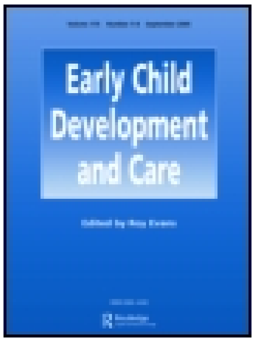

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Block play: spatial language with preschool and school-aged children

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ABSTRACT
Implementing a play-based curriculum presents challenges for pre-service and in-service teachers given the current climate of standards and didactic pedagogies. This study highlights the value of playful learning and its rightful place in early childhood classrooms for children of all ages. The purpose of the present study was to investigate the use of spatial words with children aged between three and nine years. The benefits of the use of spatial words in a playful venue to advocate block play for not only preschool children, but elementary-school-age children were examined. This article suggest that industry and academia need to collaborate to provide play venues for children, and unit blocks need to be brought back into early childhood programmes.

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KEYWORDS
Block play; spatial language; guided play; preschool children; school-age children

Throughout the decades, the area of childhood education has grown by leaps and bounds. A classroom 50 years ago would be barely recognizable to parents and pre-service teachers today. Many states are removing blocks and block play from their programmes to provide more drill and didactic instruction. Educators struggle to maintain the accelerated pace associated with application of Common Core Standards, standardized tests, scripted reading programmes, and new technologies. This research provides an alternative form of assessment by demonstrating the value of block play and spatial language with preschool and school-aged children. Children's block play naturally enhances skills of observation, communication, experimentation, as well as the development of construction skills. While playing, children develop social, language, math, artistic, creative, and academic skills (Hanline, Milton, & Phelps, 2009). Research (Bairaktarova, Evangelov, Bagiati, & Brophy, 2011) also attests to block building as a starting point for architecture and civil engineering skills.

From a theoretical perspective, Vygotsky's (1978) sociocultural theory can be applied to the current study. For Vygotsky, the social context includes social, as well as cultural levels that influence a child's language and learning. Vygotsky (1978) argued that there are a number of acquired and shared tools, 'cultural tools' that aid in human thinking and behaviour. These skills help us think more clearly and better understand our own thinking processes. Vygotsky's (1978) sociocultural theory rejects an individualistic view of the developing child in favour of a socially formed mind. Bodrova and Leong (2015) clearly state that Vygotsky's theory about play describes 'only one kind of play, namely socio-dramatic or make-believe play typical for preschoolers and children of primary age' (p. 205). Although Vygotsky (1978) did not specifically include block play, it can be argued that additional principles of Vygotsky's cultural-historical theory can be applied to block play (Rogoff, 1995; Wertsch, 1991, 1998). A principle illustrating the importance of the social context in children's block play is Vygotsky's ideas of *internalization* and the *zone of proximal development* (ZPD).

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According to Vygotsky (1978) internalization occurs when knowledge moves from a social level (external) to an individual plane (mental), from a state of knowing with assistance with others to a state of knowing for oneself. Vygotsky coined the term the ZPD to refer to the conditions under which children's understanding is furthered as a result of social interaction and language. A child will display a particular level of performance when building a structure alone as opposed to a higher level when building with a peer or given direction by a teacher. In a block play context, children's efforts are supported not by deliberate instruction, but through language, perspective taking, and problem-solving skills. Vygotsky's (1978) sociocultural theories are conceptualized as they relate to block play in the present research. The purpose of this research is to describe and examine the use of spatial words in a playful venue to advocate block play for all ages.

