



## THE EFFECT OF WORDWALL EDUCATIONAL GAME ON STUDENTS' LEARNING INTEREST IN THE HIGH-GRADE MATHEMATICS LEARNING SUBJECTS IN ELEMENTARY SCHOOL

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## PENGARUH PERMAINAN EDUKATIF WORDWALL TERHADAP MINAT BELAJAR SISWA PADA MATA PELAJARAN MATEMATIKA KELAS TINGGI DI SD

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### ABSTRACT

**Abstract:** Mathematics is a subject that is invariably found and taught on every level of education unit. Nevertheless, most of the students assume that mathematics is the most difficult learning subject compared to other learning subjects. This paper is intended to explain the influence that occurs on the Wordwall game on elementary students' learning interest in mathematics and describe students' learning interest in Mathematics. The method used in the research is to use quantitative methods with experimental research in the form of pre-test and post-test. The research subjects were the fifth-grade students at SD Islam Subulussalam, SDN 02 Cijoro Lebak, SDN Kampungbaru. The researchers took a total sample of 37 students using the purposive sampling technique. In terms of the statistical data analysis, the results were obtained after applying the treatment. The results, which was the sig value of  $0.006 < 0.05$ , indicate that there were differences before and after applying treatment. The research results reveal that the Wordwall educational game has an effect on the fifth-grade students' learning interest at SD Islam Subulussalam, SDN 02 Cijoro Lebak, SDN Kampungbaru on Mathematics learning subjects, especially in multiplication and division learning material. Thus, it can be concluded that between variables Wordwall and students' learning interest, both have an effect, provide a description regarding the conducted research, and are written clearly and completely.

**Keywords:** students' learning interest, wordwall educational game, mathematics learning subject

**Abstrak:** Matematika adalah pelajaran yang selalu ditemui dan diajarkan di tiap tingkat satuan pendidikan. Namun, banyak peserta didik yang memandang matematika sebagai mata pelajaran tersulit diantara banyak mata pelajaran. Artikel ini bertujuan untuk menjelaskan pengaruh yang terjadi pada Wordwall game terhadap minat belajar matematika siswa SD serta menjelaskan minat belajar siswa akan ketertarikannya pada mata pelajaran Matematika. Metode yang digunakan dalam penelitian yaitu menggunakan metode kuantitatif dengan memakai jenis penelitian experimental pada bentuk pre-test dan post-test. Subjek dalam penelitian ini yaitu siswa kelas V SD Islam Subulussalam, SDN 02 Cijoro Lebak, SDN Kampungbaru. Peneliti mengambil jumlah sampel sebanyak 37 siswa dengan memakai teknik *sampling purposive*. Pada analisis data statistik, hasil diperoleh setelah diberikan perlakuan. Hasil, dimana nilai sig  $0.006 < 0.05$ , menunjukkan terdapat perbedaan sebelum perlakuan dan sesudah adanya perlakuan. Hasil dari penelitian menunjukkan game edukatif Wordwall berpengaruh pada minat belajar siswa kelas V SD Islam Subulussalam, SDN 02 Cijoro Lebak, SDN Kampungbaru terhadap pelajaran matematika khususnya materi perkalian dan pembagian. Maka dapat ditarik kesimpulan bahwa minat antara variabel Wordwall memiliki pengaruh dengan minat belajar siswa, memberikan gambaran mengenai penelitian yang dilaksanakan, dan ditulis lengkap dan jelas.



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Kata Kunci: minat belajar siswa, *game* edukatif *wordwall*, pembelajaran matematika

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#### INTRODUCTION

Mathematics is one of the things that is always found and taught at every level of educational unit starting from the age of children in kindergarten, elementary, high school, even up to the college level. This subject plays an important role as a subject that teaches students to think critically, reason, and hone their skills on things around them. In life, we definitely use mathematics to answer even difficult questions, because all knowledge in the world must involve mathematics and everything is interrelated with one another. However, many students view mathematics as the most difficult subject among many subjects. This difficult thing happens because mathematics is abstract and boring. So that the interest in learning in this lesson is relatively low when compared to several other subjects taught at school

Interest in learning is very important for the success of student learning. This can affect the level of success of children in terms of mathematics lessons (Sholehah et al., 2018). In learning activities interest can be seen from the attitude of students who focus their attention when the lesson takes place, both on other people, objects, as well as on certain activities. So if there are students who have been able to focus on something, it is a sign that the child already has an interest in him. Vice versa, if the child does not or has not focused on something, then the child does not have an interest which will later have an impact on the child's achievement.

