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Developing a pedagogy of play: Toddlers' conceptual learning in playworld

Abstract:

Empirical research shows that adults' in play with infant-toddlers often don't take an active role but simply provide children with play materials, observe from a distance, and contain the surrounding dangers. This is the case with childcare centre educators, who tend to control infant-toddlers rather than engage with them in play to support their learning. An international trend to increase children's cognitive achievement at a very early age has established a need to better understand toddler's conceptual learning and how this is supported by the joint play between toddlers and educators. This paper draws upon Vygotsky's (1966) concept of play and Fleer's (2018) conceptual playworld approach to investigate how educators and a group of toddlers can generate a conceptual playworld that supports their conceptual learning and development. We argue that the conceptual learning of children at a very young age should be promoted in our institutional practices as it builds a solid foundation for their future scientific learning and development at school. The educators' affective engagement is the key to developing a powerful collective play environment to strengthen children's conceptual thinking.

Keywords: toddlers' conceptual playworld, toddlers' educators, affective engagement,

Introduction

Research has shown that institutional early learning environments and the educators who staff them profoundly impact on critical aspects of early child development (e.g. Kultti & Samuelsson, 2014). These aspects include language development, social skills like sharing, turn-taking, and problem-solving, and even personal identity and self-assertion. According to the neuroscience evidence-base about brain development in the early years (Shonkoff & Philips, 2000), children are born ready to learn, and learning in the first years of life is critical for predicting outcomes in later life. Sikder and Fleer (2015) have argued that infant-toddlers can develop 'small science' concepts through adult-child narrative collaboration in everyday family life and in playful activities. Play and playfulness are basic features of early childhood education and permeate every aspect of a young child's life (Singer, 2013). Fleer's theoretical framework of conceptual play (2011) and conceptual playworlds (2018) - uniting imagination and cognition in play - permits educators to take a more active role in leading conceptual development in joint play by taking the children's perspective. By extending existing these theories, this paper investigates how to engage toddlers in play that will foster and enhance their conceptual learning and development.

Standard educational theory ignores many of the competencies of infant-toddlers, and this impacts on the administrative practices and policies of long day care centres (Trevarthen, 2011). Ridgway, Quinones and Li (2015) have demonstrated that a newborn's early imitation of her parents' behaviour reflects shared feelings of curiosity and emotional interactions through playful exchange. This shows that infant-toddlers are able to communicate their own emotions and perceive other people's emotions from birth (Trevarthen, 2011). Play is the vehicle

by which very young children make sense of the world around them, learn to speak and communicate their needs and emotions, and develop a sense of capability and selfhood. Previous research has shown that joint play involving children and adults is a cultural-pedagogical practice (e.g. van Oers, 2013). Adults can take on different roles in children's play and be observers, inquirers, supporters, material-providers, script-writers or play-partners (Pursi & Lipponen, 2018). When children explore the world guided by an adult, it builds their knowledge and promotes their conceptual thinking (Fleer, 2011). Long day care centres should therefore provide a rich and interactive environment to support early learning. However, evidence suggests that most early childhood educators do not actively support or promote infant-toddler conceptual thinking and development in play. Rather, their task is seen as merely organisational: shepherding infant-toddlers through a routine, ensuring that their immediate physical needs are met, and preventing harm (Singer et al., 2014). This represents both a fundamental problem and a missed opportunity, as the potential value of free play during day care goes far beyond entertainment. This paper will offer a crucial shift urgently needed in pedagogy.

Empirical studies have developed different models of organised joint play, such as co-producing play interactions (Bateman, 2015), adult improvisation (Lobman, 2006), sustained shared-thinking (Siraj-Blatchford, 2009), and collective imagining in play (Fleer, 2013) and conceptual playworlds (Fleer, 2018). However, most research to date has focused on joint play between adults and pre-schoolers (3-5 years old) or older children, and pedagogical research into toddlers' play is still limited (Hannikainen & Munter, 2018). This paper focuses on children aged 2-3 years in joint play with adults in a childcare setting. Research has shown that, while toddlers are imitating the surrounding actions, they communicate "their own

