

# The relationship of digital wordwall-based learning media to student learning motivation

Rizky Mutiara Sari Setiawan<sup>1</sup>, Santy Dinar Permata<sup>2</sup>

<sup>1,2</sup>Elementary and Preschool Education, State University of Malang, East Java, Indonesia

\*Corresponding author, email: rizky.mutiara.2301516@students.um.ac.id

## Keywords

Student

Learning Media

Wordwall

## Abstract

The progress of the times demands innovation in all aspects of life. One of them is in the aspect of education. Digital technology demands teachers in terms of the learning process, especially in the use of learning media to increase student learning motivation. One of these digital media is wordwall, a platform that presents various of educational game-based learning activities. This study aims to analyse the relationship between the use of wordwall learning media and students' learning motivation. This research uses quantitative methods with a focus on correlation analysis between variables. The sample in this study were third grade students of elementary school Kloposepuluh 2, who were selected by purposive sampling. Data were collected through questionnaires distributed to students. Data analysis was carried out using statistical techniques with the help of SPSS software. The results showed that there was a positive relationship between the use of wordwall and students' learning motivation. This study recommends the use of wordwall media as part of an innovative and adaptive learning strategy to the needs of learners in the digital era. Based on the findings, it can be concluded that the use of wordwall learning media has a significant influence on increasing students' learning motivation.

## 1. Introduction

The advancement of digital technology in the 21st century has brought transformative changes across various sectors, including education. The integration of digital tools into learning environments has become not only a trend but a necessity, especially in promoting student-centered, interactive, and engaging learning experiences. However, one of the major challenges that educators still face is maintaining and increasing students' learning motivation—particularly in elementary schools, where attention span and engagement levels are often unstable. Traditional, monotonous, and teacher-centered instruction frequently leads to reduced curiosity, participation, and enjoyment in learning. This condition has created an urgent need for the development of innovative digital learning media that can stimulate motivation and create a meaningful learning atmosphere.

One response to this challenge is the use of game-based digital platforms such as Wordwall, which allows teachers to develop interactive educational games (e.g., quizzes, matching games, crosswords) aligned with learning materials. The features of Wordwall—customizability, visual engagement, and instant feedback—are believed to be capable of increasing student involvement and enthusiasm in learning. Gamification elements in such platforms can turn learning into a more enjoyable, rewarding, and interactive experience, potentially leading to greater motivation and better learning outcomes.

Learning motivation itself is a complex psychological construct that significantly influences students' academic performance, persistence, and emotional involvement. According to the Self-Determination Theory (SDT) by Ryan and Deci (2020), motivation flourishes when learners experience autonomy, competence, and relatedness. In the context of digital learning, Wordwall can fulfill these three psychological needs: students can engage in tasks independently (autonomy), receive immediate performance feedback (competence), and interact socially with peers and teachers (relatedness). Such conditions encourage intrinsic motivation, where learners engage in tasks out of genuine interest and personal growth, rather than external rewards.

Complementing SDT, the theory of intrinsic and extrinsic motivation (Ryan & Deci, 2020) emphasizes that external tools, when well-integrated, can foster intrinsic interest over time, especially when they are perceived as supportive rather than controlling. Additionally, constructivist

learning theory posits that learners construct knowledge through active engagement, exploration, and social interaction (Schunk, 2012). Game-based digital platforms support this by providing problem-solving experiences, exploration of learning materials, and collaborative engagement—thus making learning more meaningful and learner-driven.

Recent studies provide empirical support for this theoretical foundation. For instance, Safitri et al. (2022) found that the use of Wordwall significantly improved student learning motivation in science classes. Similarly, Abd Al-Aziz et al. (2025) reported an increase in both motivation and academic achievement in mathematics after implementing Wordwall among sixth graders in Palestine. A systematic review and meta-analysis by Alé and Arancibia (2025) further confirmed that gamified digital learning environments have a statistically significant positive effect on learners' motivation, particularly in terms of attention, satisfaction, and confidence. However, these studies largely focus on middle school or higher education settings.

There remains a research gap in understanding how Wordwall affects elementary students, particularly in the Indonesian context. Most previous studies have centered on learning outcomes (e.g., test scores), while few have explored the affective domain, specifically learning motivation, as the primary variable. Moreover, there is limited evidence on how game-based media like Wordwall interact with the intrinsic and extrinsic motivational components of young learners.

Therefore, this study aims to investigate the relationship between the use of Wordwall-based digital learning media and elementary students' learning motivation. Using a quantitative correlational method, this study focuses on third-grade students who have previously been exposed to Wordwall in classroom instruction. It is expected that the findings will contribute not only to empirical understanding but also to practical insights for educators in integrating game-based digital media to foster intrinsic engagement, emotional involvement, and active participation among students.

