1st BICONE (Bhinneka Conference)
Empowering Society 5.0: Education, Technology, and Social Transformation
Vol 1 No 1 , 2025

The Effect of Wordwall Game-Assisted Learning on Learning Motivation in DDTJKT Lessons at SMKN 01 Rejotangan

Dedy Rachmawanto*[1)] , Anggara S. Ardiyata[2)]
1. Information Technology Education, Faculty of Science & Technology, Universitas Bhinneka PGRI, Indonesia
E-mail address : dedyrachmaa@gmail.com
2. Automotive Technology Vocational Education, , Faculty of Science & Technology, Universitas Bhinneka PGRI, Indonesia
E-mail address : anggaraardiyanta@gmail.com

***Abstract*—Fun and interactive learning is a necessity in the teaching and learning process, especially in technical subjects such as Basic Computer Network Engineering and Telecommunications (DDTJKT). This study aims to determine the effect of learning assisted by wordwall games on the learning motivation of class X TJKT students at SMKN 01 Rejotangan. This study used a quantitative approach with a quasi-experimental design and involved two classes, namely the experimental class (using wordwall games) and the control class (without wordwall games). The population in the study consisted of 107 students, with a sample of 60 students selected using purposive sampling method. Data were collected through observations, interviews, and learning motivation questionnaires that had been tested for validity and reliability. The instrument uses a Likert scale with indicators of learning motivation such as the desire to succeed, learning motivation, and interesting learning activities. The data analysis technique used the Independent Sample T-Test test. The results showed that there was a significant difference in student learning motivation between the experimental and control classes with a significance value of 0.001.**

Keywords—DDTJKT, Learning Motivation, Wordwall Game

I. INTRODUCTION

The rapid development of technology has brought significant changes in the world of education, especially in creating interactive learning [1]. Teachers are required to be creative in delivering learning in order to increase students' interest and motivation. In the context of the Independent Curriculum which requires student-centered learning, the use of digital-based media is a solution. One approach that has proven effective is the use of educational games such as Wordwall.

Wordwall games present material in an interactive form, encouraging students to learn while playing. This is especially important, especially in technical lessons such as Fundamentals of Computer Network and Telecommunications Engineering (DDTJKT) which many students find difficult due to the complexity of the material. Based on a survey conducted in class X TJKT SMKN 01 Rejotangan, as many as 71% of students stated that DDTJKT subjects were difficult to understand due to lack of motivation to learn and the use of monotonous learning methods.

Through observation and interviews, it was found that teachers still use conventional methods, such as lectures and PowerPoint presentations, which are less interactive and have the potential to reduce motivation. Therefore, it is necessary to look for methods that can increase student motivation. One of them is by implementing Wordwall educational game-based learning media. This study aims to determine the effect of wordwall-assisted learning on student learning motivation.

II. RESEARCH METHODS

A. Types of Research

The type of research that will be used in this study is quantitative with regression analysis. Quantitative research is research that uses data in the form of quantitative numbers, to be able to estimate population conditions or future patterns. Quantitative research makes it possible to generalize what happens, which is calculated based on statistical analysis [2].

This research design is a quasi-experimental research with a form of nonequivalent control group design involving two groups, one group as an experimental group and the other group as a control group. Quasi-experiments are characterized by having control groups, but they cannot fully function to control external variables that affect the conduct of experiments [3]. The following is figure 1 which is a quasi-experimental research with a nonequivalent control group design research design:

Figure 1 Research Design

O	X	O
O		O

O1 and O3 are students' initial learning motivations before there is a wordwall-assisted learning treatment. O2 is a learning motivation after getting learning with the help of wordwall games. O4 is a motivation for students to learn without using wordwall games in learning.

