

The Qualities Criteria of Constructive Play and the Teacher's Role

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ABSTRACT

The purposes of this study were to identify the qualities criteria of constructive play and the teacher's role to enhance the qualities of constructive play. The participants for this study were ninety-seven 5-year-old children (53 boys and 44 girls) attending one kindergarten located in S city, K province in South Korea. Ten research assistants were in the course of the master's degree and senior majoring in early childhood education. They were trained to observe and record the qualities criteria of constructive play in block play. Ninety-seven (97) children were divided into 20 groups, each group was consisted of 5 or 6 children. They participated in 10 block play sessions twice a week. The duration of each play session was 40 minutes. During the first 10 of 40 minutes, introduction activities were conducted by research assistants and constructive play session lasted for 30 minutes. Unit Blocks were used in this study.

The results were as follows; The qualities criteria of constructive play were time (duration), diversity (number of constructions), organization, elaboration, imagination, concentration, and variety (number of blocks, shapes of blocks). The teacher's roles to improve the qualities of constructive play are teachers should encourage and support children to participate in constructive play, and provide a plenty of time, multiple open-ended materials, diverse stories, fairy tales, many play experiences, and safe environment. Teacher's guidance, preparations, support, and encouragement will promote children's high qualities of constructive play. These high qualities of constructive play maybe contribute to quality learning and development of the young children.

INTRODUCTION

Constructive play involves manipulation of materials to create things: sand, art materials (paint, large chinks, clay, paper), water, woodwork activities, sticks and stones, and a variety of different sized and different type of blocks (Wardle, 2000). Constructive play is organized, goal-oriented play in which children use play materials to create or build something (Johnson, Christie, & Wardle, 2005). Constructive play involves open-ended exploration and gradually more functional in nature, then evolving to make-believe transformations. Four-and 5-year-olds often switch back and forth between constructive and dramatic play, and it can be difficult to distinguish between the two forms of play (Kostelnik, Soderman, & Whiren, 2007; Drew, Christie, Johnson, Meckley, & Nell, 2008).

All play is a delight to the young children engaged in it. In fact, symbolic and constructive play are the hallmarks of the early childhood period (Kostelnik, Soderman, & Whiren, 2007). Rubin, Fein, and Vandenberg (1983) reported that about 50% of all play activity is constructive play at this age. Constructive play involves exploration and discovery, tactile stimulation, problem-solving, social interaction, engagement and concentration, and attention to process and outcomes. Children represent their ideas, knowledge and interests in multimodal ways such as layouts, buildings, plans, and sculptures (Wood, 2013). Constructive play seems to play a very crucial role, both high incidence in the preschool and especially in the free play setting. But most studies have been focused on the symbolic play rather than constructive play (Park & Han, 2017).

Furthermore, many of today's parents, in response to the widespread stress on cognitive development in children, are demanding that their children be exposed to a program that is more than just play. Parents may choose a program for its so-called academic focus. In response, programs often include the terms school, early learning, academy, or some such phrase in their names (Rogers & Sawyers, 1992). But children learn many things through play. Especially through constructive play, children can learn to read, write, speak, and listen. Constructive play can teach them about math, science, and social studies. Constructive play often involves cooperative, collaborative learning, which helps children grow emotionally and socially. Constructive play also enhances their physical growth and development (MacDonald, 2001). In addition, through constructive play, problem solving ability was improved (Park, 2007). To facilitate and encourage constructive play, it needs to investigate the qualities criteria of constructive play and the teacher's role to enhance the qualities of constructive play.

RESEARCH QUESTIONS

The main research questions posed in this study are as follows:

1. What are the qualities criteria of constructive play?
2. What are the teacher's role to enhance the qualities of constructive play?

METHODS

Participants

The participants for this study were ninety-seven 5-year-old children (53 boys and 44 girls) attending one kindergarten located in S city, K province in South Korea.

Procedure

Preliminary observation. Before starting main observation, preliminary observations were conducted. Through preliminary observations, some problems were founded and these problems were made up for main observation. To reduce the sound of wooden blocks, a carpet was put in the block area. To videotape children's play behavior well, two video camcorders were established opposite sides with trivet. To establish rapport between children and researcher and research assistants, we read fairy tales to the children.

