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Purposeful Play during Learning Center Time: From Curriculum to Practice

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Abstract

This article explores the correspondence between the vision of play articulated in Singapore's national kindergarten curriculum framework and the play-related pedagogies enacted by teachers on the ground, particularly during Learning Center Time (LCT). Influenced by neo-liberal ways of thinking, the curriculum states that *purposeful play* is a medium to achieve intended learning outcomes. The study is part of a longitudinal project where 108 Kindergarten 1 classrooms were videotaped during a full "typical day" (3-4 hours). While learning centers were set up in all classrooms, only 36 LCT episodes were identified. Certain learning center types (literacy, arts) were more common than others (numeracy, science), and time spent by teachers in the different centers varied widely. Children were allowed limited freedom of choice while playing in learning centers, and some were even required to complete assignments. While teachers tended to adopt facilitative roles, quality of instructional support provided to children was low. We conclude that pedagogical practices during LCT in the observed classrooms do not adequately reflect the curriculum's vision of purposeful play. This theory/practice gap might be due to curriculum expectations, teacher-related factors (beliefs, lack of preparation), and parental pressures. Implications, limitations, and lines for future research are discussed.

Keywords

Curriculum, pedagogy, purposeful play, learning center time, preschool education, classroom observation, teacher-child interaction

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Purposeful Play During Learning Center Time

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Abstract

This article explores the correspondence between the vision of play articulated in Singapore's national kindergarten curriculum framework and the play-related pedagogies enacted by teachers on the ground, particularly during Learning Center Time (LCT). Influenced by neo-liberal ways of thinking, the curriculum states that *purposeful play* is a medium to achieve intended learning outcomes. The study is part of a longitudinal project where 108 Kindergarten 1 classrooms were videotaped during a full "typical day" (3-4 hours). While learning centers were set up in all classrooms, only 36 LCT episodes were identified. Certain learning center types (literacy, arts) were more common than others (numeracy, science), and time spent by teachers in the different centers varied widely. Children were allowed limited freedom of choice while playing in learning centers, and some were even required to complete assignments. While teachers tended to adopt facilitative roles, quality of instructional support provided to children was low. We conclude that pedagogical practices during LCT in the observed classrooms do not adequately reflect the curriculum's vision of purposeful play. This theory/practice gap might be due to curriculum expectations, teacher-related factors (beliefs, lack of preparation), and parental pressures. Implications, limitations, and lines for future research are discussed.

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Introduction

There is limited observational research focusing on what Learning Center Time (LCT) looks like in preschool education settings, particularly in Asia, where the emphasis on play within formal education settings has been traditionally minor. In Singapore, where this study was conducted, the national curriculum framework argues that LCT is the ideal setting for children to engage in 'purposeful play', a perspective on play that lies midway between *free* and *structured* play (Pyle & Danniels, 2017). To the best of our knowledge, there is no published research focusing on what purposeful play looks in Singapore preschool education. While we acknowledge that children's purposeful play might occur in many contexts and times of the day in center-based educational programs, both indoors and outdoors, this paper exclusively analyzes indoor play practices within the frame of LCT. The overall purpose is to explore how LCT unfolds in Kindergarten 1 classrooms (children aged 4-5 years). Drawing on videos of practice from 36 Singaporean classrooms, we critically examine the relationships between the vision of play articulated in 'Nurturing Early Leaners' (MOE, 2013), a neo-liberal kindergarten curriculum framework, and the play-related pedagogies enacted by preschool teachers on the ground.

Play as a Multifaceted Construct: Multiple Perspectives along a Continuum

In everyday language, the term *play* is used to refer to voluntary activities performed for recreational pleasure, self-amusement, and enjoyment. Play activities are spontaneous, intrinsically motivated, and result in behavioral, social, and/or psychomotor rewards (Van Oers, 2013). Play is observable in many higher-functioning species, most notably mammals. In humans, play may adopt a variety of

forms including role play, improvisations, games, sports, interactive play, performance, mimicry, and extreme or dangerous sports (Smith, 2010).

Agreeing on a formal definition of play, however, has been a struggle in disciplines such as Ethology, Psychology, and Education. Multiple definitions have been proposed in past decades (for a review, see Burghardt, 2011). Regardless of the differing theoretical lenses, researchers have concurred in conceptualizing play as a multifaceted construct. For example, Smith (2010) defined play as behaviors that reveal flexibility, positive affect, non-literality, intrinsic motivation, and preference of performance over outcomes. Eberle (2014) defined it as a voluntary process prompted by emotional experiences and pleasure, that is, as a function of the disposition of the individual. Burghardt (2011) proposed a criterion-based definition, identifying a list of basic criteria for the recognition of play. This list included, for example, the experience of pleasure, the absence of extrinsic goals, the spontaneous, rewarding and/or voluntary character of play behaviors, as well as their repetitive, fragmented, and exaggerated nature.

While play naturally occurs at any life stage, it is particularly prevalent during infancy and childhood, representing a crucial aspect of children's physical, intellectual and social development (Smith, 2010). Many prominent researchers have explored the role of play in early development and learning. Piaget (1962) constructivist theory identified play as a vital mechanism for children to integrate new knowledge into their prior schemas. Vygotsky (1967) considered play to be the basic medium and leading source that fosters child development and learning. From an applied perspective, authors like Montessori (1917) proposed kindergarten models heavily based on the notions of playful learning and learning through play. Other

influential scholars such as Friedrich Fröbel, Melanie Klein, Sigmund Freud, and Carl Jung extensively wrote about the importance of play.

There is a large body of research focusing on the impact of play on child development and learning, as well as how teachers may foster (or hinder) children's play within educational settings, particularly in preschools (for recent reviews, see Lai, Ang, Por, Lip, & Liew, 2018; Pyle, & Danniels, 2017). Nowadays, play-based learning is the dominant pedagogy advocated in early years' curricula around the world (OECD, 2017). However, early childhood curriculum frameworks present multiple visions of and approaches to play, which may be interpreted along a continuum (Nicolopoulou, 2010). At one end, certain curricula advocate a type of play that is child-led, spontaneous, and voluntary, characterized by children's complete freedom of choice regarding activities, materials, and resources, and typically involving no or minimal adult participation (Wood, 2014). In this type of play, often referred to as *free* and *unstructured* play, children direct their action based on their own interests and motivations, with no previously established learning/pedagogical goals in mind. The main priority is for the child to enjoy and have fun interacting with others and with the environment (Johnson, Christie, & Wardle, 2005). At the opposite end of the continuum, other curricula advocate play that is teacher-led, structured, and objective-based. There are clear guidelines and/or rules set up by adults, children have limited freedom of choice, and despite the engaging nature of activities, the central goal is to acquire new knowledge and skills (Johnson et al., 2005).

Proponents of free play regard play as the child's spontaneous and fantasy-led activity, arguing that structured play is overly rigid and results in limited engagement from children. In their view, adults should simply guard children's play, enrich the

environment with materials and resources, and protect children against dangers (Nicolopoulou, 2010). In contrast, proponents of structured play argue that free play is not an optimal way of helping children acquire new knowledge and skills. In their view, to maximize their learning, adults should carefully design the environment and engage children in guided playful activities (Miller & Almon, 2009). Along this continuum, there is a variety of intermediate perspectives—such as the vision of 'purposeful play', which is described later in the paper.

A Theoretical Framework on Play

The theoretical framework on play endorsed in this study is the one recently proposed by Van Oers (2013). Drawing on the principles of cultural-historical activity theory, this author conceptualizes play as a *format* of cultural activity. More precisely, he defines play as "any activity that is accomplished by highly involved actors, who follow some rules (either implicitly or explicitly), and who have some freedom with regard to the interpretation of the rules, and to the choice of other constituents of an activity (like tools, goals, etc.)" (Van Oers, 2013; p. 191).