B. Research Variables

Research variables are fundamental elements in quantitative research that function to measure and explain phenomena objectively. These variables represent

characteristics or attributes that can be measured and show variations between individuals or objects being studied. In quantitative research, variables are classified into independent variables (influencing factors) and bound variables (influencing factors), and can include control and moderator variables to reduce bias and test for more complex relationships [4]. In this study, there are two variables, namely free and bound variables. The independent variable of this study is the use of Wordwall Games and its bound variable, namely Learning Motivation.

C. Population and Sample

In quantitative research, a population is defined as a whole unit of analysis that has specific characteristics and is the target of generalization of research findings. Samples are part of a population that is systematically selected to represent the entire population, thus allowing researchers to make inferences by optimizing the use of time and resources [5]. One of the most widely applied non-probability sampling techniques is purposive sampling, where researchers select samples based on specific considerations or certain criteria that are aligned with the research objectives [6]. This technique is particularly appropriate when researchers need data from specific groups that have unique or crucial characteristics to answer research questions. Although it does not allow for broad generalizations, the purposive sampling method can improve the depth of analysis and data quality when applied systematically and transparently [7].

The population in this study is all students of class X TJKT SMKN 01 Rejotangan totaling 107 students. The sample was taken by purposive sampling, consisting of 30 students of class X TJKT 2 (experiment) and 30 students of class X TJKT 3 (control).

D. Data Collection Techniques

Data collection techniques are a crucial component in quantitative research to obtain valid and measurable information. There are three main methods that are often used, namely interviews, observations, and Likert scale questionnaires. Interviews allow researchers to dig into in-depth information related to participants' perceptions and experiences through direct interactions, making them effective in understanding individual values and beliefs (Monday, 2020). Meanwhile, observation provides an opportunity for researchers to witness behavior firsthand in its natural context, which can strengthen understanding of the actions being studied

The Likert scale questionnaire is an instrument that is widely used to measure respondents' attitudes or opinions through an ordinal scale ranging from strongly disagree to strongly agree. The questionnaire in this study used a likert scale to measure learning motivation based on 6 indicators from [8] namely the desire for success, the encouragement and need for learning, the existence of future hopes and ideals, appreciation in learning, interesting learning activities, and a fun learning environment for students to study well.

E. Data Analysis Techniques

1. Test Instruments

Instrument testing is a critical stage in quantitative research to ensure that measuring instruments are able to produce valid and consistent data. The validity test aims to evaluate the extent to which the instrument actually measures the intended construct. Commonly used approaches include content validity testing through expert assessment or empirical validity with Pearson Product Moment correlation analysis [9]

On the other hand, reliability tests measure the level of consistency of results obtained from instruments under similar measurement conditions. The most popular technique is Cronbach's Alpha, where the > 0.7 usually indicates adequate reliability [10]. High validity and reliability are the main prerequisites for the instrument to be suitable for reliable scientific decision-making.

2. Prerequisite Test

Prerequisite testing is a crucial initial stage in quantitative statistical analysis to verify the suitability of data with basic assumptions before hypothesis testing. The two main tests that are often carried out include normality and homogeneity tests. The normality test aims to examine the distribution of data, where the Kolmogorov-Smirnov test is commonly used as a tool to verify the normality of the distribution of the data before further analysis [11].

The homogeneity test serves to ensure uniformity of variance between the data groups being compared, with the Levene's Test being the commonly applied method of analysis. In practice, the Levene test is also used to verify the similarity of variance before the implementation of the t-test. The validity of the results of statistical analysis is largely determined by the fulfillment of these assumptions of normality and homogeneity, because violations of these two assumptions can result in biased or inaccurate conclusions [12].

3. Hypothesis Test:

Hypothesis testing in quantitative research aims to identify significant differences between groups. One of the most widely used methods of analysis is the independent sample t-test, a statistical technique for comparing the averages of two unrelated groups. The requirements for the application of this test include: (1) data are scaled intervals or ratios, (2) are normally distributed, and (3) have homogeneous variance [13]. Significant t-test results showed that the average difference between groups was not caused by a coincidence factor, but rather by the variables studied.

