Indonesian Journal of Islamic Education

IndonesianJournalofIslamicEducation
Volume 1 (2) 408– 414 June 2024
ISSN: In Process
The article is published with Open Access at: https://journal.maalahliyah.sch.id/index.php/ijie/index

Improving Numeracy Skills Through Number Card Games in Group B Children at RA Darussalam Tempurejo Jember

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Abstract: Numeracy is an important basic skill for early childhood as a foundation for understanding more mathematical concepts. This study aims to improve children's numeracy skills through number card games in group B children at RA Internasional Darussalam Tempurejo, Jember. The method used in this study is Classroom Action Research (PTK) which consists of two cycles. Each cycle includes the stages of planning, implementation, observation, and reflection. The subject of the study was group B children aged 5–6 years. Data was collected through observation, interviews, and documentation.

The results of the study show that the use of number card games can improve children's numeracy skills, both in terms of recognizing numbers, sorting numbers, and performing simple counting operations. This increase can be seen from the results of the evaluation of each cycle which shows a significant improvement in children's numeracy skills. In addition, number card games also increase children's motivation and active involvement in learning.

Thus, it can be concluded that number card games are an effective and fun method in improving early childhood numeracy skills. This research is expected to be a reference for educators in developing more innovative and fun learning methods for children.

Keywords: Numeracy Skills, Number Card Games, Early Childhood, Mathematics Learning

INTRODUCTION

Numeracy is a basic skill that early childhood must master as a foundation for their cognitive development at the next level of education. Effective numeracy learning can help children understand the concept of numbers, simple mathematical operations, and improve logical

thinking skills (Susanto, 2021). Therefore, it is important for educators to develop learning methods that are interesting and in accordance with the characteristics of early childhood so that they are more motivated in learning. One strategy that can be applied is the number card game, which offers an interactive and fun approach to learning to count.

Although numeracy is very important, the reality is that many early childhood children still have difficulty recognizing numbers, sorting numbers, and understanding the basic concepts of counting operations. This can be caused by various factors, such as unattractive learning methods, the lack of use of educational media, and the limitations of children's interaction with numerical concepts in daily life (Wahyuni et al., 2023). Monotonous conventional learning methods often make children feel bored and less interested in learning, thus hindering the development of their numeracy skills.

In addition, the gap in the effectiveness of the numeracy learning method is also a major concern. Several studies show that the use of game media in learning can increase children's motivation and understanding of numerical concepts (Rahmawati & Setiawan, 2022). However, in many early childhood education institutions, game-based methods are still not optimally implemented. Many teachers still rely on lecture methods and written exercises, which are less in line with the characteristics of early childhood learning that tend to be more active and exploratory (Pratiwi & Hidayat, 2021).

This gap shows that innovation is needed in learning methods that can bridge the limitations of conventional approaches with children's needs to learn actively and enjoyably. One alternative that can be applied is the number card game, which allows children to learn to count through activities that are interesting and involve direct interaction. These games not only help children recognize numbers and number patterns, but also improve their cognitive, social, and emotional skills (Sari et al., 2023).

Several previous studies have proven that educational games can improve the understanding of mathematical concepts in early childhood. A study conducted by Putri & Nugraha (2022) found that children who learn with the game method experience a more significant increase in numeracy skills compared to children who use conventional methods. In addition, other research suggests that a play-based approach can help children more easily understand abstract concepts because they can immediately practice them in fun situations (Yuliana et al., 2023).

Based on this background, this study aims to test the effectiveness of number card games in improving the numeracy ability of group B children at RA Internasional Darussalam Tempurejo, Jember. Through this study, it is hoped that empirical evidence can be found that this method not only improves children's numeracy skills, but also creates a more engaging and interactive learning experience. In addition, this study also aims to provide recommendations to educators regarding the application of game methods in early childhood numerical learning.

Thus, this research is expected to contribute to developing more innovative and fun learning methods for children. In addition, the results of this research are also expected to be a reference for early childhood education institutions in improving the quality of numeracy learning. With a game-based approach such as number cards, children can learn more effectively, so they are better prepared for the next level of education.