interpretation like a musician performing a piece of music" (Parker-Rees, 2007, p.11). Also, "although very young children are able to communicate, express their feelings in a purposeful way, and engage in joint play with play partners, they are not able to "maintain the connectedness or the coherence of the interaction in the same way as adults and older children do" (Pursi & Lipponean, 2018, p.23). Therefore, research urgently needs to focus on how meaningful joint play can be developed between adults and infant-toddlers that considers this limitation, and in what roles adults can join very young children's play. Changes in policy development indicate an increasing focus on delivering greater cognitive outcomes in play-based programs as increased attention is drawn to young children's literacy and numeracy competence (Fleer, 2011). This paper explores joint play between adults and toddlers that supports young children's conceptual development.

Singer et al. (2014) explored the relationship between teacher behaviour and the level of play engagement in 2-3-year-old children in Dutch childcare centres and concluded that the teachers' pedagogical model was based on individualised care and control and could not, therefore, support children in quality play-engagement or enhance their conceptual development. Researchers concluded that highly-engaged play offers 'deep level learning' about a complex world that can then be transferred to real life situations; low engagement play does not (Laevers et al., 2011, p.23). To produce environments and educator-capacity conducive to high engagement, it is necessary to explicate pedagogical strategies that educators can apply to support toddlers in play and further their deep level learning and conceptual development. This paper begins with an overview of empirical studies on how educators' joint play in early learning centres supports children's learning. This is followed by a theoretical discussion of Vygotsky's (1966) play and Fleer's (2017, 2018) conceptual

playworlds, and details of our research design. After arguing our findings, the paper concludes with a theoretical and pedagogical discussion and its implications for developing pedagogies of play.

Theoretical Framework

This paper draws upon Vygotsky's cultural-historical concept of play (1966) and Fleer's (2018) conceptual playworld and takes a cultural-historical view of young children's play interactions with educators and peers. It investigates approaches to play, and aims to identify specialised pedagogical approaches found in educator and infant-toddler joint play that supports infant-toddler's conceptual development in areas such as science.

According to Vygotsky (1966), play is the creation of an imaginary situation by the child. In play, children develop by giving new meaning to objects and moving in and out of imagination. Within this process, children create imaginary situations in which they imitate the roles of people they see in their everyday life. This provides them with opportunities to play with roles to understand social rules, supporting their engagement with academic concepts when they start school (Fleer, 2011). Through this imaginative process, children make sense of – and interpret – everyday concepts such as cold and hot, hard and soft etc. and build conceptual thinking. Fleer (2011) has named this process 'conceptual play'. The pedagogy for realising conceptual play explains the relationship between play and learning, with imagination acting as the bridge. Play-based programs provide infant-toddlers with opportunities to visit and revisit their daily experiences, and, under the guidance of teachers, build relational links, conceptual narratives, and theoretical knowledge (Fleer, 2011).

Fleer (2017; 2018) has developed the theory of conceptual play through the implementation of the playworlds approach with pre-schoolers and their educators in early childhood settings. She discovered a unique relationship between imagination in play and the learning of scientific concepts in the playworld. As Fleer (2018) explains, "the process of transforming imaginary situations of the playworld into a collective scientific narrative required building discourses of wondering, creating imaginary scientific situations, and introducing cultural devices that mirror science experience" (p. 4). This means that children collectively explore scientific concepts through dramatising the narrative and creating imaginary situations. Fleer's (2017) model for teaching science in play-based settings is shown below.

