

THE EFFECT OF USING NUMBER LINE JOURNEY BOARD MEDIA ON THE NUMERACY SKILLS OF STUDENTS AT SD MUHAMMADIYAH 38 MEDAN KRIO

Rizky Khaliza

State Elementary School Teacher 38 Medan Krio

Email: rizkykhaliza13@gmail.com

ARTICLE INFO	ABSTRACT
Article History Receive: 22-01-2025 Revision: 0-02-2025 Accept: 28-02-2025	This study aims to determine the effect of using the number line journey board media on the numeracy skills of fifth-grade students at SD Muhammadiyah 38 Medan Krio. The research employed a quantitative approach with a One-Group Pretest-Posttest Design. The subjects were all 20 students in the fifth grade. Data were collected through a multiple-choice test consisting of 10 questions administered before and after the treatment. The number line journey board media served as a visual aid in learning the addition of negative integers. The results showed an increase in the average score from 53 on the pre-test to 82 on the post-test. The Shapiro-Wilk normality test indicated that the data were normally distributed, and the Paired Sample t-Test yielded a significance value of $0.000 < 0.05$, indicating a significant difference between the pre-test and post-test scores. Therefore, the use of the number line journey board media is proven to be effective in enhancing students' numeracy skills and fostering engagement and motivation in learning mathematics.
Keywords	Numeracy skills, integers, instructional media, number line, elementary school

1. INTRODUCTION

Education plays a very crucial role in driving the progress of a nation. The high quality of education in a country reflects the overall quality of that nation. Education serves as the main foundation in developing the potential of every individual. Everyone has the right to receive a decent education, as education has an important role in social, national, and state life. Therefore, the field of education needs special attention from the government (Nitiasih, 2021).

Improving the quality of education is one of the efforts to enhance the quality of human resources so that they are capable of mastering, applying, and developing science and technology in accordance with the times. To achieve an

improvement in the quality of education, steps are needed in the development of human resources involved in the learning process, namely teachers and students, as well as innovations in the learning system. The learning process plays a very important role in efforts to improve the quality of education. Therefore, the search for and application of effective learning models is a necessity for educators. Various learning models have been developed to support the improvement of the quality of education (Larasati et al., 2022).

At school, there are various types of learning tailored to different education levels. One of the subjects taught is mathematics. Mathematics is a subject that is taught at every

level of education, from elementary school, middle school, to higher education. The National Education Minister Regulation Number 22 of 2006 defines mathematics as one of the subjects aimed at educating students to be able to think logically, analytically, systematically, critically, and creatively, as well as to work cooperatively. In line with the purpose of teaching mathematics in schools, we can see that mathematics plays a very important role. According to National Education Minister Regulation Number 22 of 2006, mathematics is one of the subjects aimed at developing students' abilities in logical, analytical, systematic, critical, and creative thinking, as well as fostering teamwork skills. Based on this objective, it is clear that mathematics plays a very important role in the educational process.

Numeracy is one of the important aspects in basic education because it serves as the foundation for students to understand mathematical concepts and their applications in daily life. Numeracy not only includes the ability to calculate, but also the ability to interpret, analyze, and use information based on numbers logically (Ekowati et al., 2019). However, in reality, many primary school students still face difficulties in understanding number concepts and arithmetic operations, especially in abstract forms such as number lines.

Based on observations conducted at SD Muhammadiyah 38 Medan Krio, it appears that some students are still having difficulty understanding number positions, addition and subtraction operations, and number lines, and have yet to visualize number concepts as a whole. This indicates that the learning approach used is still unable to optimally accommodate the learning needs of the students.

To address this issue, innovation in the use of learning media is needed to help students build a more concrete understanding. One medium that can be used is a number line journey board, which is a manipulative medium designed to make the concept of a number line more tangible, interactive, and enjoyable (Kuntari et al., 2023). By using this medium, students can physically move or use markers on the board to indicate the position of numbers, making the learning process more active and meaningful.