According to this framework, any activity –including goal-directed, academically-related tasks designed by teachers with pedagogical goals in mind– can be potentially formatted as a play activity. However, to be truly play and not *work* (i.e., assignments, work sheets), children need to: (1) be engaged voluntary in the activity, with high level of involvement; (2) adhere to rules established by themselves and/or in discussion with others; and (3) enjoy some freedom in the way they undertake the activity (e.g., the materials/resources they want to use, how to organize their time, or how the desired final product should look). In contrast, when activities involve strict execution of tasks under rigid external rules, with no room for creativity or freedom to decide how to interpret the rules or carry out the tasks, then such

activities should be considered work and not play, even if children enjoy performing them—something that, according to Van Oers (2013), happens very often. In short, the difference between play and work lies in the degree of children's internal agency and freedom.

Furthermore, Van Oers's (2013) theory does not prescribe whether children's play should be free or guided by teachers. It is understood that teacher participation is a cultural decision dependent on curricular and pedagogical aims. The focus is therefore on why, when, and how teachers should participate in certain contexts or situations (Pramling Samuelsson & Carlsson, 2008). Nonetheless, the theory proposes that teachers should never impair or even discontinue children's play, minimize their freedom, reduce their involvement, or impose rules that do not respond to children's own needs. Instead, the understanding is that teachers "should primarily enhance the play format of children's activity and answer the children's need for help to improve their participation in the current role play" (Van Oers, 2013; p. 194).

Influence on Neo-Liberal Education on Children's Play

The two ends of the above-described continuum, namely free play *versus* structured play, represent different perspectives on the value of play in child development and learning: respectively, play for personal and social development *versus* play for the learning of academic skills (Fesseha & Pyle, 2016). In turn, such perspectives reflect to a large extent two different conceptions about the ultimate goal of early childhood education: educating children for socio-emotional development *versus* preparing children for Primary school (Lim, 2004).

Today, there is little agreement internationally with regard to the goals of early years curricula (Hedges, Cullen, & Jordan, 2011). Many industrialized nations have adopted neo-liberal educational agendas, designing curricula strongly influenced by

the impositions of employer-identified knowledge and skills. The focus is to prepare children (i.e., human capital) as future employees for an economically driven society, for a global job market, providing them with the 'right' competencies, attitudes, and dispositions (Sims & Brettig, 2018). Within this context, countries have developed early childhood education systems strongly focused on an 'education discourse', according to which the mission of kindergartens and child care centers is to inculcate in children the necessary attributes to increase their future productivity and competitiveness (OECD, 2017). Such discourse is supported by a plethora of studies showing that early education leads to economic pay-offs in the longer term (Sims & Brettig, 2018).

In this neo-liberal educational landscape, due to growing emphasis on academic readiness and accountability, many preschools have seen a steady decrease in the time devoted to play (Lynch, 2015; Sawyer, 2017). While most written curricula strongly advocate for play-based teaching and learning approaches, many preschool educators feel increasingly compelled to deliver explicit instruction to maximize children's academic learning. Center-based play is becoming more rigid and less engaging, shifting along the continuum towards structured play (Lynch, 2015). Further still, play-based approaches are seen as obsolete by an increasing number of parents, in favor of teacher-centered pre-academic programs aimed at transmission of knowledge and skills (Lillard et al., 2013).

Certainly, important tensions and contradictions arise when there is an attempt to integrate academic learning and an emphasis on children's play (Hedges et al., 2011). In many cases, the use of play and its inclusion in classrooms has been justified on the basis of its educational or instructional value, that is, based on *pragmatic* reasons (Van Oers & Duijkers, 2013). For instance, many advocate for

play in the classroom due to its potential to improve children's knowledge and skills in areas such as literacy, mathematics, and scientific thinking (Dickinson, 2011; Johnson et al., 2005; Lee & Yelland, 2017). Others advocate for play in the classroom due to its potential to make learning tasks more engaging and motivating for students (Bergen, 2009; Sawyer, 2017; Smith, 2010). Finally, others have argued that play has the capacity to develop children holistically, fostering their learning in both academic and non-academic areas (Ashiabi, 2007; Brown, 2009). For example, Bergen (2009) showed that a specific play-based approach had positive effects on children's creativity and adaptability, competencies that lead to the type of innovative thinking required in professions such as engineering, architecture, and mathematics. This education-oriented perspective on play resonates with the vision of Singapore's national kindergarten curriculum framework, as described in the following section.

Singapore's Notion of Purposeful Play: Playing during Learning Center Time (LCT)

The 'Nurturing Early Learners' (NEL) curriculum framework is a national guideline recently designed by Singapore's Ministry of Education (MOE) to inform the practices of preschool educators (MOE, 2013a). In Singapore, the term *preschool* refers to both kindergarten and child care centers for children aged four to six. Clearly influenced by neo-liberal ways of thinking, the NEL curriculum framework was designed to raise quality standards and harmonize pedagogical practices across the Singapore preschool sector, which is predominantly private (Bull & Bautista, 2018). The MOE carefully examined developmental and learning theories proposed by Western scholars (e.g., Jean Piaget, Lev Vygotsky, John Dewey, Jerome Bruner), as well as high quality early childhood education practices across the world, with a special focus on North America, Europe and Australia. The NEL is based on six key

theoretical underpinnings: (1) A holistic approach to development and learning; (2) Integrative learning; (3) Children as curious, active, and competent learners; (4) Adults as interested supporters in learning; (5) Interactive learning; and (6) Play as a medium for learning to encourage children to think widely, be more engaged and explore ideas thoughtfully. As shown in (6), the perspective on play is explicitly education-oriented, as play is conceptualized as a *medium for learning* (Bergen, 2009).

The NEL proposes that the desired outcomes of Singapore's preschool education can be achieved through six learning areas, all of which are conceived to be essential for children's holistic development (MOE, 2013). These learning areas encompass Aesthetics and Creative Expression, Discovery of the World, Language & Literacy, Motor Skills Development, Numeracy, and Social and Emotional Development. Each of the six learning areas has its specific learning goals and learning objectives. For example, in the area of Numeracy (MOE, 2013b), one of the three learning goals is "Use numbers in daily experiences" (p. 20), and some of the corresponding learning objectives include counting numbers in order, recognizing numbers, and knowing the quantity of sets of things.

While Singapore's NEL acknowledges that free play and teacher-led play might be useful, the main perspective advocated is that of purposeful play, which falls at the center of the play continuum (Nicolopoulou, 2010). As stated in the curriculum, "Purposeful play involves intentional planning and facilitation of children's play to achieve intended learning outcomes" (p. 86). The understanding is that play activities should be *purposeful* (that is, pursue clearly established learning goals and/or objectives) and allow children to explore, develop and apply new knowledge and skills in fun and engaging ways. The NEL proposes that preschool educators should

always be sensitive to children's interests and motivations, seeking to find out what they know, what they pay attention to, and what might engage them to learn in fun and meaningful ways (MOE, 2013). Drawing on this knowledge, preschool educators are expected to design environments and activities that, while being responsive to children's needs, promote the curriculum learning goals and objectives. Moreover, teachers are expected to actively interact with children and extend their play to facilitate their learning (Martlew, Stephen, & Ellis, 2011).

The NEL argues that the ideal setting for children to engage in purposeful play is that of Learning Center Time (LCT). Learning centers, also referred to as learning corners in the literature, are the self-contained thematic areas or sections in which the physical space of preschool classrooms is typically divided, allowing children to play and engage in different self-directed activities within the same classroom (Tu, 2006). A learning center includes materials and resources meant to be used by children to tackle activities that are engaging, fun, and relatively open-ended. Early childhood education researchers, curriculum designers, and policy makers in Western countries recommend organizing the classroom environment into several learning centers (at least five), and to schedule time for children to play in centers of their choice for at least one third of the program's duration (Harms, Clifford, & Cryer, 1998). The types of centers most commonly available in preschools include dramatic play, arts, blocks, language and literacy, and science. Each center type may provide children with different play opportunities, leading to various learning experiences (Kostelnik, Soderman, & Whiren, 2004).

