grant Wiggins describes teachers as designers. They play a key role in designing the education curriculum to provide learning experiences that meet their specified purposes. They also design assessments to diagnose the students' understanding, and ultimately redesign their teaching approaches for better learning efficacy.

BEEP and Epic Fun!

Architecture is equal parts art and science; it is a craft that requires both imagination and inquisitiveness. BEEP Lab's design studio activities are crafted to provide enjoyable moments of discovery and achievement while learning about how buildings, cities, and parks are designed and built for and with people. Underpinning these learning activities are the integrated pedagogical principles of experiential learning and inductive learning. An emphasis on learning by doing or making is key to helping students make sense of their experiences and form stronger mnemonic impressions.

The design of the learning journey is always contextualized in a project-based or problem-based scenario. Described by Prince and Felder in the essay, "The Many Faces of Inductive Teaching and Learning," inductive methods of teaching and learning present students with a challenge and then support their learning of what they need to know to address that challenge.

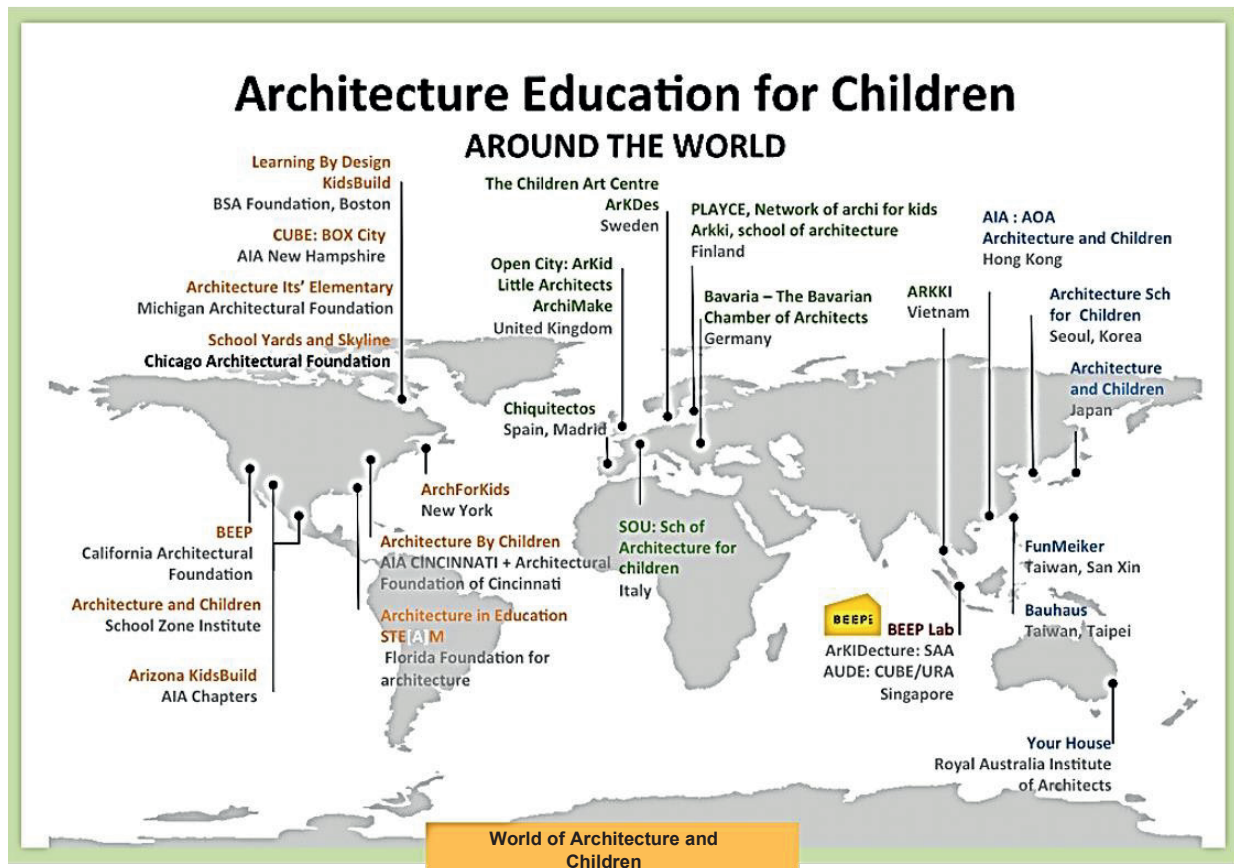
Built
Environment
Experiential
Programme
LAB

Empowering kids to be aware of current issues around the world and participate in design to interact with these issues. Inspiring them to be confident, collaborative, and compassionate human beings.

Albert Liang Tsu Ying,
*Founder and
Creative Director
of BEEP Lab*



A project-based or problem-based learning platform facilitates incremental acquisition of the relevant skills for designing a solution. There is often no instant answer provided; rather, the learners are guided toward discoveries and encouraged to synthesize their learning experiences to form meaningful strategies for application. They are coached to be motivated learners with the basics of independent learning. This is what BEEP Lab strives to imbue in the young learners they support.

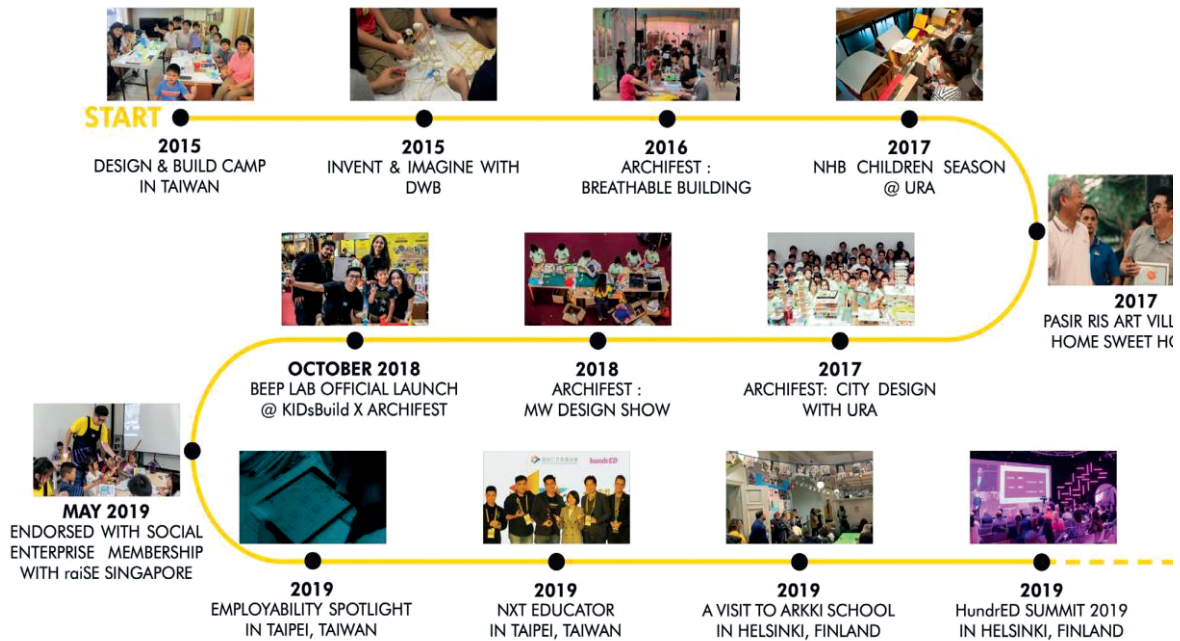


Around the world, a movement affecting architecture education is focusing on developing various platforms for engaging children and youth. Many of these programs are spearheaded by local architecture chapters and architectural centers or higher learning institutions. BEEP Lab was developed through corporate social responsibility efforts to take on education and architecture with a new angle.

BEEP Lab's Journey

To change the status quo, BEEP Lab's founder Albert Liang Tsu Ying decided to improve the way children learn by embarking on a journey to relearn, unlearn, and learn about architecture through the lens of children and youth. He strongly believes that by developing a new point of view on the world around us, we can work together to make better decisions about our learning and how to better serve our society.

OUR MILESTONES



In 2015, with support from SAA Architects management, Albert and some colleagues embarked on a civic engagement initiative known as ArKIDecture. With a team of architects, the initiative pursued various public engagements to promote learning about architecture through platforms such as Archifest, URA Children Season Workshop, National Library, and PA Arts Festival.

