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Analysis of Padlet Media Use on Student Activities and Learning Outcomes in Classes XI-5 and XI-7 at Samarinda 4 Public High School

Miftahul Jannah¹, Iya' Setyasih², Ratna Ruslan³

¹University Mulawarman, Samarinda, Indonesia, jannahmiftahul2502@gmail.com

²University Mulawarman, Samarinda, Indonesia, iyasetyssih@gmail.com

³Publik High School 4, Samarinda, Indonesia, ratnaruslani80@gmail.com

Corresponding Author: jannahmiftahul2502@gmail.com¹

Abstract: Analysis of the Use of Padlet Media on Student Learning Activities and Learning Outcomes in Classes XI-5 and XI-7 at Samarinda 4 Public High School was conducted due to the limited use of digital learning media that affects student learning activities and outcomes. This study aims to analyze the effectiveness of Padlet in improving learning activities and learning outcomes in Geography learning. The research employed a mixed methods approach with a sequential explanatory design. The research objects were students of classes XI-5 and XI-7 at Samarinda 4 Public High School. Data were collected through learning outcome tests and student activity questionnaires. Quantitative data were analyzed using descriptive statistics and difference tests, while qualitative data were obtained through open-ended questionnaires administered to teachers to support the quantitative findings. The results indicate an improvement in student learning activities and a significant increase in learning outcomes, shown by an increase in the average score from 72.62 in the pretest to 91.21 in the posttest. These findings are supported by teachers' perceptions that Padlet is easy to use, engaging, and effective in increasing student participation. Therefore, Padlet is proven to be an effective digital learning medium for enhancing student learning activities and learning outcomes.

Keywords: Padlet, Learning Activities, Learning Outcomes, Digital Media, Geography.

INTRODUCTION

The development of Information and Communication Technology (ICT) in the 21st century has created significant changes in educational practices, from teacher-centred learning to technology-based and student-centred learning (Ramadhan *et al.*, 2025). The use of digital-based learning media is an important strategy for increasing student and teacher engagement in creating meaningful learning, particularly in Geography learning materials that guide conceptual understanding, visualization, and spatial analysis skills (Jannah, 2025).

One of the increasingly widely used digital learning media is Padlet. Padlet is an interactive digital platform that functions as a virtual collaborative learning medium, allowing teachers and students to share ideas, learning materials, images, and multimedia content in a single digital space (Fajar *et al.*, 2021). Through its collaborative features, Padlet creates an

active, participatory learning environment, fostering interaction between students, and is easily accessible to students, in line with the principles of constructivist and collaborative learning (Kim, 2023). Previous studies have shown that the use of Padlet can improve student learning activities, motivation, and learning outcomes, including in geography. Padlet also supports visual and interactive learning, helping students understand spatial concepts and materials more deeply, especially when combined with a student-centred learning approach (Permatasari, 2022; Rahmawati & Mutia, 2025).

However, the implementation of digital learning media in educational practices has not yet been fully optimized. At SMA Negeri 4 Samarinda (a public senior high school in Samarinda, Indonesia), Geography learning particularly the topic of Indonesia's Natural Resource Potential still encounters challenges in promoting active student engagement. Some teachers have not effectively utilized digital-based learning media, resulting in passive student participation and inadequate conceptual understanding. Therefore, it is necessary to investigate the effectiveness of Padlet as a learning medium in enhancing student learning activities and learning outcomes, especially among Grade XI students at State Senior High School 4 Samarinda on the topic of Indonesia's Natural Resource Potential. Consequently, the use of Padlet is expected to serve as an alternative instructional medium that not only increases student engagement but also strengthens learning outcomes and contextual mastery of Geography concepts.

Although various researchers have studied Padlet as a digital learning medium and its positive impact on student learning activities and outcomes, most of these studies still examine these two aspects separately and are dominated by quantitative approaches. Empirical evidence that integrates learning activities and learning outcomes simultaneously through a sequential explanatory design with a method approach, especially in Geography learning at the public high school level, is still limited. Therefore, this study aims to fill this gap. Theoretically, this study contributes to strengthening the understanding of the role of Padlet media in enhancing collaborative learning activities in Geography learning. Empirically, this study presents evidence of the use of Padlet media in the context of public high schools in Eastern Indonesia. Practically, this study provides implementation recommendations for Geography teachers regarding the use of Padlet media to improve student learning activities and outcomes.