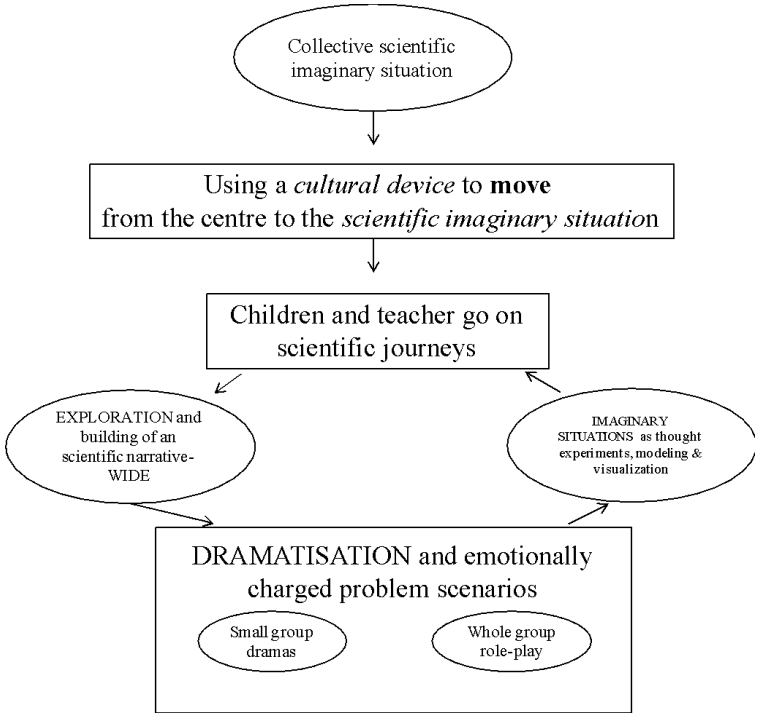

Figure 1: Scientific playworld model of teaching science in play-based settings (Fleer, 2017).

The model explains the five key pedagogical characteristics of scientific playworlds (Fleer, 2017):

1. A **story** with a structure that allows the children to collectively go on adventures.

2. A **cultural device** is needed as a psychological tool (such as a sign, a word, or a curtain) to support children's smooth transition from the normal preschool classroom to the playworld environment where children can experience the scientific concept.

3. Adults and children **being inside the imaginary play**, taking a role to start their adventure journey.

4. Teachers **setting up the scientific problem in play** by following the children's inquiries and building up the narratives in which the scientific inquiries are embedded.

5. **Dramatise concepts** to create emotionally charged dramatic moments and tension in supporting the focus on engagement with each other as children and adults seek to solve the scientific problem in order to extend their play.

In the playworld, children not only dramatise stories through their imagination but also consider relevant scientific concepts. Their exploration of these concepts supports their play development, and their enriched play situation encourages complex scientific inquiries. Children's conceptual learning in play can be promoted as the dialectical relationship between play and exploration. Fleer's (2017; 2018) research focusses on preschool children, and helps teachers to develop a range of complex playworld pedagogies to support the children's conceptual learning. However, her work has not told us what the playworld pedagogy looks like when teachers work with infant-toddlers. This paper will provide a case example that demonstrates how to develop a conceptual playworld with toddlers in childcare centres to support their conceptual thinking, and deep learning.

The educational experiment of a toddlers' playworld

The project uses an educational experiment, a new method of education and research that "represent(s) a form of action or intervention research where everyday situations are systematically intervened, combining an educational perspective with a research perspective" (Lindqvist, 1995, p. 67). The researcher and six educators together developed methods that accorded with the conceptual playworld as an educational intervention. This approach embeds a 'holistic approach' (Hedegaard, 2008), which states that the process of imagination in play is holistic and dynamic, with children's everyday practices and social interactions with adults and peers at home, at school and in the community, and collective acts informing their imaginative thinking. In interpreting infant-toddler play with adults and peers, the wholeness approach takes account of both players' perspectives (evident in their overall engagement, body gestures, verbal/non-verbal language, interests, choices, and curiosity), as well as the perspectives of the educators' pedagogy and demands. The wholeness approach improves our understanding of infant-toddler conceptual play and leads to more effective play engagement strategies (e.g. playworlds pedagogy).

Participants

Twenty-nine children under 3, and six educators from two classrooms at a long day care centre (three with qualifications at diploma level, and three with Certificate III qualifications) were involved in this project. This paper only focuses on one group of 2-3 year olds with 12 children and three educators (Deb, Tom, and Mish).

Data generation

The research project includes four phases of data collection.

Phase 1: Baseline data-gathering

First visual data collection of educators' practices: the educators' interactions with the toddlers were video-recorded over four visits (once a week across four weeks) in order to show infant-toddler and educator lived experiences, facial expressions, emotions, tiny visible actions, the distance between teachers and infant-toddlers, and transition moments in play. Two cameras were used, one focussing on the educators' interactions with infant-toddlers, the other capturing the whole class' activities and interactions.