Islamuddin stated that interest is a tendency/enthusiasm/willingness for

something (Islamuddin, 2012). Interest can be expressed through a statement such as students prefer multiplication lessons rather than fractions. In interest in learning there are also two factors that influence it, namely factors namely internal & external. Both can be an obstacle or a support (Sentani et al., 2022).

External factors that hinder here can be influenced by the teacher in providing teaching material, and what is very important is what media is used by the teacher in supporting or supporting the teaching material in class learning, so that students do not understand the mathematical concepts being taught. If a child does not have or lacks interest in mathematics, then his knowledge in this lesson will be hampered. If learning interest in mathematics is not developed and left alone, children cannot think critically and reason (Sirait, 2016). Slameto (2015: 180) There are four indicators in learning interest, namely (1) happiness feelings, (2) attention in the learning process, (3) interesting lesson materials and teacher attitudes, and (4) Benefits and functions of subjects.

Understanding of mathematical concepts needs to be mastered and understood from the start, for example during elementary school, because it is the foundation for students so that misunderstandings do not occur which result in their disinterest in mathematics (Kamsiyatun, 2016). In addition, the teacher also, during mathematics lessons, directly provides the contents of the subject matter that will be taught by students without looking at the students' activeness in the lesson, also students do not look for the

concepts themselves to understand (Supriadi, 2021). On the other hand, teachers still use conventional methods and sources of learning mathematics, which in turn have an impact on low interest in learning mathematics. So that students are not fully able to actively participate or be enthusiastic in participating in mathematics classes, which means that learning is still focused on the teacher (teacher centered) (Husna et al., 2013).

Along with the development of technological advances from time to time, educators need to make innovations related to media or interesting learning tools and facilities so that later students will easily understand concepts in a mathematics lesson. This is in line with what was said by Indriana that the media is a very useful tool for students and educators in the learning and teaching process (Indriana, 2011). Teachers must be able to take advantage of existing technology to support interesting and interactive learning for their students so that later interest in learning mathematics will increase. There is one way that can be used to boost interest in mathematics, namely by using educational games such as Wordwall.

The interactive learning is packaged in a Wordwall game, this is also in accordance with what was said by (Maghfiroh, 2018) which of using educational game Wordwall media can give birth to a beneficial interaction for students. Educational Wordwall games is a website to support student learning which can be accessed on a laptop or cell phone for free. This application is not only a learning medium but also an assessment tool (Nissa & Renoningtyas, 2021). In Wordwall it also consists of various templates which have been provided with a total of 18. The templates already contain examples of the form of questions that are packaged in the form of educational Wordwall games, so that we as teachers just choose which templates are suitable for learning activities. When using Wordwall this is constrained by the network,

so it can be done by printing it in PDF form.

In research conducted by (Nissa & Renongtyas, 2021) it turns out that students' interest in learning thematic learning is seen from the attitude of wanting to ask questions when experiencing problems or difficulties in answering the questions provided, filling in the attendance list, and increasing assignments collected by students. It is no different from the results of research conducted by researchers (Sari et al., 2021), where after testing an understanding of history it turns out that the experimental class and the control class are different. However, here the control class continues to experience changes in the level of learning outcomes. Using games during learning can replace a boring learning atmosphere into fun, so that students can increase their focus during the lesson, understand the material better, and improve learning outcomes.

Based on the explanation described above and previous research, it can be concluded that Wordwall This can affect student learning interest. Therefore, in this study the researchers also used educational games Wordwall to see and explain its influence on students' interest in learning related to mathematics and the focus tested on multiplication and division material.