Regarding the organization of learning environments, the NEL curriculum framework explicitly states the following:

> "An effective learning environments is purposefully designed to provide engaging, stimulating and challenging learning experiences to promote children's holistic development. The three key aspects that teachers need to consider include: the physical environment; the interactional environment; and the temporal environment. The physical environment can be set up to provide opportunities for children to engage in purposeful play and learn at their own pace. […] A space where children can explore with concrete materials and manipulatives to solve problems and discover answers to questions on their own. […] A space where children work cooperatively and make decisions independently. (MOE, 2013, p. 34/35).

Despite these general guidelines, the NEL does not prescribe how LCT should look in practice. While the NEL provides suggestions on how to set up and equip learning centers pertaining to each of the six learning areas, it does not specify the number or type of learning centers that classrooms should offer, whether all learning center types should be available, or the relative importance teachers should give to different learning centers when engaging children in purposeful play (MOE, 2013). Given the lack of research focused on documenting how LCT unfolds in Singapore preschools, the first goal of this exploratory study was to examine the types of learning centers set up by teachers in the classroom, and our second goal was to analyze how teachers managed their time across the different types of learning centers. Addressing these two goals provided indirect information about the importance given by the observed participants to NEL's learning areas within the context of LCT, as reflected in both their pedagogical choices of learning centers and the time spent interacting with children in them. The third goal was to examine the extent to which our participants allowed freedom of choice to children during LCT.

On the basis of Van Oers's (2013) cultural-historical theoretical framework on play, we were interested to explore whether teachers assigned children to specific learning centers, whether children could freely choose materials and resources to carry out their purposeful play activities, and whether children were allowed to change between learning centers.

The fourth goal of the study focused on teachers' enacted roles during LCT. In the NEL, teachers are encouraged to observe how children behave and interact during LCT. They are also encouraged to actively participate in the proposed activities to reinforce and/or extend children's thinking and learning, hence acting as facilitators and guides (MOE, 2013). Western researchers have investigated the various roles preschool teachers might adopt in play situations, as well as the effects of such roles on children's play (Ashiabi, 2007; Tarman & Tarman, 2011; Van Oers & Duijkers, 2013). For example, in a qualitative study conducted in United States preschools, Tarman and Tarman (2011) identified four facilitative roles: *Onlooker* (simply observes children's play), *Stage Manager* (provides children with suggestions and assistance to organize play setting, play materials, and props), *Co-Player* (becomes a play partner, though taking a minor role), and *Play Leader* (actively participates in and enriches children's play). Two additional roles were identified: *Uninvolved* (neither pays attention to nor supports children's play) and *Director/Redirector* (takes over control, interrupts, and/or disrupts children's play). As opposed to free play, where a teacher could have virtually no interaction with children, Tarman and Tarman (2011) argued that teachers should adopt facilitative roles to better understand children's interests and needs, model appropriate behaviors, extend and enrich children's ideas, build new experiences, and ultimately foster their learning. Consistent with the theoretical framework adopted in this study (Van Oers, 2013), the

authors also argued that teachers should not be too intrusive in children's play, as this would not promote inventiveness and creativity.

Despite its focus on teachers' interactional roles, the literature has disregarded the degree of quality of interactions with children, particularly the quality of instructional support provided during play situations (i.e., how teachers help children to think, reason, solve problems, and develop new knowledge). We argue that enacting the facilitative roles described by Tarman and Tarman (2011) does not necessarily guarantee quality of instructional support to be high. Indeed, a teacher might exhibit any of the facilitative roles, for example *Stage Manager* or *Play Leader*, while having poor conversations with children (e.g., simply asking yes/no questions). In this study, we adopted the conceptualization of instruction support proposed by Pianta et al. (2008), which includes three dimensions: *Quality of Feedback* (degree to which teachers' feedback maintain the child's engagement and focus on expanding learning and understanding), *Language Modelling* (degree to which teachers model complex language and increase the amount of talking children do), and *Concept Development* (degree to which teachers foster children's conceptual understanding using reasoning strategies).

Effective instructional support is associated with gains in a variety of cognitive and social competencies, such as expressive and receptive vocabulary, letter naming, and numeracy skills (Dickinson, 2011; Mashburn et al., 2008). However, research has shown that cognitively stimulating interactions are infrequent in preschools and that most children receive instructional support of mediocre to low quality (Dickinson, 2011; Pianta et al., 2014). While prior studies have measured quality of instructional support looking at teachers in different scenarios throughout the day, the current paper focuses specifically on instructional support during LCT.

Meacham, Vukelich, Han, and Buell (2013) have recently argued that further research on high quality interactions within play settings is necessary to inform the design of teacher education and professional development initiatives. Thus, the fifth goal of this study was to investigate the quality of instructional support provided by our participants to children while playing in learning centers. This dual focus on teachers' roles and interactional quality constitutes a unique aspect of the present study.

Context for the Research

This study was conducted within the scope of the 'Singapore Kindergarten Impact Project' (SKIP), a large-scale project on preschool education in Singapore. Overall, the aim of SKIP was to examine how the preschool environment and pedagogical practices, together with home factors, influence children's learning and development. SKIP recruited 1,538 K1 children from 80 preschools. The sampling strategy targeted centers from a range of social strata, geographical locations, types of provider (both public and private), and whose fees were affordable to the majority of local families in Singapore. Private preschools charging high fees, therefore, were intentionally excluded. A wealth of data was collected, including a comprehensive battery to assess changes in children's academic and non-academic competencies, questionnaires about the child's home environment and teacher characteristics, and classroom observations to measure program quality, in which we recorded the same teacher in a variety of classroom situations. The present study draws on the classroom observation data.

Goals

This study provides a descriptive account on how LCT unfolded in the K1 classrooms observed within the scope of the SKIP project. The aim is to explore the correspondence between the vision of purposeful play outlined in Singapore' NEL

framework (MOE, 2013), a neo-liberal kindergarten curriculum with a clearly education-oriented perspective on play, and the pedagogies enacted by teachers on the ground. More precisely, the study had five goals that involved the examination of: 1) the types of learning centers identified in the observed preschools; 2) the time teachers spent in each type of center; 3) the degree of freedom of choice regarding learning centers and materials allowed to children; 4) the roles enacted by teachers while children play in learning centers; and 5) the quality of instructional support provided by teachers to children while playing in learning centers.

Findings are interpreted according to Van Oers's (2013) conceptualization of role play from an activity theory perspective. When interpreting the findings, it is important to bear in mind that teachers were only observed at one time point, as SKIP was not designed to investigate the topic of LCT primarily. Due to the interest of this topic and the limited observational research available, the ultimate aim of the secondary analyses presented here is to provide preliminary data on how the vision of purposeful play outlined in the NEL is being enacted in certain classrooms. Note that we do not intend to make generalizable claims about all preschools in Singapore, but rather to describe the tendencies observed in our classroom video database. Furthermore, to accurately interpret the findings, it is important to bear in mind that what is driving the NEL curriculum is the achievement of certain learning goals and objectives, and that purposeful play during LCT is proposed as a *medium* to achieve them. The pedagogical choices, roles, and interactions enacted by the participants in this study should be interpreted within this frame.

Method

Participants

We videotaped a total of 108 K1 teachers from the 80 centers selected. All teachers were female. Their mean age was 34.2 years (*SD* = 10.4) and their teaching experience as preschools educators was 6.9 years on average (*SD* = 5.7). All but four of the teachers indicated that their qualification was specific to early childhood education and/or development. Most teachers (66%) indicated that their highest academic qualification was a Diploma in Early Childhood Education (which currently requires the equivalent of 18 months full time study and approximately 300 practicum hours).

While learning centers were set up in all 108 K1 classrooms observed in SKIP, children were only seen playing in the centers in 36 classrooms (33.3%). The teachers in charge of these classrooms had a mean age of 34.8 years (*SD* = 11.42). Their total teaching experience ranged from 0 to 20 years (*M* = 6.90, *SD* = 5.24). Regarding their highest qualification, 27 had a Diploma, eight a Bachelor's degree, and one a Master's degree.