METHOD

This study used a mixed methods approach with a sequential explanatory design (Creswell, 2020). In the first stage, a quantitative approach was used to analyze changes in student learning activities and learning outcomes before and after the implementation of Padlet media in Geography learning. In the second stage, a qualitative approach was used to obtain supporting data from Geography teachers, specifically regarding perceptions, implementation, and obstacles to using Padlet in learning to strengthen and explain the quantitative findings. This study was conducted at State Senior High School 4 Samarinda with research subjects of grade 11 students who participated in learning using Padlet.

In the quantitative stage, this study used a pre-experimental design with a one-group pretest-posttest model. This design aims to observe changes in student learning activities and learning outcomes after being given treatment in the form of using Padlet media, without involving a control class. Therefore, this study is not intended to draw strong causal conclusions, but rather to identify trends in changes that have occurred after the application of Padlet in learning. This research design is expressed as HB_1-X-HB_2 , where HB_1 is the pretest, X is the treatment in the form of using Padlet media, and HB_2 is the posttest (Ibrahim et al., 2018).

In this study, Padlet functions as a learning treatment or intervention, while the variables measured include student learning activities and student learning outcomes. The effectiveness of Padlet use is optionally defined as an increase in student learning activity scores and learning

outcome scores after Padlet implementation, which is measured using a learning activity questionnaire and a learning outcome test. This definition is supported by qualitative data describing student engagement and teacher responses to Padlet use during the learning process.

Quantitative data were obtained through learning outcome tests and learning questionnaires administered at the pretest and posttest stages. Quantitative data analysis was conducted using descriptive statistics to describe changes in student activity and learning outcomes, and inferential statistics to examine differences in scores before and after treatment. Inferential tests used included paired-sample t-tests for normally distributed data and the Mann–Whitney U test for data that did not meet the assumption of normality (Machali, 2021). The statistical analysis in this study was limited to examining differences in scores, not to examining causal relationships between variables.

The population of this study was eleventh-grade students of State Senior High School 4 Samarinda. The quantitative sample of this study consisted of eleventh-grade students of grades XI-5 and XI-7, selected using a purposive sampling technique, considering that both classes had implemented learning using Padlet media (Soendjoto et al., 2021). The sample size met the minimum requirement for statistical analysis, which was more than 50 respondents (Joseph et al., 2019). Qualitative data were obtained from Geography teachers through an open-ended questionnaire. Qualitative data analysis was carried out through the stages of data reduction, data presentation, and conclusion drawing (Harahap, 2020). This qualitative data was used to support and deepen the results of the quantitative analysis, particularly in explaining the effectiveness of Padlet use in terms of learning activities and student engagement in Geography learning.

RESULTS AND DISCUSSION

Based on the results of research conducted at State Senior High School 4 Samarinda involving 65 students from two classes, namely XI-5 and XI-7, the data obtained are as follows. The data were obtained through a learning activity questionnaire and learning outcome tests in the form of a pretest and posttest. Based on the questionnaire results, student responses to the use of Padlet in Geography learning are presented in table 1.

Table 1. Frequency distribution of students' responses to survey items in 2025

Alternative Answers	Frekuensi	Persen (%)
Strongly Disagree	0	0%
Disagree	22	33,8%
Agree	30	42,2%
Strongly Agree	13	20%

Source: SPSS Research Data (2025)

Table 1 shows that the majority of students 66.2% agreed or strongly agreed with the use of Padlet as a learning medium, indicating that this medium is generally well-received and able to encourage student engagement in the learning process. However, there were still 33.8% of students who disagreed, indicating that acceptance of learning technology is not yet fully equitable. This condition is due to differences in students' digital literacy levels, learning habits that are still oriented towards conventional methods, and technical constraints such as limited devices and unstable internet networks in the school environment (Fadillah, 2021). These findings indicate that the success of Padlet use is determined not only by the medium itself, but also by student readiness and learning infrastructure support.

Student learning outcomes before and after using Padlet were analyzed by comparing pretest and posttest scores as presented in table 2.