Training of research assistants. Ten research assistants were trained to observe and record the qualities of constructive play in block play. Among them, seven research assistants were in the course of master's degree and three were senior (undergraduates) majoring in early childhood education. Prior to the observation, they were trained four times in total, for 3 hours per one training session, about the definition of the qualities criteria of constructive play, the method of using video camcorder, and observer's attitude etc.

One group consisted of 5 or 6 kids, and are playing with 1 set of Unit Blocks for 30 minutes. Five research assistants observed 5 children's block play and they coded the score using the qualities criteria of constructive play. And every play session was videotaped.

As soon as each observation time was over, observers checked the scores to ensure the inter-rater reliability. Inter-rater reliability of coding scores was established as follows: (a) the research assistants coded appearing the qualities criteria of constructive play with observation forms and photographed the scene, (b) when the play session was over, they compared the coding scores with each other, and (c) if there were any differences between their scores, they discussed until they agreed on the coding scores of them.

Observation. The place of block play was set up in an extra room separated from their classroom in the kindergarten. Ninety-seven (97) children were divided into 25 groups, 5 or 6 children were grouped in one group, and they participated in block play sessions twice a week. As a result, they participated in ten-times in total. They were grouped in same classmates and 2 girls 3 boys were one group or 3 girls 2 boys or 3 girls and 3 boys were one group.

One play session lasted for 40 minutes. During the first 10 of 40 minutes, introduction activities were conducted by research assistants and constructive play session lasted for 30 minutes. They read story books to the children or they told with the children experiences about zoo, transportations, for example, airplane, ship, bus, train, etc., and Christmas. The books were predetermined to stimulate children's block construction as *The Three Little Pigs*, *Kindergarten*, *Zoo*, *The Wizard of Oz*, *Thomas and friends*, *Manhee's House*, *Cosmos*, *Block City*, *Transportations*, and *White Christmas*. The research assistants asked the children to make structures using blocks, and let them play, as they wanted. For example, when they read of *The Three Little Pigs*, children constructed three kinds of pigs houses with blocks. After they completed their block constructions, they played with construction(s) and play props or they used props as block construction. The research assistants did not interact with children when the children played with blocks. After the play session, research assistants asked them to name and describe their constructions. And the block structures were photographed to identify their structure's elaboration.

Materials for block play. Among constructive play, block play is appropriate for meeting the developmental needs of young children, providing opportunities for social, physical, and cognitive development (Han & Park, 2010). In the block center, there are no right answers. Activities are open-ended and children are free to change direction. Blocks promote children's awareness of symbols and their purposes (Wellhousen & Giles, 2005). Among blocks, Unit Blocks were used in this study. Other kinds of blocks are also available, but Unit Blocks consisted of various shapes and sizes in mathematical design and it is valuable equipment we can offer to children. In addition, it is helpful and useful to evaluate the qualities of constructive play. Unit Blocks were invented by Caroline Pratt. Unit Blocks have the basic dimensions 3.5x7x7cm, others are either multiple or divisions of the unit. Unit Blocks are consisted of unit, half-unit, double unit, quadruple unit, large arch, half

circle, 1/4 circle, pillars, half pillars, small cylinders, large cylinders, ramps, circular curves, elliptical curves, large triangle, small triangle, floor board, right-angle switches, X-switches, and Y-switches. Unit Blocks are built in mathematical proportion and they are different shapes and sizes. They are made from solid hardwood (MacDonald, 2001).

In addition, props (accessories) were supplemented. The props were wooden made. These were provided in all ten play sessions. For example, a miniature size of humans, animals, cars, trees, and traffic signs. The props had different shapes, colors, and sizes. Miniature of humans were adults, children, man, and woman. Miniature of animals were snake, elephant, crocodile, and rhinoceros. The props promoted and facilitated Unity Block play. Table 1 shows the kinds and number of Unit blocks that used in this study. These blocks were provided for one group in every play session.