The present study

An investigation was implemented at Blockspot® (www.blockspotlearning.com), a retail business that invites children to visit, play, and learn outside of the classroom. At Blockspot® opportunities are provided that put the children (age: 2–12) in charge of their own block-building outcomes. Previous research has investigated spatial language and block play with preschool and kindergarten children (Caldera et al., 1999; Casey et al., 2008) and parent–child dyads (Ferrara, Hirsh-Pasek, Newcombe, Golinkoff, & Lam, 2011; Pruden, Levine, & Huttenlocher, 2011), but there is little research that examines wooden unit block play with school-age children. Two research questions were examined in the present study:

(1) In what ways do children (4–12-year-old) use spatial words in guided block play? Specifically, do they use spatial words when teachers verbally scaffold block play?
(2) Is there evidence that older children will use more spatial words than younger children in block play?

Thus, we begin with the literature related to the notion of guided play in the context of block play. Vygotskian theories believe that teachers' observations and verbal scaffolding in a child's ZPD can create learning experiences that build upon the child's existing understanding. Next, the literature related to spatial skills, language and blocks is discussed. Finally, age differences between younger and older block builders are presented.

Guided play with blocks

Two pedagogical methods of play that are often contrasted are free play and guided play. Free play is child-initiated and child-directed; children decide what to play and how. Several researchers have provided evidence of the value of free play for children's development (Hirsh-Pasek, Golinkoff, Berk, & Singer, 2008; Singer, Golinkoff, & Hirsch-Pasek, 2006). There is evidence that free play support's children's social development (Hyson, 2004), cognitive development (Bergen, 2002), and imagination and creativity (Brown, 2009). Guided play is a blend of adult-scaffolded learning objectives but is child-directed. In guided play, adults initiate the learning process, constrain the learning goals and maintain focus on these goals as the child guides his or her discovery (Weisberg, Hirsh-Pasek, & Golinkoff, 2013). This perspective embodies a sociocultural view on play that supports scaffolding and guidance in discovery learning (Honomichl & Chen, 2012). The adult's role is to follow the child's lead and guide the child in the context of the environment by suggesting, not directing important learning goals. Honomichl and Chen (2012) summarized three approaches to facilitate discovery learning that have proven to be effective: (1) strategic presentation of materials, (2) sequential feedback, and (3) probing questions and self-explanation. Several researchers have used guided play in the context of block-building activities (Ferrara et al., 2011); Gregory, Kim, & Whiren, 2003; Ramani, Zippert, Schweitzer, & Pan, 2014) For example, Vygotsky's theories of scaffolding and guided block play is illustrated in a study by Gregory et al. (2003), who trained adults to recognize degrees of complexity in block constructions and then had them observe children at block play and offer verbal support for creating increasingly complex structures. While the adults did not interfere in the play and took a supportive rather than a directive role, they engaged in verbal scaffolding such as asking open-ended questions, posing problems (e.g. What would happen if … , How could …), making leading statements (e.g. sometimes people use a block to join a structure …), and thinking of possibilities out loud (e.g. I wonder if …). The result was an increase in the complexity of the children's block structures. Symbolic play recreated an experience in which knowledge and skills were transmitted to children to help him or her better understand reality. In that sense, play lead to the development of complex block structures (Vygotsky, 1978).

Similarly, in the present study, adults scaffolded block play for both prekindergarten and school-age children by presenting challenges, posing problems, and asking open-ended questions. A few examples of open-ended questions were: How are you planning to make your airport? How's your house coming? Examples of problems posed: With these blocks what can you build? Would some small blocks like this one (holding up a unit block) help to complete your structure? Which blocks are you thinking about to enhance your idea?

In sum, from a cultural-historical tradition, play does not develop spontaneously in all children once they reach preschool age. For play to be a leading activity, adult mediation or having older children acting as play mentors for younger children can facilitate the quality of block-building skills (Bodrova & Leong, 2015). Although, we do not want adults to take over children's play and turn it into educational lessons that destroy children's freedom, joy, and passions. Children need to be able to initiate their own learning and adults need to know when to intervene and pose questions and problems to support new skills.