Research Design

To achieve the goals of the study, we employed a cross-sectional descriptive design. Descriptive research is used extensively in Social Sciences, such as Psychology and Education, to obtain a better understanding of how certain phenomena occur in practice, without influencing or manipulating the variables in any way, bringing to light new knowledge that may have otherwise gone unnoticed (Creswell, 2013). Thus, descriptive research does not attempt to answer "why" questions and is not used to make predictions or establish causal relationships. As mentioned, the study draws on classroom observation data. Observation is considered

to be an appropriate method to analyze the actions and behaviors of human groups in their natural environments (Creswell, 2013).

Procedure and Data Sources

Ethics approval was obtained from the authors' university Institutional Review Board (IRB). Once center leaders indicated their willingness to participate in SKIP, classroom teachers were invited to participate and provided informed consent. Parental consents were sent to the parents of children whose teacher had agreed to participate.

In the interest of capturing instances of the preschools' regular operations, the 108 teachers were videotaped during a full "typical day" (3-4 hours, depending on the duration of the program). They were given no instruction or directions regarding the content or the pedagogy of the activities to be conducted that day. Observations were conducted by pairs of trained research assistants. The person operating the video camera followed the teacher at all times, in order to capture her interactions with children. The team of research assistants in charge of classroom observations (n = 22) attended training and received official certification for the administration and coding of the Classroom Assessment Scoring System (CLASS) (Pianta, La Paro, & Hamre, 2008), a widely used observational tool for assessing interactional quality in preschools. All research assistants held a Bachelor's degree in Early Childhood, Psychology, or a related field.

The raw video footage of each classroom was edited and trimmed into four to six short video clips that contained concrete instances of the same teacher in different classroom situations (e.g., morning assembly, mealtime, whole class work, mother tongue lessons, LCT). In total, this process resulted in 695 video clips, each being 10 to 20 minutes long. The analyses presented in this paper focus exclusively on the 36

video clips that were categorized as instances of LCT. Note that each episode was collected from a different classroom. Total observation time for all 36 video clips was 682 min. Duration of these episodes ranged from 10 to 20 min, with an average length of 18 min and 56 sec.

Data Analysis

To address Goal 1, we coded all the learning centers in which children were observed playing/working according to eight mutually exclusive categories (Table 1). Seven of these categories reflected the types of learning centers described in the NEL curriculum framework (MOE, 2013), namely *Arts*, *Discovery of the Word*, *Language & Literacy*, *Fine Motor*, *Dramatic Play*, *Numeracy*, and *Blocks*. For example, learning centers containing counters, counting boards, and/or number cards were coded under *Numeracy*. We also created an additional category to account for those cases in which teachers were observed working with a small group of children on academic activities (e.g., completing worksheets), while the other children played in learning centers. This category was named *Class Assignments*. Two of the authors independently coded all the learning centers observed in the video clips according to the categories presented in Table 1. Cohen's Kappa reliability index was .90. Disagreements were resolved through discussion until the two coders reached 100% agreement.

Table 1
Types of learning centers and examples of materials available

Learning center type	Description based on materials available
Arts	• Tools for mark making, cutting, painting and making prints • Modelling and molding materials • Musical instruments
Discovery of the World	• Natural materials • Science tools • Recycled materials
Language & Literacy	• Writing tools • Books • Labelled picture cards
Fine Motor	• Connectors, linking cubes • Beanbags • Balancing beams • Unifix cubes
Dramatic Play	• Dressing-up games • Props for role-play
Numeracy	• Counters • Counting boards • Number cards
Blocks	• Puzzle blocks • Wooden building blocks
Class Assignments	• Teacher works with a small group of children on completing worksheets, while the other children play in learning centers.

Goal 2 was addressed by recording the time teachers were physically present at each of the center types mentioned above or completing classroom-related work (if applicable). We summed the duration of all the segments pertaining to the eight codes shown in Table 1. For example, if a teacher was observed to be at *Numeracy* centers three times throughout the video (from 0:00:30 to 0:00:60, from 0:02:00 to 0:06:00, and from 0:10:00 to 0:11:00), then total time for *Numeracy* would be five minutes and 30 seconds. The same procedure was followed for the other codes. Duration would be zero for center types that, while being observed in the classroom, the teacher spent no

time interacting with the children involved in them. We report descriptive statistics in relation to the time teachers spent in each learning center.

To address Goal 3, we examined the extent to which teachers allowed children to have freedom of choice. Each video clip was analyzed according to the three binary dimensions: a) Was the teacher observed to assign children to the various learning centers in the video?; b) Did the teacher allow children to freely choose the materials within the learning center where they are playing?; and c) Did the teacher allow children to play in more than one learning center during the video? Video clips were independently analyzed by two of the authors, coding 'Yes' or 'No' for each of these questions. Cohen's Kappa reliability index was .90. Disagreements between the two coders were resolved through discussion until 100% agreement was reached.

Regarding Goal 4, we used the framework proposed by Tarman and Tarman (2011) as a starting point to conceptualize our analytical codes. Using an inductive (bottom-up) approach, we defined four categories aligned to two of the facilitative roles (*Stage Manager, Co-player*) and the two disengaged role (*Uninvolved, Director/Redirector*). We labelled these four categories as *Stage Manager*, *Activity Participator*, *Uninvolved* and *Director*, respectively. Additionally, based on our analysis of the videos, we defined another two categories that were labelled *Administrative-focused* and *Assignment-focused*. Definitions and examples for these six roles are presented in Table 2. Note that categories were conceptualized as mutually exclusive categories.

Table 2
Teachers' enacted roles during LCT

Teacher Roles	Descriptions and examples
Stage Manager	Organizes the classroom environment, provides materials to aid children in their activities, and/or supervises that everyone is on task. Example: *Teacher walks around observing what children are doing. She notices that children's writing pencils are blunt and helps to sharpen them before bringing an easel for the children at the art corner.*
Activity Participator	Actively engages in activities with children at specific learning centers. Example: *Teacher sits with a group of children playing with abacus. She asks them what 3 and 5 would make using the abacus. Teacher interacts with the group of children at the dramatic center. She closely observes their play activity and then adopts the role of the chef.*
Administrative-focused	Focuses on doing administrative work while children play in the learning centers. Example: *Teacher is observed to be filing assessments and/or marking worksheets, sitting at her desk or in the corner of the classroom.*
Assignment-focused	Engages with children in classroom-related assignments. Example: *At the start of learning center time, teacher gets a group of children to sit at a table away from the other children and gets them to finish up their drawing work or written assignments.*
Director	Gives instructions to direct children's activities and/or interrupts children's play. Example: *Teacher assigns groups of children to specific learning centers. Teacher engages in children's activities by dictating what they should do and how they should play with the materials available.*
Uninvolved	Is not involved in any activities. Example: *Teacher is observed siting in one corner of the room using her phone, not paying any attention to children*.

We analyzed the videos second-by-second using the software MAXQDA® (https://www.maxqda.com/), accounting for the specific role that the teacher was

adopting at each time. For instance, for one of the videos, the teacher was observed to be acting as one of the customers in a cafe at the dramatic play center from 0:10:00 to 0:11:20. The code *Activity Participator* was therefore assigned for this time segment. Then, the teacher was observed taking a step back to observe how the play in the whole classroom was unfolding from 0:11:21 to 0:12:30, hence the code of *Stage Manager* was assigned for this segment, and so on. The coding scheme was content-validated by three of the authors, who assessed the suitability of the analytical categories for the observations under consideration. Prior to final coding, definitions were revised and further refined on several occasions until inter-rater reliability was high. All videos were independently analyzed by two authors of the paper. Initial Cohen's Kappa reliability index was .85. Disagreements between the two coders were resolved through discussion until 100% agreement was achieved.

Finally, we analyzed the quality of teachers' instructional support –as measured by the CLASS (Pianta et al., 2008)– for all the LCT episodes. Note that the other two domains included in the CLASS (i.e., classroom organization and emotional support) are not discussed here because these go beyond the scope of our fifth research goal. Following CLASS standard procedures, videos were coded on a 7-point scale for the three dimensions: *Quality of Feedback, Language Modelling,* and *Concept Development*. Based on the evidence observed in the videos and the descriptors and indicators presented in the CLASS, each dimension was assigned a score according to the following scale: low quality (1 or 2), medium quality (3, 4 or 5), or high quality (6 or 7). Videos were coded by two of the authors independently. Initial consensus was 100%. In the *Results* section, we report descriptive statistics for the three dimensions pertaining to instructional support. To qualitatively illustrate our data, we present examples of the highest levels of interactional quality.

