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NUMBER WHEEL MEDIA: IMPROVING NUMERACY SKILLS AT 'AISYIYAH GUIDANCE CENTER MALAYSIA

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Abstract

This research aims to improve the numeracy skills of 1st-grade students at the 'Aisyiyah Guidance Center Kampung Pandan Malaysia through number wheel media. This research used a Classroom Action Research (CAR) method with a qualitative approach, conducted in two cycles. The research subjects were 15 1st-grade students, consisting of 8 female students and 7 male students. Data collection techniques included observation, interviews, and tests. The research was conducted in two cycles, each consisting of planning, action, observation, and reflection. The research focused on improving numeracy skills within the range of numbers 1-10, specifically in addition and subtraction operations. The results of this research indicated an improvement in students' numeracy abilities. The average student score in the Pre-Cycle was only 57.33, with a classical completeness of 20%. After Cycle I, using the number wheel media, the average score increased to 64 with a classical completeness of 46%. In Cycle II, the average score reached 88, with a classical completeness of 100%. Number wheel media proved to be effective in enhancing numeracy skills. This media taught mathematical concepts and encouraged students to observe and practice the relationship between addition and subtraction symbols. Teacher and student activities also increased, from 83% and 75% in Cycle I to 91% and 96% in Cycle II. This research concludes that number wheel media can be an innovative strategy to improve elementary school students' numeracy skills.

Keywords: Numeracy Skills; Number Wheel Media; Addition and Subtraction

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A. Introduction

According to Article 1 of Law Number 20 of 2003 concerning the National Education System, education is a conscious and planned effort to create a learning environment and learning process that enables students to develop their potential actively (Pristiwanti et al., 2022).

The development of elementary school-aged children is also known as middle and late childhood development, a continuation of early childhood. Every individual will experience developmental phases, namely infancy, toddlerhood, childhood, adolescence, adulthood, and old age (Khaulani et al., 2020). Lower-grade students are students who are in the phase of starting the formal learning process (Oktavia et al., 2021).

Numeracy, which is the ability to understand a problem, plan its solution, and reconsider the process and its results, is a skill that students must possess (Nasiba, 2022).

According to (Nainggolan et al., 2023), Monotonous and uninteresting mathematics learning can cause students to become bored and uninterested in learning mathematics. Mathematics learning is a scientific and rational way of thinking that improves human resources quality (Wardani et al., 2024). Mathematics is fundamental for advancing technology and science (Zakia et al., 2024).

Numeracy literacy is assessing and understanding statements related to symbols or language found in everyday life and expressing them orally and in writing (Munahefi et al., 2023).

According to Yustinaningrum (2021), numeracy literacy is the application of various symbols and numbers related to basic mathematics to solve practical problems in various situations in daily activities and to assess the information provided in various forms (tables, graphs, charts, and others). Numeracy literacy also involves knowing how to use mathematical symbols and numbers to solve problems related to daily activities (Salvia et al., 2022). There are three basic principles of numeracy literacy: 1) contextual, which means that it is relevant to geographical, socio-cultural, and other situations; 2) aligned with the scope of

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mathematics in the 2013 curriculum; and 3) interdependent and improves other literacy elements (Han et al., 2017). Although both rely on the same knowledge and skills, the relationship between numeracy and mathematical ability differs. The difference lies in how both are used to apply mathematical concepts and rules in daily activities (Siregar, 2022).

In mathematics, "operations" are used to solve arithmetic operations. Arithmetic operations include four basic operations: addition, subtraction, multiplication, and division (Sa'diyah et al., (2017). Several arithmetic operations can be applied to numbers: addition, subtraction, multiplication, and division. The researchers used addition and subtraction arithmetic operations.

According to (Fadilah et al., 2023), learning media are tools used to support the teaching-learning process to be more effective and optimal. Learning media are essential for learning (Lail et al., 2024). In line with this, according to (Antika et al., 2023), there are many types of learning media, including visual, multimedia, print, and audio. All these media types facilitate and accelerate students' understanding of the subject matter.

According to (Sadrina et al., 2024), number wheels are learning media that involve games, which can increase student participation in learning because they motivate them to participate in further activities. According to (Tafonao, 2018), anything that can be used to convey a sender's message to a receiver and encourage students' thoughts, feelings, attention, and interest in learning is called learning media.

The practical values of learning media are as follows: 1) Media can instill concrete foundations for thinking and reduce verbalism; 2) Media can increase students' interest and attention to learning; 3) Media can lay the foundation for learning development so the learning outcomes become more stable (Wahid, 2018).