Spatial skills, language, and play

There is some evidence that constructive play is related to spatial skills (Caldera et al., 1999; Ness & Farenga, 2007). According to the scientific literature, constructive play activities such as Legos and blocks exert the most influence on children's spatial skills. Most of the studies with older children (Brosnan, 1998; Nath & Szücs, 2014; Pirrone, Nicolosi, Passanisi, & Di Nuovo, 2015) have focused on the relationship between Lego building blocks, mathematics, and spatial skills (Nath & Szücs, 2014; Pirrone et al., 2015). Brosnan (1998) asked mixed-gendered nine-year-olds to follow instructions to build a bridge with Lego blocks. Results found that those that completed the Lego model scored significantly higher in spatial ability than those who did not. There were no significant sex differences as both sexes played with Lego blocks. Caldera et al. (1999) examined 51 preschoolers' play preferences, performance on standardized measures, and skills building with blocks. Structured and unstructured block play was videotaped and coded. They found no preference between structured or unstructured play. Play with art materials and reproduction of complex block structures were interrelated to tests of spatial visualization.

Fewer studies have examined communication skills during block building with preschool children. Cohen and Uhry (2007) observed individuals, dyads, and small groups of children in the block area in a preschool classroom. The dyads and small groups talked more than children building by themselves. Sluss and Stremmel (2004) observed preschool dyads and found that girls communicated more when paired with an experienced partner. The girls' block building, communication skills, and understanding were further developed by socially interacting with another peer.

In view of findings that show spatial thinking is an important predictor of Science, Technology, Engineering, and Mathematics (Wai, Lubinksi, & Benbow, 2009), it is important to explore how language in a context of constructive play is related to spatial thinking. Spatial words that refer to spatial features and block-building properties (e.g. big, little, tall, fat), or the shapes of blocks (e.g. circle, rectangle, octagon, triangle,), and the spatial properties of blocks (e.g. bent, curvy, flat, edge, pointy) are commonly used as children build and talk about their structures. Although communication among peers during play could support spatial skills as well as spatial language skills, the majority of the research on play and spatial language has focused on preschool (Casey et al., 2008; Ramani et al., 2014) and parent–child dyads (Ferrara et al., 2011; Pruden et al., 2011). Casey et al. (2008) used a guided play intervention using unifix cubes and storytelling with kindergarten children. They found teaching block building improved spatial abilities and the story telling provided a context for teaching spatial language. Ramani et al. (2014) used guided play to investigate four- and five-year old's communication and building behaviours using cardboard blocks. They found the dyads engaged in spatial talk about math-related concepts, such as number and spatial relations, and matching the size and relations between blocks.

Parental spatial language input has been compared to children's use of spatial language when playing with blocks (Ferrara et al., 2011; Pruden et al., 2011) using the same spatial language coding system, *A System for Analysing Children and Caregivers' Language about Space in Structured and Unstructured Contexts* (Cannon, Levine, & Huttenlocher, 2007), used in the present research. Ferrara et al. (2011) investigated MegaBloks with preschool, kindergarten, and parents in three conditions: (a) guided play, (b) free play, and (c) play with preassembled structures. Parents in the guided play condition produced significantly higher proportions of spatial talk than those in the free play condition. Similarly, Pruden et al. (2011) found that the amount of parental spatial language input predicted the amount of spatial language preschool children used as parents played alongside their child. The work by Pruden et al. (2011) was an experimental study with children aged 14 to 46 months in a sample of 52 parent–child dyads as they engaged in everyday activities in the context of the home. Three categories of spatial terms were coded: (a) shape terms (e.g. circle, triangle, octagon), (b) dimensional adjectives (e.g. big, little, tall), and (c) spatial features (e.g. bent, curvy, side). The amount of spatial words used by children and parents was assessed when children were 46 months. There was variability in the amount of children and parents' spatial words but overall the results found when parents produced a lot of spatial words, children also used large percentages of spatial words.