Phase 2: Collective workshops and focus group discussion

Collective workshops: a video-recorded 5-hour workshop brought together educators in each class to discuss how the quality of pedagogical play and interactions could be improved. Group discussions led to new thinking, with educators acting as co-researcher in the educational experiment, and the visual data collected at Phase 1 used as prompts to introduce play concepts. The workshop introduced the concepts of Vygotsky's play (1966) and conceptual playworld (Fleer, 2011; 2017) to the educators. The workshop focused on the adults' pedagogical practices with the infant-toddlers and how adults create play environments that foster the conceptual development. The data collected during Phase 1 provided a focus for critical reflection and workshop discussions.

Phase 3: Data gathering of conceptual playworld implementation

This comprised the second round of visual data collection, the video recording of the implementation of playworld at each group over five weeks (once a week) following the workshops to examine any changes and challenges in the implementation of the playworld, and how these impact children's conceptual learning and play engagement. Also, educators and researchers work collaboratively to plan and implement the conceptual playworld through the educational experiment.

Phase 4: Data gathering post implementation

Reflective interview: educators were interviewed for one hour each to determine their perspectives on the effectiveness of the implemented playworld approach. This process was filmed.

Table 1. Summary of video data captured by researchers and participating educators

Context	**Research activities**	**Hours of data**
Childcar e centres	Video observation 2 cameras x 2 rooms x 9 visits x 2 hours	72 hours
	One 1-hour interview with each of four educators 1 interview x 4 educators x 1 hour	4 hours
	One 1-day workshop with 2 educators (room leaders)	5 hours
Total		81 hours

Data analysis

A dialectical-interactive and wholeness approach (Hedegaard 2008; Li, 2014) was used to analyse the data collected step by step using the Four Spirals analytical framework, which aims to holistically synthesise the different perspectives of infant-toddler play. ***First spiral****:* this is a common-sense interpretation to generate the *wholeness* interpretation from different perspectives. ***Second spiral****:* this comprises a situated practice interpretation to examine particular events identified from the common-sense interpretation relevant to key concepts of imagination in play, and educators and infant-toddlers' pedagogical positioning in play. Building on the common-sense interpretation, we interpret the conceptual playworld. ***Third spiral****:* this takes the form of a thematic interpretation to examine each childcare class'

infant-toddler play actions and each educator's pedagogical role. It presents direct links to the research objectives as a systematic analysis of each educator's pedagogical practice in the conceptual playworld. ***Fourth spiral:*** this is a synthesis analysis of infant-toddler and educator play across data from all childcare classes. This process supports the researcher in exploring the communication and interplay between infant-toddlers and educators within their conceptual playworld settings on an increasingly sophisticated level (Li, 2014).

Discussion of toddlers' conceptual learning in playworld

The workshop introduced Fleer's conceptual playworld to the teachers, which ensures the teachers to have a good understanding of the importance of conceptual learning in play with toddlers. The work between teachers and researchers led to the development of an educational experiment (playworld) based on a caterpillar's lifecyle at the focus class in this paper. This playworld was founded on an occasion where one child found a caterpillar in the backyard and, guided by the teacher, the whole group started a conversation about the caterpillar's life. In response to the children's interest in the caterpillar's world, the teacher then chose the story book *The Very Hungry Caterpillar* to initiate the caterpillar playworld to explore the concept of 'growth' as part of their daily practices. In the following sections, a couple of vignettes show the process of the toddlers' conceptual learning in playworld.

Life-cycle of a butterfly - playing a part in shared knowledge

To help the children to understand the lifecycle of a butterfly, teacher Deb set up a dramatisation of the transition from caterpillar to butterfly. In order to do this, Deb role-modelled how to become a caterpillar and invited the children to join her. She got down on her hands and knees and joined her hands together to make a caterpillar shape, wriggling them to demonstrate. Some of the children imitated this and lay on the floor

like caterpillars. Teacher Deb then sang “Flitter, flutter … creepy, crawly caterpillar, I will choose my friend.” She touched toddler Emily on the shoulder and made a wave movement with her arms, directing her to go to the bathroom to wash her hands for lunch. Emily crawled off on her hands and knees (see Figure 2).

