



Implementation of Mathematics Learning For Early Childhood Through The Traditional Bekel Ball Game

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Abstract

There are several things that need to be prepared to support children's development through the learning process, one of which is preparing media that can support aspects of their development. Most teachers only use an approach in the form of media images through worksheets without any modifications in the form of games. The purpose of this study is to describe the related Implementation of Mathematical Learning for Early Childhood 4-6 years Through the Traditional Game of Bekel Ball at PG-TK Islam Tirtayasa. This research uses a qualitative method. The research subjects were children aged 4-6 years old. With data collection techniques through an interview, observation, and documentation, classroom Action Research is an activity to improve learning practices to learning activities from problems that arise in learning situations. The results of the study are that there is an increase in the symbols for numbers 1-10 and knowing the shape of a circular geometric circle which if written in proportion is knowing the symbols for numbers 1-10 which is caused by stimulation of the child's brain for cognitive aspects through congklak media, as many children develop very well (BSB) 70% and children who develop as expected as much as 30% while children who know the geometry of circles with an unprecedented development rate as much as 80% and who develop as expected as much as 20%. This is also shown when the process of bekel ball games is done, namely the enthusiasm of children in playing and children are delighted when playing ball together with their friends so that the child does not feel that he is learning as well.

Keywords: Math Learning, Bekel Ball Game, Early Childhood

Introduction

NAEYC (National Association for the Education of Young Children) states that early childhood is children aged 0-8 years who receive services in education in daycare, primary family homes, and preschool education. Early childhood education continues to experience an increase from year to year. However, like the number of children in 2002 aged 0-6 years (28,311,300 people), only 5.69% were served by kindergarten, 11% had entered elementary school, and 52.25% were fostered through the Toddler Family Development program. The remaining 30.06% have not received education services (Andayani, 2021).

According to (Saputra, 2018), the definition of early childhood education contained in the 2003 National Education Act Article 1, paragraph 14 states that: Early childhood education is an effort to guide children from birth to the age of 6 years, which is carried out by providing stimulation education in early childhood to increase physical and spiritual growth and development in children so that children have the readiness to take further education. Early childhood has a phase where there is a transition from the pre-operational stage to the concrete stage. Children in this phase have a good learning process on natural objects. Therefore, teachers and parents can tell children about numbers with media in the form of objects around them. In addition, we can use various objects around us to improve the development of the ability to think logically and mathematically in children (Nurhidayah & Astari, 2019).

Maturity and learning are the factors of child development. If a child aged 5-6 years has shown the characteristics of an acute phase (maturity) in his numeracy skills, it is better if parents and teachers are there to immediately provide services and guidance to children so that their needs are met appropriately. Calculate the wishes of teachers and parents so that competency development is transmitted optimally. The ability to count in children aged 4-6 years does not only function for cognitive development but also for delicate motor and social aspects. Age 4-6 years is a practical age to introduce counting to mathematics because ages 4-6 years are susceptible to environmental stimuli.

High curiosity can be conveyed if you receive suggestions related to developmental aspects. If counting activities are taught through various appropriate and entertaining games, it is undoubtedly more effective because playing is a vehicle for learning and creative design for children. Children are believed to be more successful in learning if what they learn is by their interests, needs, and abilities (Hasbi, 2016). One of the determinants of the success of early childhood development is using a suitable game model. Games are crucial to developing aspects of early childhood development because the stimulation carried out will be easily absorbed by children through play activities, including providing stimulation to increase early mathematical abilities in early childhood.

The ability to number from 1-10 and know geometric shapes in children is one of the basic skills that are prepared, with the aim that children can process their learning acquisitions and find various alternatives. Problem-solving, developing mathematical logic skills, knowledge of space and time, the ability to sort and classify, and preparation for developing the ability to think carefully. Considering numeracy skills development materials' critical effect from an early age, it is essential to provide stimulation, encouragement, and support in many planned, practical, and enjoyable learning programs. This is where the role of the teacher is needed, for that as a kindergarten teacher must be able to develop and actualize the development of learning the ability to number 1-10 in school according to his creativity, as long as it does not conflict with the principles and principles of learning in kindergarten.