Results

Goal 1: Types of Learning Centers Observed

The 36 classrooms presented an average of 5.06 different types of learning centers in which children were seen playing/working, including the category *Class Assignments* (min = 3; max = 7; *SD* = 1.17). Table 3 presents the frequencies and percentages for each type of center, in decreasing order. As indicated, all 36 classrooms included *Language & Literacy* centers, followed by centers related to *Arts*, *Fine Motor* and *Dramatic Play*, which were observed in more than 75% of the videos. *Blocks* and *Numeracy* centers were observed in approximately half of the videos. The lowest frequencies were registered for *Discovery of the World* and *Class Assignments*.

Table 3
Types of learning centers: frequency and percentage

	Freq. (*N*=36)	Percent %
Language & Literacy	36	100%
Arts	31	86%
Fine Motor	29	80%
Dramatic Play	27	75%
Blocks	24	66%
Numeracy	16	44%
Discovery of the World	11	30%
Classroom Assignment	8	22%

Goal 2: Time Spent by Teachers in the Various Learning Center Types

The 36 preschool teachers were observed physically present in learning centers or engaging in *Class Assignments* during 479.5 out of 682 minutes (68% of total observation time). This time was spent interacting with children directly at specific centers or closely observing their play/work. In the remaining time (202.5

minutes, 32%), teachers were observed physically absent from learning centers, although not necessarily disengaged from the activities going on in the classroom. For example, they could be looking for additional materials for children, or walking from one center to another. As explained in Goal 4, there were also certain times when teachers were fully disengaged, either carrying out administrative tasks (e.g., marking worksheets, completing assessments for parents) or simply uninvolved in the ongoing activities (e.g., using the phone).

Figure 1 indicates the amount of time (i.e., minutes and time percentage) spent by teachers in the various learning centers. Time spent in *Class Assignments* was the longest, accounting for 95 out of 682 minutes (14%), even though there were only eight classrooms where this category was registered. This indicates that teachers in charge of these classrooms spent much of their time working with the group of children engaged in academic activities. This was followed by time spent in *Arts* and *Language & Literacy* centers, followed by *Fine Motor*, *Numeracy* and *Dramatic Play*. The shortest amount of time was spent in centers containing *Blocks* and in centers related to *Discovery of the World*.

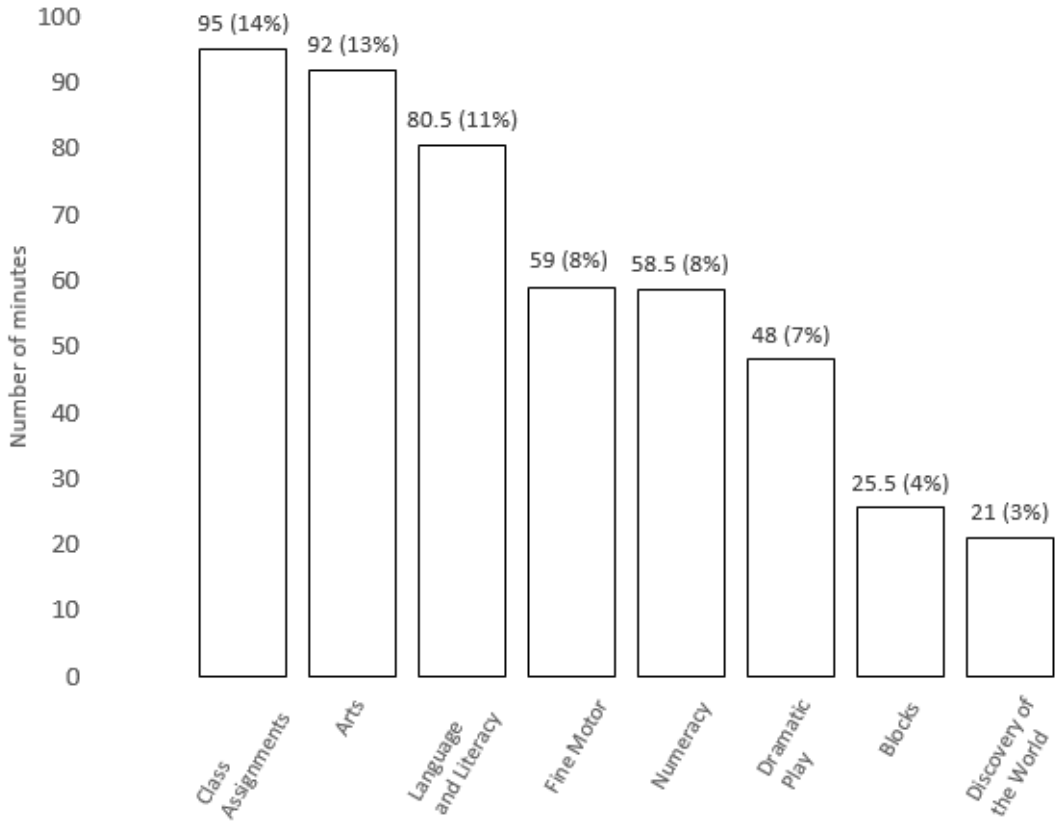

Figure 1. Time spent by teachers in the various learning centers

As not all 36 classrooms included all the types of learning centers, as reported for Goal 1, we performed analyses focusing on the time proportions each teacher had spent in the centers actually present in her classroom. Table 4 shows the mean, minimum and maximum proportion times for each center type, as well as the number of teachers who spent no time in each type of center (despite the learning center being available in the classroom). With the exception of *Classroom Assignments*, where all eight teachers participated, note that more than half of the teachers who set up centers related to *Language & Literacy, Arts, Fine Motor, Dramatic Play,* and *Blocks* spent no time interacting in the children that were playing in these centers. Similarly, about one third of teachers who set up *Blocks* and *Discovery of the World* centers did not interact with the children in these centers.

Table 4
Time proportions spent by teachers in the learning centers available in the classroom

Type of learning center	*n*	Teachers spending no time in this type of center (%)	Mean Proportion of time (SD)	Minimum Proportion of time	Maximum Proportion of time
Language & Literacy	36	26 (72%)	.11 (.24)	.00	.97
Arts	31	17 (54%)	.11 (.18)	.00	.90
Fine Motor	29	18 (62%)	.12 (.21)	.00	.88
Dramatic Play	27	15 (55%)	.09 (.17)	.00	.82
Blocks	24	15 (62%)	.05 (.10)	.00	.41
Numeracy	16	7 (43%)	.19 (.24)	.00	.78
Discovery of the Word	11	4 (36%)	.09 (.16)	.00	.55
Classroom Assignment	8	0 (0%)	.60 (.17)	.30	.87

In the eight classrooms where the category *Classroom Assignments* was registered, teachers spent an average of 60% of time working with this particular group of children. Regarding centers that were apparent in most classrooms, teachers spent similar proportions of time in *Language & Literacy*, *Arts*, *Fine Motor*, and *Dramatic Play* (approximately 10-12% of total time), while time spent in *Block* centers was lower (5%). Regarding centers observed less frequently, proportion of time spent in *Numeracy* centers was almost 20% (substantially higher than the most frequently observed centers), and 10% in *Discovery of the World* centers. Teachers' level of involvement in learning centers where children were actually playing/working varied greatly. For example, while all 36 classrooms included *Language & Literacy* centers, the percentage of time spent interacting with children in this type of center varied from 0 to 97%.

Table 5 presents the number of center types available in the classroom as a function of the number of center types in which teachers spent some time. As can be observed, most teachers circulated around a maximum of three or fewer learning center types, and there were three teachers who did not interact with children at all during the observation episode.

