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Investigating the Strategy of Kindergarten Teachers Integrate Technology into Block Learning Area

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Abstract: In kindergartens, playing blocks is productive and independent learning activities in children's daily life. Teachers rarely intervene in the process of building blocks for children. However, in recent years, research has found that the process of playing blocks helps young children develop STEM concepts. Hence, it is important for the teacher to guide and interact with children on how to play block. The purpose of this study is to investigate how kindergarten teachers integrate technology into the block learning area and enhance students' block playing. This study interviewed six kindergarten teachers from two schools. The preliminary results showed that the teachers' teaching strategies integrating technology into block learning area, including (1) providing pictures and videos for children to observe how to construct the building, (2) photographing the process of children's building blocks, and children could discover the problems of building blocks and discussing how to solve problems, (3) the children shoot their films when the products are demonstrated.

Keywords: block playing, technology, learning area, Kindergarten

1. Introduction

A play that a child plays by using unit blocks in various sizes are called a block play. Blocks which are found in construction materials are used creatively by a child. Legos, puzzles, unit blocks, plastic blocks, wooden blocks, colored blocks are among block plays (Phelps, 2012). The block play is the most popular construction game in the children's play. The block play refers to the object modeling activity carried out by the child to operate the building block. In the game, the child selects various shapes of building blocks and uses the building skills to build different objects, including tiling, extension, and enclosing. All along, the relevant research or the kindergarten teachers point out that building blocks are good game media, and building blocks can provide physical operation opportunities for children to learn many skills. More importantly, block play contributes to the cognitive development of a child. A child could learn the concepts of measurement, number, shape, and size develop by playing with blocks. According to Wellhausen and Kieff (2001), children's logical inference and problem-solving skills are developed in the block play process.

Building blocks provides young children with peer interaction and language development in a natural context. Children plan, communicate, and collaborate with others to form relationships, solve problems and share goals, and acquire mathematics and scientific concepts in the process of building blocks. Past research has found that increasing the complexity of building blocks through teaching teachers to help young children learn and develop in other areas in the future, such as Hanline, Milton, and Phelps (2001) found in the complexities of building blocks and late childhood reading. There is a predictive correlation between ability and self-regulation, and Similarly, Wolfgang, Stannard, and Jones (2001) have similar findings that preschool children are associated with the complexity of building blocks and the high school mathematics.

The purpose of the kindergarten to build various learning areas is to provide a variety of play material so that children can explore, operate, experiment or play, through this process can acquire new knowledge, even present personal creativity. When children have the chance to choose a learning area, "block learning area" is often a popular option for young children. Since there is no limit to the playing method of the building blocks, children can reassemble and rebuild at any time, so that the children can

play freely, always try and experiment, and when they are wrong, they can come back at any time and reduce the frustration of failure. Besides, the child can assemble any shape as desired, even though the two blocks are stacked together, the imagination can give it a different life. Therefore, the building blocks can promote the experiment, modification, and creation of the child. In addition, the types of building blocks are also quite diverse, including Great Wall blocks, unit blocks, hollow blocks, wooden blocks, LEGO, et cetera., so children can choose freely, have great elastic changes, and even match other material accessories, can expand the type of games for young children. For example, animal puppets, toy cars, marbles, doll, branches, and so on.

In the building block game, different skills and different abilities are required. Through the guidance of the teacher, the child can learn to build complex building blocks in the imitation, and then provide opportunities for the child to explore and learn (Ramani, Zippert, Schweitzer, & Pan, 2014). In this process, teachers need to motivate their children and mentoring. They can provide demonstrations, suggestions, support, and comments for young children. Teachers' involvement in children's building block games can determine the intervention strategy based on factors such as age and child development (Aksoy & Aksoy, 2017). In the kindergarten classroom, when the child carries out the learning area activities, although the teacher and the child have the opportunity to interact with the dialogue, or the teacher observes the performance of the child building blocks and photographs the child's work each time to leave the child's work record, but it found that the interaction between teachers and students is short-lived. Because teachers need to take care of the performance of other children in different learning areas, the intervention of science and technology can help teachers build the building blocks of the children in the eagle frame, such as how to induce children to think, test, experiment, and transform. To promote students' development of the building block stage, and even the acquisition of the STEM concept should be the focus of our attention.

In the teaching scene, kindergarten teachers are less involved in the process of children's independent learning when they are learning in the learning areas. This situation is also found in the block learning area. Teachers are rarely involved and lack relevant teaching courses. However, in recent years, research has found that the process of building blocks helps young children develop STEM concepts, and the guidance and interaction of teachers in children's block play is even more important. Therefore, the purpose of this study is to investigate how teachers can use technology to guide young children to learn in the building blocks.

2. Research method

2.1 Participants

The participants are 6 kindergarten teachers who all have taught over 10 years from 5 classes and two schools. The two kindergartens are public schools attached elementary schools and locate in Taipei city. The kindergartens serve families who are predominantly middle class and implement the theme-based curriculum and learning area. The five classes are mix-age classes which children aged 4-5. This study focused on block area where provides unit blocks, Kapla, wooden blocks and block accessories. The classes provide different block accessories, such as animals puppets, toy cars, marbles and so on.

2.2 Research method

The primary research method of this study is the interview method. Before interviewing with the teachers, the researcher observed that the child interacted with the teacher in the block learning area in each classroom three times. According to the observation results, the researcher designed the interview outline. The questions include (1) how to teach in the building blocks? (2) How do the teacher scaffold children in the block learning area? (3) How to end the construction of the block learning area?

3. The preliminary results

Preliminary research results can be discussed from three aspects: (1) providing pictures and videos for children to observe how to construct the building, (2) photographing the process of children's building

blocks, and children could discover the problems of building blocks and discussing how to solve problems, (3) the children shoot their films when the products are demonstrated.

(1) providing materials for children to observe how to construct the building

For children who aged 5 or with good block building skills, the teachers provide sample pictures or video to help children challenge and learn new skills. The video could provide a three-dimensional view of the building, allowing students to observe the different faces of the building. For children who aged 4 or with lower block building skills, the teachers observe their interest topics, and provide less complicated examples, such as the construction of a single shape and the construction of less building blocks. The teachers most collected pictures or video from APPs which other teachers shared.

(2) photographing the process of children's building blocks

The teachers filmed the video while the child is building the blocks. The teachers would discuss the problem with the child in the process. Letter, the teachers would playing videos in group discussions, letting young children engage in peer-to-peer conversations, find that building difficulties and discussing how to solve them can help children improve the way they build.

(3) the children shoot their films when the products are demonstrated.

At the end of the semester, children would publish blocks performance, and children use photographs or videos as posters or promotional videos. Children need to design their posters or the content of the video.

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