THE INFLUENCE OF USE MATHEMATICS FRACTION BOARD LEARNING MEDIA AND PARENTAL ATTENTION ON MOTIVATION FOR LEARNING MATHEMATICS

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Abstract
The purpose of this research were: 1)to determine the influence of learning media on motivation in learning mathematics; 2) to know the influence between parental attention and motivation in learning mathematics, and; 3) to understand the influence between mathematics learning media and parents' attention to motivate students in learning mathematics. This research is a quasi-experimental research with a quantitative approach. The research method used is analysis of variance (ANOVA) using a simple factorial design (2x2) and post hoc test of Dunnet Test. The population and sample used in this study were class III students at Dukuh 05 Pagi Elementary School. The instrument used in this study was in the form of a questionnaire containing statements using the Likert scale parameter. Based on the analysis that has been done, the researchers found that there was an influence between mathematics learning media and parents' attention to the motivation to learn mathematics. This can be seen from the results of the ANOVA test which showed a value higher than 4.047 (F_h of the 0.05 significance level) which were 14.14 on the learning media variable, 59.98 on parental attention, and 12.71 on the interaction between the two on motivation to learn mathematics. Researchers also found that there was interaction between variables in the Dunnet Test with parents' attention playing the highest role in influencing students' motivation to learn mathematics.

Keywords: *Elementary School, Learning Media, Learning Motivation, Mathematics, Parental Attention*

INTRODUCTION

Education is basically a need for every human being. Humans live and develop through various aspects of life through education, whether obtained in informal (family), non-formal (community) and formal (school) education (Indy, 2019). Informal education is the first stage for someone to get an education. The family, in this case both parents, plays an important role in educating children from the time they are born. Communication that is built, examples of behavior, and how to solve problems are some of the things that are normally taught by parents. This education then becomes an introduction for children

to join society (non-formal education) and receive formal education.

As a first step in receiving education, Indonesia has prepared a primary school education level. Elementary schools were created to develop the basic competencies of students so they are able to face challenges at the next level of education. Based on Minister of Education and Culture Regulation Number 67 of 2013 concerning the Basic Framework and Curriculum Structure for Elementary Schools/Madrasah Ibtidaiyah, the subjects taught at the Primary School level include core groups and support groups. The core group contains mandatory subjects in the form of Religious and Character Education, Pancasila and Citizenship Education, Indonesian Language, Mathematics, Natural Sciences and Social Sciences. Then the support group consists of Arts and Culture subjects as well as Physical, Spiritual, Sports and Health Education.

Of the many subjects presented at elementary school level, there is mathematics. Mathematics itself is a scientific discipline that focuses on the use of logic (Putra, 2019). Logic in mathematics is closely related to the development of logical thinking which involves problems and problem solving. These two things then have an important role for students because they can help them in solving everyday problems related to logical thinking (Putra, 2019).

Therefore, mathematics is presented to students even in the first grade of elementary school. Students who receive mathematics education are expected to be able to count, be able to calculate content and weight, be able to collect, process, present and interpret data, and be able to use calculators and computers. Apart from that, this subject also aims to enable students to take further mathematics lessons at a higher level. Therefore, the main aim of implementing mathematics education at elementary school level is so that students can think logically, critically and practically, as well as have a positive attitude and have a creative spirit.

Struggling with numbers and mathematical thinking, mathematics is allegedly always a scourge for students (Amaliyah, N., & Wisudiyantie, 2019). Not only is the concept complicated, but it also requires students to be able to build good logic. As with the concept of dividing numbers and simple fraction operations, third grade students must be able to memorize at least numbers that can be divisible by another number.

This is cause mathematics anxiety, a condition when students are very afraid of mathematics (Firdaus, D. M., Purwanto, S. E., & Nuriadin, 2021). Excessive fear, worry and anxiety about mathematics

subjects can drastically reduce students' desire to learn mathematics which can also have a direct impact on students' learning outcomes. Therefore, students' anxiety and fear of mathematics is also an important responsibility for teachers in their aim of increasing motivation to learn mathematics. According to Yurike & Wahyudi (2020) learning motivation is an encouragement that triggers students to learn so that the learning process leads to the goals they want to achieve.