Table 5
Number of centers available and visited by the teacher

		Number of learning centers teachers spent time in						
		0	1	2	3	4	5	Total
Number of learning centers available in the classroom	3	1	1	1	2	-	-	5
	4	1	0	1	3	0	-	5
	5	1	4	2	3	1	1	12
	6	0	3	5	1	2	0	11
	7	0	0	1	0	2	0	3
Total		3	8	10	9	5	1	36

Goal 3: Freedom of Choice Allowed to Children

As explained, children's freedom of choice during LCT was analyzed according to three binary dimensions. First, teachers were observed to assign children to the various learning centers in 29 out of 36 classrooms (80.5%). This indicates that most children could not freely choose the center where they wanted to play on that day. Second, 29 out of 36 teachers (80.5%) allowed children to freely choose materials and resources within the learning center where they were playing. It is important to bear in mind, however, that items available in the learning centers had been pre-selected by teachers, who set up and equipped the centers prior to the session. Finally, only 10 out of 36 teachers (27.8%) allowed children to play in more than one learning center. In most classrooms, therefore, children were required to stay in the same center throughout the entire LCT session.

Goal 4: Teachers' Roles during LCT

Figure 2 shows the number of minutes (out of total 682 minutes) and percentage of time that teachers were observed playing the various roles defined in Table 2 (see *Methods* section). Results revealed that *Activity Participator* was the role enacted for the longest duration, followed *Stage Manager*, *Assignment-focused*, *Director,* and *Administrative-focused*. The role *Uninvolved* was enacted for just a short duration.

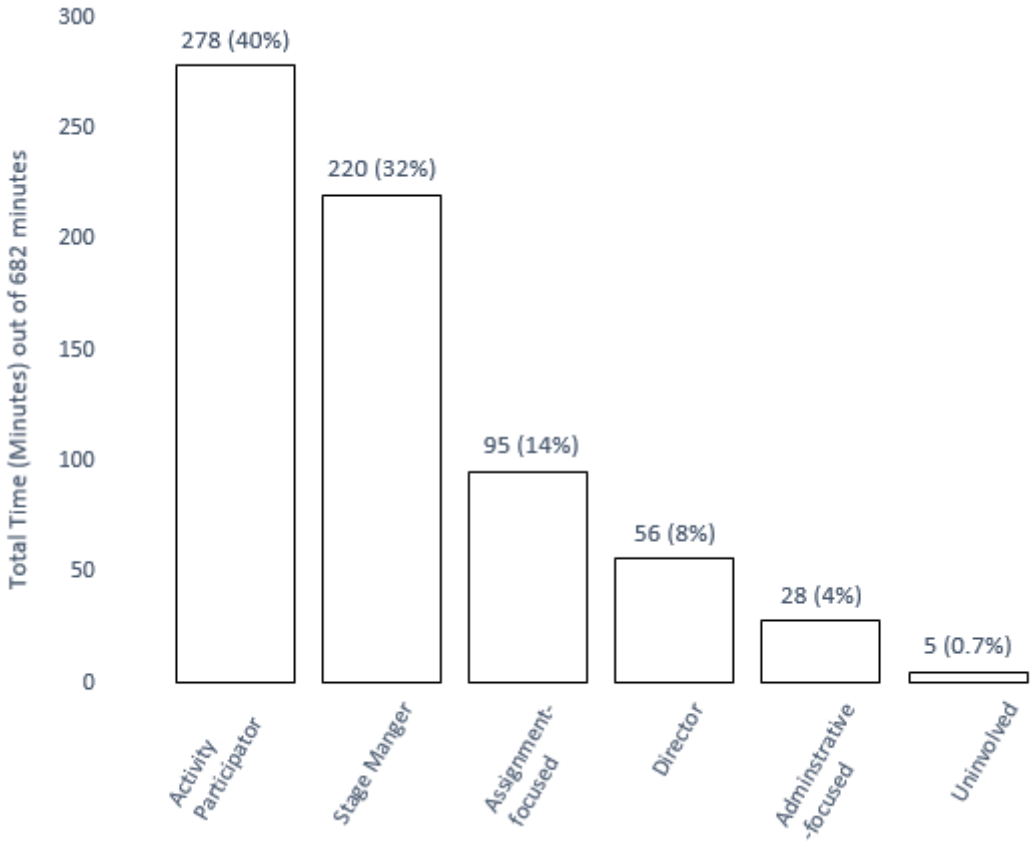

Figure. 2. Roles played by teachers: Time and percentage (total = 682 minutes)

Table 6 reports descriptive data regarding the number of teachers who were observed enacting each of the roles and the proportion of time spent in each role. As indicated, most teachers enacted the roles *Stage Manager*, *Administrative-focused,* and *Director* at some point in the observation, although this was only for a relatively small proportion of the time (30%, 11% and 9%, respectively). Note that there were dramatic differences in the proportion of time teachers spent playing the role of *Stage Manager* (between 2% to 85%). When teachers did take on the role of *Activity Participator*, they typically spent a larger proportion of time in this role (55% of time, on average), although this varied considerably across teachers (from 18% to 85% of time). Only four teachers were observed being *Uninvolved* in the classroom's ongoing activities, and only for a relatively small proportion of time (maximum at 13% of

observation time). While the *Assignment-focused* role was only enacted by eight teachers, this was the role that registered the longest mean time proportion.

Table 6
Time proportions spent by teachers in the various roles

Roles	Number of teachers who enacted this role (%)	Mean Proportion of time (SD)	Minimum Proportion of time	Maximum Proportion of time
Activity Participator	26 (72%)	.55 (.21)	.18	.85
Stage Manager	33 (91%)	.30 (.23)	.02	.85
Assignment-focused	8 (22%)	.60 (.18)	.30	.87
Director	33 (91%)	.09 (.09)	.00	.34
Administrative-focused	16 (57%)	.09 (.11)	.01	.44
Uninvolved	4 (11%)	.06 (.05)	.02	.13

Goal 5: Quality of Instructional Support Provided to Children During LCT

Overall, the domain score for *Instructional Support* in the 36 LCT video clips was found to be in the low to moderate range (M = 2.31, SD = 0.81, min = 1; max = 4). This score was slightly higher than the average score in *Instructional Support* obtained by the same 36 teachers for all other episodes (morning assembly, mealtime, etc.) (M = 2.20, SD = 1.08, min = 1; max = 6). A paired sample t test indicated that this difference was not statistically significant, t (35) = .99, p = .33.

Across the three dimensions, the highest mean score within the LCT video clips was found for *Quality of Feedback* (M = 2.56, SD = 1.00, min = 1; max = 5). This score was higher than the mean score for all other episodes (M = 2.33, SD = 1.23, min = 1; max = 6), but the difference was not statistically significant, t (35) = 1.77, p = .09. In one of the classrooms with the highest score (5 out of 7, moderate quality), a group of children was forming sentences starting with Chinese characters shown on cards. When children had difficulties, the teacher was observed reading or mouthing the first part of the character at hand. Another group was asked to recall the Chinese names of animals printed on cards. In this case, the teacher was observed providing intermittent corrective feedback when children answered incorrectly and

offering explanations to some of children's questions. Encouragement in the form of praise and acknowledgements of children's efforts were often given by this teacher.

Mean score for *Language Modelling* was also in the low-moderate range (M = 2.33, SD = 1.01, min = 1; max = 4). This was marginally higher than mean the score for all other episodes (M = 2.26, SD = 1.17, min = 1; max = 6), although the difference was not statistically significant, t (35) = .57, p = .57. In the highest quality classroom (4 out of 7, moderate quality), most questions asked by the teacher were closed-ended and elicited short responses from children (e.g., "What is the name of this shape?"). On several occasions, this teacher was observed asking open-ended questions (e.g., "What are you making?"), as well as paraphrasing and extending upon children's responses to her previous questions. One instance is when the teacher approached a child who was building a structure with sticks and connectors and asked him "What are you building?" The teacher repeated the child's response and asked "What is that for?" She continued to prompt the child when he replied by asking "What part of the house is that?"

