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The Influence of Wordwall Interactive Media on Learning Interest in Mathematics For 5th Grade Students at SD Negeri 2 Kepatihan, Tulungagung Regency

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Abstract-Education stands as a cornerstone in Indonesia's national development, yet it grapples with persistent challenges such as low student interest and motivation, alongside a scarcity of innovative and engaging learning media. Recognizing these hurdles, this research underscores the vital role of Wordwall interactive media as an innovation in mathematics learning for 5th grade students at SD Negeri 2 Kepatihan, aiming to significantly boost student learning interest. This quantitative study employed a pre-experimental One Group Pretest-Posttest approach. The research was conducted at SD Negeri 2 Kepatihan, involving all 31 students from the 5th grade as the data source. Data collection involved administering a learning interest questionnaire, which had undergone validity and reliability testing, supplemented by documentation. Data analysis included normality tests, Paired Sample T-Test for hypothesis testing, and descriptive analysis. The findings reveal a significant increase in student learning interest following the implementation of Wordwall media. This improvement is evidenced by a p-value of less than 0.001, and an notable rise in average questionnaire scores from an initial 36.5 to a final 63.9. These results strongly suggest that Wordwall effectively addresses the challenge of low student engagement in mathematics. In conclusion, Wordwall interactive media is proven to be highly effective in significantly enhancing student learning interest. Its application provides a viable solution for fostering a more dynamic and motivating educational environment, particularly in subjects like mathematics.

Keywords :Interactive media, Learning interest, Mathematics learning, Wordwall

INTRODUCTION

A. Background

Education plays a crucial role in improving the quality of human resources by adapting to the rapid development of science and technology. In Indonesia, education is mandated to develop intelligent and capable citizens in accordance with the 1945 Constitution and Law No. 20 of 2003 concerning the National Education System. Despite this mandate, Indonesian education faces challenges at both the macro and micro levels, including a complex curriculum, uneven distribution of teachers, monotonous teaching methods, and limited learning facilities.

Among these challenges, low student interest in learning is a significant obstacle, especially in subjects such as mathematics, which is often considered difficult and uninteresting by students. To address this issue, the Ministry of Education and Culture of Indonesia encourages the integration of Information and Communication Technology (ICT) in education. However, the use of ICT-based media in teaching remains limited, thereby reducing the effectiveness of learning.

As stated by Agustina in the journal [1]Nisa & Susanto (2022), technology is used as one of the innovative teaching media (teaching aids) in the field of education. The current rapid development of technology affects all aspects of life, including the education sector. The education sector is influenced by the rapid advancement of information technology in today's era of globalization. Anyone seeking educational resources will experience convenience thanks to the presence of information technology.

There is a regulation issued by the Minister of Education and Culture of the Republic of Indonesia, namely Number 65 of 2013, which in clause 13 states that Information and Communication Technology (ICT) can improve the efficiency and effectiveness of learning [2](Widyastono, 2017). When implementing this policy, teachers are required to use ICT-based media in their teaching process.

The limited innovation by teachers in utilizing learning technology significantly contributes to low student interest in learning. .[3]Education will be successful if students have a strong interest in learning. Teachers can be likened to guides on a journey, responsible for ensuring smooth progress in students' learning process through their knowledge and experience. The changes that occur are relatively constant and have a profound impact. Teachers play an important role in the students' learning process and strive to bring about changes in their attitudes and interests (quoted in Suprihatin, 2015).

This shows that students' interest in the subject matter has a significant influence on their willingness to learn. High interest can encourage students to actively participate in the learning process, which helps them absorb lessons more easily and achieve optimal learning outcomes. Interest is one of the components that drive students to engage in education. It is a key factor that motivates students to want to learn. Learning interest plays a very important role in the learning process because it can affect the results obtained by students[4].

Students' interest in participating in the learning process is crucial for the smooth running of teaching and learning activities. Students who have a high interest in learning during the process will support a better teaching and learning environment. Conversely, if students' interest is low, the quality of learning will decline, which will certainly affect learning outcomes. Teachers needfulness to create sure the classroom is a pleasant place to be, so that students grow more interested in learning. To enhance students' interest in learning at the elementary school level, using attractive learning media can be an effective approach.