The use of number line journey board media is expected to enhance the numeracy skills of students as it helps them understand abstract concepts visually and kinesthetically. Additionally, this media can also foster students' interest and motivation in learning mathematics, which has often been perceived as a difficult and boring subject. Based on the above description, the researcher is interested in conducting a study titled 'The Effect of Using Number Line Journey Board Media on the Numeracy Skills of Students at SD Muhammadiyah 38 Medan Krio', with the aim of determining the extent of the impact of this media in improving students' numeracy skills.

2. RESEARCH METHOD

This research uses a quantitative approach. According to Sugiyono & Lestari (2021), the quantitative research method is a method based on the philosophy of positivism, applied to a specific population or sample, with data collection through research instruments, as well as quantitative or statistical data analysis. This research employs a One-Group Pretest-Posttest Design, which is an experimental research design that involves administering a pretest before the implementation of the learning treatment. After the treatment is completed, a posttest is conducted to measure the extent of the results of the treatment that has been applied (Ramdayanti et al., 2023).

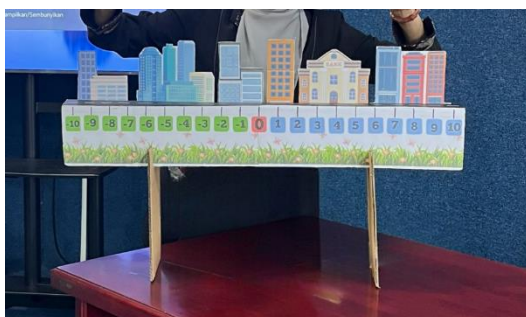
The population in this study is the fifth-grade students of SD Negeri 106799 Paluh Manan. In this study, the determination of the sample size used the saturated sampling method. This method is a sampling technique where all members of the population are used as the research sample. The data collection method used in this study is a written test consisting of 10 multiple-choice questions. The test is a data collection technique that is conducted by providing questions or tests to respondents for them to answer. This test is designed to determine or measure the numeracy skills of students regarding the material on the addition of negative integers.

In this study, the normality test used is the Shapiro Wilk test. Shapiro Wilk is more suitable for this research because the sample is less than 50. The hypothesis test used is the Paired Sample

t-Test. The Paired Sample t-Test is a statistical analysis method that involves two measurements on the same subject to evaluate the effect or influence of a certain treatment (Syafriani et al., 2023).

3. RESULT

The journey board media is a simple learning tool designed to help students understand the material on operations with negative and positive integers. The journey board media is rectangular in shape and made of cardboard, carton, and HVS paper. This media can be used when explaining the learning material or during evaluation. The journey board shapes like a highway and contains images such as houses, trees, buildings, and so on. In this journey board media, a number line will also be created, referred to as a straight line.



Gambar 1. Media of Number Line Travel Board

During the learning process, students actively engage in learning, which is carried out in three stages: taking a pre-test, the researcher explains the material on the addition of negative numbers with the help of a number line board, and lastly, the students take a post-test.

Before conducting the learning, the researcher asks the students to complete the pre-test, which consists of 10 multiple-choice questions designed to assess the students' numeracy skills before treatment is given, where the treatment refers to the provision of material on the addition operation of negative integers with the help of the number line board.

After the students finished working on the pre-test, the next stage was for the researcher to explain the material on the addition of negative

integers with the help of a travel board media. During the explanation, it was observed that the students were focused on the researcher explaining the material; they seemed interested in the media used. Not only did the researcher explain, but they also involved the students to be active in the learning process by asking them to use the media to answer some questions directly in front of the class.

The next stage after the researcher explains the material is that the students are asked to take a post-test, which consists of 10 multiple-choice questions similar to those in the pre-test. This post-test is conducted to assess the students' numeracy skills after they have been given treatment in the form of material explanation using a number line board media.