This research also seeks to strengthen the theoretical connection between motivation psychology and digital pedagogical strategies. By aligning SDT, motivational theory, and constructivist perspectives, the study underscores that effective digital media must not only deliver instructional content, but also create stimulating, student-centered experiences that nurture both cognitive and affective growth in learners.

## 2. Method

This study employed a quantitative approach with a correlational method to determine the relationship between Wordwall-based learning media and elementary students' learning motivation. This method was chosen because it is appropriate for measuring the strength and direction of the relationship between two variables without manipulating the subjects. The independent variable in this study was the use of Wordwall media, while the dependent variable was students' learning motivation.

The subjects in this study were students at elementary school Kloposepuluh 2. The sample selection was carried out using non-random sampling technique, namely purposive sampling. According to Nyimbili & Nyimbili (2024), purposive sampling is a non-random sampling technique where the researcher deliberately chooses participants or problems that are considered relevant and provide in-depth information about the phenomenon under study. In this case, the sample was taken from students who had participated in learning by using wordwall media in several previous meetings. This technique is used to ensure that respondents have relevant learning experiences with the media under study. It consisted of 25 third-grade students at elementary school Kloposepuluh 2 who were selected based on specific criteria to ensure relevance to the research objectives. The criteria included: (1) students who had participated in learning activities using Wordwall media at least three times within the past month; (2) students who had full attendance during the sessions when Wordwall was implemented, ensuring consistent learning experiences; (3) students capable of understanding and completing the questionnaire independently with minimal assistance from teachers or researchers; and (4) students whose participation was authorized by their parents or guardians. These criteria were designed to ensure that the sample consisted of students who had directly experienced the media being studied.

The research instrument used was a Likert-scale questionnaire measuring learning motivation, consisting of indicators such as curiosity, persistence, attentiveness during lessons, enthusiasm, and the desire to complete tasks. After data collection, the first step of analysis was to test for data normality using the Shapiro-Wilk method, appropriate for small sample sizes ( $n < 50$ ). The results showed that the “Wordwall Media” variable had a significance value of 0.312 ( $p > 0.05$ ), indicating a normal distribution. In contrast, the “Student Motivation” variable had a significance value of 0.000 ( $p < 0.05$ ), indicating a non-normal distribution. Since one of the variables did not meet the assumption of normality, further analysis was conducted using the non-parametric Spearman Rank correlation test.

This part should contain sufficient detail that would enable all procedures to be repeated. It can be divided into subsections if several methods are described. Authors should be as concise as possible in experimental descriptions. The experimental section must contain all of the information necessary to guarantee reproducibility. Previously published methods should be indicated by a reference and only relevant modifications should be described. For statistical analysis, please state the appropriate test(s) in addition to a hypothesized p-value or significant level (for example 0.05).

The following table presents the criteria in the normality test :

**Table 1. Normality Test Criteria**

Nilai Signifikansi (Sig.)	Level of Relationship	Interpretation
Sig. > 0,05	Normally distributed data	Using parametric analysis
Sig. ≤ 0,05	Data is not normally distributed	Using non-parametric analysis

The Spearman correlation test was used to determine the relationship between the two variables under non-normal distribution conditions. The results showed a correlation coefficient of 0.599 with a significance value of 0.002 ( $p < 0.05$ ). This result indicates a statistically significant positive correlation of moderate strength between the use of Wordwall media and students’ learning motivation.

The following table presents the criteria in the Spearman Rank correlation test

**Table 2. Spearman Correlation Test Decision Criteria**

Significance Value (Sig.)	Level of Relationship	Significance Value (Sig.)	Level of Relationship
Sig. 0,00-0,199	Very low	Sig. 0,00-0,199	Very low
Sig.0,20-0,399	Low	Sig.0,20-0,399	Low
Sig. 0,40-0,599	Medium	Sig. 0,40-0,599	Medium
0,60-0,799	Strong	0,60-0,799	Strong
0,8-1,00	Very strong	0,8-1,00	Very strong

These findings clearly demonstrate that more intensive use of Wordwall media in the learning process is associated with higher levels of student motivation. This supports the hypothesis that game-based digital media can enhance students’ interest, participation, and enthusiasm in learning. Therefore, Wordwall serves not only as a teaching aid but also as a motivational tool that stimulates both intrinsic and extrinsic motivation within a more enjoyable and interactive learning environment.

