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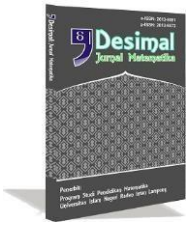

Efforts to increase students' interest in learning through the learning media of number cards with whole numbers in addition and subtract

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ABSTRACT

This study aims to increase students' interest in mathematics. Students can use number card learning media as an alternative method of learning integers (addition and subtraction). In mathematics, the material on integers (addition and subtraction) discusses abstract properties in mathematics. Based on this study, the study was conducted through observation of class VII students at MTs Altihadul Wathoniayah. This research takes the type of quantitative research through an experimental approach and uses a Pretest-Posttest Design. This research involves all class VII MTs Al Ittihadul Wathoniyah, both class VII-A and VII-B. However, the sample used randomly is type VII-A which consists of 30 samples used in this study to conduct tests to collect data on reasoning skills and mathematics learning outcomes. After testing with the hypothesis that the calculated value is greater than the table's t value. The results of the data show that the use of number cards in conducting research on mathematics learning media is effective in increasing students' interest in learning mathematics subjects and achieving satisfactory results.

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INTRODUCTION

Education plays an important role in shaping social skills and the ability to communicate well. Everyone can only develop their personal qualities gradually over time, because education is a lifelong process. Education continues as long as one is able to develop parts of one's personality (Astuti, 2016).

The main goal of education is to produce individuals with noble character, devout, healthy, disciplined, creative, independent and democratically responsible (Arigiyati, 2016). According to (Arigiyati, 2016) education plays an important role in improving knowledge, attitudes and skills. This means that, through a good education process, individuals can develop themselves not only intellectually but also morally and socially. Education is expected to shape human beings, not only academically intelligent but also possessing noble values, as well as the ability to be responsible and contribute positively to society.

Mathematics is one of the subjects in education from elementary to higher education. Mathematics is not only a subject in the curriculum but is also the main basis for intellectual development and modern technology, as stated by (Firmansyah, 2015). Mathematics is known as a subject that is very relevant to everyday life where good mathematical skills are the key to understanding and applying mathematical concepts in various life situations. This is also supported by (Hikmah, 2016) who states that the main goal of learning mathematics at school is for students to have a good understanding of mathematics so that they can apply it in their daily lives.

Learning mathematics is not only limited to theoretical understanding but also involves the development of practical skills that can be applied in various life situations. The results of learning mathematics also make a great contribution in developing logical, creative, systematic, and critical thinking skills to solve problems. Because these abilities are not only useful in an academic context, but also in making daily decisions (Ermawati & Sri Eti, 2016). According to (Batubara, 2015), the development of technology can be a solution to increase interest in learning mathematics especially in creating interesting developments in mathematics learning materials. This can have a positive effect on students' interest in mathematics which affects the level of engagement and achievement. Interest in mathematics can affect student activities such as laziness, unwillingness to learn, and failure (Lestari, 2017). Indicators of interest in learning mathematics include students' attention to seriousness and satisfaction when learning mathematics (Ningsih & Nurrahmah, 2016).

Inadequate use of media in the classroom results in several negative effects. One of the impacts is that students lack interest in learning. Sarah et al. (2021) defines interest as a feeling of liking something more and being attracted to something or an activity based on an individual's awareness of himself. Therefore, students' interest in learning is very important to develop in students so that they have self-awareness to learn and achieve the desired results. Therefore, interest is essential when learning because with interest students will feel happy, interested, and have more curiosity. Indicators of interest in learning based on Brown (Ariyanti, 2019) include: (a) Feeling happy; (b) Student Interests; (c) Student involvement; (d) Study diligently and do math assignments diligently; (e) Be persistent and disciplined in studying and have a study schedule.

Applying interest in learning will make students more interested in what they are learning. In addition, interest in learning is also a supporting factor for student success in learning. Therefore, interest in learning needs to get more attention from teachers or parents to facilitate guiding and directing children in learning. (Nadiyah Fatriansyah, 2023).