With a commitment to pushing the boundaries of the education and training sector in order to create a platform for promoting design education on a long-term and sustainable scale, Albert took a leap of faith and officially started up BEEP Lab on 1 October 2018. Since then, BEEP Lab has been on the move to grow and develop clarity for their mission of advancing holistic design education for children and youth, to help them become confident and self-directed learners, active contributors, and civic-minded individuals.

Pedagogy and Philosophy of Learning

The core pedagogy at BEEP Lab sets out to impact young learners from all walks of life through experiential learning about the built environment. Just as our built environment develops from multidisciplinary sectors working together, we developed a framework, AR.C.HI.TEC.TURE, to encompass different disciplines (art, community, history, technology, and nature). Within this context of AR.C.HI.TEC.TURE, programs empower children to SEE, WONDER, and DO and then move on to BUILD, SHARE, and LEARN

AR.C.HI.TEC.TURE

ART is content.

COMMUNITY is who we serve.

HISTORY forms context.

TECHNOLOGY helps to construct.

NATURE is what surrounds us.

with others. With the use of the DIG DEEP design thinking methodology, BEEP Lab aims to engage and inspire the head, hands, and heart, so as to build a sense of stewardship and ownership toward the shared built, natural, and cultural environments.

BEEP Lab curates design briefs to approach the design challenges around us. This framework becomes the baseline for programs based on current issues surrounding the themes in AR.C.HI.TEC.TURE. They find exciting proposals that challenge teams to transform neglected parts of urban areas or cities into interactive landscapes that encourage community building and engagement.

AR.C.HI.TEC.TURE is a catalyst to promote interdisciplinary learning through scenario- and inquiry-based learning. Through the ArKIDtect studio, diverse programs cater to learners of different ages. In these studios, students explore the built environment, collaborating with architectural designers and educators to develop their ideas. This opportunity facilitates cross-disciplinary discussions and teaching, allowing diverse ideas to be generated and shared for meaningful and impactful learning. As programs are term-based, the curriculum allows for learning to take place at students' own pace.

Multi-disciplinary learning is an important goal for the BEEP curriculum, which is designed to complement other disciplines, such as science, technology, engineering, art, and mathematics. Partners from other disciplines introduce such STEAM topics into programs, empowering children with broad knowledge and various skills to help them tackle the problems they will encounter as they grow up.

The philosophy at BEEP Lab is to build, share, and learn. The team cultivates an attitude about building ideas, reflecting on them, and then sharing them with others to gain insights and improve. From this, they make changes to the initial ideas and apply them to create better and more comprehensive ideas. This process of building experience, sharing ideas, and learning to improve is an attitude promoted with everyone who participates in the BEEP Lab programs. The philosophy is in line with the Maker Movement Manifesto advocated by Mark Hatch. He thoroughly explains how this process of making and exploring has led to discoveries and inventions around the globe. Such successes are possible with creativity, hard work, and a strong motivation to Build, Share, and Learn.

Design Thinking for Children and Youth: SEE. WONDER. DO.

In line with the experiential learning process researched deeply at Harvard School of Education's Project Zero, BEEP Lab's approach to See, Wonder, and Do teaches children to look around themselves to find inspiration and ideas from the things they see. Through careful observations, they learn to be curious and think of creative possibilities. BEEP Lab provides materials and guidance to support children as they create, giving rise to a myriad of innovative ideas.



“What do you see?

What do you think about that?

What does it make you wonder?”

—A thinking routine from Project Zero, Harvard Graduate School of Education

Design Thinking for Architectural Educators and Teachers: DIG DEEP

To effectively propose innovative solutions to design challenges around us, BEEP Lab developed a seven-step design thinking framework, DIG DEEP. This step-by-step process deconstructs a design brief, considers the problem to be solved, proposes compelling ideas, and presents the ideas to others. This process not only stimulates children’s thinking, but also builds their confidence as they present their thought process and ideas to others.

Over the years, this framework has been refined with the guidance of mentor Dr. Anne Taylor, author of *Linking Architecture With Education*. Based on her advice informed by extensive research in architectural education for children, BEEP Lab’s DIG DEEP approach teaches children to solve problems, in ways that also could be applied to other disciplines, and to be effective communicators.

BEEP Lab Approach

BUILD PEOPLE

Empower the future generation to create an environment of openness that values discovery and diverse perspectives, through the mastery of creativity, confidence, and collaboration.

SHARE EXPERIENCES

Share knowledge and experiences to invoke a sense of giving that heightens the purpose of learning.

LEARN TRAITS & SKILLS

Impart architectural traits and skills to equip lifelong learners of our built, natural, and cultural environments.

Define issues and scope

Investigate the issues

Generate ideas

Develop

Experiment

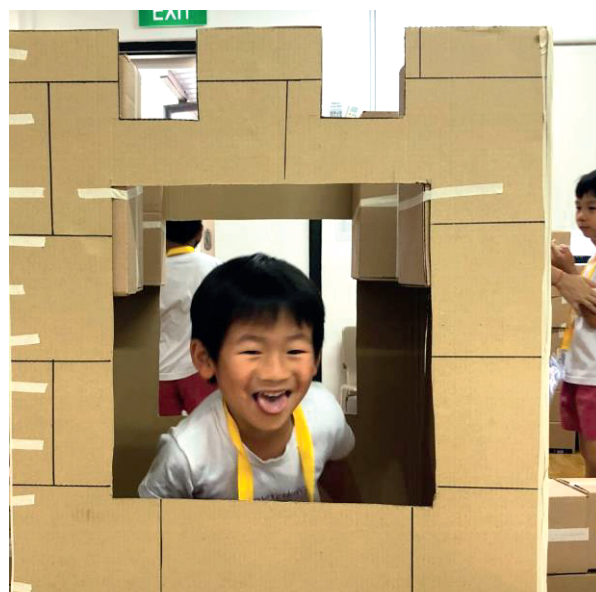
Evaluate

Present



BEEP Lab's 5G Values

An important aspect of the experiential learning process at BEEP Lab is a focus on imparting the 5G VALUES of **Grease, Grit, Grace, Gratitude, and Green**. Design thinking relies on a continuous process of exploring, making, and failing. In the process of construction, children learn to get their hands dirty (Grease) and be comfortable with that. When their designs do not work immediately, they learn to persevere (Grit). Through hard work and team work, children learn to care for one another (Grace) and to appreciate that things do not just happen (Gratitude). They also learn how to be Green, with a focus on sustainability.



Community Building

In Singapore, children live in a built-up environment. Architecture is all around them and this provides a rich inspiration for them to connect their learning in the classroom to the community. Such authentic experiences allow them to appreciate that buildings are not just bricks and mortar. Within and around these structures are people, culture, history, and stories. At BEEP Lab, children learn about, connect with, and even build their community.



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在幼儿绘本教学中结合布鲁姆分类法组织活动

王卫平 (Wang Weiping)
Kinderland International Education
Singapore University of Social Sciences

《新加坡学前课程框架》中的 iTeach 原则提出 (Ministry of Education, 2012)：在综合性学习中，学前教师可从主题、故事或者方案出发，根据幼儿的兴趣和发展水平规划学习经验。学前阶段，故事通常都是通过绘本的形式来表现，而绘本教学是学前教师最常采用的活动方式之一。笔者从事幼儿园课程编写工作，并在绘本教学中结合布鲁姆分类法来组织综合性学习活动，以下是个人的心得分享。

参考《学前华文教学指南》(Ministry of Education, 2014, 36 页) 中的绘本阅读活动建议，并考虑到绘本的多样性以及相关延伸活动等，笔者把绘本活动流程规划为“观察导入”、“逐页阅读”、“回顾与讨论”和“表达与延伸”四个环节。布鲁姆分类法 (Bloom, 1956; 安德森 等, 1990) 把学习者的认知过程从低到高依次分为图 1 和表 1 所示的六个层次水平：记忆、理解、应用、分析、评价、创造。在具体的绘本教学活动中，可依据布鲁姆教育目标分类，并因应每一本绘本的自身特色，设计适宜的提问和引导策略，从而逐步地由低到高引导幼儿不同层次的认知水平与思维发展。