Age differences

As indicated earlier, a goal of the study was to examine the differences in spatial language between younger and older block builders. This question is of interest because although the literature has not examined the differences in the use of spatial language and unit block play between preschool and elementary students, early research has described how spatial relations within children's block-building structures become more complex with age. Toddlers and young preschoolers are limited in their language and spatial dimensionality, building structures with one or two blocks in rows or towers. Later, preschool children start to arrange structures in arches or build bridge structures. Ness and Farenga (2007) found differences between four-year-old and five-year-old structures. They analysed videotapes of children's block play to observe and record cognitive abilities of the relationship between space and architectural relationships. Thirteen codes were associated with 90 young children's engagement in spatial, geometric, and architectural thinking based on *The Assessment for Measuring Spatial, Geometric, and Architectural Thinking of Young Children*. The buildings for five-year-old children included more symmetry and patterns. Reifel (1984) suggests that child's block constructions, age's four years and younger, result in the vertical structures by placing blocks on top of one another or creating horizontal structures by placing blocks next to one another. This early framework by Reifel (1984) shed important information for examining block complexity with four–seven-year-old children. Reifel (1981) and Reifel and Greenfield (1982, 1983) examined block play complexity with children aged between four and seven years. Reifel and Greenfield (1982) found that construction becomes more structurally complex with age. Seven-year-olds were able to label and discuss finished block structures at a higher rate than four-year-old children.

Review of the literature highlights the point that preschool and kindergarten children in guided play produce more spatial words when parents are playing and talking about block building alongside their children. Additionally, the literature has reported significant findings related to Lego play, mathematics, and spatial skills with elementary children, but the findings do not necessarily capture children's spatial language during their building interactions with peers. Although early research found children's block structures became more complex and they talked more about their structures with increased age, these studies did not investigate the use of spatial language with unit blocks. Thus, the goal of the present study was to examine the use of spatial words in guided block play and if older children would use more spatial words than younger children.

Methods

Setting

Data were collected at Blockspot® a retail business in Southampton, New York for children of all ages to play with unit blocks. It was developed by a certified teacher, the founder (co-author), and run by certified teachers. The goal is to get unit blocks back in the hands of children of all ages. The founder (co-author) believes that as children mature their play will become more complex. Block play classes are held mornings for preschool children and after school for elementary children. Multiage drop-in play is offered every Saturday morning. Recently, local public school districts serving Pre-K to fifth grade leave the classroom and take field trips to Blockspot®. It is in this setting that classroom curricula are transformed into block-building experiences and play for children of all ages. The children and teacher work together to create block-building plans before the trip; so learning has been scaffolded and guided by an adult or a peer. Onsite, children use their block-building plans to build structures related to a curricula theme. For most classes, these experiences are tied to an English Language Arts or Social Studies concept. Many are linked to the children's writing either through their writers' workshop selections, linked to a book read in class or a unit of study such as Colonial Times. For example: some classes may select to build structures related to their reading writing workshop stories by showcasing the characters and setting. Other classes may demonstrate their full understanding of an urban/suburban/rural unit of study and replicate characteristics of each. While others may select between three significant stories read in class and have to choose the one they wish to represent through their block structure. For all of the options mentioned … the details both in structure and material selection are purposeful and powerful indicators of thought and understanding. The transference of the experience comes full circle in the return to the classroom where images of student work are used in a variety of ways to bring the experience to fruition. The teachers in this study supported the children's work by observing the way the children interacted, planned, engineered, and selected materials. Comments would be observational 'I see you are planning to build a large structure' 'I see you are building the interior. Are you planning to do a second story or a roof? How will you support that?' This type of observational scaffolding is dually important as it validates the process in place and encourages thoughtful next steps. For optimal student-driven block building, it is crucial that the teachers scaffold and pull back with the correct balance. Thus allowing the children to drive the process and result in the completed structure as intended by their minds' eye.