Talking about motivation, learning motivation itself is closely related to interest in learning. Interest in learning arises from the existence of a feeling of interest in something, including subjects, especially mathematics subjects. Building interest in a lesson for students can be done in various ways, one of which is the use of interesting learning media. Learning media that can attract students' attention is not limited to interesting shows, but also requires interaction between teachers and students. As stated by (Amaliyah, N., & Wisudiyantie, 2019) elementary school mathematics learning is basically a form of manipulating concrete objects. Therefore, in practice, mathematics learning requires media that supports direct interaction between teachers and students. Among the various types of learning media available, board games are one of the learning media

that is predicted to foster students' interest in learning, especially for mathematics subjects.

The research related to learning media with the target being mathematics learning at the junior high school level. They tried to develop a board game entitled "The Adventure of Algebra" which was focused on learning algebra in the eighth grade. The results of the media development that has been carried out show that the majority of students agree that the use of board game-based learning media has a good impact on teaching and learning activities in the classroom (Andini, M., & Yunianta, 2018).

This can be seen from the results of the questionnaire which shows that 62% of respondents agree that board games increase students' interest in algebra learning material, 91% agree that board games make the presentation of algebra material in teaching and learning activities more interesting, and 97% agree that the use of games The board as a learning medium is very useful in increasing the attractiveness of learning as well as the effectiveness of learning.
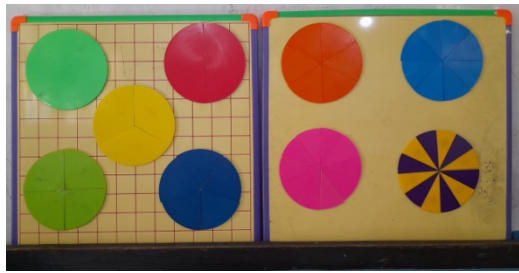
Figure 1. Educational Mathematical Fraction Board Game

Apart from interesting learning media, parental attention can also influence students' responses in dealing with subjects they don't like. Appreciation, praise and positive support given by parents greatly influence the level of enthusiasm of children in learning (Putri, A. H., & Amaliyah, 2022). The enthusiasm for learning as a result of parental attention has a direct impact on students' performance at school, especially in mathematics subjects.

Based on the explanation of the phenomenon above, it can be seen that motivation is a complicated thing. Even though there have been many studies that have tried to examine the impact of the media and parental attention on learning outcomes, currently these two factors have not yet been clearly measured in their relationship to learning motivation, especially in mathematics subjects. Motivation can not only be built from within each student but also has a high sensitivity to the influence of external factors such as the media and parental attention.

METHOD

The research entitled The Effect of Using Mathematics Learning Media and Parental Attention on the Learning Motivation of Class III Students at Dukuh 05 Pagi Elementary School is a quasi-experimental research (Quasi Experiment) using a quantitative approach. Sugiyono explains that research using the quasi-experimental method divides two groups of data equally, namely a control group and an experimental group. Both were given different treatments to see the differences, impacts, or influences that arise based on the treatments according to the research variables (Sugiyono, 2017). The quantitative approach used is a research method based on the philosophy of positivism. Quantitative methods are used to research certain populations or samples. Data collection uses research instruments, while data analysis is quantitative or statistical.

The purpose of quantitative research is to test established hypotheses. As with quasi-experimental research, the data group is divided into two, namely the control group and the experimental group. These two groups were then applied to students in the classes that were used as research objects. Determination of the control class category is the category of respondents (students) who are given mathematics lessons using conventional media (markers

and whiteboards). Meanwhile, the experimental class is a category of respondents (students) who are given treatment in the form of using the learning media of the mathematical fraction board game. To analyze data in quasi-experimental model research, researchers used two-way Analysis of Variants (ANOVA). This technique is a way of analyzing data based on previously determined variances between groups.

The research design used in this research is a simple factorial design with a data analysis format in 2x2 factorial form. Based on this research design, the data obtained was analyzed in a two-by-two (2x2) table format with groupings of two rows and two columns based on predetermined variables. This grouping of two classes with different treatments aims to examine the effect of a treatment on research subjects under controlled conditions. This categorization is applied because it is impossible to control all variables, except for a few that are relevant.

The population as research objects in this study were class III students at the Dukuh 08 Pagi State Elementary School and the Dukuh 05 Pagi State Elementary School. The samples in this study were classes III-A and III-B, each consisting of 32 children. Every research requires a technique for collecting data. According to

(Ridwan, 2015), data collection techniques are techniques or methods that can be used by researchers to collect data. Data collection techniques are very important to obtain data that complies with established data standards. The data collection technique used is a questionnaire to measure student learning motivation and documentation.