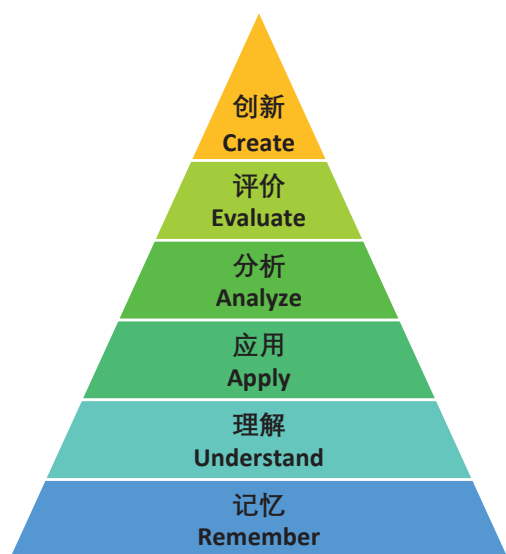


图 1: 布鲁姆分类法 修订版 (Blooms Taxonomy (Revised))

表 1. 布鲁姆认知过程分类

类别	说明
记忆	从长时记忆中回忆相关知识
理解	理解学习过程中的口头、文字和图像等交流形式包含的信息。
应用	在给定情景中使用新知识
分析	把材料分解为组成部分，确定各部分之间的关系以及各部分与总体之间的关系
评价	依据一套标准做出判断
创新	以新的方式，把信息和要素重新整合成新的模型或产品

资料来源：安德森.(2009). 布鲁姆教育目标分类学 修订版 (蒋小平等译). 外语教学与研究出版社

绘本教学活动组织

以下一一说明绘本教学四个环节的活动组织，以及如何在其中依据布鲁姆分类法并结合绘本特色设计具体的活动：

一、观察导入

主要是引导幼儿观察封面、环衬和书名页等，引导幼儿关注作者信息，说说封面、环衬中图画的内容，察觉绘本的关键角色、场景等，并猜测内容和书名。

二、逐页阅读

在逐页阅读时，教师可根据每一页的画面、文字特点，说说每页的内容并鼓励幼儿观察、推测和想象情节发展。另外，常常会有作者别出心裁地在绘本中暗藏细节，则应给予幼儿充分的时间和机会去发现此类绘本中的惊喜。例如在《爷爷一定有办法》中（图2），作者在书中页面的



图2：绘本《爷爷一定有办法》中暗藏的故事

下方，还随着约瑟一家的故事发展相应画了小老鼠一家的无字故事。

三、回顾与讨论

教师通过提问引导幼儿讨论或回忆故事情节和人物，说出故事大致内容、进行情景再现。教师的提问和引导要注意层次性，可依据布鲁姆分类法（记忆、理解、应用、分析、评价、创新）由低向高层次递进。通常一次讨论中应该至少有3个不同层次的问题。

四、表达与延伸

引导幼儿结合自身生活经验用多元化方式来创造性表达对绘本内容的理解、感想、看法和应用，进行再创造的创意活动和延伸活动。这一阶段的活动其实也对应着布鲁姆分类法的认知过程的“应用”层次或最高的“创新”层次。教师可根据绘本特点灵活引导幼儿进行多元化表达：口头表达、书面表达、动作表达、美术创作、故事改编/续编、戏剧扮演、游戏和实际行动等；这些表达方式可以单独采用，也可几种不同的方式结合在一起进行。

1. 口头表达

有的绘本具有突出的语言特点，则可引导幼儿进行相应的语言表达游戏。例如绘本《棕色的熊，棕色的熊，你在看什么》(图3)中包含有节律的重复句式“X色的XX，X色的XX，你在看什么？我看见一只X色的XX在看着我。”可请幼儿加入自己喜欢的颜色和动物进行对答和接龙游戏。



图3

2. 书面表达

对于K2大班幼儿，也可以通过提问引导幼儿结合自身经验说说、画画、写写自己的想法。例如读完绘本《达芬奇想飞》(图4)后提问幼儿“如果你有一双翅膀，会想要做什么”，并请幼儿画一画、写一写。



图4

3. 动作表达

有些绘本则具有突出的动作元素，尤其是低幼绘本中常常会以身体动作为主题。例如绘本《从头动到脚》(图5)，教师可以扮演动物，幼儿扮演绘本中的小朋友，一边说绘本中的重复对白(师：“我是……，我会……，你会吗？”幼：“这个我会!”)，一边模仿绘本中的动作。这一扮演游戏即包括口头表达，也包括了动作表达。在幼儿熟练后，也可以请幼儿扮演动物，并加入自己喜欢的动物和动作。



图5

4. 美术创作

有些绘本表现出鲜明的艺术风格或艺术元素，则可以引导幼儿进行绘画、涂色、制作角色纸偶等相应的艺术创作。例如模仿《奥莉薇》(图3)中画家波洛克名画的创作手法，以泼洒和滴溅颜料的艺术技法来进行美术创作。



图6

5. 故事改编/续编

教师也可以通过开放式问题引导幼儿依据绘本中的句式、情节、结局，结合自己的生活经验来进行改编。例如新加坡本土绘本《三轮车跑得快》(图7)则可以改编故事情节：“如果你是小威，你会去哪里找小熊？”也可以引导幼儿进一步想象和再创造，对故事进行改编。



图7



图8

6. 戏剧扮演

戏剧扮演有手偶剧、演唱表演、创意戏剧、围裙剧场、皮影戏剧场等多种形式。例如《月亮伤心了》(图8)是特别的仿阶梯设计页面，一群小动物依次叠罗汉爬到天空高处和月亮做朋友；把绘本中的动物角色图案放大、剪下、过塑，后面粘贴上魔术贴，把一块蓝色不织布固定在围裙上当做故事背景(天空)，可进行围裙剧场的表演。

7. 游戏

有些绘本里的角色和故事提取出来可发展为游戏活动。例如绘本《狼，狼，你来了吗？》(图9)，小猪们一直重复问：“狼，狼，你来了吗？狼，狼，你在干什么？”每一次狼的回答都是幼儿日常生活中做的事：“我在睡觉/洗澡/刷牙/……”直到最后狼说“我要把你们都吃掉！”冲出来追逐小猪。可以请幼儿分别扮演故事中的狼和小猪，玩类似“老狼老狼几点钟”的追逐游戏，只是把游戏中对答的语句替换为绘本中的对白。除了绘本中的对白，扮演狼的幼儿也可以依照句式说出任何自己喜欢做的事。



图9

8. 实际行动

有些绘本包含着积极价值观或理念的传递，教师可引导幼儿以实际行动去践行。例如《照顾好你的星球》(图10)传递的是环保理念，可引导幼儿设计垃圾分类回收箱并投入使用，在学校践行垃圾分类回收。

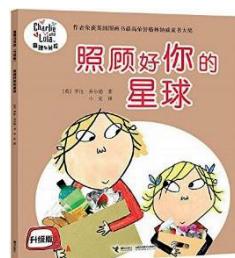


图10

绘本教学活动组织示例

以绘本《石头汤》(图 11)为例,为幼二班(K2)幼儿设计绘本教学的活动:

1. 观察导入:引导幼儿观察画面,说说看到了什么,猜测故事内容。介绍作者和插画家,读出书名《石头汤》;并以问题“石头怎么煮汤呢?”引起幼儿的好奇。
2. 逐页阅读:读故事给幼儿听,引导幼儿观察画面,推测和想象情节发展。
3. 回顾与讨论:依据布鲁姆分类法设计不同层次的问题来引导幼儿加深对故事的理解,体验和感悟“分享使人幸福”。例如:



图 11

- 1) 记忆:故事发生在哪里?故事里都有谁?
- 2) 理解:从哪里可以看出村民们不快乐?
- 3) 应用:如果你是村民,你愿意给和尚们开门吗?
- 4) 分析:村民们之前和之后的行为表现有什么不同?
- 5) 评价:你认为分享有让村民们得到幸福吗?为什么?
- 6) 创新:(续编/改编)如果你是村民,你想要分享些什么来煮汤?