Figure 2: Emily crawling to the bathroom as a caterpillar

Some of the children watched Emily as she crawled away from the group. Then a child on the mat yelled out “Again!" When Emily was halfway to the bathroom, teacher Deb once again sang “Creepy, crawly caterpillar, I will choose my friend … Jody”, and Jody started to crawl towards the bathroom. Teacher Deb commented “Good girl, Jody, look how nicely caterpillar Jody is crawling.” Eventually, five children were being caterpillars on the floor while one child sat watching. Soon, Jody came out of the bathroom flapping her arms like butterfly wings and sat down at the lunch table (see Figure 3 and Figure 4). Afterwards, teacher Deb at the interview remarked that the hand-washing set up a smooth transition for the caterpillar children to become butterflies before sitting at the table for lunch.

Figure 3: Jody crawling to the bathroom as a caterpillar

Figure 4: Jody becoming a butterfly flying to the lunch table

Applied in this way, the caterpillar playworld can be a pedagogical tool to facilitate transition processes. Rutanen's (2017) research on everyday transitions within a toddler group care setting elucidates that "From the children's perspectives, the small-scale, moment-to-moment transitions present intensive learning opportunities" (p.61). In our experiment, all children were excited to be caterpillars and wash their hands in order to become butterflies and fly to the lunch table. The lunch routine and space became a conceptual playworld where children and teacher collectively dramatised the concept of growth and the butterflies' lifecycle. During this process, the transition, the concept and playing came alive and elucidated genuine emotions and experiences for the toddlers,

while the teacher shared the toddlers' understanding of the concepts of caterpillar and butterfly. The collective play setting thus became very meaningful for both children and adults as they developed their caterpillar playworld. According to teacher Deb, "the importance of really being in their world instead of having an adult mindset, and … being engaged with them … really helped to understand the children's interest." This highlighted the importance of becoming a play-partner to better understand the children's perspectives in play. In this shared imaginative space, the toddlers enjoyed the simple narrative of Deb's song about the caterpillar and were motivated by curiosity and pleasure, making the collective playworld meaningful for their conceptual learning.

Dramatisation of the concept of tree growth - a conceptual problem emerges

Episode 1: Discussing and watching the video of planting a tree

After experiencing caterpillar playworld through a series of activities, including planting seeds in a container to extend the children's understanding of the concept of growth, teacher Deb showed a group of toddlers a video of a tree-planting. While watching the video, Deb guides the children's conversation about the tree's growth. Deb asked "What is she (a little girl in the video) doing?"

A child, Emily, said "planting."

Deb repeats "What's happened to the little plant?"

Emily responded "Growing." All children watch closely.

Deb confirmed "It's growing."

Another child, Yani, using her body to gesture growth, said "it is going to be a giant," while watching the tree grow. Deb agreed with Yani and her physical explanation: "Yes. It is going to be a giant"

…

Figure 5: Yani's body movement indicating growth

Deb asked "There were two things that the plant needed. She (*the woman in the video*) went to go get a bottle of something from inside the house: what did she get?"

Children: "Water."

Deb: "Water – and what else?"

Yani: "Oil, oil, oil…"

Deb: "Oil? Do we put oil on our land?"

Mish wonders "Soil?"

Yani responded "Soil!" Other children also said "soil… soil…soil"

…

Emily noted "It did not grow faster."

Deb responded while using her body: "Yes. It takes more time to grow."

After watching once, one child, Yani, asked to watch the video again, and the children watched it again together. They began to understand that, to grow, a tree needs *water* and *sun*. The video opened up the children's curiosity about the seed and the tree, and the discussion about how the tree grows generated excitement. Observing a tree is part of the toddlers' everyday experiences and a concept relevant to their community. In this vignette, the toddlers' playworld enhanced the children's conceptual thinking and enriched their everyday experiences.