Table 1. The kinds and numbers of Unit Blocks that used in this study

The Kinds of Unit Block	Number
half-unit	25
unit	50
double unit	32
quadruple unit	15
half-pillars	7
pillars	11
small cylinders	14
large cylinders	10
1/4 circle	2
half circle	4
half arch	7
large arch	4
circular curves	2
elliptical curves	2
small triangle	17
large triangle	10
floor board	9
ramps	8
right-angle switches	6
Y-switches	1
X-switches	1
props (miniature of humans, animals, cars, trees)	25
props (traffic signs)	5
The number and kind of blocks	23
Total	267

RESULTS

1. The qualities criteria of constructive play

The sub-qualities criteria of constructive play in this study were time (duration), diversity (number of constructions), organization, elaboration, imagination, concentration, and variety (number of blocks, shapes of blocks). These sub-qualities of constructive play were evaluated at each play sessions. Table 2 shows the qualities criteria of constructive play.

Table 2. The qualities criteria of constructive play

Sub-qualities	Contents / Explanation	Examples and Scores
Duration of play time	<ul style="list-style-type: none"> - The time that children participated in constructive play (The time limit of one play episode was 30 minutes in this study.) 	<p>Some children play constructive play 30 minutes, others play 10 minutes or 20 minutes in one play session.</p> <p>The children who play constructive play 30 minutes get a high score.</p>
Diversity	<ul style="list-style-type: none"> - The number of constructions in one play episode 	<p>For example, after reading <i>The Three Little Pigs</i>, children construct the first pig's house, the second pig's house, and the third pig's house. In this case 'diversity' is 3. If a child constructs only the third pig's house, the 'diversity' is 1.</p>
Organization (Relationship)	<ul style="list-style-type: none"> - The organization of between theme and constructions - The relationship of between theme and constructions 	<p>For example, after reading <i>The Three Little Pigs</i>, if a child constructs the first pig's house, the second pig's house, and the third pig's house, the 'organization' is high score.</p> <p>But if a child constructs something that is no relationship with <i>The Three Little Pigs</i>, the 'organization' is low score.</p>
Elaboration	<ul style="list-style-type: none"> - The degree of elaboration of construction - To evaluate elaboration researcher looked at carefully the constructions and took photos of constructions. 	<p>For example, after talking about <i>Transportations</i>, if a child constructs airplane not only inside but also constructs outside very concretely, the elaboration is high score.</p> <p>If a child constructs only outside of airplane roughly, the 'elaboration' is low score.</p>
Imagination	<ul style="list-style-type: none"> - The degree of imagination of construction - Most children construct based on the theme of each play session predetermined books or storytelling, or some children construct using their imagination based on the theme. 	<p>For example, after reading <i>White Christmas</i>, if children construct White Christmas castle, Santa's house, and playground for Rudolf deer and his friends, the 'imagination' is high score.</p> <p>After reading <i>Hensel and Gretel</i>, if children construct the prison for the witch and the policeman to protect Hensel and Gretel, the 'imagination' is high score.</p>
Concentration	<ul style="list-style-type: none"> - The degree of concentration on constructive play - The action or power or focusing on children's attention on constructive play 	<p>For example, when children construct their construction, if they are very concentrate on construct their construction, the 'concentration' is high score.</p>
Variety	<ol style="list-style-type: none"> 1) The used number of blocks in constructions 2) The number of kinds of block shapes in constructions 	<ol style="list-style-type: none"> 1) The sum of used number of blocks in one play episode. For example, children construct the first pig's house, the second pig's house, and the third pig's house, the first 'variety' means the sum of used number of blocks in three pig's house. 2) For example, children construct the first pig's house, the second pig's house, and the third pig's house, the second 'variety' means the sum of used number of different kinds of block shapes in three pig's house.

2. The teacher's role to enhance the qualities of constructive play

For optimal learning to occur through constructive play, children need support, time, and open-ended materials that stimulate the brain to think imaginatively (Drew, Christie, Johnson, Meckley, & Nell, 2008). The teacher's roles to enhance the qualities of constructive play are as follows;

(1) Time

Research has demonstrated the importance of the length of an activity period to mature, complex forms of play. Longer play periods were associated with more constructive and dramatic play. The researchers concluded that longer time periods maybe necessary for children 'to become involved in mature, complex forms of play' (Tegano, Lookabaugh, May, & Burdette, 1991; Park & Han, 2018). The most essential condition to support constructive play is the child's sense of schedule. Play does not survive when children rushed; constructive play must be nurtured by time (Forman, 2006). Teachers should give plenty of time for constructive play.