4. 表达与延伸:

- 1) 画一画:如果你是村民,你想要在大锅里加些什么来煮石头汤?》
- 2) 创编儿歌:根据想添加的食材,创编儿歌并唱一唱,调同《伦敦铁桥垮下来》(图 12)
- 3) 扮演游戏:幼儿扮演手拉手围成圆圈扮演“大锅”,按照位置顺序依次选一位幼儿扮演村民,说出自己想要添加的两样食材,然后大家一起唱相应的创编儿歌《一起来煮石头汤》。
- 4) 烹饪活动:请每位幼儿带一样自己喜欢的食材来学校,大家一起煮“石头汤”。



图 12

- 5) 爱心捐赠——“石头汤”计划:与幼儿园附近的儿童福利院、老人院建立伙伴关系,确认福利院需要的物资,定期进行募捐活动。

上述《石头汤》一系列从封面导读到最后实施爱心捐赠计划的综合性学习经验,使得幼儿从理解故事开始,循序渐进地提高认知发展层次,最后把“分享就是幸福”

的价值观以创新方式落实在自身所处的社会生活脉络中。这样既达到了布鲁姆教育目标的认知过程最高层次，幼儿也籍此把“幸福”传递到社区里的其他人群。

让我们在绘本教学中继续共同探索，通过绘本里的多彩世界来丰富幼儿的综合性学习经验。

附：

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The Importance of Critical Reflection in Classroom Practice

A Case Study

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Scenario

Julie is busy getting her Nursery One (aged three and four) class ready for lunch as she oversees the packing up of toys, and two children who want to go to the bathroom. Her mind keeps going back to the music and movement class that she had conducted this morning and she wonders why some children were not engaged and even acting up during the session. What went wrong? Julie wondered. With a myriad of tasks before her, the class schedules and routines occupy her mind throughout the day and Julie pushes the thoughts and reflection about the music and movement class away. Does this scenario sound like a familiar experience?

More than half of the 40 part-time undergraduate in-service early childhood teachers I taught in my recent course on Early Years Mathematics indicated that they do not take the time to reflect on their work and practices on a regular basis due to their busy work schedules. Only three of the forty teachers surveyed have participated in action research or practitioner inquiry, encouraged by their supervisors and principals. Yet all of them acknowledged the importance and benefit of reflecting on their practices regularly for improvement. What strategies can we provide to encourage reflection in early childhood teachers as an integral part of their profession?

The importance of critical reflection

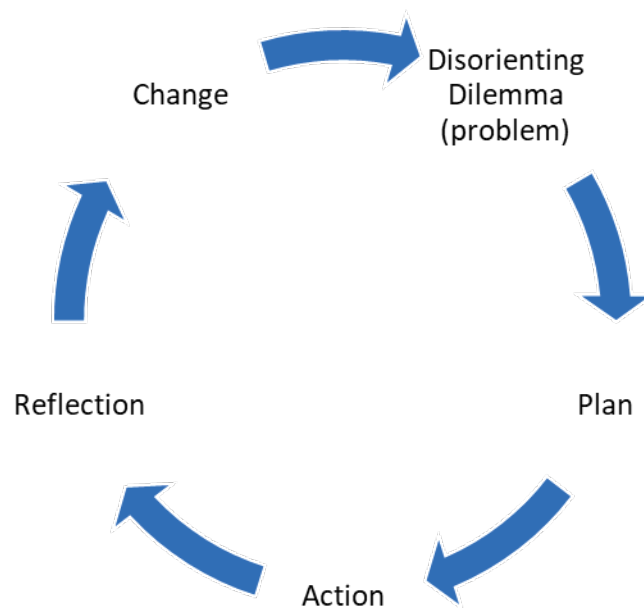
The term “reflection” was first defined in the works of John Dewey (1933) and its definition usually involves a systematic process of enquiry to think about personal practice. Critical reflection also involves thinking about and questioning your actions, beliefs and assumptions in your professional practice and experiences.

When Julie wondered about the children’s reaction to her music and movement class in the above scenario, she was trying to engage in critical reflection of her curriculum plan and her actions in implementing it. In his seminal work, Donald Schon (1976) called this ‘reflection in action’ (Julie thinking about her actions while implementing the music and movement lesson) and ‘reflection on action’ (Julie thinking about the learning experience for her children after she had implemented the lesson). By thinking about her actions during and after the class, Julie is integrating what she has learnt in theory into practice in the context of her classroom lessons. The ability to reflect on one’s actions is a critical ingredient in continuous learning which is important to a

teacher's professional practice (Schon, 1976). In short, Julie is learning about the effectiveness of her lesson design in her experience of conducting the music and movement class.

Transformative learning

Engaging in critical reflection has the effect of challenging one's beliefs and assumptions which could result in changing one's perspectives, according to Mezirow (2012) in his transformative learning theory. Transformation can take place when a person encounters a problem that disorients (for example, Julie did not expect her children to be disengaged or react negatively in her planned lesson), which acts as a catalyst for her to review her views, assumptions and perspectives. If Julie engages in reflection about her lesson, she may begin to explore options, take new perspectives and actions based on insights gleaned from her reflection. As such, Julie will engage in a transformative learning experience to improve her classroom practice. The transformation begins with reflection which leads to action that results in change. This is illustrated in Figure 1.



*Figure 1. Transformation process
(adapted from The Handbook of Transformative Learning, Mezirow, 2012)*

Teachers who engage in reflective practice

In the Bachelor of Early Childhood programme at the Singapore University of Social Sciences, students take a course called “Early Childhood Education Applied Project” where they undertake a 12-week action research project to address an issue or seek

to improve certain aspects of classroom practice they have observed or encountered in their field practicum. In the process of reading, designing the research plan, conducting the intervention, collection and analysis of data, and discussing their findings, they engage in cycles of plan-action-reflect-change much like the transformative learning theory described above.

By participating in this form of practitioner inquiry, these pre-service students learn to reflect on their beliefs, assumptions, ideas, ideals and classroom practice. It helps them become more aware of what is happening in class by identifying common problems, hypothesizing possible causes and applying an action plan to solve the problem (Mathew et al., 2017). Reading their research reports and hearing their oral presentations of their research, I found that the students have not only gained substantive content knowledge about the areas of their research, they have also honed many skills that are important for their practice. These include learning to be flexible in thinking, adaptability, problem-solving, honing observation skills, planning and anticipating, learning to ask for help, being intentional in actions and words as teachers, self-awareness and time management to name a few.

One example of a student-researcher who engaged in the transformative process was Brenda. Whenever Brenda tried to involve the children in her Kindergarten One (aged 5) class in story-telling, she realized they struggled with engaging their peers in their narratives as their stories lacked the use of descriptive language. She then set out to find a solution to this problem (her disorienting dilemma).

Critical Review and Plan:

Brenda observed that her Kindergarten One children loved to construct structures with Lego bricks and spun stories out of them in an animated fashion, engaging in pretend play. She read up articles and searched the literature for ways to promote descriptive language for young children and realized that previous researchers had used constructive play materials as props to support children in developing descriptive language. Hence, Brenda set out a plan to encourage the children in her class to use Lego bricks to construct props like structures and characters of the stories they had read.

Action:

Brenda counted the number and type of descriptive language used by the children before she introduced her strategy of Lego props for stories. She then asked them to use Lego bricks to build a variety of props that they felt would support their story-telling. When they did so, she counted the number of descriptive words and phrases used by the children and found that there was an increase in the number and variety of descriptive words and phrases used by the children in their stories.

Reflection:

Brenda found that the children had not only acquired more vocabulary on descriptive words, the peers were also more engaged in the story-telling when props and actions were used to accompany the story-telling. The children asked each other questions about the props and there was overall more discussions and involvement in the story-telling activity by the whole class.

Change:

Henceforth, constructive play materials became a regular feature and strategy in promoting better story-telling skills in the class. Brenda's co-operating teacher for the class also thought that this was a good idea that can be implemented for other classes in the centre. Upon reflecting on this research, Brenda realized she has become more intentional in the way she provided support for learning the English language in her class and was more confident in applying the plan-action-reflect-change cycle of transformation and improvement in her classroom practice.

One of our students Renee also shared how practitioner inquiry and reflection have impacted her classroom practice:

Through this applied project, I realised how important it is to conduct observations of the children in my class. When I pause and observe what is happening to the children, I learn about their interests, their strengths and areas where they need help. I get to appreciate their uniqueness too. I find time for in-depth thinking and consider the rationale behind decisions made by teachers. It honed my skill to seize teachable moments that are beneficial for just-in-time learning for the children. I get to be more intentional in my actions and plans.

- Renee, Year 3 SUSS.

In a previous research (Lim, 2019), one teacher participant also shared how keeping a journal helped her reflect on the day's events in the classroom.

No matter how busy, I must always take time to stop and think about whether what I am doing is actually achieving what I had planned to do in class. Even when things appear to be going as planned, it is good to find out what worked well and what can be improved on.