Based on the recap results of the students' numeracy skill test on the addition operation of negative integers, presented in Table 1, the descriptive statistics show that the average pre-test score of fifth-grade students is 59, which significantly increased to 78 in the post-test. This data indicates an improvement in the consistency of the students' numeracy skills after the treatment using the number line board media.

Tabel 1. Recapitulation of Data on the Numeracy Skills of Students

Data	Mean
Pre-test	53
Post-test	82

Next, a normality test is conducted on the data. The normality test is used to determine whether the sample taken from the population is normally distributed or not. The normality test used is the Shapiro-Wilk test. The analysis of the normality test in this study is assisted by SPSS 23.0 for Windows. The criteria for making decisions in the normality test with a significance level of $\alpha = 5\%$ (0.05) are as follows: if the significance value $\geq \alpha$, then the data is normally distributed; whereas if the significance value $< \alpha$, then the data is not normally distributed. The calculations for the normality test are as follows.

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.205	20	.027	.937	20	.207
Posttest	.181	20	.083	.932	20	.170

Tabel 2. Uji normality

From the table above, it is known that the significant value produced in the pre-test is $0.207 \geq 0.05$, while the significant value produced in the post-test is $0.170 \geq 0.05$, so it can be concluded that these values are normally distributed. Furthermore, after conducting the normality test, the next phase is to conduct a hypothesis test. This hypothesis testing is used to determine whether or not there is an effect of using number line media on the numeracy skills of fifth-grade students at Muhammadiyah Elementary School 38 Medan Krio. The hypothesis test in this study uses the t-test (sample paired t-test) with the assistance of SPSS 23.0 for Windows. The decision rule for the t-test is that if the sig. (2-tailed) value < 0.05 , then H_a is accepted and H_0 is rejected. Below are the results of the paired sample t-test from SPSS.

Paired Samples Test									
	Paired Differences			t	df	Sig. (2-tailed)			
	Mean	Std. Deviation	95% Confidence Interval of the Difference				Lower	Upper	
Pretest - Posttest	7.10	2.573	[-8.304, 5.896]	-12.3	19	.000			

Tabel 3. Paired Sample Test

Based on the table above, it can be seen that the significant value of .000, where $0.000 < 0.05$. It can be concluded that H_a is accepted and H_0 is rejected, which indicates that there is an effect of using the number line travel board media on the numeracy skills of fifth-grade students at SD Muhammadiyah 38 Medan Krio.

4. DISCUSSION

The use of this travel board media in the implementation side in the classroom, students showed enthusiasm and active involvement during the learning process. The media designed to resemble a road board with various visual elements such as houses, trees, and buildings made the learning atmosphere enjoyable. The physical activities carried out by students, such as moving markers on the number line directly, provided a learning experience that was visual, concrete, and kinesthetic (Nufus, 2022).

This is in line with constructivist learning theory, where learners build their own understanding through direct interaction with objects or their learning environment (Suparlan, 2019). In addition to enhancing numeracy skills, the use of this media has also proven to foster interest and motivation in learning mathematics, which has long been perceived as an abstract and difficult subject. By utilizing creative and contextual media, learners can connect numerical concepts with their real-life experiences, making it easier to understand the material (Sembiring, 2024).

5. CONCLUSION

Based on the results of the research conducted, it can be concluded that the use of number line board media has a significant effect on improving the numeracy skills of fifth-grade students at Muhammadiyah 38 Elementary School in Medan Krio. This is evidenced by an increase in the average score from 53 in the pre-test to 82 in the post-test after the intervention was given. The results of the normality test indicate that the data are normally distributed, and the Paired Sample t-Test shows a significance value of $0.000 < 0.05$, which means there is a significant difference between the pre-test and post-test results.

Thus, the number line board media has proven to be effective in helping students understand the concept of adding negative integers in a more concrete, visual, and enjoyable way. This media can also enhance student engagement and motivation in learning mathematics. Therefore, this media can be a suitable alternative to be applied in the process of numeracy education in elementary schools.

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