## **METHOD**

### **Research Design**

In this study, researchers determined the experimental method of one group pre test and post test quantitative as the method. Hamdayana (in Hayuningtyas, 2017) revealed that the experimental method is to provide trial opportunities to students both individually and in groups. By using this method, students mean that they have experimented, searched, and confirmed. It is experimental because a treatment is carried out which serves to determine the effect of the treatment. When the implementation takes place before the treatment (treatment) the subject will be given



a pre-test and after the treatment is given, a post-test will be given.

**Place and Time**

This research was conducted by researchers on grade V students in three places online, namely at Subulussalam Islamic Elementary School, SDN 02 Cijoro Lebak, SDN Kampung Baru. This implementation time was carried out in October when the Teaching Campus 2 took place.

**Research Subjects**

The subjects used for this study were all fifth grade students from Islam Subulussalam Elementary School, SDN 02 Cijoro Lebak, SDN Kampung Baru as many as 37 students using non-probability sampling techniques or saturated sampling. According to Sugiyono (2018) saturated sampling itself is a technique that takes all subjects to be used as research.

**Research Instruments**

The instruments used in this study were in the form of a learning interest questionnaire using a Likert scale, pre test, and

post test. Which is then intended to determine the measurement of attitudes and opinions, as well as perceptions, or social phenomena by utilizing a Likert scale (Khusnah et al, 2021). The questionnaire is made with a total of 20 (twenty) statements which will be given to all fifth grade students at the end of the meeting or post test. Based on its purpose, this questionnaire is used to obtain data related to the learning interest of each student in the mathematics learning process which includes several indicators such as feelings of happiness / pleasure, interest in learning, student attention to lessons, independence, needs, persistence in facing a difficulty, and having interest or sharpness of attention in the learning process, and perseverance in learning activities.

The instrument will later be measured using a validity test. The validity test is used to determine whether the instrument that has been made by the researcher is correct or not.

**Data Analysis**

Table 1 presents data on the student interest questionnaire instrument which consists of 8 indicators.

**Table 1. Study Interest Questionnaire Instrument Table**

Indicator	Description	Item		Amount
		+	-	
1. Feeling happy	Happy in learning mathematics	1		1
2. Interested feeling	Mathematics is an interesting and challenging subject	2		1
	Watching math learning shows on Youtube	12		1
	Utilizing the internet is not to study but to play online games		19	1
3. Full of attention	Prepare math textbooks when the teacher enters class	3		1
	Repeating lessons when coming home from school	17		1
	Pay attention to the teacher's explanation	15		1

	Do the practice questions carefully	16		1
4.	Independent in learning	Set aside time to do homework	18	1
		Skipping math lessons	10	1
		Fast and often not thorough in working on questions	6	1
5.	Need	Using props to assist the learning process	11	1
6.	Tenacious in the face of adversity	Attitude in trouble		13, 14
		Efforts in the face of difficulties	20	1
7.	Interest and sharpness of attention in learning	Daydreaming during class	4	1
		Likes to joke when the lesson is in progress	5	1
		Don't care about difficulties in math lessons	8	1
		Learn by yourself when ordered by parents only	9	1
8.	Perseverance in learning	Study math when there is a test only	7	1
	<b>AMOUNT</b>		<b>13</b>	<b>7</b>
				<b>20</b>

Then table 2 presents the assessment scale of students' learning interest with alternative answers agreeing and disagreeing.

**Table 2. Learning Interest Assessment Scale**

Alternative Answers	Score	
	positive (+)	negative (-)
Agree	2	1
Don't agree	1	2

Finally, table 3 presents the criteria for evaluating students' interest in learning

mathematics in the high, low, and medium categories.



**Table 3. Guidelines Assessment Criteria for Interest in Learning Mathematics Questionnaire**

Average Score	Category
$x \geq \bar{x} + SD$	Height
$\bar{x} - SD < x < \bar{x} + SD$	Currently
$x \leq \bar{x} - SD$	Low

Information:

$x$  = Total score of respondents

$\bar{x}$  = Overall average of students

$SD$  = Standard deviation / standard deviation of all students

With the table above, the researcher can find out the number of students who have high, medium and low learning interest.