RESULTS AND DISCUSSION
Result

The learning process carried out is divided into two forms of learning. First, learning mathematical fractions uses conventional media, namely whiteboards and markers. Meanwhile, in the second method, learning uses fraction board game learning media. These two methods are used to see the relationship between them and students' mathematics learning motivation. The data obtained was analyzed statistically using IBM SPSS 26 software.

Data on Mathematics Learning Motivation of Control and Experiment Class Students

To be able to find out in detail the mathematics learning motivation scores of students in the control and experimental classes, the researchers carried out detailed descriptive statistics using IBM SPSS 26. Below is a descriptive statistics table for the mathematics learning motivation variables in the control and experimental classes.

Table 1. Descriptive Statistical Values for Control Class and Experimental Class

Descriptive Statistics							
	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Control Class	32	59	79	138	108.50	18.104	327.742
Eperimental Class	32	44	97	141	119.28	12.449	154.983
Valid N (listwise)	32						

Based on the table above, it can be seen that there is a tendency for students in the control class to have lower motivation. This can be seen from the overall average that students in the control class obtained an average score of 108.5. Meanwhile, the average in the experimental class was 119.28. This average difference is not that big considering that the only aspects that are considered in motivation are two factors, namely media and parental attention.

Normality test

The normality test carried out in this research used the help of IBM SPSS 26 software. The normality tests carried out were the Kolmogorov-Smirnov normality test and the Shapiro hypothesis test. The normality test carried out in this research used the help of IBM SPSS 26 software. The normality tests carried out were the Kolmogorov-Smirnov normality test and the Shapiro hypothesis test.

Table 2. Normality Test of Residual Data for Independent Variables

Regarding the Dependent Variable

Tests of Normality						
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standarized Residual For Motivation to Learn Mathematics	.082	64	.200*	.974	64	.194
*. This is a lower bound of the true significance						
a. Lilliefors Significance Correction						

Based on the table above, it can be seen that the significance value in the Kolmogorov-Smirnov test column is 0.200. This value is of course greater than 0.05 so that H_0 is rejected and H_1 is accepted. Thus, it can be said that the data obtained is equivalent in terms of probability distribution. On the other hand, the normality test in the

Shapiro-Wilk column shows a significance of 0.194. This value is greater than 0.05 so H_0 is rejected and H_1 is accepted. Thus, the calculation results show that the sample comes from a normally distributed population.

Homogeneity Test

The homogeneity test in this study is the Levene test or commonly known as the Levene's Statistics Test.

Table 3. Homogeneity Test of Independent Variables on Variables

Levene's Test of Equality of Error Variances[a,b]		Levene Statistic	df1	df2	Sig.
Motivation to Learn Mathematics	Based on Mean	1.104	3	60	.355
	Based on Median	.641	3	60	.592
	Based on Median and with adjusted df	.641	3	51.867	.592
	Based on trimmed mean	1.028	3	60	.387

Based on the calculation data in the table above, it can be seen that the significance value for the homogeneity of control class and experimental class data is 0.355. This value is greater than 0.05 so H_0 is rejected and H_1 is accepted. With this significance value, the data can be said to be homogeneous because it meets the requirement that the significance value must be greater than 0.05, so that there is no difference in variance from the control class or experimental class.

Two-Way ANOVA Test

The purpose of carrying out this test is to determine the significance of the mean difference between the dependent class and the independent class (control and experimental classes). Two-Factor Anova is used to test the effects of two independent variables (main effects) on the same dependent variable and also examine how the independent variables influence each other on the dependent variable (interaction effects).

Table 4. Two Way ANOVA Test Calculation Results

Variance Statistics	JK	db	RJK	F_{count}	F_{table}
Based on Learning Media Variables (Between Group A)	1523.61	1	1523.61	14.14	4.047
Based on Parental Attention Variables (Between Group B)	6464.32	1	6464.32	59.98	4.047
Based on Learning Media Variables and Parental Attention (A x B Interaction)	1369.94	1	1369.94	12.71	4.047
In	5065.43	47	107.78		
Total	14423.29	50			

Hypothesis I

The calculated F value that has been obtained shows a value of 14.14. This value

has a greater number than the F table with a significance level of 0.05 of 4.047. Thus $F_{count} > F_{table}$. Referring to the previously established hypothesis, the calculation results show that H_0 is rejected and H_1 is accepted because the value of $F_{count} > F_{table}$ with a value of 14.14 > 4.047 so that there is a significant difference in influence between the use of learning media on students' mathematics learning motivation.