Table 2. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	72.62	66	18.532	2.281
	Posttest	91.21	66	11.165	1.374

Source: SPSS Research Data (2025)

Table 2. Paired samples statistics test results show an increase in student learning outcomes after implementing Padlet media. The average pretest score, which was initially at 72.62, increased to 91.21 in the posttest. This increase indicates that the use of Padlet has the potential to make a positive contribution to the understanding of Geography material State Senior High School 4 Samarinda. In addition, the use of Padlet media is effective in improving student cognitive outcomes (Lestari & Hartati, 2024), as evidenced by the significant difference between pretest and posttest scores after using Padlet media during learning, which indicates that Padlet media has a positive impact on improving students' thinking skills and conceptual understanding. Viewed from the perspective of Constructivist Learning Theory, the use of Padlet encourages active student involvement in building knowledge through exploratory activities, reflection, and linking new concepts to previous knowledge. With the support of visual displays and interactive features, conceptual and spatial Geography material can be learned more effectively by students (Sihotang et al., 2025).

However, these improvements in learning outcomes need to be interpreted critically. One possibility that needs to be considered is the testing effect, which is a condition where students obtain higher posttest scores because they are already familiar with the format of the questions or material tested in the pretest stage. Furthermore, teacher factors also have the potential to influence research results, especially if, during the implementation of Padlet, teachers show higher enthusiasm, intensity of guidance, or a variety of teaching methods compared to previous learning. Another factor that cannot be ignored is the novelty effect, where increased student motivation and attention can arise because Padlet is a new and interesting medium, so its impact on learning outcomes is temporary and not necessarily sustainable (Akuarta et al., 2025).

Differences in learning outcomes between classes XI-5 and XI-7 were analyzed using the Mann–Whitney U test, with the results as presented in table 3.

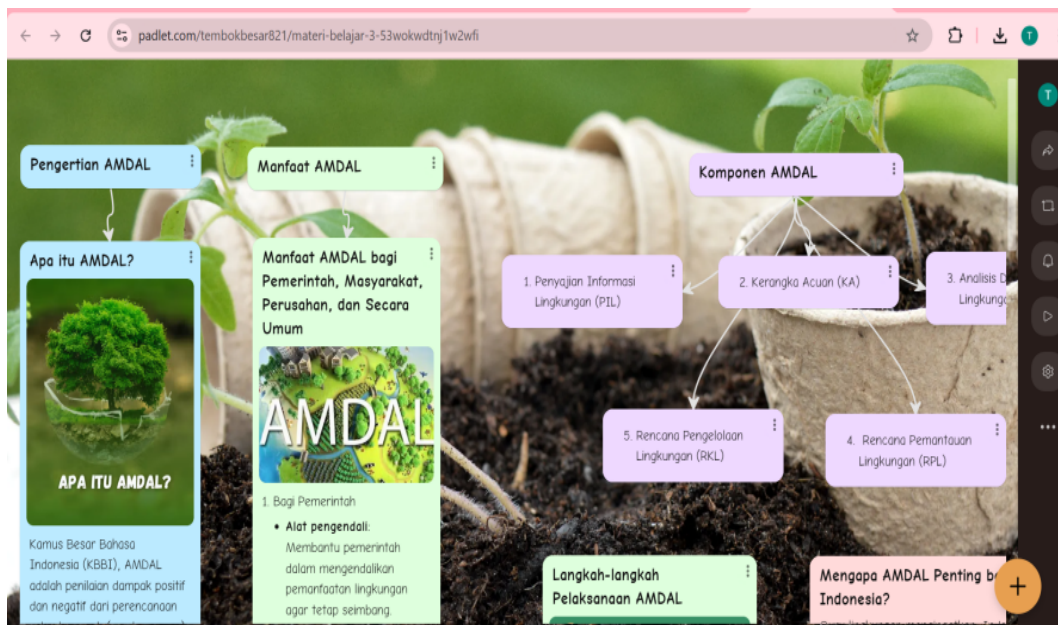
Table 3. Man-Whitney U Test

	PreTest	PosTest
Mann-Whitney U	209.000	449.000
Wilcoxon W	770.000	977.000
Z	-4.208	-1.096
Asymp. Sig. (2-tailed)	.000	.273

Source: SPSS Research Data (2025)

The results of the analysis in Table 3. Using the Man-Whitney U test conducted by the researcher, shows an average difference between the pretest and posttest in class XI of SMA Negeri 4 Samarinda. At the pretest stage (before using Padlet), the Asymp. Sig. = 0.000 < 0.05, so there is a significant difference in the initial learning abilities of students between classes XI-5 and XI-7. This finding indicates that the two classes are not at the same initial ability level before the learning treatment using Padlet media. However, at the posttest stage (after using Padlet) the Asymp. Sig. = 0.273 > 0.05. This means that there is no significant difference in learning outcomes between the two classes after learning using Padlet.