## RESULTS AND DISCUSSION

### Descriptive analysis *pretest* and *posttest*

Giving an initial test is intended to see the initial intelligence of students before being given special treatment. After obtaining the pretest data, the next step is data processing using IBM SPSS Statistics. Statistical results related to test scores *vizpre test* students are loaded into the tabular form below:

**Table 4. Result Description *Pretest* and *Posttest* Student**

	N	Minimum	Maximum	Mean	Std.Deviation
PreTest Experiment	37	26.00	33.00	30.95	1.527
PostTest Experiment	37	28.00	35.00	31.92	1.831
Valid N (listwise)	37				

Based on data *pretest* We can see that in the research sample which totaled 37 students, the results obtained were an average value of 30.95 by obtaining a median or median value of 31.00 and the standard deviation was 1,527 with an acquisition range of 7 and a drinking value of 26 and the maximum value is 33.

Based on data *posttest* We can see that in the research sample which totaled 37 students, the average value was obtained

(*mean*) is 31.92 with a median value of 32.00 and a standard deviation of 1,831 with a range of 7 and a drinking value of 28 and a maximum value of 35.

### Value Frequency Distribution *Pretest*

Based on the data analysis carried out, the results of the Frequency Distribution and Percentage of Students' Pretest Scores in mathematics can be presented.

**Table 5. Distribution of Frequency and Percentage of Values *Pretest***

		Category <i>Pretest</i>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	4	10.8	10.8	10.8
	Currently	28	75.7	75.7	86.5
	Height	5	13.5	13.5	100.0
	Total	37	100.0	100.0	

Based on the table data above, it can be seen that the value *pretest* in the low score category there were 4 students or 10.8%, in the medium score category there were 28 students or 75.7% and in the high score category there were 5 students or 13.5%.

### Value Frequency Distribution *Posttest*

Furthermore, the data analysis carried out is the result of the Frequency Distribution and Percentage of *Posttest* Scores of students in mathematics.

**Table 6. Distribution of Frequency and Percentage of Values *Posttest* Category Post**

	Frequency	Percent	Valid Percent	Cumulative Percent
Low	4	10.8	10.8	10.8
Valid Currently	17	45.9	45.9	56.8
Height	16	43.2	43.2	100.0
Total	37	100.0	100.0	

Based on the table above, it can be seen that the value *posttest* in the low score category there were 4 students or 10.8%, in the medium score category there were 17 students or 45.9% and in the high score category there were 16 students or 43.2%. Refers to *datapre test given posttest* it can be concluded that students experience increased grades.

### Inferential Statistics Results

#### Normality test

Testing the data with the data normality test was carried out to find out whether the data used in the study was normally or not normally distributed. The normality test was obtained with the help of the IBM SPSS Statistics program. The normality test used in this study was by using *kolmogorov-smirnov*. In this case, the decision is taken if the sig. > 0.05 or 5% then the data distribution is said to be normal.

**Table 7. Normality Test Results**

Class	Kolmogorov-Smirnov <sup>a</sup>		
	Statistic	Df	Say.
Student learning outcomes			
PreTest Experiment	0.187	35	0.002
PostTest Experiment	0.155	35	0.025

- Distribution of data on the pretest =  $0.002 < 0.05$  ⊕ Abnormal
- Data distribution on *post test* =  $0.025 < 0.05$  ⊕ Abnormal
- Distribution of pretest data to *post test* =  $0.159 > 0.05$  ⊕ Normal

Based on the results of the normality test, it can be concluded that normally distributed data is only distribution data *pretest* to *posttest* whose value is greater than 0.05. The next step is to determine alternative hypotheses to find out which hypotheses are

accepted, to determine which hypotheses are accepted, further analysis is needed using *Paired Sample T-test* as well as SPSS calculations.

The formulation of the hypothesis is as follows:

Ho: There is no difference in the variables before and after treatment

Ha: There are differences in the variables before and after treatment

If the value of sig < 0.05 then Ha is accepted and Ho is rejected and vice versa.

**Uji Paired T Test**

If the sig. <0.05, indicating a significant change after treatment, the

correlation value indicates how affected the treatment was before and after.