Hypothesis II

The Fcount value that has been obtained shows a value of 59.98. This value has a greater number than the F table with a significance level of 0.05 of 4.047. Thus $F_{count} > F_{table}$. Referring to the previously established hypothesis, the calculation results show that H_0 is rejected and H_1 is accepted because the value of $F_{count} > F_{table}$ with a value of 59.98 > 4.047 so that there is a significant difference in influence between parental attention on students' mathematics learning motivation.

Hypothesis III

The calculated F value that has been obtained shows a value of 12.71. This value has a greater number than the F table with a significance level of 0.05 of 4.047. Thus $F_{count} > F_{table}$. Referring to the previously established hypothesis, the calculation results show that H_0 is rejected and H_1 is accepted because the value of $F_{count} > F_{table}$ with a value of 14.14 < 4.047 so that there is a significant difference in influence

between the use of learning media and parental attention on students' mathematics learning motivation.

Disscusion

The Great Influence of Differences in the Use of Learning Media on Motivation to Learn Mathematics

(Uno, 2021) that media can be a source of fulfillment of extrinsic learning motivation. Changing the use of conventional media to innovative media, such as fraction board games, is an effort to fulfill students' learning motivation in order to achieve high learning motivation. This was then proven in this research through the ANOVA test that there was a difference between the use of conventional media and board game learning media. Thus, the ANOVA test that has been carried out answers the first research hypothesis that there is an influence of the learning media used on the mathematics learning motivation of class III students at Dukuh 05 Pagi Elementary School.

The Great Influence of Differences in the Intensity of Parental Attention on Motivation to Learn Mathematics

Because of its important role in building internal motivation, parental attention is the main actor that provides encouragement and desire for students to succeed (Krismony, N. P. A., Parmiti, D. P., & Japa, 2020). This was then proven by the results of the ANOVA test which gave a

very large value of 59.98, or around fourteen times greater than the significance level value of 4.047. Thus, the results of the tests that have been carried out answer the second hypothesis of this research that there is an influence between parental attention and the mathematics learning motivation of class III students at Dukuh 05 Pagi Elementary School.

Motivation for Learning Mathematics in Control and Experiment Classes

Motivation to learn mathematics in the control class looks quite low. This can be seen from the results of the descriptive analysis test that the average motivation of students in the control class was only 108.5 points. This of course happens because learning and teaching activities use media that students are used to. Even though the interactions built by educators are active, they are not enough to create more enthusiasm for students. Parental attention at home can take the form of providing facilities and infrastructure, including helping students with learning activities at home. Parents who give enough attention, as (Alkaabi, S. A. R., Alkaabi, W., Vyver, 2017) say, can provide more energy to students. The energy provided is not only limited to affective encouragement,

cognitive encouragement also gives students strength in solving problems, especially mathematics.

In contrast to the control class, the experimental class showed differences in students' levels of motivation to learn mathematics. This can be seen from the slightly larger average number with a value of 119.28 points, 10.78 points higher than the control class. This difference in motivation levels of course occurs due to the use of different media. The experimental class that used the fraction board game learning media showed higher enthusiasm than the control class.

On the other hand, students in the experimental class showed a positive response to board game learning media. This is shown by the average learning media questionnaire results in the experimental class of 99, slightly higher than the control class of 90. With a difference of 9 points, this shows that students prefer learning mathematics using the fraction board game media rather than using conventional learning media. The enthusiasm shown by students then also supports the statement (Widyastuti, 2013) that interactions with real objects can influence interest in learning mathematics.
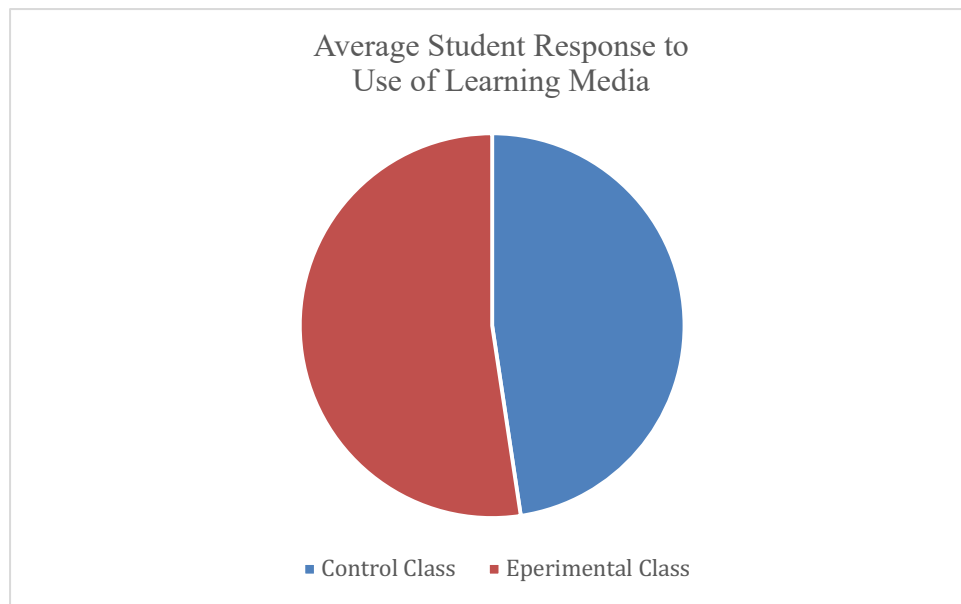
Figure 2. Diagram of Student Responses to Use of Mathematics Learning Media