In fact, in Titrtayasa Islamic Kindergarten in group B, there are still many problems that refer to the child's inability to say 1-10 and the need to know the name of the geometric shape. When the researcher asks about this bekel ball shape, the child is silent and does not know it. The condition of the low ability to say 1-10 and not knowing the geometric shape of

the circle in group B children, one of the causes, is caused by the teacher factor. Namely, the teacher needs to be able to apply learning approaches and methods that can improve the quality of learning. Most teachers only use an approach in the form of picture media through student worksheets without any modification in the form of games. The ability to number in the 5-6 year age group where children can say 1-10 (Permendiknas Number 58 of 2009). Based on a journal written by Badrullah entitled "Building a disciplined attitude and children's concentration skills through traditional beklen (Bekelball) games" explains that the cognitive aspect is stimulated because, in the bekel ball game, children use their reason or logic to remember processes and stages in learning.

Based on a journal written by Badrullah entitled "Building a disciplined attitude and children's concentration skills through the traditional game of Beklen (Bola Bekel)" explains that the cognitive aspect is stimulated because, in the Bekel ball game, children use their reason or logic to remember the processes and stages in the game, their power Thinking, focus and math skills or counting children are honed because in the Bekel ball game there are several stages, namely stage one child must take one kwuk seed, stage two children take two seeds, stage three children take three seeds, and so on until they are equal. With the total number of kwuk seeds. After that stage, there is a stage of reversing the kwuk seeds and then taking the kwuk seeds, like the first stage. Then the last stage reverses the position of the kwuk seeds from the previous position and takes the kwuk seeds according to the first stage. As a result, children will begin to understand information from existing and new experiences. In addition, children will think and make strategies to play the game well and smoothly and win the game (Badru, 2020)

Based on some of the previous studies above, it can be concluded that there is an update in this research with previous research, namely the research method is carried out using a qualitative descriptive approach and traditional games which can improve children's numeracy skills not only through congklak media but also through other traditional games such as bekel ball. According to the researcher, the method that can be applied to early childhood is the method of counting and introducing geometric shapes using bekel ball media. By using a bekel ball, children can learn and play so that children stay energized. This study aims to describe the implementation of Mathematics Learning for early childhood 4-6 years through the Traditional Bekel Ball Game. This research is useful for helping prospective educators, especially early childhood education in developing creativity in students' numeracy learning activities through media that are attractive to students so that aspects of child development namely, language aspects, artistic aspects, physical motor aspects, religious moral aspects, cognitive aspects as well as the social-emotional aspects of children can develop according to the stages of their development.

Literature Review

a. Math for early childhood

Mathematics studies logic about the shape, arrangement, and size of interrelated concepts. The word mathematics comes from the Greek machine, which

means to study. The word is taken from the word mathematics, which means knowledge which can also be called knowledge (knowledge, science). The machine word is also related to other words that have the same meaning with almost the same mention. Mathematics is a branch of science studied in all educational institutions, from PAUD to tertiary institutions, depending on the level. Only basic mathematics taught in PAUD is in the form of counting concepts, such as counting from 1-10 and knowing the shape of a circle's geometry. Children should be introduced to fun learning mathematics and they like it so that what they see and feel when learning becomes a provision for their theory and understanding of concepts in mathematics lessons at the next school level (Lubis & Umar, 2022).