- Lai San, Preschool teacher of 10 years

Lai San found it challenging to carve out time to engage in a full-scale action research project but this does not stop her from keeping a reflective journal to continue learning and improving her classroom practice.

How to engage in reflective practice

The ability to reflect on one's actions is important for professional and effective classroom practice. How does one engage in reflective practice? Being able to undertake a practitioner inquiry or action research project will give us many reflection opportunities to improve our professional practice. However, if we are not in the position to do so, we can begin by taking the following steps towards engaging in our own critical reflection. This involves gathering information about what is happening in class to analyze it. We can do this by:

1. Being observant – Observe what interests and engages the children you teach, their temperaments and reactions to things around them. How do they respond to the activities planned for them?
2. Take notes – Similar to Lai San, you can keep a notebook or journal where you can jot down observations and questions that you encounter so you can take the time to ponder over them when you have the time
3. Ask questions – What went well today? What was surprising? What didn't go the way I planned? Why is that so? What can I do differently to make it work?
4. Find critical friends – Discuss your questions with colleagues, your supervisor or other teachers and ask for their views. Perhaps they have encountered this question before and have tips and ideas to solve the problem or give you fresh insights.
5. Find the time to stop and think – This could be pockets of downtime during the day or on your journey home or to school, make it a habit to practise critical reflection daily to the best of your ability.
6. Be open to learning and taking action for change. Consider alternative perspectives, have a disposition of enquiry and wonderment and, most importantly, a desire for personal professional development and improvement.
7. Share your observations, insights and best practices with colleagues and teachers at meetings, in a community of learners or at conferences and other platforms.

For someone who is motivated to continue learning and improving on best practices, practising reflection can bring insights to inform change and mindful transformation (Mezirow, 2012) that will benefit the children under your care.

While there are many benefits for undertaking reflective practice, one has to bear in mind that certain conditions must be present for reflection to take place. Teachers need to receive support and encouragement from peers and supervisors by establishing a work culture and climate that is conducive to reflection (Hanson, 2011). Research has shown that class size, management support, healthy work climate, workload, time and space to talk to colleagues all play a part in promoting reflective practice in the workplace (Thompson & Pascal, 2012).

Conclusion

Pre-service and in-service teacher education does not provide all the necessary knowledge and skills for a teacher to meet the demands of professional classroom practice. Becoming a teacher is an ongoing developmental process that involves career-long and lifelong learning (Zwozdiak-Myers, 2018). By engaging regularly in critical reflection of their own practice, teachers will continue to grow professionally and be more effective in the field. They will be better able to support the diverse and changing needs of the children, problem-solve daily issues in the classroom and meet the demands of the profession (Mathew et al., 2017). In reflecting, teachers can be said to look inwards in order to improve their outward actions. Put in another way, it can also be said to be looking backwards in order to progress forward in teachers' learning and professional journey.

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Life's Lessons: What I Learnt from Mending Pipes to Teaching Young Children

Dr Weelai Suwanarat



With Teachers' Day today, one of their ranks writes in praise of teachers – and of the importance of finding meaning in work amid life's twists and turns.

For decades, I have been involved in early childhood education – and the paper chase of qualifications to rise up the ranks. But with Teachers' Day around the corner, I have paused to reflect on my career trajectory. And it certainly has not been a conventional one.

When I entered the workforce, I worked in plumbing and sanitation. Indeed, in my blue- and white-collar world of jobs, work has never been linear nor easy. With the ups and downs came a variety of struggles – self-doubt, emotional gyration and physical exhaustion.

Hopefully, my personal story will give some people considering a career change to the educational sector food for thought, and encouragement.

Here's how I came at it by not following the usual academic routes.

I WANTED A BLUE-COLLAR JOB

Some people find it strange when told that I had always wanted a blue-collar job, an ambition I harboured since I was young. That was why I chose to study in a technical school where I passed my O levels, then the vocational institute – now the Institute of Technical Education – as my parents

could not afford a polytechnic education.

My story was told by Straits Times deputy Life editor Wong Kim Hoh in “This childcare expert can also repair your leaking tap”, his article on March 10, 2019.

With the certification, I worked as a draughtswoman and quantity surveyor in plumbing and sanitation from 1979 to 1984. Driven not by a materialistic ambition but by the desire for meaningful work, I took the initiative in 1983 to prepare for my biggest challenge and most exhilarating moment of my life then as a woman.

I sat to be a PUB-approved licensed plumber. On passing the test, I became one of the few female-licensed plumbers in a male-dominated field in Singapore. It was a sought-after licence, even for my male counterparts.

With this achievement, coupled with my experience and qualifications, I thought I would remain employable forever.

But in life, there are no certainties. My employer went into liquidation in 1985, succumbing to the recession’s impact on the construction industry.

I found another job but quickly got retrenched again, as my new employer, too, succumbed to the recession. Within months, I lost two jobs, my confidence, and the hope of continuing my harboured ambition.

CAREER SWITCH: TEACHING

After nine months of unemployment, I knew I had to make a drastic decision; if not, I would face protracted unemployment. I decided on a career change.

Relying on my little experience teaching Sunday school, I searched for a teaching job in the Early Childhood Care and

Education (ECCE) sector and landed one in a kindergarten.

Life seems to know when to toy with you. After accepting the job, a property developer offered me a shareholding in his plumbing and sanitation subsidiary.

However, I decided to stick to my decision to try teaching. But the offer affirmed that my learning and upgrading in obtaining the plumbing licence was not a waste.

So, armed with only determination, I set sail for uncharted territory.

It was 1987 when I started this first teaching job. Instinctively, there was a growing sense of what the expectations and opportunities of the profession were.

Gradually, I discovered that my passion for learning played a pivotal role in my new career. Recognising that certification is essential, and anticipating that standards would rise in the future, I embarked on my first ECCE course (basic) in 1988.

I went on to complete the subsequent two levels – the only courses available in Singapore then.

And at the age of 32, in preparation for a diploma course in the offing, I sat the A-level examinations as a private candidate to strengthen my academic foundation.

I rose through the ranks and became a vice-principal in 1994. Just then, the Singapore Institute of Management started a Diploma in Early Childhood course; I took it up. A year later, I became principal.

After an eight-year career change, my vision furthered, and my goals and aspirations got higher – as had sector expectations.

As a principal, my scope of work widened significantly, responsibilities grew, bottom-line expectations intensified, and the operational intricacies of managing 30-plus staff and nearly 800 children and their parents daily “mutated” as well.

Despite that, my passion and vision for the profession, children and teachers grew stronger and became more meaningful. I was determined to make a difference.

As years passed, my aspirations shifted. I aspired to do curriculum development, to train, mentor and lecture.

This provided me with an avenue to change educators’ perceptions of the profession and encourage them to be advocates for children.

I wanted teachers working with children – to be the voice for the children.

I wanted society to see ECCE educators not as mere childminders, but professionals with the daunting task of moulding children’s futures.

However, I felt that I was not adequately equipped with the appropriate knowledge, skills and experience to do that, and to reach a wider group of educators. I undertook a bachelor’s degree in 1996, followed by a master’s.

After 15 years in a kindergarten, I left to join a childcare group as the principal of a relatively new centre to gain experience from a different setting.

The childcare setting gave me the opportunity to work with infants, enhancing my scope of experience and repertoire of skills. It brought an opportunity for me to take up an infant/toddler care and education course.

Never did I realise that infant care would become the sought-after programme that it is today. Because of that, I got an opportunity to lecture in an infant/toddler care and education programme.

MAKING MEANING OF WORK

Some people see my passion for pursuing learning as madness, because it puts a strain on your financial, mental, emotional and physical well-being.

My pursuits – from taking my National Trade Certificate 2 in 1983, till 2013 when I completed a doctorate – were never a paper chase obsession; however, they were all essential to my work at each stage of my career progression at the time.

They were done part-time and self-funded with my income. Indeed, there were moments when I wanted to quit – not learning, but that daunting endeavour of working and studying.

Thankfully, I did not because over the years, my pursuits ushered in numerous milestones, benefiting me professionally and personally, especially in making meaning of my work.

Finding a job that comes with meaningful work is ideal, but might not be easy to find – or might never be found.

But making meaning of what you currently do is easier. I discovered that making meaning of your work is the crux to your well-being. Inextricably, it is linked to your self-identity, self-worth and self-inspiration.