III. RESULTS AND DISCUSSION

This research was carried out at SMKN 01 Rejotangan in the even semester of the 2024/2025 school year. The population used is class X students majoring in Computer Network and Telecommunication Engineering (TJKT) who are currently taking the Basics of Computer Network and Telecommunication Engineering (DDTJKT) subject which totals 107 students. There are two classes used as samples, namely class X TJKT 2 as an experimental class and X TJKT

3 as a control class, each consisting of 30 students. In collecting learning data, Wordwall Games assisted learning on students' learning motivation uses questionnaires through google forms.

Based on the results of validity, it was concluded that 18 learning motivation questionnaires in TJKT X students after being analyzed using SPSS version 25 of the 18 questionnaire items, there were 16 questionnaire items that were declared valid and 2 questionnaire items that were declared invalid. In 2 invalid statements, they will be deleted and not used. This stage of validity test uses the help of SPSS by comparing the significance value, if the significance is < 0.05 then it is declared valid, and if the significance is > 0.05

Table I Reliability Test Results

Reliability Statistics

Cronbach's Alpha	*N of Items*
,881	16

Based on table I above, 16 statements of learning motivation that have gone through the validity test get a Cronbach's Alpha value of 0.881 which is greater than 0.7. Then it can be declared reliable [10].

Table II Normality Test Results

Yes	Instruments	Control Class	Experimental Classes	Information
1	Learning Motivation Pretest	0,134	0,200	reliable
2	Posttest of Learning Motivation	0,169	0,200	reliable

In table II, the results of the normality test can be seen that the study motivation questionnaire of the control class received an asymp Sig value of 0.134 (pretest) and 0.169 (posttest) where the value is greater than 0.05, so the data of the study motivation questionnaire for the control class is normally distributed. Likewise, in the experimental class that received an asymp Sig value of 0.200 (pretest) and 0.200 (posttest) where the value was also greater than 0.05, so the learning motivation questionnaire data in the experimental class was also distributed normally.

Table III Homogeneity Test Results

Yes	Instruments	Sig Value	Information
1	Learning Motivation Pretest	0,743	Homogeneous
2	Posttest of Learning Motivation	0,193	Homogeneous

In table III, the homogeneity test of the sig value in the prettest of learning motivation is 0.734. Based on the homogeneity test decision-making, if the significance is > 0.05, H0 is accepted, so it can be concluded that the data group on the pretest value of learning motivation in the control class and the experimental class have the same variant (homogeneous). While the sig value of the posttest of learning motivation in the Test of Homogeneity of Variance is 0.193 where the value is also > 0.05, H0 is accepted. So it can be concluded that the posttest data group of learning motivation between the control class and the experimental class had the same variant (homogeneous).

Table IV Hypothesis Test Results

Yes	Instruments	Sig Value
1	Learning Motivation Pretest	0,597
2	Posttest of Learning Motivation	0,001

Based on table IV, the calculation that has been carried out is 0.597. Where 0.597 > 0.05 can be concluded that there is no difference in the initial ability of learning motivation from 2 classes, namely control class students and experimental class in X TJKT SMKN 01 Rejotangan students. After the experiment was carried out, there was a difference in the score in the posttest, this can be seen in the significance value in the posttest, the motivation for learning is 0.001. Where 0.001 < 0.05 then Ha is accepted, so it can be concluded that there is an effect of wordwall-assisted learning on student learning motivation in class X TJKT SMKN 01 Rejotangan.

The findings of the study revealed that the application of Wordwall-based educational game-based learning media had a positive impact on increasing students' learning motivation. Based on observation and data analysis, there was a significant increase in student active participation during the learning process after the implementation of Wordwall. Students showed higher enthusiasm, increased frequency of questions, and enthusiasm in completing game-based tasks through the platform. This proves that an interactive and fun learning approach is able to create a meaningful learning experience while encouraging comprehensive student engagement.