Students who like mathematics will focus on the material being taught because they are interested in what the teacher teaches (Komariah & Sundayana, 2017). Interest can be defined as a strong inclination, enthusiasm, or desire for the lesson taught by the teacher. If there is a sense of fun, then learning will go smoothly. Students who are interested in learning means that they have set beneficial goals for themselves, so they tend to enjoy their studies (Ermelinda & Benge, 2017), Students who are not interested in studies often experience poor grades when studying which is the cause. by having subjects that students are not interested in. Students never participate in lessons passively or lazily. Therefore, it is hoped that students will be very interested in mathematics in particular because mathematics helps foster creativity and logical thinking, as well as solving everyday problems. (Rafika et al., 2017).

According to (Nurmala et al., 2016), mathematics is an abstract field that studies numbers and abstract structures. Moreover, mathematics is a field that is always related to all aspects of life. Mathematics subject content standards for primary school to university are outlined in the Minister of National Education Regulation Number 22 Year 2006. The main goal of mathematics education is to cultivate a good mindset among students towards learning mathematics (Kasyadi et al, 2018). This includes fostering curiosity, attention, and interest in the subject as well as increasing resilience and independence, confidence when dealing with these matters. Teachers can use the learning media of number cards to develop students' enthusiasm and ensure an interesting and effective learning experience (Fatimah, 2018).

Therefore, teachers will use various methods to encourage students' interest in learning. It is important for teachers to not only rely on textbooks as one of the main learning methods. Teachers will create interesting learning materials and arouse students' interest with various learning media. This can show that variations in the use of learning media can increase the effectiveness of learning mathematics and strengthen students' interest in learning mathematics. (Dewi & Haryanto, 2019).

According to (wahyuningtyas, 2015), the contribution of learning media in learning mathematics is as follows: 1) Delivering learning with a better standard that is in line with the developing curriculum; 2) Make learning more interesting and effective; 3) Deliver learning more efficiently; 4) Improve the quality of learning as a whole; 5) The learning process using number card learning media during the learning process can be done anytime and anywhere; 6) Increase students' interest in mathematics, create a positive attitude of students towards mathematics learning materials; 7) Helping teachers change the learning atmosphere in a more positive direction.

Academic success is greatly influenced using learning media. The teacher must also adjust the material and the student's level according to the intended use (Rahmatin & Khabibah, 2016). Learning media is an alternative to help teachers in teaching and learning (Oktaviana et al., 2018). Learning media can be used to improve thinking, attention, emotions, and the learning process to promote effective learning. Teachers can deliver lessons more effectively and easier to understand by using number card learning media. The results of observations and interviews conducted with mathematics teachers at MTs Al Ittihadul Wathoniyah show that there are still many students who experience difficulties in learning mathematics such as adding and subtracting round numbers. This shows that teachers continue to use conventional learning approaches and rarely use learning media while teaching. Create the material that are presented so that students are not actively involved in the learning process. In addition, students do not actively ask questions during the learning process and the interaction between students and instructors is not carried out well (Raharjo et al., 2021). Therefore, the learning process can be better and more innovative, especially the learning model that uses number card learning media in the learning process that can increase students' interest in learning mathematics and improve student achievement.

Based on the results of the interview conducted with mathematics teachers at MTs Al Ittihadul Wathoniyah, it can be seen that students still experience many difficulties in calculating whole numbers (addition and subtraction). Here the teacher also still uses the lecture method and rarely uses visuals to help during the presentation of material so that students are less active in participating in the learning process. In addition, the

interaction between students and teachers is also invisible, students are not actively asking questions during the learning process. Therefore, it is necessary to make improvements and innovations in the learning process in terms of learning models. The use of learning media in the learning process can improve student understanding. So that it can increase students' interest in participating in learning mathematics (Mohamad Yudiyanto et al., 2023). One alternative learning media that can be used is number card teaching tools (Fauzia et al., 2018). Number card media can help students understand addition and subtraction of integers, because addition and subtraction of integers is abstract material. Therefore, based on the results of the above study and the results of observations at MTs Al Ittihadul Wathoniyah class VII. This study aims to explore the effectiveness of using number cards in increasing students' interest in learning whole number material, especially in the context of addition and subtraction operations and to evaluate students' responses to the use of number cards as media. This is including direct observation of students' interactions with the media as well as their responses to learning mathematics.