Kuraesin (Mahmud, 2019) states that numeracy is an exact science that cannot be guessed, the ability to count cannot be separated from everyday life that is commonly used by adults, parents, and even children. Counting is also a part of mathematics that deals with the concept of numbers, where counting enters the stage of the concept of numbers. the stages of the concept of numbers. Basic calculation is a science that must be taught in early childhood, this is very important for them in the future. The calculation is the most basic thing in everyday life. Almost all human activities use calculations. Therefore, it is very important to teach calculation from an early age. For early childhood, calculations must be taught or conveyed in a simple and precise way and carried out stably and sustainably, must be in conducive conditions and encouraging learning so that the child's brain is more active. Trained to continue to develop so that children can master the concept of counting and even really like learning mathematics (Hidayah, 2019).

The National Council Of Teacher Of Mathematics (NCTM) has developed The principles and standards for school mathematics (principles and standards for school mathematics) explaining the expectations of mathematics in early childhood about concepts that early childhood can understand in mathematics, including:

1. Numbers

One of the mathematical concepts that what is most important for children to learn is development of number sensitivity. Sensitive to numbers means not only count. The sensitivity of the number includes developing a sense of quantity and understanding one-to-one compatibility one. When sensitive to numbers children develop, they become more and more interested in the calculations. Calculating this becomes the cornerstone for early work of children with number.

2. Algebra

An introduction to algebra begins with sorting, classifying, compare, and arrange objects according to shape, number, and other properties, recognize, describe, and expand the pattern will give contribution to children's understanding about classification.

3. Classification

Classification is one of the most important processes for develop the concept of numbers. So the child is able to classify or sorting objects, they have to develop an

understanding of "have each other in common", "likeness", "similarity", and "difference".

4. Patterns

Identify and create pattern is associated with classification and sorting. Children begin to see same and different attributes pictures and objects. Children love to make patterns in the environment they.

5. Geometry

Building the concept of geometry on children begin by identifying forms, investigate buildings and separate the usual pictures like square, circle, triangle. Learn layout concepts such as below, above, left, right lays the initial foundation of understanding geometry.

6. Measurement

When the child has the chance for hands-on experiences to measure, weigh, and compare the sizes of objects, they learn the concept of measurement. Through this experience the child develop a solid foundation in measurement concepts.

7. Analysis of data and probability

Experiment with measurements, classification, and sorting is the basis for understanding probability and data analysis. It means ask questions, collect information about himself and their environment, and convey this information lively (Syafri, 2018).

b. Cognitive aspects of children on numeracy skills

Cognitive development is the development of children's thinking and the ability to give reasons. With his cognitive development, child able to think and remember, and have ideas, ideas, solutions, how to solve problems and compile creative strategy. In this study, ability children's cognitive seen from the ability children in counting each bekel seed and the number of jumps on the bekel ball (Hapsari, 2020).

Cognitive Development in Children from 0-7 years old According to Jean Piaget (in Filtri & Sembiring, 2018):

1. Sensory Motor (age 0-2 years) In this stage development of the senses very influential child self. Desire the greatest is desire to touch or holding, being pushed by desire to know the reaction of his deeds. In this age they don't understand yet motivation and weapons the biggest is 'cry'. Convey stories or news in children this age can not be just simply by using pictures as props, but must be with something that moves (puppet stage will very helpful). Piaget argues that this stage marked ability development and spatial understanding important in six sub-stages:
 1. Reflex scheme sub-stages, present from birth to age six weeks and particularly related by reflex.
 2. Sub-stages of the reaction phase primary circular, from age six weeks to four months and connected especially with emergence habits.
 3. Sub-stages of the reaction phase secondary circular, appears between the ages of four and nine months and connected especially with coordination between sight and meaning.