Participants

Blockspot® serves children who are predominately from upper-middle income families with the exception of school field trips. All participants of this study were upper-middle income and monolingual English speakers. Participants were 8 beginning builders aged 4–5 years (4 girls and 4 boys) and 6 after-school builders aged 8–12 years (2 girls and 4 boys). The classes for beginning builders are designed to support children's emerging block-building stages: stacking, making rows, bridges, pathways, and enclosures, while constructing stories with block accessories. The after-school builders' club provides children the freedom to learn and work on weekly activities planned on rotating topics created with blocks. Children learn physics, study architecture, solve math questions, and read and build story elements from classroom-independent reading.

Materials

Children's block building and conversations were videotaped by the researchers who quietly stayed in the corner during the play session. The video camera was placed unobtrusively in a corner where the block building took place, with full view of the children, the blocks, and the structures. An external microphone was attached to the video camera. A digital camera was used to photograph completed block structures.

Blocks were standard Caroline Pratt unit blocks (unit = 1⅜″× 2¾″ × 5½″) made of hard rock maple. The recommended number of blocks is 100 per child and space for construction is a minimum of 25 square feet per child (Phelps, 2006). Blockspot® has over 10,000 ++ unit blocks in a 2500 space designed for block play (See Figure 1). The number of unit blocks and space Blockspot® provides was more than adequate for children participating in the present study.

Procedure

Videotape sessions of guided play were recorded for three weeks that culminated in three hours of video data. The preschool children were videotaped in the morning and the after-school builders were taped in the afternoon. Each session was approximately 30 minutes in length. The building sessions included introductions, building time, share sessions, and cleanup time. Teachers began the beginning builders (four- to five-year-olds) sessions by discussing what children were to build and some things that their structures should include. The after-school builders were given a weekly challenge. For example, a challenge might be to build something 100″ wide but less than 36″ high using 5 different types of blocks or to build something that flies. The activity was a guided play activity because the children were given a goal, but could complete the goal in multiple ways with the

Figure 1. Blockspot® provides children with 10,000 + + unit blocks in a variety of different geometric shapes for children in elementary and preschool classrooms. Ample shelving is available to allow children to classify and organize the blocks during clean-up, an important learning experience.

teacher minimally involved. Usually, the teacher(s) used strategies similar to Gregory et al. (2003)'s verbal scaffolding of asking open-ended questions, posing problems, or making leading statements to support children's building process. At the end of the session children talked about their block-building structures.

Transcription and coding

All videotape block play sessions were transcribed for children's use of spatial words. Reliability in transcription was achieved by having a second research assistant independently transcribe 20% of the videotapes. The reliability criterion was set at 95%. Both transcribers were in agreement on 95% of the utterances, $r > .95$. For each participant, the total number of utterances in all transcripts was calculated. To arrive at this measure, the flow of talk into utterances during block-building sessions was based on conversational turn taking (Cohen & Uhry, 2007). An utterance consisted of a single international contour within a conversational turn. This included declaratives and questions in which there was a pause preceding and following it. An utterance could also include a single word (e.g. bigger), a phrase (e.g. a little table) or a single or multiword sentence.

These transcriptions were then coded using the eight spatial categories of the University of Chicago spatial language coding system, *A system for analyzing children and caregivers' language about space in structured and unstructured contexts* (Cannon et al., 2007). The coders identified terms that included the following spatial categories: (1) spatial dimensions are words that describe the size of objects, people, and spaces (e.g. big, little, wide, narrow, size, length), (2) shapes are words that describe mathematical names of two- and three-dimensional objects and spaces (e.g. rectangle, square, triangle, circle), (3) location/direction are words that describe the position of objects, people, and points in space (e.g. up, down, in, under, high, row), (4) spatial orientations or transformations are words the relative orientation or transformation of objects and people in space (e.g. turn it around, right side up, upside down, upright, rotate), (5) continuous amount are words that describe amount of continuous quantities (e.g. part, a lot, all, same, more, equal, half, inch, foot), (6) deictic terms identify spatial location and rely on the context or participants to understand their referent (e.g. here, there, where, anywhere), (7) spatial features or properties are words that describe the features and properties of two- and three-dimensional objects, people, and spaces (e.g. side, curvy, straight, flat, corner, horizontal, vertical), and (8) pattern are words that indicate a person may be talking about a spatial pattern (e.g. pattern, order, next, first, last, before, increase, decrease). Reliability was also investigated on 50% of the spatial word coding. Again, the reliability criterion was set at 95%. Research assistant one and two both were in agreement, yielding reliability for the spatial word codes, $r > .95$.