Advanced Test (Post Hoc Test) and Dunnett's t-test

Analysis in the previous subsection of ANOVA has shown that there is a significant influence on all variables, including the interaction between the two independent variables on the dependent variable. However, the influence between each variable cannot be seen only from the ANOVA test data. Further tests are needed to determine the influence that occurs between learning media variables and parental attention on students' mathematics learning motivation.

The Dunnet's t-test analysis that has been carried out proves the results of the ANOVA test that has been carried out previously. As in the first hypothesis, there is a difference in students' mathematics learning motivation between the control

class and the experimental class with an F_{count} value of 14.14 which is greater than the F_{table} value of 4.047. This difference can be seen from the results of the t_{dunnet} test that the use of board game learning media in the experimental class can increase students' learning motivation. The influence provided by board game media is not only limited to facilitating the acquisition of cognitive aspects, but also fosters affective aspects in students (Andayani, 2021). However, the use of learning media does not have a significant impact on students who have received high parental attention. After all, parents play an important role in building students' motivation to learn mathematics from home.

This is then proven in the second hypothesis that there is a difference in students' mathematics learning motivation between those who receive low and

medium parental attention and those who receive high parental attention. The difference between the two can be seen from the F_{count} value in the ANOVA test of 59.98 which is very large compared to the F_{table} value of 4.047. This value illustrates how big a role parental attention plays in students' mathematics learning motivation, so it can be ascertained that parental attention influences students' mathematics learning motivation.

This was then explained further in the results of Dunnet's t-test, which showed that high levels of parental attention could increase students' learning motivation, both in the control and experimental classes. The results of this test then support the findings (Mahmudi, A., Sulianto, J., & Listyarini, 2020) that parental attention not only makes it easier for students to absorb learning, but also has a direct influence on students' achievement of learning outcomes. Thus, motivation cannot be separated from the influence of the intensity of attention given to students by their parents.

Then in the third hypothesis, the results of the ANOVA test, the data shows an F_{count} value of 12.71, which of course is greater than the F_{table} of 4.047. These calculated values generally describe the interaction between learning media and parental attention. This interaction is then explained further in the results. Dunnett's t-

test shows that the combination of learning media and parental attention can contribute to high or low students' mathematics learning motivation. The highest motivation can of course be achieved by combining the use of appropriate learning media with high intensity of parental attention. Because however, the combination of internal motivation from parental attention and external motivation from learning media has a direct impact on students' learning motivation (Uno, 2021).

However, the interaction that develops is quite unique because the learning media and parental attention fill each other's deficiencies in increasing students' motivation to learn mathematics. If students receive less parental attention, motivation can be increased through more interesting learning media. On the other hand, if the learning media used is difficult to update to make it more interesting, then parental attention plays an important role in increasing students' learning motivation.

CONCLUSION

Based on research that has been conducted, there is an influence between the mathematics fraction board learning media on the mathematics learning motivation of class III students at Dukuh 05 Pagi elementary school. There is an influence between parental attention on students'

mathematics learning motivation and there is an interaction between the mathematics fraction board learning media and parental attention on mathematics learning motivation of class III students at Dukuh 05 Pagi elementary school. This then shows that parental attention plays a very important role in increasing students' motivation to learn mathematics, especially with the help of the mathematical fraction board game.

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