In ECCE, children learn not only basic skills, but critical emotional and social ones, too. As educators, besides teaching them, we learn with them and through them – their innocence teaches.

My time spent with them was always fruitful; they often influenced meaningful discoveries about myself – my strengths, weaknesses, character, and how setbacks and moments of anguish strengthened and increased my resilience.

My ECCE endeavour yielded a career resurgence.

It taught me to accept unexpected challenges and things beyond my control. There was never a dull moment due to the challenges and intensity of the nature of the work, and also due to the elation derived from my immense effort.

For years I also aspired to start a business with my ECCE expertise. Finally, after 34 years, in 2018, I co-started a company to provide training consultancy services and publish children’s educational products. I focus on training/talks, mentoring, advisory and development work relating to the ECCE sector, and author educational games for pre-schoolers as well.

This business brings me to another stage of my career role in my ECCE journey.

The sector landscape has evolved considerably; much has been done to uplift the profession. The recognition of the ECCE educator has also grown – with an image now as a specialised profession with a widening range of professional development courses.

To all teachers, I salute you. Happy Teachers’ Day!

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I Anticipate to See a Rainbow After a Storm

Dr Yvonne Chan Yoke Yin
National Institute of Early Childhood Development



This year marks my 25th year in the early childhood profession. I remember switching from being a secondary school teacher to embark on my new adventure in early childhood. It has been a rewarding journey and I am personally grateful to the many people who cheered me on and believed in me.

Recently, a friend asked me if there was something that I could share with others in this profession – I think practising self-care and mental well-being is helpful for one to grow and thrive in this profession, as well as in our personal life.

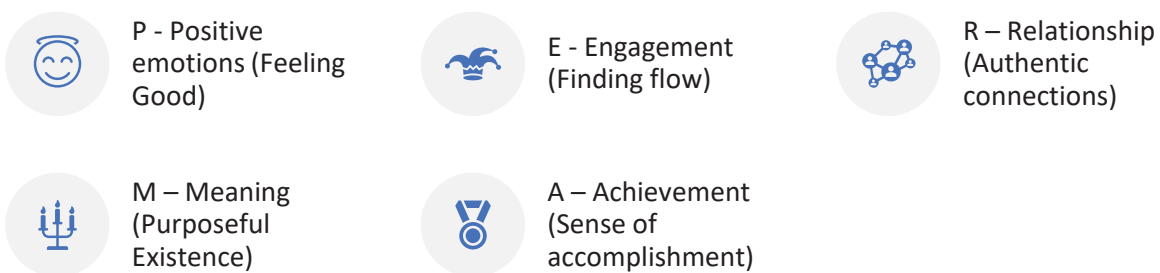
According to Bryant and Kazan (2012), personal mastery is the process of living and working purposefully towards a vision, in alignment with one's values and in a state of constant learning about oneself. This is in the reality in which one exists. In my professional journey, I learnt that it was important to be self-aware, to self-manage and self-learn.

During this period of Covid-19, I found myself struggling having to adjust to the new normal. Changing the way I have to work and doing things in a way that I was less familiar with, was not an easy feat. Having to embrace technology and learning to use them to help my students to learn was also a real challenge for me.

These challenges heightened my awareness to the need to be resilient and to find strategies that could help me self-manage and learn to cope with and manage the challenging situations in a post Covid-19 world.

Positive psychology is grounded on the belief that people want to lead meaningful and fulfilling lives, to cultivate what is best within them and others, and to enhance their work, school and life experiences. It is a science aimed to assist individuals to learn to: rise to life's challenges, steer through setbacks and adversity; engage with and relate to other people; and find fulfillment in creativity and productivity (Robinson, 2018).

Research has identified optimism as one of the key contributors to well-being. Seligman (2011) identified 5 elements that account for what makes up the "good life". The five building blocks of the PERMA theory include – Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment.



Adapted from five elements developed by Martin Seligman that account for what makes up the "good life". (Seligman, 2011).

It is interesting to note that as I reflect on my professional journey over the last 25 years and recently, these five building blocks have helped me in one way or another to stay resilient.

Here is a brief description of each of the five building blocks and how it relates to my professional journey.

Positive Emotions:

In this building block, individuals can seek to increase their positive emotions. That is by cultivating and building gratitude, interest, joy, love, hope and optimism.

Positive emotions are a prime indicator of flourishing, and they can be cultivated or learned to improve well-being (Fredrickson, 2001).

I remember taking up a hobby in gardening since last April. Taking short periods of

time away from screen time to appreciate nature and watch plants grow really helped and gave me room to rest, recharge and regulate myself to cope better with the stress and challenges. I was able to better meet the given demands and expectations from the new normal after taking short breaks doing what was pleasurable.

Focusing on things at work that make me feel good, like being recognised for the work I did or having a chance to help a colleague, were also helpful.

How can you increase your positive emotions today?

When are you happiest at work?

What emotions are you experiencing?

Engagement:

Engagement is an experience in which an individual uses their skills, strengths and attention for a challenging task.

Finding the flow in a task will help individuals derive the satisfaction from being fully absorbed in the moment, being willing to do it for its own sake, rather than for what they get out of it.

Flow, or this concept of engagement, occurs when the perfect combination of challenge and skill/strength is found (Csikszentmihalyi & LeFevre, 1989).

For example:

When preparing portfolios for the children as a teacher in the classroom for the first time, by being fully absorbed using his/her own skills and engaging in the task itself is a reward.

It was noted that being absorbed in a challenging but achievable task will provide opportunities for individuals to explore new ideas in interesting ways.

What can you be engaged in today?

What do you love most about your work?

What strengths are you using?

Relationships:

Relationships are fundamental for one's well-being. They include: joy, sense of belonging, purpose and meaning, and pride in accomplishment.

Relationships in the PERMA model refer to feeling supported, loved and valued by others. Relationships are included in the model based on the idea that humans are inherently social creatures (Seligman, 2012). Research also indicates that supportive, positive relationships and social belonging sustain well-being (Diener & Seligman, 2004).

I remember when I was a novice principal at one of the preschools in the northern region of Singapore, the teachers supported me and helped me grow professionally. Our strong relationships with one another helped us to support each other through “ups and downs” which included overcoming difficult parents, heavy workloads, licensing renewal and infectious disease outbreaks etc. It was also during these challenges that we witnessed how love, compassion, kindness, empathy, teamwork and cooperation helped us overcome these challenges.

Another very moving moment for me while working with this team was when I went for my further studies overseas. The staff who were not working on that day, including the teachers, centre cleaners and cook, sent me off with some of their family members and children at the airport. Their act of kindness stayed with me and it was a special day that I would forever remember.

Who are you grateful for at your workplace?

Who supports you most at work?

Who do you support?

Meaning

Meaning and purpose in individuals could be derived from belonging to and serving something bigger than self.

Seligman (2012) discussed meaning as belonging and/or serving something greater than ourselves. Having a purpose in life helps individuals focus on what is really important in the face of significant challenges or adversity.

After my career switch to early childhood, I found joy in working with the children. To help equip myself professionally to do my work better, I studied in night classes for almost ten years.

On one occasion while attending night class, I found another purpose for my life. I wanted to be a teacher educator so that I can encourage and support early childhood educators in the work that they do.

The pursuit to achieve the new-found goal lasted many years. However, interestingly, the purpose helped me persevere and see meaning in what I do on a daily basis.

What is the purpose for your work you do?

What is most important to you about your role?

Why do you do what you do?

Accomplishment:

Individuals pursue achievement, competence, success and mastery for its own sake.

A sense of accomplishment is a result of working toward and reaching goals, mastering an endeavour and having the self-motivation to finish what you set out to do. This contributes to well-being because individuals can look at their lives with a sense of pride (Seligman, 2012).

I remember how encouraging and honest feedback on my work as a teacher contributed to my sense of accomplishment and success.

In addition, being a teacher and receiving a card or a genuine note of appreciation from a parent or a child at the centre for what I did was enough to contribute to my sense of accomplishment.

What goal do you want to achieve?

What achievements have you made recently?

Implications from PERMA theory

Research done by Stoeber and Rennert (2008) indicated that teachers are among those professionals with the highest level of job stress. Teaching can be challenging as we cope with heavy workloads, challenging parents and also students who may present challenging behaviours.