Number wheel media are created by considering the needs in the field, mainly related to media that can help children practice numeracy skills through arithmetic learning. According to Ernilawati (2020), children are trained to recognize numbers, colors, addition, and subtraction using number wheel media.

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Based on research conducted by the researchers at the ‘Aisyiyah Guidance Center Kampung Pandan Malaysia, it can be said that media are very important because they can arouse students’ interest and motivation to learn. Media will influence student learning outcomes because the presence of media can arouse students’ motivation and interest in learning. Students at the ‘Aisyiyah Guidance Center Kampung Pandan Malaysia have very minimal knowledge about numeracy skills, and these students cannot yet distinguish numbers 1-10 and cannot yet solve addition and subtraction of numbers 1-10.

Based on the explanation above, the researchers want to conduct research with the title “Efforts to Improve Students’ Numeracy Skills Using Number Wheel Media at ‘Aisyiyah Guidance Center Kampung Pandan Malaysia.”

B. Methods

This research used a classroom action research (CAR) design with a qualitative approach. The researcher selected this method to address practical problems during classroom learning and improve the learning process through specific actions or treatments conducted within the class.

The research occurred at ‘Aisyiyah Guidance Center Kampung Pandan Malaysia, Lot 83 Jalan Belangkas, Kuala Lumpur 55100. This institution serves as an alternative learning center for Indonesian students living abroad. The research subjects included all 15 first-grade students at ‘Aisyiyah Guidance Center Kampung Pandan Malaysia, consisting of 8 female and 7 male students. Additionally, the 1st-grade teacher at the learning center participated as a subject in this research.

The researcher collected data using multiple techniques, including observation sheets, interviews with students and teachers, and a test comprising 10 multiple-choice questions. The test assessed the numeracy skills of 1st-grade students.

The research results will be presented in numerical data and descriptive explanations. To distinguish between observation and test results, the researcher will analyze the test and observation data using the following formula:

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$$P = \frac{F}{N} x\ 100\%$$

Description:
P = Student percentage score
F = Student score frequency
N = Total frequency

The research results, in the form of test data, will be compared with the school-determined passing grade or Minimum Completeness Criteria (KKM), which is 70. The research or cycle will stop if the students' numeracy skills have reached 70%. Students are said to have achieved mastery if they meet a minimum score of 70. To determine students' classical learning mastery from Cycles I and II, which have already been conducted, the researcher will use the following formula:

$$\text{Classical Passing Grade} = \frac{Number\ of\ students\ who\ achieved\ mastery}{Total\ number\ of\ students\ tested} \text{ x } 100$$

C. Results and Discussion

The initial observations indicated that 1st-grade students at the 'Aisyiyah Guidance Center Kampung Pandan Malaysia were less effective in learning mathematics. Researchers found that most students faced difficulties calculating arithmetic operations (addition and subtraction) from numbers 1-10, with 12 out of 15 students experiencing these challenges. Only 3 students were able to do it. Additionally, the students were rarely encouraged to use their fingers to count numbers, which could help clarify mathematical concepts. The impact of the gap in media interaction and less interactive teaching strategies resulted in a decrease in numeracy abilities of 1-10 in most children. Detailed data on the numeracy abilities of numbers 1-10 can be seen in Tables 1, 2, and 3, which compare children who have mastered and those still experiencing difficulties in mastering numeracy concepts. This improvement effort aimed to enhance the quality of learning and ensure that all children reached the passing grade (KKM).

The Pre-Cycle stage was an initial activity before the Cycle 1 and 2 stages. The results of the Pre-Cycle were used as a basis for designing action plans in the planning stage of Cycle 1. Research activities in the Pre-Cycle were conducted in one meeting. The material presented in the Pre-Cycle included numeracy, specifically the addition and subtraction of numbers 1-10, without using media.

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Data on the numeracy skills of 1st-grade students at the ‘Aisyiyah Guidance Center Kampung Pandan Malaysia in the Pre-Cycle can be found in Table 1 as follows:

Table 1
Recapitulation of Numeracy Skills Test Results

No	Description	Data Acquisition
1	Highest Score	70
2	Lowest Score	50
3	Number of Students Below Passing Grade	12
4	Number of Students Who Passed	3
5	Average	57,33
6	Percentage	57,33%
7	Classical Completeness	20%

The reflection of the Pre-Cycle stage did not show a significant improvement in the calculation or numeracy abilities of 1-10. Out of 15 students, only 3 were able to solve the addition and subtraction problems of 1-10. From the reflection in the Pre-Cycle stage, a total score of 850 was obtained, with students achieving an average score of 57.33 and a classical completeness percentage of 20% for addition and subtraction material. These Pre-Cycle results indicated that the researchers needed to implement improvements in Cycle I.