In reality, not all elementary school students have a good ability to understand mathematics subjects, especially on the topic of percentages. Many students face difficulties in learning this concept. Based on interviews with a Grade 5 teacher at SD Negeri 2 Kepatihan, the mathematics learning process is still dominated by the active role of the teacher, while students only act as listeners and note-takers. This has an impact on the low learning outcomes of the students. Moreover, the teacher has never utilized the Wordwall learning media in teaching mathematics. Therefore, the use of Wordwall learning media is necessary to encourage active student participation, increase their interest and confidence, and develop problem-solving skills in mathematics.

[5]Mathematics, as one of the core subjects, is often considered difficult and boring by students. Students' lack of interest in mathematics, abstract concepts, and challenging problem-solving often becomes an obstacle to achieving learning objectives. Various efforts have been made to improve the quality of mathematics learning. Integrating technology into the learning process is one promising method. [6]Interactive media is a learning tool or means that contains material, methods, evaluations, and limitations (quoted in Wati, 2016).

One popular example of interactive media today is Wordwall. According to Sherianto (2020)[7], Wordwall is an application it was pioneer that students can harness the material as a tool for learning, a reference, and even for assessmentfor teachers and students. Halik (2021)[8] states that Wordwall is a web application used to create entertaining quiz-based games. The selection of the interactive Wordwall media makes students interested in learning, thereby improving their learning outcomes.

[9]Wahyudi (2015: 68) revealed that mathematics learning aims to train students to think in a structured, logical, critical, creative, and consistent manner. An empirical study conducted by [10]Khofifah (2022) shows that the use of interactive media based on Wordwall quizzes has a significant positive impact on students' learning outcomes. Khofifah found that students' science learning outcomes using Wordwall-based interactive media were superior compared to conventional learning or learning without involving media. Thus, it can be concluded that the use of Wordwall quiz-based interactive media influences the science learning consequence of fourth-grade students at SDN Pasir Putih 03.

In research by [11]Nurdin et al. (2023), titled "The Effect of Using Wordwall-Based Interactive Media on Social Studies Learning Outcomes of Fifth-Grade Students at SD Negeri 14 Biru, Tanete Riattang District, Bone Regency," it was also shown that there is a significant effect of using Wordwall quiz-based interactive media on the social studies learning outcomes of fifth-grade students at SD Negeri 14 Biru, as seen from the calculated t-value (2.044) > t-table value (1.67528).

[12]Interactive media can facilitate social interaction between students and teachers, as well as among students, thereby enriching the learning experience. Previous research has shown that the use of interactive learning media can increase motivation and student learning outcomes. Interactive media such as Wordwall can facilitate the learning process by providing various activities that challenge students to think critically and creatively.

Wordwall, as one of the interactive learning media platforms, has several advantages. The advantages of Wordwall media include an engaging learning media display for students in the classroom, the availability of several templates to support use according to needs, and accessibility of assignments through smartphones (Mujahidin, et al., (2021))[13].

Research on the use of Wordwall in the context of mathematics learning in elementary schools, particularly in Indonesia, is still relatively limited. Therefore, this study aims to fill this gap and contribute to the development of more effective teaching practices. By examining the influence of Wordwall usage on the interest in learning mathematics among fifth-grade students in elementary school, it is expected that empirical evidence regarding the effectiveness of this interactive learning media can be obtained.

Additionally, the study will explore how different game formats within Wordwall can cater to diverse learning styles, potentially enhancing student engagement and retention of mathematical concepts. The findings may also provide insights for educators looking to incorporate technology into their classrooms, ultimately fostering a more dynamic and supportive learning environment.

The results of this study are expected to provide recommendations for teachers and schools in utilizing technology in the learning process. Additionally, this research is also expected to serve as a reference for educators and researchers in efforts to improve the quality of mathematics education. Thus, this study is anticipated to contribute to the advancement of education in Indonesia.