It is thus important for teachers to be supported with strategies to manage the cognitive and emotional demands of the job (Falecki, 2019). I think it is important for individuals to consider self-care in terms of promoting their mental well-being in the teaching profession.

The PERMA theory provides a possible framework with evidence-based strategies to better understand and support their own well-being. The building blocks for us may be considered when seeking to improve our personal well-being.

Being self-aware and be able to self-manage is important. Putting on a positive mindset may be a solution as we learn during challenging times to cope with them. For me it has been a rewarding journey growing and learning in this profession, with the many opportunities that I was given.

Change and challenges are inevitable. In the pursuit for excellence, we may sometimes encounter stress. We can learn to build positive psychology or to put on a mindset that can help us anticipate to see a rainbow after the storm.

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5th Leadership Forum: Inclusion Practices in Ireland and Singapore 20 August 2021

The first Leadership Forum was held in 2011. This is the 5th Leadership Forum organised by the Association for Early Childhood Educators (Singapore) – AECES, and it was conducted virtually for about 60 educators who participated actively. The theme was Inclusion Practices in Ireland and Singapore. Professor Emer Ring, Dean of Education at Mary Immaculate College from Ireland was the keynote speaker; she shared with us about “Leading INclusion in the Early Years: The Irish Experience”.

AECES also invited panel presenters from Singapore to share on inclusive practices in their preschools:

- Ms N Kanngadevi, Assistant Director, Capability Support from Presbyterian Community Services,
- Ms Fiona McDonald, Head of Learning Support, from Chiltern House Singapore, and
- Ms Loy Wee Mee, Founder/Managing Director from Pre-school By-The-Park.

Then, on 27 August 2021, AECES featured a special virtual visit to Little Seeds Early Learning and Care, located in Limerick, Ireland. Our participants had the wonderful opportunity to see this centre up close. They saw different learning areas and aspects of the centre. Ms Leesa Flanagan, the centre manager, gave a presentation on their pedagogy and shared some of their experiences regarding inclusion. Ms Flanagan also shared some of the challenges they faced since Covid-19 and the strategies they used to overcome these challenges.

The forum was featured in Mary Immaculate College’s press release, it is reprinted here.

MIC involved in International Forum to share experience of best practice in early childhood care and education



Professor Emer Ring, Dean of Education at Mary Immaculate College (MIC) has joined an Irish contingent invited to share Ireland’s experience of creating inclusive early childhood experiences for children at a recent international meeting of the Association for Early Childhood Educators in Singapore (AECES).

Professor Ring joined Leesa Flanagan, Manager at Little Seeds Childcare in Moyross who virtually attended the 5th Leadership Forum to highlight examples of effective inclusive practices in the early childhood education sector in Ireland and to hear from international colleagues on their own experiences.

Speaking after the forum, which was held last month, Professor Ring commented: “We at MIC have developed extensive expertise in early childhood education across all of our programmes and we are delighted to be invited to share this expertise with colleagues in Singapore. In particular, it was a pleasure to work with Leesa Flanagan at Little Seeds and to continue MIC’s commitment to developing partnerships and supporting the development of early childhood education in the region. Little Seeds has developed innovative, research-based and child-centred practices designed to make a difference in the lives of children. We look forward to further building on the long-standing relationship between MIC and Little Seeds”.

Reflecting on her involvement was Little Seeds Manager, Leesa Flanagan, who said: “The Forum provided an exciting opportunity to share practice, to reflect and to learn

new practice. Seeing the value that MIC and early educators in Singapore place on inclusive education mirrors the ethos of inclusive practice at Little Seeds where we strive to ensure each unique child feels a real sense of belonging, achievement, empowerment and happiness.”

MIC leads the Leadership for INClusion in the Early Years (LINC) Consortium which also includes partners Early Childhood Ireland and Maynooth University. The programme is a Level 6 Special Purpose Award that is designed to support the inclusion of children with additional needs in the early years.

Commenting on the involvement by Professor Ring and Little Seeds was Dr Christine Chen, President of the Association for Early Childhood Educators in Singapore, who said: “We recognize that the LINC programme is world renowned and we are deeply grateful to have Professor Ring giving us the opportunity to hear from her directly. We are also grateful to Leesa Flanagan for sharing her experience of making inclusive practice come alive. Singapore has a similar population size as Ireland and we hope to visit Ireland to see its inclusive environment for preschoolers in practice”.

This article originally appeared in the MIC press release of 22 Sep 2021, “*MIC involved in International Forum to share experience of best practice in early childhood care and education*”.
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Post-conference

In addition, participants of the forum attended a complimentary workshop ‘Leading the Way for Inclusive Education in Early Childhood Settings’ by Childhood Education International and sponsored by Singapore American Embassy.

Ms Fiona McDonald, Head of Learning Support, from Chiltern House Singapore and Ms Loy Wee Mee, Founder/Managing Director from Pre-School By-The-Park were invited by Persatuan Taska Negri Sembilan (Malaysia) to be presenters at their conference on 16 October, 2021. The theme was ‘Education for Children with Special Needs’. The two speakers had a lively conversation and exchange of ideas with the Malaysian delegates.

Engaging Families in Supporting Children (EFiSC)

*“From learning strategies to an ear to listen and a heart to understand and serve.”
- a reflection by Ms Lim Yi Wei, Caroline.*



The Association for Early Childhood Educators (Singapore) – AECES conducted a new course called ‘Engaging Families in Supporting Children’ (EFiSC) in August 2021.

The 14-hour workshop took the learners through a journey from family involvement to family engagement. Learners took a self-assessment of their current practice with families and were encouraged to discover ways to engage families in their centres. They were introduced to the “design thinking” approach in engaging families and the six Family-School Partnership Standards from the National Parent and Teachers Association (PTA) – USA.

Caroline *and* Serene were from this first cohort. In their Reflections, they share their thoughts and takeaways from the course.

Reflections

Caroline Lim Yi Wei

I came in to the course with an expectation of learning strategies and ways of how to engage and support parents. However, as I went through the training, I realised that we do not really need any special strategies. All we need is an ear to listen and a heart to understand and serve.

I realise that, as humans, we have plenty of prior opinions about others and that would also affect how we perceive them as well.

When it comes to working with parents and families, I think it is very important for us to first understand the plight and situation of what the family is facing with the child, before we can even step in to do anything. In order for families to feel supported and willing to also do their part in nurturing their children, I believe they have to feel that we are FOR them, before they are willing to open their hearts to listen to what we have to share with them and eventually try out what we have to suggest.

I also learnt that parents are actually good resources for us to learn from as well. There may be things which we as teachers do not know as well as parents do. So, it is very important for us to communicate well with parents, understand things from their perspective, what they have tried and done with their children.

When we have listened empathetically to parents, and also learnt from them, I believe this is when we are better able to provide the support for parents and families, something that is custom designed for them. Support is only valid and useful when it something that caters to the needs of children and their families.

Moving forward, I will commit myself to better understand the difficulties of parents, the needs of children before I even think of any help or advice that I want to give to families.

Serene Ng Mui Kheng

I like the part on design thinking and I can use this approach to solve problems, be it staff issues or even parental issues. It is a very ideal approach, especially when we have to know what is the exact concern of the parent.

It is important that we practise active listening and have an empathetic view to understand the perspective of the parents. Sometimes, parents just need us to listen, it is not necessary for us to provide an answer. Wherever possible, we can provide new ideas for parents to consider as alternatives.

Another learning point for me is how we can engage the parents instead of just involving them. For this, I plan to send out surveys on a yearly basis. I would like to understand the potential of parents, for example have them suggest ways that they can contribute to the centre. The aim is to start a partnership between our centre and parents so as to strengthen our relationship. In having this partnership, I would be mindful of Standard 5 on Sharing Power. In my view, when parents have thoughts and expertise that are aligned with our vision, mission and values, their feedback would definitely play a useful and meaningful part of this partnership.

It's All About Teamwork!

The Journey of a Preschool: Working and Reflecting as a Team

Koh Hui Hua, Sharon Lim, Lim Yu Jie, Ng Hui Ying
Charmaine Teo
Between Two Trees

The growth and development of a centre is never a one-person endeavor. It hinges on a team of professionals who each play their role, yet together brings about the synergy that is needed to move ahead. Below you will read the reflections on the role of the class teacher, the curriculum specialist, the principal and the preschool artist of Between Two Trees Preschool (B2T) and how each team member working together, raised the preschool to its next level of development.