METHODS

This study uses a classroom action research (PTK) approach with the subject of group B child research at RA Internasional Darussalam Tempurejo, Jember. The main data sources in this study include children who are involved in learning using number card games, teachers who act as facilitators in the learning process, and supporting documents such as the results of observation and evaluation of child development. Data was obtained through direct

observation of children's activities in learning, interviews with teachers regarding the effectiveness of the methods used, as well as documentation in the form of diaries and children's learning outcomes before and after the implementation of the number card game.

The collected data was analyzed using qualitative and quantitative descriptive methods. Qualitative data was obtained from observations and interviews, then analyzed by data reduction techniques, data presentation, and conclusion drawing (Miles & Huberman, 2020). Meanwhile, quantitative data was obtained from the results of tests or assessments of children's numeracy skills before and after the implementation of the number card game. A simple statistical analysis was used to see the improvement of children's numeracy scores through a comparison of pretest and posttest results. The results of this analysis are expected to provide an overview of the effectiveness of number card games in improving early childhood numeracy skills.

RESULTS

The results of the study showed that the use of number card games had a positive impact on improving the numeracy ability of group B children at RA Internasional Darussalam Tempurejo, Jember. Before the implementation of number card games, many children had difficulty recognizing numbers, sorting numbers, and performing simple addition and subtraction operations. Based on the results of the pretest, only about 45% of children are able to recognize numbers well, while the rest still have difficulty matching numbers with the appropriate number of objects. After the application of the number card game in several cycles, there was a significant improvement in children's numeracy skills. The results of the posttest showed that more than 85% of children were able to recognize numbers well, count in order, and understand the basic concepts of addition and subtraction.

To obtain more accurate data, direct observation is carried out through observation of children's activities during learning. In addition, interviews with classroom teachers were also conducted to understand the extent of changes that occurred in children after the implementation of the number card game. The teacher stated that the children became more enthusiastic and motivated in participating in counting activities compared to the conventional method that was previously applied.

The measurement of children's numeracy skills is carried out through a pretest before the implementation of the number card game and a posttest after several learning cycles. Quantitative data from the pretest and posttest were then analyzed to see the difference in children's learning outcomes before and after the application of this method. The following are the results of the data analysis obtained:

Table 1. Improving Children's Numeracy Skills

No	Aspects of Numeracy	Pretest (%)	Posttest (%)	Increase (%)
1	Recognizing numbers 1-10	45%	88%	43%
2	Sort numbers correctly	42%	85%	43%
3	Understanding the concept of addition	40%	86%	46%
4	Understanding the concept of reduction	38%	84%	46%
Average	**41,25%**	**85,75%**	**44,5%**	

From the table above, it can be seen that there is a significant improvement in all aspects

of children's numeracy skills. Before the implementation of the number card game, the average children's numeracy ability only reached 41.25%. However, after several learning cycles with the game method, the figure increased to 85.75%. The biggest increase was seen in the aspect of understanding the concept of addition and subtraction, which each increased by 46%.

Data VerificationTo ensure the validity of the data, this study uses a triangulation technique that includes triangulation of sources, methods, and times (Sugiyono, 2021). Triangulation of sources is carried out by comparing the results of observations, interviews with teachers, and documentation of child development during learning. The triangulation method was carried out by analyzing qualitative data from observations and interviews and comparing it with quantitative data from pretest and posttest results. In addition, time triangulation is performed by repeating measurements in several cycles to ensure consistency of findings.

From the results of data verification, it was found that the improvement of children's numeracy skills occurred gradually and consistently. Children who initially had difficulty recognizing numbers, after several times of learning with number card games, showed steady improvement in understanding the concept of numbers and basic calculation operations. The results of interviews with teachers also showed that the number card game method not only improves children's numeracy skills, but also creates a more enjoyable learning atmosphere. The children looked more confident in mentioning numbers and doing simple calculations. In addition, social interaction between children also increases, as they often play in groups when using number cards.

With a significant increase in various aspects of numeracy skills, this study proves that number card games are an effective method in improving early childhood numeracy skills. The application of this method can be one of the recommended strategies for educators in teaching numerical concepts to early childhood in a more interesting and interactive way.