**Table 8. T-test Test Results**  
**Paired Samples Test**

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
				Paired Differences				
Pair 1 pretest - posttest	-.973	2.048	.337	-1.656	-.290	2.890	36	.006

**Table 9. T-test results**  
**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 pretest & posttest	37	.267	.111

Value sig:  $0.006 < 0.05$  then there is a mean difference between the pretest and *post test*. The correlation shows a value of 0.267, meaning that the treatment affects 26.7%, but the significance value is  $0.111 > 0.05$  so it can be said that the two variables are not correlated. (correlation value is meaningless)

The decision making in this study was to obtain a sig value of 0.006 where 0.006

$< 0.05$ , then  $H_a$  was accepted and  $H_o$  was rejected. Therefore, it can be concluded that there are differences before the treatment and after the treatment. Then it can be concluded that between variables *Wordwall* has a relationship with student learning interest.

**Discussion**



**Figure 1. Initial display *Wordwall* which displays several templates**



Figure 1 is the initial display when entering the *Wordwall*. This view will display the 18 templates that are already available, so that we can play them directly or the teacher just needs to change the questions but still follow the templates that are already available

to be later distributed or tested on students. The display that has been provided from this application is very interesting and diverse, so that it can increase students' interest in learning mathematics.



**Figure 2. Front view before the question starts**

Figure 2 shows the front view of the question before starting, if you want to start and work on the problem, students must press

the text “start” and questions will appear. Then students can immediately work on the questions that are already available.



**Figure 3. View multiplication and division problems**

Then, Figure 3 shows the display of questions that students have to work on in the form of multiplication and division questions of 15 questions. How to play this students should *drag & drop* question to the correct answer. In this view there is also a processing time, so we can know when the problem was completed. Apart from that, this display also

has the sound of music, so that children don't feel bored, but if they really feel disturbed by the music, students can turn off the music.

Based on research on the pretest and posttest after testing the *Wordwall*, then the researcher processes the data that has been found, so it will be seen whether the *Wordwall* affects the child's learning interest in

mathematics or not. The following are the results of data that have been processed by researchers.

From the data that has been obtained by conducting a descriptive analysis it can be seen that the intermediate value *pre test* and *post test* have differences. At the time of the initial test (*pre test*) high category only 5 students, while after *posttest* high category to 16 students. The average value obtained from the pretest is less than *posttest* that is equal to 30.95 while *posttest* 31,92 and when viewed from the median value between *pretest* and *posttest* also experienced a change, which initially only had a median of 31, now it has changed to 32. It is evident that the student's grades at the time *posttest* higher moment *pretest*

Also in the descriptive analysis, students' interest in learning when done *posttest* there is an increase or change. This change was due to the treatment which produced results by changing the categories of students, which previously were more in the high category, now there are a lot more.

Paired sample t-test was conducted to test the hypothesis. Before testing the hypothesis, a normality test is carried out to check which data are normally distributed or not for complementary purposes or requirements for testing the t-test. The results obtained from the normality test for *pretest* and *posttest* a significant value of 0.187 and 0.155 has been obtained. From the results of the normality test above, it can be concluded that normally distributed data is only distribution data *pretest* to *post est* whose value is greater than 0.05.

Hypothesis testing using the SPSS 25 application showed significant results, that is, the use of educational *Wordwall game* effect on students' interest in learning mathematics in class V SD Islam Subulussalam, SDN 02 Cijoro Lebak, SDN Kampung Baru.

## **CONCLUSIONS AND RECOMMENDATIONS**

The results of the research that has been carried out by researchers are obtained if before the treatment is carried out (treatment) pretest use Wordwall, the average grade V students at SD Islam Subulussalam, SDN 02 Cijoro Lebak, SDN Kampung baru are in the moderate category with a total of 75.7%. However, after the treatment (treatment) post test many students have changed their categories, the average student is indeed in the medium category. However, onpost test also many students who are in the high category with a total of 43.2. When the Paired Simple T-test was carried out, the results obtained were Sig (2-tailed) 0.006 <0.05. With this, it has been proven that the use of educational Wordwall game effect on the learning interest of fifth grade students of SD Islam Subulussalam, SDN 02 Cijoro Lebak, SDN Kampungbaru towards mathematics lessons, especially the material of multiplication and division.

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