### 3. Results and Discussion

This study aims to determine the relationship between the use of Wordwall media on student learning motivation at elementary school Klopsepuluh 2. Data were obtained through distributing

questionnaires that had been filled out by students who became the research sample. This questionnaire measures the level of student learning motivation based on indicators of interest in the material, and activeness in learning,

Before conducting a correlation test, a normality test is first carried out to determine the appropriate type of statistical test. The normality test was conducted using the Saphiro-Wilk test with the help of SPSS. The results of the normality test are shown in Table 3 below:

**Tabel 3. Result Normality tes**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Media Wordwall	,148	25	,163	,954	25	,312
Motivasi Siswa	,192	25	,018	,812	25	,000

Lilliefors Significance Correction

Based on the results of the normality test, it is known that the data is not normally distributed, so the analysis is continued using a non-parametric correlation test, namely Rank Spearman. The results of the Rank Spearman test are shown in Table 4 below:

**Tabel 4 Result Spearman Rank test**

		Media Wordwall	Motivasi Siswa
Spearman's Rho	Media Wordwall	Correlation Coefficient	1,000
		Sig. (2-Tailed)	,599**
		N	25
	Motivasi Siswa	Correlation Coefficient	,599**
		Sig. (2-Tailed)	,002
		N	25

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**3.1. Results and Discussion 2**

The results of the normality test using Shapiro-Wilk show that the data from the 'Wordwall Media' variable has a significance value of 0.312 ( $p > 0.05$ ), which means that it is normally distributed. In contrast, the variable 'Student Learning Motivation' has a significance value of 0.000 ( $p < 0.05$ ), so it is not normally distributed. Because only one variable was normally distributed, the correlation test was conducted with Spearman Rank. The test results show a correlation coefficient value of 0.599 with a significance of 0.002 ( $p < 0.01$ ), indicating that there is a positive and significant relationship with moderate strength between the use of Wordwall media and student learning motivation. This means that students who use Wordwall more often or more actively tend to have higher learning motivation.

Specific features on Wordwall play an important role in increasing students' learning motivation. The platform provides various types of educational games such as quizzes, match pairs, random wheel, anagrams, and 'whack-a-mole', which can be adapted to the teaching materials. Based on observation, quizzes and whack-a-mole are the most effective because they are competitive, dynamic, and encourage quick thinking. In addition, Wordwall provides instant feedback after students answer the questions, which helps them understand their work immediately and provides a sense of accomplishment. Features such as scores and leaderboards also add a positive competitive

element. This creates a learning atmosphere that is active, engaging, and able to nurture students' passion for learning

When linked to Ryan and Deci's Self-Determination Theory (SDT), these results reinforce that students' intrinsic motivation can flourish when three basic psychological needs are met: autonomy, competence and relatedness. In the context of Wordwall, autonomy is facilitated through students' freedom to choose games, access them independently, and learn at their own pace. Competence is built through structured challenges in the game and instant feedback, which helps students feel successful and motivated to keep learning. Meanwhile, connectedness comes from interactions between students in a healthy competitive atmosphere and support from teachers during the play process. Wordwall's features indirectly support the fulfilment of these three needs, thus strengthening students' intrinsic motivation to learn, rather than external factors such as grades or teacher pressure

A comparison with other platforms such as Kahoot and Quizizz shows that while all three are gamification-based, Wordwall has the advantage of flexibility, variety of game forms, and suitability for primary school. Kahoot focuses more on real-time competition and quick visual displays, while Quizizz emphasises result tracking and individualised learning. Wordwall excels in terms of ease of use, ability to be accessed online and offline, and a simple yet engaging interface for elementary-aged children. This makes Wordwall an adaptive gamification medium, especially for learning environments with limited internet access or with varied material delivery needs.

However, increased learning motivation is not only influenced by learning media. These results should also be seen in a broader context, where parental support, student characteristics and teacher teaching strategies play an important role. Students who get emotional and academic support from their parents tend to have higher learning enthusiasm. Student characteristics such as curiosity, learning style and self-confidence also influence the effectiveness of Wordwall in increasing motivation. In addition, teachers who are able to integrate the media with an active and inclusive pedagogical approach will increase the meaning of using the media for students.

Therefore, although Wordwall was shown to have a positive and significant relationship with learning motivation, it should not be used in isolation from a whole learning approach. An approach that considers the psychological aspects of students as described in SDT theory, as well as support from a conducive learning environment, will be much more effective in building sustainable motivation. Further research is strongly recommended to explore the interaction between media, psychological and social factors in the context of primary education using qualitative approaches or advanced experiments

They should be combined. The study results should be clear and concise. Restrict the use of tables and figures to depict data that is essential to the message and interpretation of the study. The results should be presented in a logical sequence in the text, tables and illustrations. The part of result exposes the findings obtained from research data which is related to the hypotheses. The results should summarize (scientific) findings rather than providing data in great detail. The discussion should explore the significance of the results of the work. Explains the findings obtained from research data along with theory and similar research comparison. Make the discussion corresponding to the results, but do not reiterate the results. The following components should be covered in discussion: How do your results relate to the original question or objectives outlined in the Introduction section (what/how)? Do you provide interpretation scientifically for each of your results or findings presented (why)? Are your results consistent with what other investigators have reported (what else)? Or are there any differences?. Include in the discussion the implications of the findings and their limitations, how the findings fit into the context of other relevant work, and directions for future research.