Finally, scores for *Concept Development* were the lowest (M = 2.03, SD = 0.81, min = 1; max = 4), in this case virtually identical to the mean score for all other episodes (M = 2.04, SD = 1.13, min = 1; max = 6). Again, the difference was not statistically significant, t (35) = .09, p = .93. The teacher in one of the highest quality classrooms (4 out of 7, moderate quality) used activities that fostered children's mathematical reasoning, in particular understanding the concept "more or less". A group of six children were seated in pairs around a table, participating in three different activities related to this concept. The teacher went around the three pairs of children asking them questions such as "How many do you have?", "Who has more?", "How many more?", "How do you know?" These opportunities to engage

children in higher-order thinking were sustained, although somewhat repetitive. While this teacher interacted with the children very frequently, the questions posed did not encourage students to generate new ideas or transfer their knowledge to other contexts.

Discussion

We have presented an exploratory analysis based on a large dataset of classroom videos (108 K1 classrooms observed during a full typical day, for 3-4 hours), which were recorded within the scope of a longitudinal project on preschool education in Singapore (SKIP). Before discussing the results, it is important to note that evidence of LCT was only identified in 36 of the 108 of the observed classrooms. This finding is surprising because learning centers were set up in all 108 classrooms. As observation sessions were scheduled during a "typical day", this finding suggests that LCT does not occur on a daily basis in the observed classrooms. This could be partially due to the rigidity of schedules, which might lead teachers to implement more formal and structured learning activities (Tan & Rao, 2017).

Regarding Goal 1, the 36 episodes presented a variety of learning center types (five on average) equipped with a wealth of materials. This is consistent with recommendations from the NEL curriculum framework (MOE, 2013) and the LCT international literature (Cryer, Harms, & Riley, 2003; Kostelnik et al., 2004; Tu, 2006). We found, however, that certain learning centers types were much more prevalent than others. All classrooms included *Language & Literacy* centers (containing materials such as writing tools, books, and labelled picture cards), and most classrooms included learning centers associated with non-academic areas (i.e., *Arts*, *Fine Motor* and *Dramatic Play*). Centers related to academic areas such as mathematics and science (i.e., *Blocks*, *Numeracy*, *Discovery of the World*) were

apparent in less than half of the LCT episodes. These findings largely mirror the results pertaining to Goal 2. Overall, teachers were observed spending more time in *Arts* and *Language & Literacy* centers (the two most commonly observed), followed by *Fine Motor*, *Numeracy* and *Dramatic Play*. The shortest amounts of time were spent in *Blocks* and *Discovery of the World* centers.

Consistent with the cultural-historical activity theory on play proposed by Van Oers (2013), findings from Goals 1 and 2 suggest that the choices of learning centers and the time spent by our participants interacting with children in them are heavily influenced by socio-cultural and pedagogical factors. For example, in a multilingual country like Singapore, where children are expected to have a good command of English and their respective mother tongues (e.g., Mandarin, Malay, Tamil), teachers seem to clearly prioritize learning centers that involve *Language & Literacy* activities. The importance given to *Arts* and *Dramatic Play* during LCT, based on our own prior study (Bautista, Moreno-Núñez, Bull, Amsah, & Koh, 2018), might reflect teachers' attempts to compensate children's limited exposure to *Aesthetics and Creative Expression* during instructional time, particularly in whole-class activities. Singapore is a multicultural nation, where children are expected to learn about diverse forms of artistic expression and communication, and teachers seem to view LCT as a suitable context for this learning to occur. Findings from Goals 1 and 2 are also relatively consistent with another own study on teachers' beliefs (Bautista, Ng, Múñez, & Bull, 2016), in which we investigated how kindergarten teachers ranked the importance of the learning areas outlined in the NEL framework (MOE, 2013). It was found that teachers prioritized children's socio-emotional, linguistic, and motor development, while areas such as *Numeracy* or *Discovery of the Word* were given lower importance.

Goal 2 data also showed that having a variety of centers in the classroom does not necessarily mean teachers will spend time interacting with children in them (Kostelnik et al., 2004). Teachers' level of involvement in certain types of centers varied greatly, from teachers who never engaged actively with children to teachers who engaged during the entire observation episode (Meacham et al., 2013). This diversity of practices is perhaps a result of NEL's lack of guidelines or recommendations for teachers. Indeed, the NEL does not specify if teachers should facilitate purposeful play in all types of learning centers, or if focusing on a lower number of centers might be more appropriate. Additionally, some teachers may not feel the need to facilitate play in certain types of centers, for example in *Language & Literacy* centers, which might be seen as spaces for children to quietly read and/or look at picture books. We argue that early childhood curriculum frameworks should explicitly discuss these matters to better inform teachers' practices.

Contrary to the vision of purposeful play articulated in the NEL curriculum (MOE, 2013), we found that about a quarter of the LCT episodes involved the completion of class assignments. Some of these teachers spent most of their time supervising the group of children engaged in academic work, thus not interacting with the children playing in the learning centers. This finding could be due to multiple factors. For example, aligned with neo-liberal ways of thinking (Sims & Brettig, 2018), the NEL sets numerous learning goals and objectives for preschool education. Although these are presented as "desirable" outcomes, some teachers might feel pressured with the idea that all children must achieve such outcomes (Lim-Ratnam, 2013), and hence resort to using academic worksheets to ensure children's academic learning. Furthermore, there is evidence that fostering the learning of academic skills and preparing children for Primary school are the main priorities for some early

childhood practitioners, including teachers and principals (Fesseha & Pyle, 2016; Lim, 2004). Thus, engaging children in academic work during LCT could reflect these traditional views on the value and ultimate goal of preschool education. Finally, in their attempt to meet the needs of a meritocratic and highly competitive education system, many parents in Singapore expect preschool education should provide their children basic reading and writing skills in two languages (English and their own mother tongue), basic numeracy skills (how to count, add, and subtract), and basic knowledge about the environment (Lim-Ratnam, 2013). In a sector that is predominantly private and where pleasing parents is imperative, some preschools may feel compelled to focus on delivering academic content, even when children should be playing (Bull & Bautista, 2018). Similar pressures and expectations have been described in studies conducted in Western nations (Lynch, 2015; Sawyer, 2017).

Goal 3 was to examine the extent to which teachers allowed children to have freedom of choice during LCT. Our participants were observed implementing activities aimed to foster children's learning in the six learning areas of the NEL, as suggested in the NEL curriculum (MOE, 2013). However, contrary to internationally accepted recommendations (Harms et al., 1998), most teachers pre-assigned children to specific learning centers and did not let children move freely around the classroom to explore the materials available in other centers or to try out different activities with other groups of children (Wu, 2014). During informal conversations with some teachers, we learned that many preschool educators in Singapore systematically rotate children across centers. This is to ensure that children have similar exposure to different learning experiences and to manage children's behavior in the classroom (e.g., avoid excessive noise). While most of our participants allowed children to use

any materials available within a given center, these materials were pre-selected by the teacher, who set up and equipped the centers prior to the session.

In sum, while children were generally engaged in the proposed LCT activities, their freedom of choice and internal agency regarding the activity constituents (e.g., goals, materials, rules) was very limited. For this reason, we claim that many children's behaviors recorded in our LCT episodes might not qualify as *play* from an activity theory point of view (Van Oers, 2013). This finding could be interpreted in light of Confucian traditional values of respect for elders and authority. In many Asian societies, particularly in the Chinese tradition, the expectation is that teachers will instruct children to follow rules and be obedient to adults; spontaneity and curiosity are often discouraged (Lee & Yelland, 2017). Such values and practices are in stark contrast with curricula based on the ideas of free-play, such as Reggio Emilia and Montessori, where educators support children-initiated projects by ensuring the availability of and accessibility to materials and resources, thereby fostering children's independence in decision-making (Bond, 2015).