These findings are reinforced by research [14] at SMPN 1 Sesean, North Toraja, which revealed that around 90% of students experienced an increase in learning motivation after the application of the Wordwall-based method. In addition, the researchers also observed a significant increase in the engagement of students who were previously less interested in conventional learning methods. [15]complementing these findings by stating that in the context of classroom action research, Wordwall succeeded in creating a fun learning environment thereby significantly increasing students' intrinsic motivation. This increase can be seen from the post-test results and positive responses of students who feel more active and motivated during the interactive game-based learning process. Further literature review by [16] revealed that the implementation of Wordwall in learning was able to increase students' intrinsic motivation from 60% to 85%, extrinsic motivation from 55% to 80%, and learning interest from 65% to 90%. This improvement is explained through the theoretical framework of ARCS (Attention, Relevance, Confidence, Satisfaction) and Social Cognitive Theory which emphasizes the role of active involvement and the relevance of learning media in increasing learning motivation. In addition, research [17] that integrating the Problem Based Learning (PBL) model with Wordwall in social studies learning class V shows a double impact: not only on learning

motivation but also on student learning outcomes. Statistical analysis showed significance values of 0.000 < 0.05, confirming the positive and significant influence of this approach on both variables. In the context of learning Chinese, Wordwall has also shown significant effectiveness. Studies conducted [18] revealed that the use of this platform is able to increase vocabulary mastery as well as students' motivation in online learning, especially through interesting quiz features and interactive games.

Consistently, various research findings prove that the implementation of Wordwall has a positive impact on the learning experience of students across levels and subjects. In addition to contributing to improving academic results, this media also succeeds in encouraging students to be more active, creative, and enthusiastic during the learning process.

IV. CONCLUSION

Based on theoretical analysis and data processing of research data on the influence of Wordwall-assisted learning on the learning motivation of DDTJKT subjects at SMKN 01 Rejotangan, it can be concluded that:

The application of different treatments to the control group (conventional learning) and the experimental group (Wordwall Game-assisted learning) showed significant results. The average posttest score of the control group's learning motivation was 56,267, while the experimental group reached 59.1 with the same number of students in each class. Further statistical analysis revealed a significance value of 0.001 < 0.05 on the learning motivation posttest, so that an alternative hypothesis (Ha) was accepted. These findings empirically prove that Wordwall Games-assisted learning has a significant positive influence on increasing student learning motivation in DDTJKT class X TJKT subjects at SMKN 01 Rejotangan.

REFERENCES

[1] N. Mazelin, M. Maniam, S. S. B. Jeyaraja, M. M. Ng, Z. Xiaoqi, and Z. Jingjing, "Using Wordwall to Improve Students' Engagement in ESL Classroom," *Int. J. Asian Soc. Sci.*, vol. 12, no. 8, pp. 273–280, 2022, doi: 10.55493/5007.v12i8.4558.

[2] O. C. Nwabuko *et al.*, "An Overview of Research Study Designs in Quantitative Research Methodology Ogbonna," *Am. J. Med. Clin. Res. Rev.*, vol. 3, no. 5, pp. 2–7, 2024.

[3] J. Janssen and I. Kollar, "Experimental and Quasi-Experimental Research in CSCL," *Int. Handb. Comput. Collab. Learn.*, pp. 497–515, 2021, doi: 10.1007/978-3-030-65291-3_27.

[4] I. D. Permatasari, H. Sa, and A. S. Fahmi, "Variable Compilation Techniques, Research Instruments and Data Collection in Quantitative Research," *INTERDISIPLIN J. Qual. Quant. Res. ISSN*, vol. 2, no. 1, pp. 63–70, 2025.

[5] D. Hossan, Z. Dato' Mansor, and N. S. Jaharuddin, "Research Population and Sampling in Quantitative Study," *Int. J. Bus. Technopreneursh.*, vol. 13, no. 3, pp. 209–222, 2023, doi: 10.58915/ijbt.v13i3.263.