METHOD

This research began with observations at MTs Al Ittihadul Wathoniyah. This activity is carried out in the even semester of July which includes three meetings in class VII at MTs Al Ittihadul Wathoniyah in Jalan Perjuangan, Negeri Lama, Bilah Hilir District, in the academic year 2023/2024. This research uses quantitative experiments to increase students' interest in learning mathematics by focusing on integer mathematical concepts, particularly addition and subtraction through the use of number card learning materials. This research is conducted through experiments that test the effects of various variables using a pre-test and post-test group design.

Tabel 1. Pretest-Posttest Control Group Design

Group	Initial Test	Treatment	Final Test
Eksperimen	O_1	X	O_2

Information:
O_1= Pretest value
X = Providing learning using number card learning media
O_2= Posttest value

This research uses a simple random sampling technique to select a sample from the population. The population in this context is all 30 students in class VII-A. A simple random sampling technique implies that each member of the population has an equal chance of being selected as part of the sample (Sugiyono, 2017).

This research was conducted according to the following steps.

a) Preparatory stage

The stages of preparation for compiling this research are as follows:

1. This research was conducted at MTs Al Ittihad Wathoniyah in June by observing during three meetings to see the situation in the school such as the school curriculum, number of classes, grades and number of students, as well as the teaching style of the teacher.
2. Preparation of learning tools (RPP, textbooks, number card teaching materials) that will be used during the research.
3. Selecting the research sample, the sample that will be used is class VII-A with a total of 30 students.
4. Then carry out testing and analysis on test instruments
5. Analysis was conducted to determine students' math learning scores, difficulty levels, and strength of differences. The results of the analysis show that all questions are appropriate to measure students' understanding of concepts.

b) Implementation Stage
1. Conduct pre-tests in experimental classes.
2. Conduct learning using number card learning media.
3. Conduct a post-test after implementing the number card learning model.

c) Final Stage
1. Process and analyze data from experiments
2. Prepare research reports

RESULTS AND DISCUSSION

The results of this study show that the data analyzed is quantitative and obtained from the results of the pre-test and post-test of reasoning abilities and the results of student mathematics learning in the two classes involved, namely; The experimental class uses a learning model using number card learning media, while the control class uses conventional or direct learning methods. This research involved a total of 60 students who were divided into two, namely 30 students in the control class and 30 students in the experimental class. From the data results before the pre-test and after the post-test, the learning intervention was collected to observe the changes in students' mathematical reasoning skills and mathematics learning outcomes. The results of this data analysis are expected to provide information regarding the effectiveness of the learning model using number card learning media in improving students' understanding of reasoning and mathematical learning results compared to conventional learning methods. Thus, the use of the SPSS version 23 application can provide significant benefits in improving the understanding of the learning outcomes of Reasoning and mathematics for class VII students.

Table 2. Descriptive Data Table of Student Ability Scores in Learning

No.	Assessment Aspects	Skor
Pretest and postest		
Mean 1	16,00	16.00
Mean 2	68,93	70,00

Based on the results of the data obtained, there is a significant increase in the reasoning ability and mathematics learning outcomes of experimental class students using the SPSS version 23 application compared to the control class. The results of the statistical test scores show that the difference between the pre-test and post-test scores is significantly higher in the experimental class.

1. Normality Test

Based on the output value results from SPSS if the Kolmogorov-Smirnov test value is greater than 0.05. So it can be concluded that the data resulting from the understanding of mathematical reasoning and the achievement of students' mathematical learning results is a normal distribution.

