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EARLY CHILDHOOD MATHEMATICS COMMUNICATION IN REASONING AND APPLICATION OF MATHEMATICS THROUGH THE NUMBERS BOTTLE GAME IN Kindergarten ANNUR 2 KARANGTENGAH DEMAK

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ABSTRAK

Kemampuan komunikasi matematis dalam pembelajaran matematika merupakan suatu hal yang diperlukan oleh setiap siswa guna mempermudah proses belajar mengajar. Sedangkan permainan botol angka merupakan media visual yang dapat merangsang kecerdasan dan ingatan anak dalam memahami lambang bilangan. Penelitian ini bertujuan untuk mendeskripsikan komunikasi matematis anak usia dini dalam penerapan dan pembuktian matematis melalui permainan botol angka di TK Annur 2 Karangtengah Demak. Penelitian ini menggunakan metode kualitatif dengan jenis penelitian deskriptif. Subjek pada penelitian ini yaitu 15 siswa kelompok A TK Annur 2 yang dipilih melalui hasil siswa dalam permainan matematika. Cara pengumpulan data melalui observasi, wawancara, dan dokumentasi. Data di analisis secara kualitatif dengan menggunakan cara reduksi, pengkajian data, dan penarikan kesimpulan. Hasil penelitian menunjukan dalam mengembangkan logika matematika anak melalui penerapan permainan botol angka adalah sebagai berikut: a). Anak mampu mengenal angka 1 – 10, b). Anak mampu menyebutkan angka 1 – 10, c). Anak mampu mengurutkan angka 1 – 10, d). Anak mampu memasukkan benda ke dalam botol angka sesuai dengan angka yang tertera pada botol angka dan e). Anak mampu melakukan penjumlahan sederhana 1-10. Maka dapat penulis simpulkan bahwa peran guru dalam mengembangkan logika matematika melalui diterapkannya langkah-langkah dalam mengembangkan logika matematika anak usia dini melalui permainan kartu angka telah menunjukkan hasil yang optimal.

Kata kunci: Pemainan Botol Angka, Komunikasi Matematika

ABSTRACT

Mathematical communication ability in learning mathematics is something that is needed by every student in order to facilitate the teaching and learning process.. While the number bottle game is a visual medium that can stimulate children's intelligence and memory in understanding number symbols. This study aims to describe early childhood mathematical communication in the application and mathematical proof through the number bottle game at Annur 2 Kindergarten Karangtengah Demak. This research uses qualitative method with descriptive research type. The subjects in this study were 15 students of group A TK Annur 2 who were selected through student results in math games. The method of collecting data is through observation, interviews, and documentation. The data were analyzed qualitatively by using the method of reduction, data assessment, and drawing conclusions. The results of the study show that in developing children's mathematical logic through the application of the number bottle game, they are as follows: a). Children are able to recognize numbers 1-10, b). The child is able to name the numbers 1 – 10, c). Children are able to sort numbers 1 – 10, d). The child is able to put objects into the number bottle according to the numbers listed on the number bottle and e). Children are able to do simple additions 1-10. So the writer can conclude that the teacher's role in developing mathematical logic through the implementation of steps in developing early childhood mathematical logic through number card games has shown optimal results.

Keywords: Number Bottle Game, Mathematical Communication

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INTRODUCTION

Mathematics grows and develops from everyday life, therefore learning mathematics must be related to real life. Early childhood is a golden age that needs to be introduced to mathematics from an early age. At all levels the learning process requires teachers to be more creative, especially at the Early Childhood Education (PAUD) level, because PAUD children are not yet aware of the importance of learning. Therefore the teacher must be creative in choosing material, determining learning objectives, determining approaches/methods/media, carrying out learning and developing evaluation tools. In terms of making learning objectives the teacher must refer to the optimal development aspects of development. Because the goal of PAUD is to optimize the development of spiritual, social-emotional, psychomotor, cognitive, language, and artistic aspects (RI, 2014). In Basic Competency (KD) there are aspects of cognitive development, there are aspects of development of science and mathematics, which can be seen in aspects of skills and aspects of knowledge.

