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Play, mathematic and mathematical play in early childhood education

Ece Özdoğan^{a*}^aAnkara University, Educational Science Faculty, Ankara 06590, Turkey

Abstract

Children always interest in different plays. They start playing before beginning to walk or speak. They look the plays as a work and they are in attention while they are playing. Interest and motivation is important for learning so play can be use as a fuctional tool for learning. On the other hand children live with mathematics in their daily life and they grow up with mathematics. Before they start elementary education, they use many mathematical processes while they are playing. In this research, it is represented that how the mathematical play involves in early childhood education.

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Keywords: play, mathematic, mathematical play, early childhood development

1. Introduction

In recent years there have been a lot of researches done about mathematic education in early childhood. Play has an important place in early childhood education and it also has a meaningful place in children's daily life. Sometimes they play directly with mathematic in their plays. This process supports their mathematical development and inspires them about logical mathematical thinking.

2. Play and Mathematic

Many scientists studied on play in early childhood education and noticed play is important for learning and development. This is based substantially on the work of pioneer educators such as Jean-Jacques Rousseau, John Dewey, Maria Montessori, Friedrich Froebel, Margaret MacMillan and Rudolf Steiner (Wood & Attfield, 2005). Each of the pioneers views different parts of play.

There are a lot of descriptions of play, meaning different theoretical perspectives of learning and development. Play allows the children to show their feeling, emotions and ideas. Play facilitates learning relevant processes such as rehearsing, practising, repeating, imitating, exploring, discovering, revising, extending, combining, transforming, testing (Hughes, 1991). Mathematics and play take place in children's life at different levels. Mathematic and mathematical process starts before going school. Children are born as mathematicians and in their daily life they practice it.

Vygotsky (1978, s. 84) said that;

Children’s learning begins long before they enter school. . . . They have had to deal with operations of division, addition, subtraction, and the determination of size. Consequently, children have their own preschool arithmetic, which only myopic psychologists could ignore.

In recent years play is using in mathematic lessons for making the subject enjoyable. Players know that they are playing and that there is certain suspension of the constraints of the “real” world in which winning, losing, failing and succeeding have high stakes and meaning (Shechtman & Knudsen, 2009).

Griffiths (1994, pp. 156-157) noted that;

Maths and play are very useful partners. If we want children to become successful mathematicians, we need to demonstrate to them that maths is enjoyable and useful, and that it can be a sociable and cooperative activity, as well as a quiet and individual one. We must be careful, too, to remember that play is not just a way introducing simple ideas. Children will often set themselves much more difficult challenges if we give them control of their learning than if it is left up to the adults.

The main point is here that play isn’t only use for making activities enjoyable. It includes logical process and helps children configure the events, relations and connections. A play includes thinking, producing, creativity, discovering processes, is significantly meaningful.

3. Mathematical Play

Children use daily life activities in their plays and these plays also include mathematical experiences. Mathematic plays encourage children to improve logical thinking skills and to work on procedural knowledge such as addition, subtraction, multiplication and division facts (Burton, 2010). All children have capacities to obtain basic mathematical knowledge.

Mathematical play contains long process. Holton et al. (2001) notes that during the mathematical play children use their current knowledge and mathematical play develops links between the current schemata while the play is occurring. Mathematical play reinforces the current knowledge and it assists future problem solving/mathematical activities. During the mathematical play activities, children come across different types of daily problems and they construct several solution ways for them spontaneously. Therefore mathematical plays support the logical thinking and create powerful learning environments.

In recent years mathematic education becomes important in different levels of education. Especially, learning techniques become important too. Learning with mathematical play supports logical thinking and offers daily life problems. Ginsburg (2006) notes that, there are several kinds of mathematical plays. He specifies three types of mathematical play in early childhood education. These are; *mathematics embedded in play, play centring on mathematics* and *play with the mathematics that has been taught*.

Mathematical plays in which mathematics embedded in play, includes everyday mathematics. In this type of plays continue spontaneously. Sometimes it continues over a reading book activity, sometimes it continues with a block play or etc. (Ginsburg, 2006). Children transport their daily mathematics in their plays. For example their play can be a reading book activity. In this activity every movement can be related with mathematic. They hold the book and relative distance can be a subject for them (Ginsburg, 2006). There are so many examples like this.

Sometimes play centred on mathematics. Children play mathematics directly. They use number in their plays such as “I have one hundred.” Although they don’t have conservation, they discuss their numbers. They use directly number instead of saying “too many” or “too few”. Another type of mathematical play is, playing with the mathematics that has been taught. Children play with mathematics that they learn from their teachers (Ginsburg, 2006). They transport classroom activities to their plays.

4. Mathematical Play in Early Childhood Education

Mathematical play can be used by children in different age levels. From birth, all children start to observe mathematic. In real life situations and in play activities infants and toddlers use their hands to understand math concepts and skills. It can be a play activity for them. All play activities in early childhood, construct on past experiences. Daily life activities support mathematical learning. Educators need to know where children start mathematically and where they can go (Sarama & Clements, 2009). Educators can facilitate activities and help children to build up their mathematical plays.

5. Conclusion

Young children can cope with great difficulties in their mathematics learning. Teachers also can cope with great difficulties in their facilitation of children’s learning. These difficulties can be solved if teachers build relationships with the children in the class and know what mathematics they know, how they know and how they can use it to solve realistic problems. Teacher can develop challenging and complex experiences for young children. They can help children to reach their potential in mathematics learning.

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