Results

To address the first research question related to the use of spatial words in guided block play, the total numbers of utterances were calculated. There were 851 utterances in the three hours of videotape data. Fifty-seven per cent of the utterances were elicited by the beginning builders and 43% were spoken by the after-school builders. Next, descriptive statistics indicated both groups as a whole used spatial words while playing with unit blocks. The category of patterning was eliminated from the data set because the beginning builders and after-school builders did not produce a single spatial word in this category. On average both groups produced a total of 376 spatial words during the three hours of guided play. Both groups used spatial words but there was variability in the production of spatial words (Table 1). In the category of location/direction the children produced an average of 13.07 (SD = 17.70) spatial words and in the continuous amount category an average of 5.30 (SD = 5.15) words were produced. In comparison, children produced very low averages for categories of shapes ($M = .36$, SD = .74) and orientation words ($M = .64$, SD = 2.13).

Table 1. Mean and standard deviations of spatial word categories.

Spatial word category	*M*	SD
Dimension	2.79	3.33
Shape	0.36	0.74
Location	13.07	17.70
Orientation/transformation	0.64	2.13
Continuous amount	5.30	0.15
Deictic	2.79	3.30
Feature/property	0.71	1.59

The categories of location/direction were words that described the relative position of the blocks and their location in space. It also was the largest category of words and included terms that function in numerous parts of speech. Frequently used words were above, top, in, and behind. The category of continuous amount was words that describe the amount of continuous quantities. Frequently used words were standard spatial measurement units such as inch and foot, as well as words that describe a comparison of continuous amounts such as more, less, same, equal.

To assess differences between groups' (beginning builders and after-school builders) use of spatial words a *t*-test was used. There was no significant difference ($p > .05$) between the beginning builders ($M = 404.37$, $SD = 421$) and after-school builders ($M = 338.5$, $SD = 350$) on all spatial word categories. Thus, the after-school builders did not produce more spatial words than the beginning builders.

Discussion

This study investigated the use of spatial words in the context of unit block play with preschool children and elementary children. Two research questions were examined: (a) to examine the use of spatial words with children 4 years to 12 years in guided block play (Caldera et al., 1999; Casey et al., 2008) and (b) to assess if spatial language would differ with age level and older children would use more spatial words in block play (Reifel & Greenfield, 1982). First is a discussion of children's use of spatial words with unit blocks during guided block play followed by an examination of the age differences in the use of spatial words while building structures with unit blocks.

Children's use of spatial words varied widely in the present study. Some children used many spatial words as they were building their structures; others did very little talking and used a minimal number of spatial words. The children were able to communicate with peers during all videotaped sessions. While some conversed with peers, many were engaged in the process of building and both the beginning builders and after-school builders mainly discussed the task of building (e.g. what they were going to do, what blocks they needed). This possibly suggests that children's talk was related to the quality of the structures. This type of communication is consistent with previous research examining discourse strategies and meaning-making among young children in the block centre (Cohen & Uhry, 2007).

Additionally, all guided play-building sessions were indirectly scaffolded by the teachers. The findings may suggest that more direct scaffolding of spatial words may increase the frequency of spatial language children hear and use on their own to support the use of spatial words. Ferrara et al. (2011) examined parental scaffolding in three play conditions and found that when parents played less of an assertive role in talking to their child, the child became more absorbed with the activity of the building and did not elicit as much conversation about spatial configurations. Perhaps teachers could provide older builders with spatial vocabulary words; beginning builders may benefit from the use of parents building and talking alongside their children.