According to Dickey (2013) the purpose of learning mathematics is that children have standards in mathematical abilities such as problem solving, reasoning and proof, communication, connection, and representation. Meanwhile, the purpose of national education as stated in RI Law No. 20 of 2003 (Ministry of National Education, 2003) is to educate the life of the nation and develop Indonesian people as a whole. Humans are actually people who believe in and are devoted to God Almighty and have noble character, have knowledge and skills, physical and spiritual well-being, a stable and independent personality and a sense of social and national responsibility.

Mathematical communication skills in learning mathematics is something that is needed by every child to facilitate the teaching and learning process. At the age of 5-6 years children tend to like counting activities, like various games that involve lots of active thinking activities, such as chess and playing puzzles. Learning activities in PAUD according to the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 137 of 2014 are structured based on a program of activities covering areas of development, including the field of cognitive development which aims to develop children's thinking abilities to be able to process their learning acquisitions, be able to discover various - various alternative problem solving, helping children to develop mathematical logic skills and knowledge of space and time, and have the ability to sort, classify, and prepare the ability to think carefully.

Mathematical communication according to Sfard is a process of conveying mathematical ideas both orally and non-verbally. NCTM defines that mathematical communication is a way for students to explain, organize, articulate, and consolidate their thoughts. The purpose of problem solving in this study is a cognitive activity as a process for determining solutions in various ways and techniques or strategies to solve them. The method of conveying student ideas to problems given both in writing and non-writing is said to be a form of mathematical communication.

In this study, the author will use the Number Bottle Game, which is a game designed using a tool in the form of a plastic bottle labeled with a number (number) which is played by inserting objects into the bottle according to the numbers printed on the wall of the bottle. This game aims to introduce children to the concept of numbers through games or playing while learning. This game can be done individually or in groups. The number bottle game is carried out individually, the children are called one by one to put objects into the number bottles, the other children see and encourage friends who are playing. After the child has finished playing, the teacher invites the child to count the objects that have been put in the bottle. If it is appropriate, the teacher gives praise and awards in the form of a sticker with a picture. The game can also be done in groups in almost the same way.

Based on the results of observations made by the author before using the number bottle game, it was found that many children had difficulty communicating their understanding of mathematics. The results of the preliminary observations that the author made before using the number bottles on children at Annur 2 Kindergarten include that children often answer the

teacher's questions incorrectly, for example when asked to say the number according to the picture designated. There are five pictures but the answer is seven or vice versa. Another problem is that children have difficulty in mentioning the sum of two numbers. In addition to the lack of children's abilities in the aspect of counting.

RESEARCH METHODS

The research conducted is a research with a qualitative descriptive approach. The research subjects were group A early childhood at Kindergarten Annur 2 Karangtengah Demak. Sources of data in the research conducted were the results of children's mathematical abilities through number bottle games, interview recordings and field notes. The main instrument in this study was the researcher, while the supporting instruments were the results of children's games related to solving mathematical problems, interview guidelines, and audio-visual recordings, as well as field notes. The research technique in which all research subjects are given the opportunity to play the number bottle game for problem solving. After the child plays the number bottle game, the results of the game are communicated together whether the results of the game are appropriate or not.

The researcher also asked for answers from the children to see if there were similarities in the answers between the students and the teacher as an identification of the problems that occurred. During the discussion between the child and the teacher audio-visual recording is carried out in order to obtain accurate data. Data analysis techniques carried out from the raw data obtained are read carefully from the entire data so that it can be encoded. Furthermore, after being coded, it is grouped based on the categories of right and wrong answers, then describes the existing data to be presented and interpreted, then conclusions are drawn.

The categories of children's mathematical communication abilities consisting of high abilities, moderate abilities, and low abilities are determined by adjusting them to the written mathematical communication indicators that are fulfilled. This study uses five indicators as described in the methods section. This means that there are children who are included in the high category of written mathematical communication skills, namely children who are able to fulfill at least four indicators. While children who are included in the medium category are children who meet at least three indicators. Furthermore, for children who are included in the low category are children who only meet one indicator.