Based on this background, the researcher is interested in conducting a more in-depth study to determine whether there is an effect of the Wordwall interactive media on the learning interest in mathematics among fifth-grade elementary school students. Therefore, the researcher has chosen the research title "The Influence of Wordwall Interactive Media on Learning Interest in Mathematics For 5th Grade Students at SD Negeri 2 Kepatihan, Tulungagung Regency".

B. Problem Statement

Based on the background above, the formulation of the problem in this study is whether there is an influence of Wordwall interactive media on learning interest in mathematics for 5th grade students at SD Negeri 2 Kepatihan, Tulungagung Regency?

C. Research Objectives

This study direct to investigate how the Wordwall interactive tool influence the interest of 5th grade students in learning mathematics at SD Negeri 2 Kepatihan, Tulungagung Regency..

D. Research Benefits

The benefits of conducting this research are as follows:

1. Theoretical Benefits
   a. The results of this study can serve as a reference and a means to enhance the researcher's knowledge.
   b. It can contribute to the understanding of interactive media and learning interests. This study's results can be used as a reference and a means to enhance the researcher's knowledge.

2. Practical Benefits

   This research is expected to provide practical benefits for teachers, schools, students, and researchers.
   a. For Teachers: This research can inspire teachers to continuously innovate in using technology for mathematics learning, especially the Wordwall medium for percentage material.
   b. For Schools: This research can serve as input for schools to consider the use of technology in the learning process and to increase students' interest in learning mathematics through the Wordwall medium.
   c. For Students: This research can effectively attract students' interest in learning Mathematics, particularly the percentage material..
   d. For Researchers: This research can provide a more thorough understanding of how the interactive Wordwall medium affects the learning interests of fifth-grade elementary school students.

RESEARCH METHOD

A. Type and Design of Research

[14]This research employs a quantitative method with a pre-experimental approach, specifically utilizing a one-group pretest-posttest design. This design involves administering an initial questionnaire (pretest) before the intervention. This allows for a more accurate comparison of results after the intervention (posttest) by providing a baseline from the pre-treatment condition. This design was chosen to measure changes in learning interest before and after the intervention using Wordwall media. The research design can be illustrated as follows:

Table 1. One Group Pretest-Posttest Design

Class	Initial Questionnaire	Treatment	Final Questionnaire
Experiment	T_1	X	T_2

Description:
T1 = Initial questionnaire administered before the treatment.
T2 = Final questionnaire administered after the treatment.
X = Interactive Wordwall medium treatment applied.

Interactive Wordwall Medium → Learning Interest

Description :
X: Interactive Wordwall Medium (Independent Variable)
Y: Learning Interest (Dependent Variable)

Figure 1. Research Paradigm

Figure 2. Research Procedure

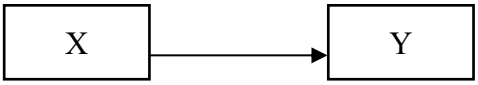
Explanation of the Research Procedure Diagram:

1. Initial Questionnaire

   At the initial stage of the research, the researcher first conveyed the learning objectives and the scope of the percentage material. Subsequently, an initial questionnaire was distributed to measure students' learning interest in the percentage of material before learning using Wordwall. The researcher also explained how to complete the questionnaire and ensured that the students understood the instructions.

2. Learning Mathematics (Percentage Material) Using the Wordwall Medium

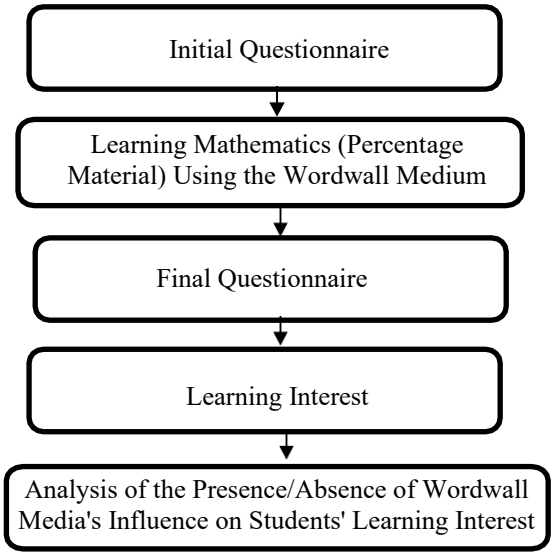
   In the subsequent stage, the researcher opened the Wordwall application and shared a website link containing pre-prepared questions on percentage material with students via the WhatsApp group. The researcher explained how to use Wordwall and its interactive features. Following this, students worked on practice problems within Wordwall. The researcher monitored and guided students during their use of Wordwall, providing assistance when students encountered difficulties.