In response to Goal 4, we identified a variety of teacher roles during LCT. *Activity Participator* and *Stage Manager* were enacted for the longest proportion of time, followed by *Director*, *Administrative-focused* and *Uninvolved*. Note that the role *Assignment-focused* was only adopted by eight teachers, who spent most of the time enacting this role. Virtually all teachers were observed acting as *Stage Manager* and *Director*, although just for a short period of time. The *Activity Participator* role was observed in fewer teachers, but for a longer duration. Only four teachers were *Uninvolved* in the classroom activities. Interestingly, we did not observe evidence for Tarman and Tarman's (2011) category *Onlooker*, which indicates that teachers might not spend sufficient time observing children's activities during LCT. This constitutes

a potential area for improvement, as the NEL framework states that teachers should always seek to find out what children know, what they pay attention to, and what might engage them to learn in meaningful ways (MOE, 2013).

While our participants were found to primarily adopt facilitative roles, Goal 5 findings showed that quality of instructional support provided to children was low to moderate, similar to tendencies identified in studies conducted in Western countries (Dickinson, 2011; Pianta et al., 2014; Pianta & Hamre, 2009). In other words, teachers acted as *Activity Participator* and *Stage Manager* most of the observation time, but they provided children with little feedback on their own ideas or productions, did not frequently model or expand on the child's language, and offered minimal scaffolding to help children develop new concepts. Children's ideas and interests were seldom explored. Children were rarely encouraged to ask questions or enquire further about their play activities. Most questions asked by educators had pre-determined (correct) responses, typically aligned with the intended learning outcomes for the activity. This restricted children's possibilities to complete activities in unexpected ways, share their thinking and ideas more freely, and/or arrive at their own conclusions (Lefstein & Snell, 2014).

Conclusion

We conclude that the practice of LCT in the 36 observed classrooms tends to look like relatively rigid and constrained learning situations, in which groups of children complete purposeful learning activities with pre-determined materials and resources, while having frequent but somewhat superficial verbal interactions with the teacher. Agency and locus of control are external (teacher) rather than internal (children) (Leggett & Ford, 2013), especially in those cases where children are required to complete academic assignments. From an activity theory point of view

(Van Oers, 2013), we argue that many of the behaviors observed in children are instances of *work* instead of *play*, given the low degree of freedom and internal agency allowed to children regarding the goals, rules, and/or materials involved in the activity (Fesseha & Pyle, 2016). Rather than *purposeful play activities*, as envisioned by the NEL (MOE, 2013), what we see in practice during these 36 LCT episodes are *purposeful activities*, designed by teachers to help children achieve the learning goals and objectives outlined in the curriculum.

The evidence gathered from these 36 classrooms suggests the possible existence of an important gap between the vision of purposeful play articulated in Singapore's national curriculum (MOE, 2013) and teachers' pedagogical practices during LCT. This gap might be due to curriculum-related factors (e.g., tensions between the existence of curriculum goals and the very notion of play), teacher-related factors (e.g., conceptions and beliefs, lack of preparation), and sociocultural factors (e.g., parental expectations, cultural values).

Significance, Limitations, and Further Research

While the body of literature on play is extensive, this study contributes its unique focus on purposeful play during LCT in preschool education, as well as its emphasis on the relationships between curriculum and pedagogy within the context of an Asian nation. The study is significant because of its breadth, as our team observed high number of classrooms (108 K1 classrooms) during a full teaching and learning day. While the study is exploratory and findings should be interpreted with caution, the trends identified in our video database might inform the work of Singapore curriculum designers, teacher educators and professional development providers, and might be useful to foster reflection among practitioners (for more details, see section *Implications for Curriculum and Practice*). Another important contribution is the

fine-grained coding schemes designed to achieve our research goals, which other researchers will be able to apply in subsequent studies focusing on LCT.

We are aware that the study has a number of limitations. As mentioned, each teacher was observed only at one time point. The fact that LCT was not observed in two thirds of the classrooms does not necessarily mean that these teachers neglect the importance of purposeful play. Perhaps they simply did not schedule LCT on that particular day. Future studies aiming to gain a deeper insight into LCT should ensure more prolonged observations with each classroom. It would be also important to explore teachers' own perspective on play (for example, via interviews or focus group discussions), gather information about the various learning activities conducted with children, and explore if purposeful play or any other form of play is observed in other activities throughout the day. Another limitation is that the 80 centers observed in SKIP cannot be considered a nationally representative sample, as private and commercial preschools charging high fees were intentionally excluded. Future studies in private and commercial centers would be necessary. It is important to emphasize that the findings discussed above are only valid within the scope of our video database and not generalizable to the entire Singapore preschool education sector. More research is needed to strengthen the knowledge bank about the practice of purposeful play within LCT in Singapore kindergarten classrooms.

Implications for Curriculum and Practice

This study suggests that enacting the vision of purposeful play, as articulated in the NEL curriculum (MOE, 2013), might be challenging for preschool educators. It seems difficult for them to find the right balance between establishing learning goals and designing play environments, on one hand, and the vision of children as protagonist of their own learning, on the other hand. In view of this, one might

wonder: Is this balance really possible? Does the notion of purposeful play make sense conceptually (curriculum) and pedagogically (practice)? If so, how can it be enacted? These questions are complex and, to a large extent, responses are dependent on the theoretical framework on play being adopted.

Kuschner (2012) has recently elaborated on the tensions that often develop when there is an attempt to integrate children's play into the curriculum. In his view, such tensions are inevitable due to some 'unremitting contradictions' that exist between the essential nature of play and the nature of school. He offered two suggestions to ameliorate the tensions resulting from such contradictions. Firstly, to not invoke the concept of play when talking about the academic goals of the curriculum, and secondly, to ensure that the curriculum provides children with time and space for truly self-directed play. The idea of purposeful play as curriculum construct, therefore, would make no sense from Kuschner's (2012) perspective.

However, from the perspective of activity theory (Van Oers, 2013), we do think purposeful play is a viable construct both conceptually and pedagogically. As explained in the literature review, any activity can be potentially formatted as a play activity, including academically-related tasks intended to achieve curriculum goals and objectives. Van Oers and Duijkers (2013) analyzed the impact of a teaching and learning approach similar to the construct of purposeful play on children's vocabulary acquisition. They found that meaningful vocabulary learning can be developed when play activities are consistent with the vision of children as curious, active, and competent learners. Moreover, they claimed that teaching in a play-based curriculum is not only theoretically plausible and practically feasible, but also more effective in terms of attainment of positive learning outcomes as compared to a strictly teacher-directed approach. The key, in their view, is transforming teaching from a top-down

transmission process into a meaning-driven process through play. This requires very skillful teachers, able to understand play as an activity format that allows freedom, permits the establishment of rules, and stimulates authentic engagement.

Understanding and enacting the notion of purposeful play, therefore, requires teachers to have high levels of curriculum and pedagogical preparation. In Singapore, early childhood courses merely focus on how to set up and equip learning centers, not providing specific guidelines on how to design activities that truly involve play, how to manage children's behavior during LCT, or how to behave and interact with children to facilitate their learning while respecting their play. The present study, therefore, provides insights that may inform the design of pre- and in-service teacher education courses (Múñez, Bautista, Khiu, Keh, & Bull, 2017).

In such courses, teachers should learn that restricting, impairing, limiting, or discontinuing children's play is counterproductive for the learning and development, as is minimizing children's freedom or imposing external rules that go beyond their perceived needs. Courses should also focus on how to enhance the play format and how to improve children's participation. There is also a need to help teachers move from roles such as *Assignment-focused*, *Director*, *Administrative-focused* and *Uninvolved* to the more facilitative roles, especially *Activity Participator*, and also the role of *Onlooker* as described by Tarman and Tarman (2011). More importantly, our findings reveal the need to help teachers improve their interactional style with children during LCT, moving towards more *dialogical* forms of interaction (Lefstein & Snell, 2014). Authentic dialogues with children, where their voices are really heard and taken into consideration, would foster deeper and more meaningful learning experiences during play situations (Meacham et al., 2013). Finally, more time and resources should be offered for preschool teachers to reach a unified vision of what

purposeful play should look like in preschool education and why. This should be done in constant dialogue with parents to negotiate the tensions between the desired curriculum outcomes and societal expectations (Lim-Ratnam, 2013).

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