The second was to examine the use of spatial words in both groups of block builders, beginning builders, and after-school builders. Again, a review of the video transcripts and interactions indicated that older builders appeared to be demonstrating goal-oriented design, problem-solving skills, and engineering thinking. Older builders were more focused on language to share the initial construction goal, give input regarding the solution, or consult with a peer than the preschool builders. Additionally, the use of spatial words by the after-school builders varied widely. Sutton-Smith's (1997) defined different types of play from different disciplines and discussed the play rhetoric of *progress*. Block play cannot be examined from a lens of stages and ages, but rather examined through a lens of children's meaning-making and understanding of how things should be constructed and how they work.

There were differences in spatial talk between the girls ($M = 28.7$) and boys ($M = 22.7$). Two girls used many spatial words while building and after-school boys rarely engaged in any spatial talk. In an examination of one videotape, the girls used 58 spatial words and the boys spoke 18 spatial words. Gender differences and spatial talk needs further investigation.

An interesting discovery was that the current literature related to block play and spatial language highlights the different kinds of blocks used in constructive play. Studies have used mega blocks (Ferrara et al., 2011); pattern blocks (Casey et al., 2008); cardboard blocks (Ramani et al., 2014), and an assortment of blocks in a box (Caldera et al., 1999). Research with elementary students (Brosnan, 1998; Nath & Szücs, 2014; Pirrone et al., 2015) has primarily investigated Lego construction abilities with mathematical performance, not spatial language. The use of Lego blocks is very different from unit wooden blocks. Lego blocks require children to construct a specific three-dimensional model. Lego blocks come with pictorial instructions that indicate which piece should be added where, without the use of any written material. It appears that current empirical studies with wooden unit blocks is limited and it could be argued that this lack of empirical research of the value of unit block play and spatial language might be attributed to the disappearance of wooden unit blocks in many prekindergarten and kindergarten classrooms.

Conclusion

Play, once a daily activity in all early childhood classrooms, has been pushed out of most elementary public schools, and presently the trend is to also eliminate it from preschool settings (Nicolopoulou, 2010). The idea that research on early brain development implies that low-income children need direct instruction to overcome the achievement gap, as well as Race to the Top Common Core Standards have led to more standardized tests and less play in early childhood classrooms. Teachers need to understand the standards in place and use those standards to enhance children's play opportunities. There are no standards written that cannot be supported through play, and especially scaffolded play with blocks. Blockspot® has taken that challenge of using the standards and curricula to allow children opportunities to play and create within disciplines of language arts, mathematics, science, art, and literature.

Overall, observations of children's unit block play suggested guided play allowed children to develop linguistic skills. Finally, the study of spatial words is an area of inquiry with the potential to help us better understand ways block play might promote further inquiries related to spatial skills in mathematics and science that use unit blocks, not Legos, as a material for future investigations.

Notes on contributors

Lynn Cohen is a Professor at Long Island University at Post where she teaches courses at the master's and doctoral levels. Before coming to Long Island University, she was a preschool, kindergarten, and literacy teacher. Her passions span all aspects of teaching and learning including early childhood education, play and creativity, classroom environment, and assessment and evaluation. Publications include books *Play: A polyphony of research, theories, and issues, Learning across the early childhood curriculum, and Theories of early childhood education: Developmental, behaviorist, and critical* (April, 2017), numerous book chapters, and contributions *to Journal of Early Childhood Research*, *Early Childhood Education Journal*, *Educational Studies*, and *International Journal of Early Childhood*.

Janet Emmons, Founder of Blockspot®, has over 20 years' experience in education, research, and business. Janet's early childhood education background, school district leadership, and business background all culminated in the creation of Blockspot®. Blockspot® is the first of its kind to marry education and block play within a retail concept. Blockspot® operates a 2500 square foot state of the art facility in Southampton, NY.

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