4. Reaction coordination sub-stage secondary circular, appears from age nine up twelve months, moment ability development to see the object up as something that permanent though it may seem different when viewed from different angles (permanence object).
 5. Sub-steps of the reaction phase tertiary circular, appears in ages twelve to eight fifteen months and related especially with inventions new ways to achieving goals.
 6. Initial sub-stage of representation symbolic, related especially with stages early creativity.
2. Pre-operational (ages 2-7 year) At this age the child becomes 'egocentric', so memorable 'stingy', because he can't see from the corner look at others. Child it also has tendency to imitate those around him. Even at the age 6-7 years they are already begin to understand motivation but they don't understand systematic way of thinking - complex. In must tell the story there are props. Cognitive abilities are an aspect of human development very fundamental (Novia et al., 2019). Early age can develop mathematics as experience study math with interactive, and motivated to learn better understand learning mathematics. Science development mathematics can be obtained through counting activities, classifying, recognizing shapes, and distinguish something Khadijah (Nurhaliza et al., 2019).

Methods

Creswell, J.W.(in Harahap, 2020) noted that in a qualitative research design should be presented in detail and clearly³⁴. For this reason, it is necessary to disclose the following matters: Research questions and research focus. 2. Compile a literature review in order to compile 'theoretical framework' or 'paradigm' which form the basis of the theory. 3. Develop a research approach plan should give a clear picture and focused on research objectives. 4. Clear research scope and setting. 5. Methods of collecting and classifying data right. 6. View or make corrections to the validity of the data. 7. Perform proper data analysis techniques.

Qualitative research focuses on activities ontological. The data collected is mainly in the form of words, sentences or pictures that have meaning and are able to spur the emergence of a more real understanding than just numbers or frequency. Researchers emphasize notes with descriptions detailed, complete, in-depth sentences that describe actual situation to support the presentation of data. By that's why qualitative research in general is often called as a descriptive qualitative approach. Researchers try analyze data in various nuances according to its original form as at the time it was recorded or collected (Nugrahani, 2014). According to Moleong (in Kusumastuti & Khoirin, 2019) Function and utilization Qualitative research includes the following: a. In early research where the research subjects were not well defined and poorly understood. b. On efforts to understand behavior and research motivational research. c. For consultative research. d. Understanding complex issues of a process. e. Understand the detailed issues about the situation and reality one is facing.

In designing qualitative research needs to be done in several ways steps, namely: 1) Finding Research Issues, 2) Outlining Research Background, 3) Identifying and Formulating

Research Problems, 4) Determining Research Purposes and Uses, 5) Determining the theoretical basis used, 6) Developing preliminary research and framework, 7) Determine Research Dimensions, and 8) Choose Research Methods (Murdiyanto, 2020).

This research approach uses this approach using a qualitative descriptive method. A qualitative approach is a research approach without statistical figures but with descriptive exposure, which is trying to describe a symptom, event, and incident that occurs to be the focus of attention and then described as it is. This research is also field research. *Qualitative research* is a research procedure that produces descriptive data in the form of written or spoken words from people or observed behavior. A qualitative research method is a research method based on the philosophy of postpositivism, used to examine the condition of natural objects, where the researcher is the key instrument, the data collection technique is done by triangulation (combined), the data analysis is inductive/qualitative, and the research results are more focused. Meaning rather than generalization.

Qualitative research differs from other research in several ways. In this connection, Williams mentions three main points, namely (1) basic views (axioms) about the nature of reality, the relationship between the researcher and the researched, the possibility of drawing generalizations, the possibility of building causal relationships, and the role of values in research, (2) the characteristics of the qualitative research approach itself, and (3) the process followed in carrying out qualitative research.(Hardani, 2020).

The research subjects were children aged 4-6 years old with data collection techniques through interviews, observation, and documentation. The interview begins by asking a series of structured questions, then one by one, it is deepened by seeking further information. With the question guidelines that have been made, it is hoped that the respondent's questions and statements will be more focused and make it easier to recapitulate the records of the results of research data collection (Adhimah, 2020).