Analysis of differences in learning outcomes between classes using the Mann–Whitney U test, as shown in table 3, also shows that there were significant differences in students' initial abilities at the pretest stage, but these differences were no longer found at the posttest stage. This finding indicates that learning using Padlet has the potential to reduce the gap in learning outcomes between classes. Within the framework of Collaborative Learning, Padlet provides a space for interaction and discussion that allows students to share understanding and clarify concepts, so that students with lower initial abilities can be helped through the collaborative learning process (Nikmatussolihah & Wahyudi, 2024). However, these results still need to be examined carefully by considering the possible influence of external factors beyond the use of Padlet media itself.



Source: research results

Figure 1. Presentation Of Material

The effectiveness of Padlet in this study can also be explained through the Technology Acceptance Model, where students' perceptions of Padlet's ease of use and usefulness encourage active engagement in learning, which in turn improves learning outcomes (Lestari et al., 2025). However, this effectiveness is highly dependent on the implementation context. At Senior High School 4 Samarinda, limited internet access and the use of several Padlet features that require paid services hinder optimal media utilization. This situation has the potential to limit student participation and reduce opportunities for deeper exploration of learning features.

Furthermore, this study has methodological limitations that require attention. The use of a one-group pretest–posttest design without a control group opens up the possibility of internal bias, such as the influence of media novelty, temporary increases in motivation, or uncontrolled learning environment factors. Measuring learning activities based on self-report questionnaires also has the potential to introduce subjective bias in student responses (Ibrahim et al., 2018). Therefore, the quantitative findings in this study should not be interpreted as absolute causal evidence, but rather as empirical indications that need to be understood in the context of the research design used and the conditions of learning implementation at Senior High School 4 Samarinda.

Thus, the results of this study indicate that Padlet has the potential to be effective in improving student activity and learning outcomes if used adaptively and adjusted to school conditions, student readiness, and learning infrastructure support.

CONCLUSION

Based on the results of research conducted at SMA Negeri 4 Samarinda, the use of Padlet shows potential in improving student activity and learning outcomes in Geography learning. This is indicated by an increase in the average pretest score from 72.62 to 91.21 in the posttest after the implementation of Padlet-based learning. In addition, the results of the Mann–Whitney U test show that the significant difference in initial abilities between classes XI-5 and XI-7 in the pretest stage is no longer found in the posttest stage, so Padlet has the potential to help reduce the gap in learning outcomes between classes.

These quantitative findings are supported by qualitative data from Geography teachers who stated that Padlet was easy to use, engaging, and able to increase student attention and motivation during the learning process. Teachers also expressed a willingness to continue using Padlet in subsequent lessons because this medium supports more interactive and collaborative learning activities. Theoretically, these findings align with Constructivist Learning Theory and Collaborative Learning, which emphasize active student involvement and interaction between students, as well as the Technology Acceptance Model, which highlights the importance of perceived ease and usefulness of technology in increasing learning engagement.

However, the results of this study should be interpreted with caution. The use of a one-group pretest–posttest design without a control group limits the strength of causal inferences, and the study's single-school implementation limits the generalizability of the findings. Furthermore, the measurement of learning activities, which was partly based on self-report questionnaires, has the potential to introduce bias into student subjectivity. Therefore, the findings of this study should not be interpreted as absolute causal evidence, but rather as contextual empirical indications. Future research is recommended to use a more robust experimental design, such as a quasi-experimental or Randomized Controlled Trial (RCT), involving more than one school, and implementing a longer duration of Padlet use. This step is expected to strengthen the validity of the findings and provide a more comprehensive understanding of Padlet's role as a collaborative digital learning medium in secondary schools.

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