3. Final Questionnaire

   In this stage, the researcher distributed the final questionnaire to measure students' learning interest in the percentage of material after using Wordwall. The researcher then explained how to complete the questionnaire and ensured that the students understood the instructions. The researcher also provided an opportunity for students to ask questions or express their opinions regarding the learning activities that had been conducted

4. Learning Interest



In this stage, the researcher observed students' learning interest in mathematics, specifically in the percentage topic, during the learning process.

5. Analysis of the Presence/Absence of Wordwall Media's Influence on Students' Learning Interest

In this stage, the researcher analyzed whether there was an increase in students' learning interest in mathematics, specifically in the percentage topic. If students' learning interest showed an increase, it would indicate an influence from using interactive Wordwall media in the learning process. Conversely, if students' learning interest did not show an increase, it would imply no influence from using interactive Wordwall media in the learning process.

B. Population and Sample

The research population comprised all students of SD Negeri 2 Kepatihan. The sample for this study consisted of all 5th-grade students at SD Negeri 2 Kepatihan, totaling 31 students. The methodology accustomed to selected participants was shout purposive sampling. This diverseness of sampling slope to surround people who retain a particular condition or expertise a specific measurement. In this case, the researcher designated the 5th-grade students of SD Negeri 2 Kepatihan as respondents based on certain considerations: their ability to understand the material well, their ability to complete questionnaires accurately, and the fact that 5th-grade students are permitted to use mobile phones as a learning medium.

C. Research Variables

Two variables were utilized in this study: independent and dependent variables. [15]Sugiyono (2018), states that a dependent variable is a variable that is influenced by or is the result of an independent variable. Conversely, an independent variable is a variable that exerts influence. In this research, the independent variable is symbolized by X, and the dependent variable is symbolized by Y.

D. Data Collection Techniques

To obtain the necessary data and information, the instruments used as data collection techniques in this research were in the form of questionnaires and documentation, illustrated as follows:

1. Questionnaire

In this study, a closed-ended questionnaire was utilized, where respondents simply marked a checkmark (√) on the appropriate option. Furthermore, in designing the questionnaire, it was important to determine the measurement scale (rating scale) to obtain a general overview of the respondents' characteristics and their assessment of each variable within the questionnaire.

The researcher used a Likert scale, as mentioned by Sugiyono (2019, p. 146)[16], who explains that this scale is used to measure people's attitudes, opinions, and views about a social issue. This questionnaire is meant to find out if using interactive Wordwall media affects students' interest in learning mathematics, especially when it comes to percentage topics, after the learning process has changed.

2. Documentation

[17]As explained by Sugiyono (2018), documentation means gathering records of events in the form of written text, drawings, or photos from an individual or organization. In this study, the data was collected using documentation, and specifically through photographs.

E. Data Analysis Techniques

In this study, the data analysis techniques for instrument testing involved validity and reliability tests, which were assessed using the Kaiser-Meyer-Olkin (KMO) Measure and Cronbach's Alpha, respectively. The prerequisite test in this research utilized a normality test, evaluated with the Shapiro-Wilk test.

The study used descriptive statistics to assess learning interest scores and a hypothesis test with a paired-samples t-test to determine the significant difference between the initial and final questionnaire scores.

RESULTS & DISCUSSION

A. Results

1. Descriptive Analysis

Table 2. Description of Learning Interest Questionnaire Data

Descriptives

	Initial Questionnaire	**Final Questionnaire**
N	31	31
Missing	0	0
Mean	36.5	63.9
Median	37	65
Mode	35.0 [a]	65.0 [a]
Sum	1131	1981
Standard deviation	7.02	6.53
Minimum	22	50
Maximum	48	75

Descriptives		
	Initial Questionnaire	**Final Questionnaire**

[a] *More than one mode exists, only the first is reported*

Table 2 demonstrates an increase in the average learning interest scores of students, rising from 36.5 before the treatment to 63.9 after the treatment. The median and mode also showed significant increases, indicating a clear improvement in learning interest.