The discussion with the toddlers was very rich, and the children were able to use their interpretation to explain what happened to the plant. For instance, Yani continued using her body to gesture the process of becoming a giant tree five times (see Figure 5). An interesting moment was Yani's understanding of "oil" in planting the tree. Deb and Mish queried her wondering about oil and elicited that what she really meant was "soil". This emphasised that capturing children's interests and wonder aims to support children's understanding of the concept of growth. Emily's response "Growing" indicates her understanding of growth thanks to the previous growth-related activities in the caterpillar playworld. Vygotsky (1978) argued that "Development creates the potential, while instruction realises it … instruction is maximally productive only when it occurs at a certain point in the zone of proximal development" (p.195). In this instance, when Emily observed that the seed doesn't grow fast, Deb recognised the potential to build the toddlers' understanding of the concept of growth and therefore created the collective playworld activity setting to extend this burgeoning concept.

Transiting to the collective playworld

Hakkarainen (2010) explains that "In all playworlds, some kind of psychological 'tool' was used in the transition from classroom to the imaginary playworld" (p. 79). The following episode shows the importance of the pedagogical role of educators in transiting to the collective playworld. After watching the tree-planting video, Deb said to the group "I wonder if you can do something … can you pretend to be a little tree?" As she said this, she curved herself into a ball pretending to be a little seed (see Figure 6) and then stretched her hands in the air, pretending to be a tree (Figure 6).

Figure 5: Deb becoming a little seed

Figure 6: Deb becoming a big tree

Figure 7: Children imitating the growing tree

After Deb's demonstration, the children watched with excitement and were eager to imitate her actions (see figure 7). Deb: "And then I want you to show me how big you are going to grow to be a big tree. Are you ready? Just like the one you saw (*pointing to the laptop*)." Deb moved from her knees to her feet, stretching her arms up like a tree. The children began to interpret the growth of the tree – most of them stood up, reaching their arms up in the air, imitating Deb. Deb made a surprised face, saying: "WOW!"

This episode highlights the importance of the educator's modelling of imaginative characters to develop a playworld by taking children's perspectives. As explained earlier, Yani kept using her body to represent how she understood growth, and Deb confirmed her interpretation. Deb's simple oral communication and primitive gestures encouraged the children to transit into the tree playworld. In Fleer's (2017) research with pre-schoolers, cultural devices such as a fabric tunnel or an inflated plastic bubble are used to achieve the transition from classroom to the playworld. In our case, Deb modelling the process of tree growth established the toddlers' wondering and excitement about entering the playworld. Deb's playfulness stimulated the toddlers' active engagement to be a seed and then a tree.

Entering the playworld: the growing seed

This time Deb asked the toddlers to pretend to be little seeds hiding in the soil. She suggested that the other two teachers in the room join in and for teacher Tom to be the sun and teacher Mish to be water. As such, the playworld was developed collectively. Mish began to pretend to pour water on the 'seeds' using a jug, and as she did this, she named the children whom she watered. At the same time, Tom pretended to be the sun and held his hands up in the air, wiggling his fingers, saying "Sunlight …. more sunlight everyone." After the water and sunlight had been dispensed, Deb encouraged the children to start growing, saying: "Ohhh, you have got some sunlight on you Megan, that means you get to start growing". Mish continued watering the 'seeds': "Have some water…. sprinkle, sprinkle, sprinkle." Deb encouraged more children to grow, saying "More sunlight. Oh, we are growing now!" Deb started to stretch up into a tall tree and the children imitated her. She stopped half way up and asked for more sun and water, saying, "Some more water and some more sun?" Deb gestured to Mish and Tom to give

the children more of both. Mish said “Ah, yes, of course, because bigger trees need more water.”

Figure 8: The growing tree

Deb stretched up into a standing position and the children imitated her. Deb said: “Oh, my goodness, we are tall trees!”

Figure 9: We are tall trees

This example showed the collective nature of the imaginative experience as the three educators supported the children to dramatise how a tree grows and thereby more deeply engaged their scientific thinking. As Deb noted Yani’s body language to explain the process of growth (see figure 5), she suggested that the toddlers imagine themselves as growing trees and assisted them by ‘being’ the water and the sunlight. Lindqvist (1995) noted from her research that “play is based on actions and dialogue and does not often include a plot. For this reason, the pedagogue needs to inspire the child to play in order to develop the dramatic nature of play” (p.35). Children and educators portray the objects of *seed, tree, sunlight,* and *water* through their imagination. The whole process

inspires children and educators to engage in joint play and shared experiences and deepens the children's understanding of the concept of growth. A toddler's understanding of its surrounding world is primarily through embodying it. The affective engagement of both toddlers and educators in representing a concept (ie. growth) or objects (ie. trees, water, and sunlight) indicates their collective embodiment, togetherness, and conceptual thinking.