The planning of the Cycle I stage was adjusted based on the observations carried out in the Pre-Cycle. The observations carried out in the Pre-Cycle were used to support the planning actions in this Cycle I stage. The numeracy skills of 1st-grade students at the ‘Aisyiyah Guidance Center Kampung Pandan Malaysia can be seen in the table below:

Table 2
Recapitulation of Numeracy Skills Test Results in Cycle I

No	Description	Data Acquisition
1	Highest Score	80
2	Lowest Score	50
3	Number of Students Below Passing Grade	8
4	Number of Students Who Passed	7
5	Average	64
6	Percentage	64%
7	Classical Completeness	46%

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The reflection at the Cycle I stage showed an improvement in numeracy ability from 1 to 10. After implementing number wheel media in Cycle I, there was an increase in numeracy skills of approximately 6.67%, with an average score of 64 in Cycle I, which can be categorized as sufficient. Based on the numeracy analysis results in Cycle I, it can be concluded that although some students had not yet reached the passing grade (KKM), students had experienced development and increased knowledge. Based on these results, it was evident that Cycle II should be carried out effectively.

After completing the series of stages in Cycle I, the research proceeded to Cycle II. In the analysis, Cycle II was based on the results of Cycle I as an improvement step if there were still shortcomings or advantages. The research activities in Cycle II were conducted in one meeting, with material on addition and subtraction of numbers 1-10, aiming to improve numerical abilities or numeracy using number wheel media. The data about the calculation abilities of numbers 1 to 10 in Cycle II can be seen in Table 3 as follows.

Table 3
Recapitulation of Numeracy Skills Test Results in Cycle II

No	Description	Data Acquisition
1	Highest Score	100
2	Lowest Score	70
3	Number of Students Below Passing Grade	0
4	Number of Students Who Passed	15
5	Average	88
6	Percentage	88%
7	Classical Completeness	100%

The data results from Cycle II showed a significant increase in numerical abilities from 1 to 10. In general, there was a significant increase, reaching 100% of the passing grade (KKM), which is 70%.

Based on the findings, there was a significant increase in numerical abilities or numeracy. Therefore, there was no need to continue with the following learning cycle. The average scores obtained by the children in each cycle showed different results. Initially, the average student score only reached 57.33, which categorized into the “poor” category. However, in Cycle I, the average score increased to 64,

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placing it in the “sufficient” category. Continuing that progress, in Cycle II, the average score reached 88, with the “very good” category.

The following bar chart illustrates the increase in classical or overall completeness.

Figure 1. Classical Completeness Scores

The results of teacher and student learning activities can be described in the following table.

Table 4
The Results of Teacher and Student Activities

Activities	Achievement Level of Cycle I	Achievement Level of Cycle II
Teacher	83%	91%
Students	75%	96%

Teacher and student activity results showed a significant increase. Teacher activity was recorded with a percentage of 83% in Cycle I, increasing to 91% in Cycle II. Similarly, student activity increased from 75% in Cycle I to 95% in Cycle II. Based on research at the ‘Aisyiyah Guidance Center Kampung Pandan Malaysia, number wheel media improved students’ numeracy skills.

D. Conclusion

Based on the research conducted at the ‘Aisyiyah Guidance Center Kampung Pandan Malaysia, it can be concluded that using number wheel media significantly improved the numeracy abilities of 1st-grade students within the range of numbers 1-10.

Classroom Action Research (CAR) was conducted in two cycles. Only 20% of students achieved mastery in the Pre-Cycle stage, with an average score of 57.33. In Cycle I, the average score increased to 64, with a classical completeness of 46%. Then, in Cycle II, the average score increased to 88, and the classical completeness reached 100%.

The success of the number wheel media lies in its ability to make mathematics learning more interactive and engaging. This media teaches addition and subtraction concepts and encourages students to observe and practice the relationships between numbers actively.

Teacher and student activities also experienced significant increases. Teacher activity increased from 83% in Cycle I to 91% in Cycle II, while student activity increased from 75% to 96%. It demonstrates the effectiveness of number wheel media in creating a more participatory and meaningful learning environment. It can be proven that using appropriate learning media can improve students' numeracy abilities, especially in essential addition and subtraction concepts.

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