### **3.2. Conclusion**

This study shows that there is a positive and significant relationship between the use of Wordwall media and elementary school students' learning motivation. The results of the Spearman correlation analysis revealed a coefficient value of 0.599 with a significance of 0.002, which indicates the strength of the relationship in the moderate category. This indicates that effective and consistent use of Wordwall can contribute to increasing students' learning motivation. Wordwall's distinctive

features-such as interactive quizzes, challenge-based games, instant feedback, as well as competitive elements through scores and rankings-provide a fun and participatory learning experience for students, thus supporting their engagement and passion for learning.

The findings provide practical implications, especially in the context of learning in primary schools. In this case, the role of teachers becomes very important in optimising the use of digital media such as Wordwall. Teachers can consider designing learning activities that integrate interactive games contextually and in accordance with learning outcomes. The selection of the type of game should be adjusted to the needs of students and the character of the material, such as the use of a quick quiz to stimulate concentration, or a 'whack-a-mole' game to build quick responses and healthy competitiveness. In addition, providing assistance while students play, as well as providing space for post-activity reflection, can strengthen the learning value obtained. Teachers are also expected to be able to read the readiness and characteristics of their students so that the use of this media is not only interesting, but also pedagogically meaningful.

On the other hand, the results of this study also open up room for further exploration in the future. Further research has the potential to explore the relationship between gamification-based learning media and various dimensions of motivation, both intrinsic and extrinsic, and how it affects students' learning behaviour in the long run. It would also be beneficial if future studies consider other factors such as parental involvement, individual learning styles, or school social environment in a more holistic framework. Using a blended approach or experimental design involving comparison groups may provide a fuller picture of the effectiveness of Wordwall media in various learning contexts. Thus, the contribution of digital media is not only seen in terms of innovation, but also in terms of its impact on the quality and sustainability of the student learning process.

### **Author Contributions**

All authors have equal contributions to the paper. All the authors have read and approved the final manuscript.

### **Funding**

No funding support was received.

### **Declaration of Conflicting Interests**

All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential competing interests include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors must disclose any interests in two places: 1. A summary declaration of interest statement in the title page file (if double anonymized) or the manuscript file (if single anonymized). If there are no interests to declare then please state this: 'Declarations of interest: none'. 2. Detailed disclosures as part of a separate Declaration of Interest form, which forms part of the journal's official records. It is important for potential interests to be declared in both places and that the information matches.

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### **Acknowledgement (Optional)**

Recognize those who helped in the research, especially funding supporter of your research. Include individuals who have assisted you in your study: Advisors, Financial supporters, or may another supporter, i.e. Proofreaders, Typists, and Suppliers, who may have given materials. Do not acknowledge one of the authors names.

### **References**

- Hidayah, V. N., & Andriani, A. (2023). "The Use of Wordwall Learning Media on Student Interest and Motivation in IPAS Learning at Elementary School". *ICONESS Proceedings*. doi: 10.4108/eai.22-7-2023.2335123
- Jhon Ale & Mari Luisa Arancibia. (2025). "Emerging Technology-Based Motivation Strategies : A Systematic Review with Meta-Analysis." *Journal of Education Sciences*. doi: 10.3390/educsci15020197

- Nyimbili, F., & Nyimbili, L. (2024). "Types of Purposive Sampling Techniques with Their Examples and Application in Qualitative Research Studies." *British Journal of Multidisciplinary and Advanced Studies*, 5(1), 90-99. doi : 10.37745/bjmas.2022.0419
- Ryan, R. M., & Deci, E. L. (2020). "Intrinsic and extrinsic motivation from a self-determination theory perspective". *Contemporary Educational Psychology*, 61, 101860. doi: 10.1016/j.cedpsych.2020.101860
- Safitri, D., Awalia, S., Sekaringtyas, T., Nuraini, S., Lestari, I., Suntari, Y., Marini, A., Iskandar, R., & Sudrajat, A. (2023). "Improvement of Student Learning Motivation through Word-Wall-based Digital Game Media". *International Journal of Interactive Mobile Technologies*, 16(6), 29-43. doi: 10.3991/ijim.v16i06.25729
- Schunk, D. H. (2012). *Learning Theories: An Educational Perspective* (6th ed.). Boston, MA: Pearson Education, Inc.
- Abd Al Aziz, T. A., Salha, S. H., & Abu Sarah, A. M. (2025). "The Effect of Using Wordwall on Academic Achievement and Motivation Towards Learning Mathematics among Sixth Grade Students in Nablus District." *An Najah University Journal for Research - B*, 39(1), Article 5. Doi: 10.35552/0247.39.1.2305