(2) Diversity

Teachers should emphasize the process rather than the product. This will aid in developing children's creativity, but even more importantly will ensure that children feel competent and good about their own work and therefore will be self-motivated to continue to learn. Constructive play should be studied by process. Also, teachers and parents should avoid the use of adult models of art or building projects for children to copy. Rather, let children use materials in ways that are most meaningful to them (Rogers & Sawyers, 1992).

Young children bring to an exploration of building their own ideas, interests, and beliefs based in experience and culture, and tempered by their developmental level. Some children may have had more opportunity to play and build with blocks and other and other materials both indoors and out. Others may have had less opportunity. Some of girls avoid the block area and need specific encouragement to build. Having a time in the block area just for girls or connecting building with the dramatic play area are other possible strategies. (Chalufour & Worth, 2004). Thus teachers should arrange near by the block play area and dramatic play area. Because these make constructive play become more diverse and connected to symbolic play.

(3) Organization (Relationship)

To enhance organization of constructive play, teachers may talk with children about *what* they made their creation and constructions (Rogers & Sawyers, 1988). Teacher's understanding, planning, and preparation are important for high quality of organization (Koo & Lee, 1998). In constructive play, organization means children can recognize and understand the relationship between the theme and their constructions, thus teachers should plan and prepare about constructive play to help and to facilitate children's understanding. For example, fairy tales or storytelling facilitate understanding about the theme and constructions.

Books are most beneficial additions to block play, and one of the easiest to include. Books in the block center offer enjoyment, expose children to new experiences, and generate new ideas for building. As teachers select and read aloud books that relate to building, children develop new ideas and strategies for their play (Wellhausen & Giles, 2005).

(4) Elaboration

Teachers can enhance the elaboration by talking with children about *how* they made their creation and encourage children to create something concretely. Furthermore, after constructing, teachers take photos of children's constructions. These make children motivated to construct more elaborate constructions. According to Park (2007), the longer the children engaged in constructive play, the more problem-solving ability and elaboration improved. In addition, pre-experiences, before constructive play, are helpful to make constructions more elaborate.

(5) Imagination

Imagination can generate alternatives to the 'way things are' and therefore expands the range of possibilities. It is important for the development of abstract, symbolic, 'as if' thinking (Tovey, 2015). Construction requires that the child have an image in mind that he or she then represents by using familiar process. Children's imagination is central to the reasoning process and no activity is undertaken without some image of the result, whether his or her conception is accurate or not (Kostelnik, et al., 2004).

Teachers should talk with children about *what* and *why* they made their creation. Also, it is helpful to keep accessories simple and austere so children can use their imaginations and apply their own meanings (Wellhausen & Kieff, 2001).

Block accessories change the nature of the play. Accessories motivate children by adding new possibilities to

their building. These additions invite different children into the action. Many children will simply be more curious about something new. Accessories can be made from just about any materials, including wood, plastic, or metal. They can be hard or flexible, real or make-believe. They can be people, animals, signs, trees, and objects. These accessories can help imagination and promote symbolic play. Accessories are the ‘gate’ children go through to enter the real of imagination, while others think more concretely. One never knows what accessory will strike a particular child’s imagination. New accessories invite renewed interest (MacDonald, 2001).

In addition, according to Park (2007), before constructive play, reading fairy tales are useful for children’s imagination in constructive play. For example, after reading *Hensel and Gretel*, a child constructed police station and put a miniature of men at the police station and put a doll of police officer nearby *Hensel and Gretel*. Research assistant asked why he or she made police station and why he or she put the police officer. A child answered, because he or she wanted to protect Hensel and Gretel from the witch. In *Hensel and Gretel* fairy tales book, there are no police station or police officer. But a child had his or her imagination from fairy tales.

(6) Concentration

Teachers can help children’s concentration on constructive play by stimulating children’s interests, curiosity, needs, and exploration. Children can concentrate on if they are interested in the activities. Thus teachers need to provide stories, open-ended materials, and supportive environments for constructing. The more concentrate on constructive play, the more problem solving ability improved (Park, 2007).