[6] M. A. Memon, R. Thurasamy, H. Ting, and J. H. Cheah, "Purposive Sampling: a Review and Guidelines for Quantitative Research," *J. Appl. Struct. Equ. Model.*, vol. 9, no. 1, pp. 1–23, 2025, doi: 10.47263/JASEM.9(1)01.

[7] S. Denieffe, "Commentary: Purposive sampling: complex or simple? Research case examples," *J. Res. Nurs.*, vol. 25, no. 8, pp. 662–663, 2020, doi: 10.1177/1744987120928156.

[8] C. F. Djarwo, "Analisis Faktor Internal dan Eksternal terhadap Motivasi Belajar Kimia Siswa SMA Kota Jayapura," *J. Ilm. IKIP Mataram*, vol. 7, no. 1, pp. 1–7, 2020, [Online]. Available: https://e-journal.undikma.ac.id/index.php/jiim/article/view/2790/1969

[9] N. W. N. Setya *et al.*, "Development of Student Leadership Variables Instruments: Validity and Reliability Analysis," vol. 508, no. Icite, pp. 541–545, 2020, doi: 10.2991/assehr.k.201214.293.

[10] M. Harlanu, A. Suryanto, S. Ramadhan, and E. Wuryandini, "Construct validity of the instrument of digital skill literacy," *Cakrawala Pendidik.*, vol. 42, no. 3, pp. 781–790, 2023, doi: 10.21831/cp.v42i3.59703.

[11] S. Alamsyah, A. Kristiyanto, F. Umar, and S. Riyadi, "Effectiveness of Self-Talk Training to Improve Self-Confidence, Achievement Motivation, and Performance of Venus Angels Futsal Athletes Semarang," *Int. J. Multidiscip. Res. Anal.*, vol. 06, no. 07, pp. 3353–3358, 2023, doi: 10.47191/ijmra/v6-i7-65.

[12] J. Shen, "Testing homogeneity of high-dimensional covariance matrices under non-normality," *J. Phys. Conf. Ser.*, vol. 2294, no. 1, 2022, doi: 10.1088/1742-6596/2294/1/012020.

[13] H.-Y. Kim, " Statistical notes for clinical researchers: the independent samples t -test ," *Restor. Dent. Endod.*, vol. 44, no. 3, pp. 2–7, 2019, doi: 10.5395/rde.2019.44.e26.

[14] D. Y. Puspitasari, H. Haryanto, and S. Sofyan, "Efektivitas pembelajaran simulasi berbantukan game wordwall terhadap hasil belajar siswa pada materi atletik," *... Manaj. Pendidik. dan ...*, 2022, [Online]. Available: https://dinastirev.org/JMPIS/article/view/1348

[15] F. A. Suhardi, J. Tang, S. Hermansyah, and S. Putri, "Enhancing Students ' Learning Motivation Through Wordwall as an Interactive Learning Tool in Class XII . G at SMAN 1 Pinrang," *J. Pendidik.*, vol. 08, no. 02, pp. 4563–4566, 2024.

[16] Z. Renata, I. Oktavia, D. Irawan, A. Naji, A. Pebrianto, and L. Nurhidayati, "Efektivitas penggunaan media games edukasi berbasis teknologi : wordwall terhadap motivasi belajar siswa," *Griya J. Math. Educ. Appl.*, vol. 4, pp. 322–330, 2024.

[17] Sarmiati, H. Quraisy, M. Nawir, and H. Quraisy, "The Influence of the Problem Based Learning Model Assisted by the Wordwall Educational Game on Motivation and Learning Outcomes for Class V Social Sciences," *J. Pendidik.*, vol. 08, no. 01, pp. 2245–2253, 2024.

[18] A. Kariyati, Syahrul, and Mukhaiyar, "The Benefits Of Wordwall Games For Teaching And Learning Mandarin Language," *J. bambuti*, vol. 6, no. 1, pp. 15–24, 2024.