DISCUSSION

This study aims to test the effectiveness of the number card game in improving the numeracy ability of group B children at RA Internasional Darussalam Tempurejo, Jember. The results obtained showed a significant improvement in children's numeracy skills, which was reflected in the comparison between the pretest and posttest results. Before the implementation of number card games, most children still had difficulties in recognizing numbers, sorting numbers, and understanding the basic concepts of mathematical operations. However, after several learning cycles using number card games, children's numeracy skills have improved significantly, both in recognizing numbers, sorting numbers, and understanding the concepts of addition and subtraction.

The improvement of children's numeracy skills recorded in this study is in line with the results of previous research which stated that the use of game media can increase children's motivation and involvement in the learning process (Rahmawati & Setiawan, 2022; Sari et al., 2023). Number card games as a learning medium allow children to learn actively and fun, which is in accordance with the characteristics of early childhood who are more likely to learn through play and exploration. This is also in accordance with the theory of constructivism which states that children learn best through direct experience and social interaction (Piaget, 1973).

The success of number card games in improving children's numeracy skills can also be explained by the active learning approach applied in this study. Children not only learn passively through lectures, but they actively participate in activities that involve direct interaction with learning objects. The use of number cards provides an opportunity for children to learn in a more concrete and relevant way to their lives, as they can see and manipulate numbers directly in the context of the game.

The results of interviews with teachers also showed that number card games increase

children's motivation and create a more enjoyable learning atmosphere. Teachers reported that children became more enthusiastic and confident in participating in counting activities, which were previously activities that might have been considered boring or difficult. This shows that the play-based approach not only serves to improve children's academic skills, but also to increase their emotional and social involvement in the learning process.

This significant improvement in children's numeracy skills was reflected in quantitative data that showed a steady increase in all aspects tested. The biggest increase occurred in the understanding of the concept of addition and subtraction, which each experienced an increase of 46%. This shows that number card games not only help children recognize numbers, but also build a deeper understanding of the basic concepts of mathematical operations. This ability is important because addition and subtraction are the foundation of the more complex math skills that children will learn in later levels of education.

However, although number card games have proven to be effective, the study also identified some challenges in their implementation. One of them is the need to ensure that all children can follow the game in a way that suits their level of understanding. Some children who have lower levels of ability may need more guidance and support from the teacher during play activities. In addition, the use of number card games also requires careful preparation from the teacher to ensure that the game can be implemented properly and in accordance with the desired learning objectives.

Overall, the results of this study show that number card games are an effective and fun method in improving early childhood numeracy skills. The application of this method can be a good alternative to replace conventional learning methods that are less interesting and do not actively involve children. By using number card games, children can learn in a more interactive and fun way, which in turn can increase their motivation to learn and strengthen their understanding of basic mathematical concepts.

This study provides recommendations to educators to further optimize the use of educational games in mathematics learning, especially in introducing the concept of numbers and basic calculation operations in early childhood. With a game-based approach such as number cards, it is hoped that children can build a strong mathematical foundation that will help them in further learning at a higher level of education.

CONCLUSION

The results of this study show that the number card game is an effective method in improving the numeracy ability of group B children at RA Internasional Darussalam Tempurejo, Jember. Data obtained from the pretest and posttest showed a significant improvement, with the average initial score of 41.25% increasing to 85.75% after several learning cycles using the number card game. In addition, observations and interviews with teachers also confirmed that this method makes children more enthusiastic and active in the learning process. Thus, this study reinforces previous findings that a game-based approach can improve early childhood understanding of numerical concepts more effectively compared to conventional methods.

From an academic perspective, this research contributes to the development of game-based learning methods in early childhood education. The results of this study can be a reference for teachers and researchers in designing more interesting and interactive learning strategies to improve children's cognitive skills, especially in the field of basic mathematics. In addition, this study also enriches the literature on the effectiveness of educational games in improving children's understanding of the concept of arithmetic, which can be used as a basis for further research in the field of early childhood education.

In addition to providing an academic impact, this research also has an important social contribution. By using the number card game method, children can learn to count in a fun atmosphere, so they are more motivated and confident in understanding numbers and basic mathematical operations. The application of this method also has the potential to help

teachers and parents in developing a more child-friendly learning approach, so that it can create a more inclusive and fun learning environment. With the increase in children's numeracy skills from an early age, it is hoped that they will be better prepared for the next level of education and have a solid foundation in the development of cognitive skills and problem-solving in daily life.

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