2. Validity and Reliability

The reliability of the first and last questionnaires was coincide apply Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO MSA). For the KMO MSA, a score higher than 0. 50 is viewed as acceptable. For Bartlett's Test, a result with a significance level below 0. 001 show the data is ready for analysis. These findings signify that the questionnaires are reliable and can be accustomed in the study (Retnawati, 2016).

Table 3. Bartlett Test of Sphericity

Bartlett's Test of Sphericity		
χ^2	**df**	**P**
13.8	1	< .001

According to table 3, the Bartlett's Test of Sphericity results show a value of less than 0. 001. A p-value below 0,001 means the results from the Bartlett's Test of Sphericity are considered valid, as mentioned in Retnawati (2016).

Table 4. KMO *Measure of Sampling Adequacy*

KMO Measure of Sampling Adequacy	
	MSA
Overall	0.500
Initial Questionnaire	0.500
Final Questionnaire	0.500

Based on table 4, the KMO Measure of Sampling Adequacy shows a test result of 0.500, indicating that it is sufficiently adequate for factor analysis. The results from processing the data for the student learning interest questionnaire test are as follows:

Table 5. Scale Reliability Statistics

Scale Reliability Statistics		
	Mean	**Cronbach's α**
scale	50.2	0.764

Based on table 5, with a Cronbach's Alpha value of 0.764, It can be aforesaid that the students' interest in know part in the learning method is clear. questionnaire instrument has a high and consistent level of reliability.

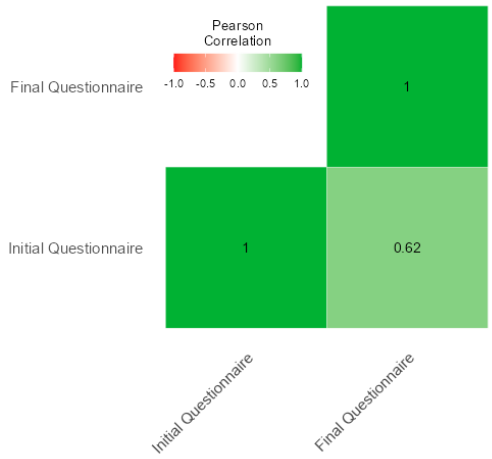


Figure 3. Correlation Heatmap

Looking at figure 3, the Correlation Heatmap shows that how much students are interested in learning stays about the same over time. If a student is very interested in learning at first, they are likely to stay that way later on. Similarly, if a student isn't very interested at the start, they probably won't become more interested later. Also, the tool accustomed to coincide learning interest is dependable, because it contribute similar answers when used at different times.

3. Normality and Hypothesis Test

Table 6. Normality Test

Normality Test (Shapiro-Wilk)				
			W	**P**
Initial Questionnaire	-	Final Questionnaire	0.978	0.751

Note. A low p-value suggests a violation of the assumption of normality

Looking at table 6, the p-value for both the first and last questionnaires is 0. 751, which is higher than 0,05. This means the data follows a normal distribution, so we accept the null hypothesis.

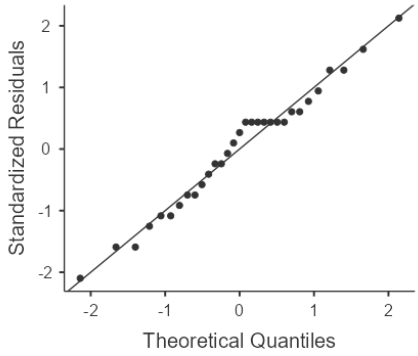


Figure 4. Q-Q Plot Assessing Multivariate Normality

The Q-Q Plot that checks for multivariate normality, display in figure 4, unveil how the data points are propagate out in relation to a normal distribution.