Emily's dramatised conceptual problem

As the children grew up to be big trees together, Mish noticed that Emily was still a seed (See figure 10), and asked: "How come Emily is still a seed? Are you needing some water, Emily? Do you need some water to grow?" (Mish then pretended to sprinkle water on Emily).

Figure 10: Emily as a seed that still does not grow

Deb suggested that Emily look up so she can see that she is being watered. Emily continued to stay in her ball and did not look up. Deb stood in front of the children as a tall tree and said "Maybe she is a sad tree … maybe it will take a little longer for her to grow?" Tom then concurred "Some seeds don't grow!" As he said this, Emily jumped to her feet. Deb said "Oh, she finally grew… maybe she just needed a little bit more time to grow." We can see that Emily used her body movement to dramatise and elaborate a

conceptual problem related to the seed's growth. As a little seed, she did not want to grow fast which also echoes her previous wondering about the growth of the tree. This tells us that toddlers feel free to express their feelings and understanding of concepts in the joint playworld environment. Emily's dramatised problem leads the educators and children to start thinking what the reason could be. One child shows her empathy, saying "Oh, no!" Emily's decision not to grow fast shows her own interpretation of the process of growth. As commented by Deb "It's not just us being the teachers and them being the children … it's more like a partnership working towards figuring it out together instead."

The playworld allows toddlers to consciously use their imagination to change the optical field (body movement) to a sense field (seed or tree) (Kravtsov & Kravtsova, 2010; Fleer, 2018). Kravtsov and Kravtsova (2010) have elaborated on Vygotsky's context of play and her categorisation of children's play development. At an early age, infant-toddlers engage with 'director's play' (the director being someone who 'directs' the action)' and 'image play'. Director's play "represents the imagined situation where the child takes a real position (by looking at the objects, touching them, etc)" (p.38). When the child has a strong attachment to the role they imagine, they engage in image play. This "allows the child to establish a role of identification ... the image should be thoroughly familiar to the child" (p.39). In our case, toddlers establish a strong connection with the tree and seed through watching the video and Deb's modelling action. With the support of the educators, they collectively project the image of a seed growing to be a tree. Emily's dramatised conceptual problem shows her in image play, when she engages with the role of being a seed. Her role as a tiny seed is not only related to her own movements, but also to other play partners, such as the characters of sunlight, water, and tree. The development of image play has been achieved and a

simple plot has been established. This shows that toddlers can think and create their own ideas related to others' imaginative acts in the collective playworld when their conceptual thinking has been enhanced.

Conclusion

Vygotsky (1978) argued that "The development of everyday concepts must reach a certain level for the child to learn scientific concepts and gain conscious awareness of them. The child must reach a threshold in the development of spontaneous concepts … beyond which conscious awareness becomes possible (p. 219)." The conceptual playworld activity settings established by educators with toddlers create the potential to enhance the development of everyday concepts such as growth. The focus child, Emily, is able to dramatise a conceptual problem, which shows her understanding of what's required to grow the seed. The seed and caterpillar playworlds as instructive approaches support young children's "spontaneous, situationally-meaningful and concrete applications" in their everyday and empirical experience (Vygotsky, 1978, p. 220). This also serves as a developmental path for children's everyday concepts, facilitating a clearer grasp of scientific concepts when they reach school age. Therefore, conceptual learning should be promoted in our institutional practices at a very young age as it builds a solid foundation for children's future scientific learning and development at school.