(7) Variety

Making sure enough blocks is very important. Generally, the number of blocks to have depends on the number of children in the center at one time. If there are too few blocks in the center, there will not be enough to go around, which can cause disagreements among the children. To figure out the best block-to-children ratio, consider the number of children who will be in the center at one time and their age. Many researchers suggest that 200 blocks for three-year-olds, 300 blocks for four-year-olds, and 400 blocks for five-year-olds and older children (MacDonald, 2001). Teachers may consider add more and more complex materials as children become more capable (Rogers & Sawyers, 1992). In addition, teachers should offer many different shapes and sizes of blocks. Variety and availability of appropriate materials will help ensure that children have many opportunities to learn through their play (Wellhousen & Kieff, 2001). Thus teachers should offer enough blocks for children.

DISCUSSIONS

Constructive play is a process, and should be studied as such (Forma, 2006). Thus it needs to be studied about the qualities criteria. Constructive play involves building and making things no one has ever seen before. As young children fiddle with, sort, and arrange materials, ideas and imagination begin to flow: Questions arise naturally: They wonder: What will happen if I put this here? How tall will it go? In this way, constructive play serves to focus the minds of children through their finger and leads them to invent and discover new possibilities, to fulfill their sense of purpose (Drew, Christie, Johnson, Meckley, & Nell, 2008).

Making things is an activity that is key to successful learning for young children. Constructive play inspires creativity, stirs the imagination, and presents opportunities for meaningful problem solving. Constructive play makes learning fun (Oliver & Klugman, 2003). The ability to physically construct new connections between thoughts and objects is the act of innovation and change. Child-focused inquiry learning that involves constructive play with array of three-dimensional materials, fosters positive learning, such as enthusiasm, resilience, creativity, decision making, and persistence in completing tasks (Drew, Christie, Johnson, Meckley, & Nell, 2008). In constructive play teachers allow high degree of freedom for children to choose what they will be representing with blocks, clay, or materials to create something. Constructive play requires children to be imaginative and creative, and involve a hands-on experience of building or making a concrete, three-dimensional model. Through constructive play, children create three-dimensional construction; they can see the elements of their models from different angles and perspectives. Block construction is the transformation of an experience or object into a concrete representation of this experience or object (Han & Park, 2010). Constructive play can provide a window into children’s thinking (Forman, 2006). The open-ended nature of blocks and other constructive toys provides young children with multiple opportunities to develop skills and abilities that cross all domains (Wellhousen & Kieff, 2001).

Constructive play is may facilitate problem solving ability. To improve problem solving ability, teachers should allow children to solve their own problem rather than interfering to offer teachers or parents solution. Give them the opportunity to try some unworkable solutions, and let them choose what works best for them. How can we do this? Rather than probing for one specific answer, encourage children to try out, or think of, multiple solutions. Ask questions focusing on “what if?” and “how can we ...?” rather than those with a yes, no, or other specific response. So much formal schooling seems to focus on finding the one right answer and how to use

things the one right way. Therefore, teachers should help children take advantage of opportunities to solve problems and think divergently (Rogers & Sawyers, 1992). If a child can construct with concrete objects, the child will learn to construct with words and ideas (Bruner, 1972). They can pretend, invent, and improvise (MacDonald, 2001). Teachers who understand and encourage this process of learning help children develop a very important talent (Drew, Christie, Johnson, Meckley, & Nell, 2008). Constructive play is similar to unstructured play. Unstructured play is just as valuable as structured play. For example, the more time children spend in less structured activities, the better their self-directed executive functioning (Trundle, 2018). Constructive play is open-ended activities allow children to design their own rules and play at their own pace. The objectives of constructive play range widely. Children can learn about physical world, about social world, and particularly about the role of the self in the construction of knowledge (Forman & Hill, 1980).

In summary, to improve the qualities of constructive play, teachers should encourage and support children to participate in constructive play, and provide a plenty of time, multiple open-ended materials, diverse stories, fairy tales, many play experiences and safe environment. It will enhance the qualities of constructive play, time, diversity, organization, elaboration, imagination, concentration, and variety. These high qualities of constructive play maybe contribute to quality learning and development because it provided the ideal conditions in which to learn. It would make more positive effect on learning and development for the children to be engaged in the high qualities of constructive play, rather than to just participate in constructive play. Teacher's interest, preparations, support and encouragement will reinforce children's high qualities of constructive play.

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