Ms Ng Hui Ying, Class Teacher

At the end of every school year, I recall fondly the class projects I have carried out with the children. During the entire year, I worked closely with the children and my team at B2T to explore different projects of the children's interests. This year, we explored three projects that were close to our hearts - Weaving, Earthworms and Map. The Earthworm project left me with the deepest impressions as it was a project that encouraged me to challenge myself to explore and learn while I scaffolded and facilitated the children to investigate and gain new knowledge and information. We also adopted a bin of earthworms as our class pets!

At the end of my five years at B2T, I am now more confident at carrying out a project meaningfully. I have also gained hands on experiences of what the Reggio approach is and also explored a variety of new tools and materials to conduct activities within and outside of the classrooms. For instance, working with lights to explore art and building compost bins with materials the children found at home and in school. Working at B2T has challenged me to pick up new skills that can enhance the children's learning.

It has been a wonderful and productive eight years of teaching practice. I have experienced challenges, opportunities and gained a new perspective of my job as an early childhood teacher. I am able to understand children's learning better through facilitating, observing and playing meaningfully with them. I have also learned ways to create a holistic and positive learning environment for children while including children with different learning needs. I have learnt all these while working collaboratively with my team mates. As I continue to work with the awesome B2T team, I know with great confidence that I will have many more opportunities to grow and develop my potential as an early childhood educator.

Ms Sharon Lim, Curriculum Specialist

Being the Curriculum Specialist at B2T, I feel the constant need to engage in and with children, teachers and parents' experiences. This need is driven by the B2T culture of openness and being a support to one another while standing on the same level. I have always viewed my role as being present behind the scenes completing editorial works to ensure the language is consistent in all documentations and without losing the teachers' voices. Being present is also being involved with the welcome and drop off because I am there to support families and the team, be it clarifying administrative matters or discussing developmental challenges or milestones. I have also taken an interest in discovering new community partners to work with and encouraging the team to contribute or grow professionally in areas that each individual is passionate about.

As we come to the end of 2021, my reflections are about:

- What else could be done in the projects (class and centre based) that we may have missed doing this year?
- How else could we have done it differently?
- Have we grown together as a team? Did we learn something new?
- Have we achieved something different?
- Have we met the goals we set at end-2020?
- How can we do better in the upcoming year?

With time as the ever-scarce element, I find ourselves chasing time and am comforted by the fact that we did what we could with what we had. To me, these questions have been fruitfully answered and understood when we engaged in team meetings and gather feedback from our families. Meetings were held with our founders-turned-advisors, the senior team members, the teaching team, and the auxiliary team. Yet, the daily, monthly, yearly routine of running the school is present in a large part of the limited time we have. Or perhaps the routines of a typical preschool day, month and year have to be redesigned?

B2T is in its twelfth year of being, and I am in my thirteenth year of practice as an early childhood educator. I have always known or recognised that curriculum work acts as a backend support to the teams. The curriculum specialist, coordinator or for lack of a better word – person, is someone who ensures that our form of emergent curriculum meets the learning needs of the children, steers towards the school's vision and mission, is guided by our values and seeks opportunities for everyone to grow. I work closely with the head of school to ensure that the operations (for example, staff schedule, class schedule) and administrative work (e-brochure for new parents, recorded virtual tours, emails for new families, etc) are in line with the curriculum and related in the same language. In the tenth year of B2T's operations, a curriculum team was set up and teachers who were interested in playing a part in building the curriculum (edible gardens, sustainable living, project learning, etc) were invited to be

on board. To date, we are constantly developing our curriculum which makes our work exciting, current and meaningful.

I find the work that I do makes me behave like an elastic band; pulling myself away from the front and releasing myself back when a need arises, but the elastic band always retains its position. It dawned upon me this year that I needed something different, to investigate an idea or to discover something new. I signed up for ECDA's iBAP workshop and that was when I realised what was missing in my practice – a professional sharing circle. During this workshop and, with one goal in mind, the participants shared their concerns and challenges while everyone gave suggestions and were very encouraging. All participants played managing roles in their respective preschools without having to lead a class of children. The experience ignited more questions for myself, and they were linked to a need to share and have a larger impact. These questions were:

- How can The B2T Way be useful or helpful in other preschools?
- How can we share our practices better, to make The B2T Way more effective for other preschools or exciting for educators?

I would like to continue seeing growth in what we (children, staff, families) can do to make our learning relevant, real and with heart work.

Ms Lim Yu Jie, Principal

The structure of the roles in a preschool often reminds me of a ship. Our roles are equally important, neither can set sail without the other. We support one another to ensure a smooth sailing of our vessel. My role as principal is like the mast of a ship that supports the various structures of the ship, while the curriculum coordinator's role and the artist's role are like sails providing the direction and steering the ship towards its goals. The teaching team is like the keel of the ship keeping it steady and preventing it from rolling over, likening it to being a foundation of our school. The children are the passengers of the ship, cradled safely, while on the ocean.

As principal, I put on multiple hats as I support the various team members in the preschool. I set the tone and the structure of the school culture by taking charge and making sound decisions for the direction of the school. A principal does not work alone, she is surrounded by her team of teachers and staff, and children and their families. A principal cannot do without her team.

I believe that the principal's role is to understand the strengths, weaknesses, and capabilities of the team. She understands what motivates each member of the team personally and professionally. This enables the principal and administrative team to provide opportunities that fits each team member such as training sessions and professional courses, and to provide autonomy for each staff to work on varying school projects and classroom teaching outcomes. When the staff's intrinsic needs are met

and their accomplishments are recognized, the team will be motivated to translate their energies positively into their day-to-day teaching and interaction with the children.

It is important to practise open communication and to embrace feedback from my team, and to guide my team to working towards a common goal or at times to discover their own solutions. It is important to know that the principal works on the ground and to step in when there is a need to lend a hand, this could be stepping into the classroom to help comfort crying children, to pick up a pair of gloves to mop up spillages and to assist in meal preparation in the kitchen.

A principal's job is never done! At the end of each day, we continue to reflect, to think and to dream about the school.

Ms Koh Hui Hua, School Artist

I love my role as a school artist as I think about the projects through the lens of lines, colours, textures, forms, shapes and space! I am constantly challenged to think of good materials to suggest for the art experiences for our children. I work closely with the curriculum specialist to discuss, share new ideas and encourage the teaching team to try out new ways of creating artefacts with children.

When I meet with the teaching team and hear about the project, I go off thinking about the quality of the actual subject the children and teachers are discussing and learning about; and dreaming of how it can be represented by a material that children can work with. An example would be an insect. An easily accessible way of representing an insect would be drawing it, painting it, or making a collage of it. The B2T Way encourages that and more! We often ask - how can it look in another dimension? When it is been drawn in 2D form, how can we create a 3D version of it? An insect is small and light. Which material has qualities to encapsulate that? We ended up making insects with thin wire, and admiring the different shapes that butterflies, dragonflies, ants, grasshoppers have. Similarly, for a fire station that has been built using wooden blocks, how would it look as a drawing?

These art journeys provide the space for us to try new ways and solve problems together - school artist, curriculum specialist, teachers and children. We build our working relationships through figuring out the puzzling crumbly clay, smelly paper mache starch, surprisingly bright eco-paint and sturdy cardboard luggage!

In my next stage of growth as school artist, I would like to encourage the practice and culture of understanding aesthetics, and continually create opportunities for children and teachers to discover the artists in themselves. I hope that the awakened artists can embrace the beauty around them and within them, and for them to connect with other artists too. Every child an artist, everyone an artist!

Together with the team, Ms Charmaine Teo, Co-founder, chose her role to be that of a magnifying glass - to look closer at professional collective practice, find connections between theory and practice as well as make visible what is often invisible in everyday lives in the preschool. This team at B2T has contributed much to B2T's Outstanding Centre for Teaching and Learning Award (2021) from ECDA. The award has acted as an inspiration for the team at B2T, in its twelfth year of operation, to reflect on their practice. As such, its leaders and staff have penned their thoughts as reflected in the foregoing paragraphs. Their reflections demonstrated the professional practices, perceptions and attitudes within a Singapore preschool that embraces emergent learning. This reflective group piece is meaningful because it airs the different voices of a class teacher, curriculum specialist, principal, school artist and co-founder. In their own crucial roles and functions, they express their wishes that, as team members, they will continue to collaborate to bring B2T to its next level of development.