RESULTS AND DISCUSSION

The number bottle game in this study is packaged into a simple game that can be played by early childhood. Number bottle game used

The purpose of this research is to use a set of number bottle game maniacs made from plastic bottles and straws. With the number bottle game, children feel something is different because the number bottle game makes children more excited. Children who are initially bored with the learning system, which is usually the number bottle game, become happy and excited about learning mathematics.

Based on the results of observations, it can be stated that playing with number bottles can improve children's mathematical abilities. Children are able to reason and prove through their mathematical logic in playing the number bottle game. Of the five indicators, among others: a). Children are able to recognize numbers 1 – 10, b). Children are able to say the numbers 1-10, c). Children are able to sort the numbers 1-10, d). The child is able to put objects into the number bottles according to the numbers listed on the number bottles and e). Children are able to do simple additions 1-10. Most children are able to fulfill 4 to 5 existing indicators.

Therefore, playing with number bottles is appropriate to stimulate children's mathematical comic abilities because to get to know abstract material, media is needed that is able to concretize the material presented and can build communication between one child and another. Children communicate opinions to each other in playing the number bottle game. Learning activities

through playing using number bottles made according to children's logic make it easier for children to recognize number symbols.

Playing number bottles makes children more active in learning activities. On average, children enjoy participating in learning activities so that children are able to survive from the beginning to the end of the activity. Children also really pay attention when playing number bottles, making it easier for children to recognize number symbols. Children can communicate by arguing, expressing the results of their thoughts and applying them. In this study, children played by inserting straws into bottles that had numbers written on them, besides that children also mentioned the numbers in the bottles, children also counted using straws and added up the numbers with simple addition. Playing with number bottles can help children improve their mathematical communication. Children who initially do not like mathematics, by playing with numbers bottles children like mathematics and are able to communicate mathematically with the logic of the child's own thinking and apply it. In addition to improving mathematical abilities, children can also learn in a fun way through the number bottle game, this makes children easy to accept what is learned and children are more enthusiastic and active in the learning that is being done.

In this study, it can also be seen through the results of interviews with children by means of discussions during games. According to the results of interviews with children, it can be concluded that children prefer to learn mathematics through number bottles because the number bottle game is very fun and children's mathematical abilities are also increasing, while according to the results of interviews with parents, children are also more active and enjoy learning mathematics and children's mathematical abilities are also increasing better and be able to understand mathematical concepts and according to the results of interviews with teachers, by using the number bottle media, children's math skills are increasing and learning activities are more fun and making children more enthusiastic about learning and not getting bored easily.

CLOSING

Of the five indicators that are hopeful, among others: a). Children are able to recognize numbers 1 – 10, b). Children are able to say the numbers 1-10, c). Children are able to sort the numbers 1-10, d). The child is able to put objects into the number bottles according to the numbers listed on the number bottles and e). Children are able to do simple additions 1-10, most children are able to fulfill 4 to 5 existing indicators, namely as many as 11 children, children in the medium category are those who are able to fulfill 2-3 indicators as many as 3 children and children in the low category are 1 child . So it can be concluded that through the number bottle game can improve children's mathematical communication skills in reasoning and proof.

DAFTAR PUSTAKA

Andika Setyo Budi Lestari. 2019. Imitasi Dalam Komunikasi Matematis Siswa Untuk Menyelesaikan Masalah Matematika. Jurnal Indonesia Mathematics Education. https://jurnal.ustjogja.ac.id/index.php/indomath Vol 2, No. 2, Agustus 2019, pp. 95-104.

Nahrowi Adjie, Suci Utami Putri, Finita Dewi. Peningkatan Kemampuan Koneksi Matematika melalui Pendidikan Matematika Realistik (PMR) pada Anak Usia Dini. Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini. Volume 5 Issue 2 (2021) Pages 1325-1338. 1325 ISSN: 2549-8959 (Online) 2356-1327 (Print).

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