Pedagogically, as Singer's (2017) research has indicated, when educators take the initiative to play with toddlers, they need to acknowledge that children can be actively involved. Her research identified the difficulties with simultaneously taking the lead in group settings and supporting children's individual initiatives. This paper addressed this issue by demonstrating how educators can lead or guide the development of a collective conceptual playworld in order to encourage conceptual learning by

toddlers. Supported by their educators, a group of toddlers can be fully engaged with the concept of growth through imitation. As argued by Vygotsky (1987), “A central feature for the psychological study of instruction is the analysis of the child's potential to raise himself to a higher intellectual level of development through collaboration, to move from what he has to what he does not have through imitation. This is the significance of instruction for development” (p. 210). This tells us that the role of educator is very important in developing children’s collective play at very early age. Educators can devise a conceptual meaning that young children are not able to on their own, and yet the children are able to progress that conceptual meaning by imitation. In the seed conceptual playworld, toddlers are able to imitate Deb’s gesture and body movement to imagine how the seed grows. The imagined actions promote the children’s conceptual learning as they internally form their own understanding of the concept of growth. This explains Emily’s dramatisation of the problem *the little seed grows slowly*. She has invented cultural meaning for a seed and imitated it for cultural use to communicate with other peers and educators. This process was recognised by Zinchenko (2007): “Action, word, and image constantly grow into each other and interweave and enrich each other, creating the fringes of forms” (p. 238). During this process, educators are able to witness what happens as the children imagine particular concepts. Also, in the example of the caterpillar playworld that the children were engaged in during the lunch transition time, toddlers understood the time and process of growing the caterpillar into the butterfly. In addition to the toddlers’ emotional-affective engagement, the collective play provided them with a transformation of their own understanding of the world.

In addition to this evolving understanding through a co-created playworld, we also found that fully engaging in an imitative exchange can drive the toddlers’ reciprocal engagement in collective play. As toddlers engage in imitative exchange, they

notice how the educators' affective engagement tunes in to the children's embodied movement, gestures, and vocalisation in play. In the transition from caterpillar to butterfly, the toddlers illustrate their affective intention through imitating the educators' actions and following the rhythms in the collective playworld. Thus, the concept of growth has been processed and understood. Through collectively imaging the growth of a tree or seed, the toddlers' understanding of the concept of the growing process has been enhanced. The playworld approach also promotes the toddlers' play development and stimulates play engagement by inspiring initiative, intention, and perspective in their lived playworld. As Hannikainen and Munter (2018) aptly put it, "Toddlers, with their whole bodies, senses, languages, emotions, and spontaneous intentions, can actively take a part in everything in their surroundings that excites their curiosity" (p. 493). Toddlers' affective engagement also encourages the educators to see new possibilities for themselves in the play (Parker-Rees, 2017), as shown in this study. The educators' instruction is very important – instruction based on imitation in the collective playworld can move forward children's conceptual understanding.

Our final conclusion is that the pedagogy for developing a conceptual playworld with toddlers is the educators' affective engagement. Affective engagement requires the educators to actively engage in toddlers' play and communicate with toddlers both verbally (by explaining the process of play and growth) and non-verbally (by tuning in to the children's play through modelling play actions). Deb, Tom and Mish's own playfulness as role-players, and their collective pedagogy, inspires the toddlers' wondering and captures their attention. This demonstrates that educators need to emotionally engage in toddlers' play to elicit powerful, conceptual, reciprocal imitation. As Li, Quinones and Ridgway (2016) argued, "collectively-shared educational settings form the building blocks of collective understanding in play" (p. 70). Generative

relationships among toddlers and educators are created when the collective knowledge of growth is developed. During this process, educators-in-role create the conditions (the dramatisation and the growth environment) by challenging the toddlers' zone of proximal development. Deb actively plays with children in the growth playworld, consciously introducing new ideas and acting these out affectively, which stimulates the toddlers' imitation of the concept of growth.

This paper has shown that the implementation of a toddlers' conceptual playworld supports young children's conceptual learning at a very early age. It has demonstrated by example that the key to developing powerful collective play environments to strengthen children's conceptual thinking is the educators' affective engagement in this important process. This also confirms that the conceptual playworld requires that educators' need to develop their own playfulness and actively play with toddlers, not only observe and guide their play as outsiders, but be in a role in play with toddlers. Educators are then able to better understand children's perspective and actively support children's conceptual thinking to promote children's conceptual learning and development.

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