Result/Findings



Fig 1. This is the process of explaining the geometry of the bekel ball and circle



Fig 2. This is the process of explaining how to play bekel ball



Fig 3. This is the process of practicing bekel ball



Fig 4. Children are practicing playing ball bekel

Based on Figures 1, 2, and 3 where the activities carried out by the researcher are playing bekel ball using several modifications to how to play to make it easier for children to count bekel seeds and jump the bekel ball, namely by taking the bekel ball using 2 hands and doing it step by step Alternate between catching bekel balls and picking up bekel seeds so it will be easier for children to play.

Table 1. Observing the Achievement of Children's Counting Ability Development

Number	Name	age	The development of children's mathematics learning	
			Counting Numbers 1-10	Recognizing Circle Geometry Shapes
1	Fz	4	BSH	BSB
2	Rs	4	BSB	BSB
3	Ba	5	BSB	BSB

4	Ak	5	BSH	BSB
5	Sr	5	BSH	BSB
6	Tw	6	BSB	BSB
7	Fg	6	BSB	BSH
8	Oc	6	BSB	BSB
9	Vm	6	BSB	BSB
10	Pj	6	BSB	BSH

Information:

BB: Undeveloped

MB: Starting to Grow

BSH: Growing as Expected

BSB: Very Well Developed

Based on table 1, is the result of an assessment instrument on children's developmental abilities using the method of measuring aspects of child development, namely: not yet developing, still developing, developing as expected, and developing very well.

Discussion

Based on table 1, which is the result of Observing the Achievement of the Development of Counting Ability of Children at Tirtayasa Islamic Kindergarten where children experience an increase in recognizing the symbols of numbers 1-10 and recognizing the geometric shapes of circles which, if written in percentages are to recognize the symbols of numbers 1-10 as many as children who develop Very Good (BSB) 70% and Children Who Develop As Expected (BSH) as much as 30% while children who know circle geometry with a development level of Very Good Developing (BSB) as much as 80% and developing according to expectations (BSH) as much as 20%. The way to play the bekel is by guessing the seeds in each hand; if the guess is correct, then that is the one who will play first. Each taking is like one kuwuk seed, two kuwuk seeds, and so on. The child counted from 1 to 10 in the bekel ball game. This is shown when researchers look directly at the location. However, some have yet to be able to catch the ball. However, it challenges children and fosters a sense of enthusiasm for them to keep repeating the game.

In pictures 2, 3, and 4, the researcher explains how to play bekel ball to early childhood children in Tirtayasa Islamic Kindergarten. Then, the researcher gave an example of how to play bekel ball, starting from throwing and catching the ball to how to count the kuwuk

seeds. After that, the children were very enthusiastic when the researcher asked, "who wants to try it" all the children answered, "I am the teacher." Therefore, guessing the seeds in hand is held first to determine who will play first. Preferably, the learning process for early childhood is carried out through fun activities such as playing traditional games. By playing, the child does not feel he is learning and is not dull. Besides being fun, playing can also develop six aspects of development in early childhood. Therefore, teachers should create a comfortable and safe playing atmosphere for children and preserve all forms of traditional games to remain sustainable.

Conclusion

Based on the description of the research above, The results of the study are that there is an increase in the symbols for numbers 1-10 and knowing the shape of a circular geometric circle which if written in proportion is knowing the symbols for numbers 1-10 which is caused by stimulation of the child's brain for cognitive aspects through congklak media, as many children develop very well (BSB) 70% and children who develop as expected as much as 30% while children who know the geometry of circles with an unprecedented development rate as much as 80% and who develop as expected as much as 20%. This is also shown when the process of bekel ball games is done, namely the enthusiasm of children in playing and children are delighted when playing ball together with their friends so that the child does not feel that he is learning as well. Through the game of bekel ball can improve the ability to count and recognize geometric shapes in learning mathematics. It seems that there is an increase in the proportion of results in Tirtayasa Islamic Kindergarten. This is also shown when the process of playing bekel ball is carried out, namely the enthusiasm of the children in playing and the child is happy when playing bekel ball with his friends so that the child does not feel that he is also learning.

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