Table 7. Hypothesis Test

Paired Samples T-Test					
			statistic	**df**	**p**
Initial Questionnaire	Final Questionnaire	Student's t	-25.8	30.0	< .001

Note. H_a $\mu_{Measure\ 1 - Measure\ 2} \neq 0$

Establish on the results of the paired samples t-test, the t-statistic is -25. 8, the degrees of freedom is 30. 0, and the p-value is diminutive than 0. 001. ago the p-value is much slight than the significance level of 0. 05, we deny the null hypothesis. This indicate there rules a statistically significant difference in students' learning interest before and after they accustomed interactive Wordwall media.

The negative t-statistic value (-25, 8) along with the descriptive data displaying an increase in average scores imply that student learning interest proceeded up after apply interactive Wordwall media. So, established on this study, it can be aforementioned that employ interactive Wordwall media possesses a positive and important impact on boost students' interest in learning..

B. Discussion

Establish on the research findings, apply interactive Wordwall media clearly and greatly elevated the learning interest in math for 5th-grade students at SD Negeri 2 Kepatihan. . The results of the statistical test using a paired-samples t-test showed a p-value of the results also display a very small value of 0,001, which is much lower than the 0,05 level of significance. This indicates that the difference in learning interest before and after the implementation of Wordwall media is statistically significant. This demonstrates that the interactive media genuinely boosted learning interest and that the improvement was not merely due to chance.

Descriptively, there was a very significant increase in the average learning interest score from an initial questionnaire score of 36.5 to 63.9 in the final questionnaire. This increase illustrates that students experienced a heightened interest in mathematics after using Wordwall as a learning medium. Not only from a statistical standpoint, but practically, the shift in median and mode from 37 and 35 in the initial questionnaire to 65 in the final questionnaire indicates that the majority of students showed significantly higher learning interest after the intervention. The diminutive drop in score differences, disclose by the standard deviation, also display that the rise in student interest was disseminate out more evenly and not just experience for a few students.

From a theoretical point of view, this finding is in line with the opinions expressed by Johnson et al. (2020) and Smith & Brown (2019)[18], who state that the use of interactive media in the learning process can increase students' motivation and strengthen their understanding of the material through direct involvement and active learning experiences. They argue that activities that involve direct student participation can foster curiosity and strengthen memory of the concepts learned. Also, the constructivism theory from Marton and Saljo in 2017[19] suggests that when students are actively involved in their learning, they understand things better and become more interested. Interactive media allows students to learn on their own, have fun, and explore while studying, which can help build their confidence and interest in math.

This research is also supported by previous research conducted by Khofifah (2022), which shows that the use of Wordwall-based interactive media can significantly improve student learning outcomes, especially in science lessons. She highlighted that this media is able to make the learning process more interesting and fun, thus motivating students to be more actively involved in learning. In addition, research by Nurdin et al. (2023) stated that Wordwall-based interactive media has a positive impact on students' learning outcomes and motivation in social studies lessons, as it facilitates social interaction and critical thinking during the learning process. Both studies support the finding that interactive media, especially Wordwall, can increase students' interest and engagement in the learning process, as well as strengthen psychological aspects such as self-confidence and enthusiasm for learning..

Generally, the research findings strongly support that technology and interactive media play a crucial role in increasing students' learning interest in the current digital era. The implementation of Wordwall as a learning medium proved capable of providing an enjoyable and meaningful learning experience, ultimately significantly boosting students' learning interest. This success underscores the importance of innovating technology-based learning media in the educational process, particularly in mathematics instruction, which is known for its high difficulty level and often leads to student boredom. Therefore, the integration of interactive media like Wordwall should be encouraged as part of innovative and time-relevant learning strategies to continuously enhance student interest.

CONCLUSION

Based on the research findings, the use of interactive Wordwall medium significantly increased the learning interest of 5th-grade students at SD Negeri 2 Kepatihan in mathematics, with a p-value of < 0.001. This improvement is evidenced by the rise in the average

learning interest score from 36.5 to 63.9 in the final questionnaire. The modify in the middle and most familiar values to higher numbers reveal that most students exhibit more interest in learning after apply the medium. Therefore, these results confirm that Wordwall medium is effective in significantly enhancing students' learning interest and can serve as an attractive and innovative alternative learning medium.

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