Table 3 of Normality Test Results Test Of Homogeneity Of Variances Pretest and Postest

Levene Statistic	df1	df2	Sig.
0,809	5	24	0,555

Based on the table value from SPSS, the significant value obtained from the Kolmogorov-Smirnov normality test is 0.555. Because the significant value obtained from α that is commonly used is (0.05). So it can be concluded that the data contributes normally.

2. Homogeneity Test

Based on the results of the homogeneity test, it will show whether there is a difference between the sample groups in the results of the variables that can be considered significant. If the result of the significance value (sig) from the

homogeneity test is greater than the significance value α = 0.05. So it can be concluded that the value of homogeneity data and subsequent analysis can be carried out using ANOVA through the SPSS application.

Table 4. ANOVA Test

Model	Sum of Squares	Df	Mean Square	Mean Square	Sig
Regression	,197	1	,197	,008	,930b
Residual	703,803	28	25,136		
Total	704,000	29			

a. *Dependent Variable: pretest*
b. *Predictors: (Constant), posttes*

3. Hypothesis Testing

This research uses a paired sample t-test in line with the needs of data value analysis which shows that both samples are in a normal position. Hypothesis testing is carried out with a significance level of $\alpha = 0.05$. If the result of the significance value (sig) from the t-test is greater than the value of α. So, the value of the null hypothesis (Ho) is rejected and the value of the alternative hypothesis (Hα) is accepted. The results of this test give an idea of the effectiveness of the problem-based teaching model in improving students' reasoning skills.

Table 5. Hypothesis Test Results Paired Sample T-Test Pre-Test And Post-Test Data

Paired Hypothesis Testing Sample T-Test	Results
Sig(2-tailed)	*0,000*
Criteria	*Sig>0,05*
Decision	*Ha* accepted

This research aims to increase students' interest in learning mathematics by using number card learning media (addition and subtraction) in class VII MTs Al Ittihadul Wathoniyah Jalan Perjuangan, Negeri Lama, Bilah Hilir. Factors that affect students' interest in learning mathematics include; external and internal factors. External factors affect the interest in learning mathematics in integer materials (addition and subtraction), while internal factors affect learning outcomes using number card learning media in integer materials (addition and subtraction). The results of the study show that there is a significant influence between the preference for using number card learning media for whole number materials (addition and subtraction). Students who have a high interest in learning will produce a better and satisfactory math learning score.

Interest in learning mathematics is an important aspect of education, as it has a significant impact on students' academic achievement. One of the approaches used to increase interest in learning mathematics is the use of learning media, such as number cards. This research aims to compare the latest study with previous studies that also used number cards to increase students' interest in learning mathematics. Recent studies conducted to examine the effectiveness of using number cards in the context of mathematics education highlight several important aspects. This media is used to facilitate the understanding of mathematical concepts visually and interactively. Number cards can help students visualize math operations, such as addition and subtraction in a more concrete and digestible way.

Recent research tends to use an evidence-based approach to evaluate the effect of using number cards on interest in learning mathematics. This approach allows the researcher to collect solid data about the change in students' attitude and interest in mathematics after using this media in learning. This research provides insight into the importance of using number cards in the context of mathematics education, by comparing the latest research with past research.

CONCLUSIONS AND SUGGESTIONS

Thus, the latest research on the use of number card media in increasing students' interest in learning mathematics shows positive and encouraging results. However, further research may be needed to confirm these findings and expand our understanding of how such media can effectively influence mathematics learning in the future.

Previous opinions and current studies related to the interest in learning mathematics using number cards show a significant development. In the past, approaches to teaching mathematics were often more formal and less interactive, with an emphasis on understanding concepts that may be less appealing to some students. However, contemporary research highlights the importance of integrating number cards as a tool that facilitates more active and enjoyable mathematics learning.

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