

The Influence of Social Media on Mathematics Learning Achievement in Mathematics Education Students

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Abstract

This study aims to examine the influence of social media usage on mathematics learning achievement among students of the Mathematics Education Study Program at Nurul Jadid University. In the digital era, social media has become an integral part of students' academic lives. The research employed a quantitative approach using a correlational method. Data were obtained through a Likert-scale questionnaire distributed to 28 sixth-semester students and analyzed using simple linear regression. The results of the normality test indicated that the data were normally distributed and suitable for further analysis. The regression analysis revealed that social media usage had a positive and significant effect on mathematics learning achievement, with a correlation coefficient of 0.747 and a determination coefficient of 55.8%. This means that more than half of the variance in learning achievement can be explained by the intensity of social media usage. These findings suggest that productive and focused use of social media can enhance conceptual understanding, active engagement in discussions, and overall learning effectiveness in mathematics. Therefore, the integration of social media into the learning process must be supported by digital literacy and guided by lecturers to prevent it from becoming a distraction.

Keywords

keywords; Social Media; Academic Achievement; Mathematics Education.



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INTRODUCTION

Recent advances in information technology have significantly transformed the way we communicate and obtain information, particularly in the context of higher education. This shift has created a new digital culture among students, where social media serves not only as a means of entertainment or personal communication, but

also as an interactive medium for exchanging ideas, fostering academic discussions, and quickly and flexibly accessing course materials. However, excessive social media use without proper control or time management can have negative consequences. One common impact is impaired focus and concentration on learning, which can ultimately lead to a decline in students' academic achievement in formal education.(Mahliah & Setiawan, 2024).

Changes brought about by digital transformation have also influenced students' access to learning resources, including in mathematics courses. While previously materials were primarily accessed through printed textbooks or face-to-face meetings, students now tend to utilize digital platforms, such as social media, online forums, and technology-based learning applications, to obtain conceptual explanations, practice problems, and video tutorials to support their understanding of mathematics.(Amelia & Suranto, 2025).

Various social media platforms such as WhatsApp, Telegram, Instagram, and YouTube have shifted from being solely used for entertainment or informal communication to having significant potential to support the learning process. The advantages of social media in terms of time flexibility, ease of access, and the ability to support collaboration have made them increasingly popular among students as an alternative learning resource. Through the features provided, students can quickly obtain information, discuss material with peers, and establish interactive communication with lecturers. This is especially relevant in learning conceptual courses that require in-depth understanding, such as mathematics.(Retna Syahrani et al., 2023).

Several previous studies have indicated that the use of internet-connected technology, including social media and digital learning platforms, can positively impact the mathematics learning process. This technology not only creates a more engaging and interactive learning experience but also plays a role in increasing students' motivation to actively engage in learning activities. Furthermore, presenting material through visual and applicable digital media helps strengthen students' understanding of abstract and complex mathematical concepts.(Aminullah & Irwansya, 2024).

Furthermore, several previous studies have confirmed that integrating digital media into the learning process significantly increases student engagement. The presence of digital technology allows for a more participatory and interactive learning environment, where students act not only as passive recipients of material but also as active participants in discussions, exploring additional learning resources, and

strengthening understanding through various engaging and accessible media.(Widiastari & Puspita, 2024).However, despite the various benefits offered, uncontrolled and unfocused use of social media also carries negative consequences. When social media is used primarily for entertainment, such as watching content irrelevant to learning or engaging in distracting conversations, this has the potential to disrupt students' concentration. As a result, focus on academic material can decrease, and the effectiveness of understanding and mastering subjects, especially those requiring high levels of concentration like mathematics, is significantly impaired.(Telaumbanua et al., 2024).

In the context of learning mathematics, this is an important issue because mathematics courses require high concentration, deep understanding of concepts, and repeated practice.(Rohimin et al., 2024)Productive use of social media can help students understand material through online discussions, learning videos, and other educational content. However, the effectiveness of social media use is still influenced by the pattern and purpose of use. Therefore, it is important to conduct research on the influence of social media on mathematics achievement, particularly among mathematics education students.

This research offers a novel contribution to the study of mathematics education by highlighting how social media, a commonly used digital tool for students, can influence academic achievement in the context of mathematics learning. Unlike previous studies that tend to focus on general aspects of technology use in education or its impact on overall learning motivation, this research specifically examines the relationship between the intensity of social media use and student achievement in conceptual and challenging mathematics courses. Another novelty lies in the selection of subjects: mathematics education students, who are also future educators. Therefore, these findings are expected to provide practical implications for the development of more relevant and effective digital technology-based learning strategies.

Although various previous studies have demonstrated that internet-based technology, including social media, can enhance learning engagement and conceptual understanding, most of these studies have not thoroughly examined its impact on specific academic achievement in mathematics at the higher education level. Furthermore, there is still a lack of research explicitly addressing the potential duality of social media as both a learning aid and a source of distraction in the context of mathematics education students. Another gap addressed in this study is the suboptimal mapping of the positive and negative influences of social media use on the mathematics learning process, particularly in the post-pandemic era, marked by the

massive use of digital platforms in students' academic lives. Therefore, this study aims to fill this gap by providing empirical data and a more focused critical analysis of the relationship between social media use and mathematics learning achievement. Based on this background, this study aims to analyze the influence of social media use on mathematics learning achievement among students in the Mathematics Education Study Program at Nurul Jadid University.

METHOD

This type of research is quasi-experimental research. This study uses a posttest-only control group design.(Sugiono, 2019)The research technique used random sampling. The population of this study were eighth grade students of MTsN 1 Probolinggo. This study used a quantitative approach with a correlational method. The main objective of this method is to determine whether there is a significant relationship between two numerical variables, namely the use of social media (variable X) and mathematics learning achievement (variable Y). This design is suitable for use when researchers want to analyze the tendency of the relationship between variables without direct manipulation of the subjects. The population in this study were all sixth semester students of the Mathematics Education Study Program at Nurul Jadid University in the 2024/2025 academic year. The sampling technique used total sampling, because the population is relatively small and allows all respondents to be involved as a whole. The number of samples in this study was 28 students 444. The instrument used to collect data was a closed questionnaire with a Likert scale of 1–5. The X variable statement items consisted of 6 items that measured the frequency and intensity of social media use in an academic context. The Y variable was measured through 5 statement items that assessed students' perceptions of the impact of social media use on understanding and achievement of mathematics learning outcomes.

The research stages are designed as follows: Research Steps: Determine variables and formulate research hypotheses., Compile and distribute questionnaires to all respondents. Collect and summarize questionnaire data into CSV format. Conduct data normality tests using the Shapiro-Wilk test. Calculate correlation and influence values between variables through simple linear regression. Present the results in the form of regression graphs and quantitative interpretations. Compile conclusions and implications of the research results.

The obtained data were first tested using the Shapiro-Wilk normality test to ensure the data distribution met the parametric assumptions. Next, analysis was performed using simple linear regression to determine the extent of influence of variable X on variable Y 111. All data processing was carried out using Python

software based on Jupyter Notebook to ensure the accuracy of the results and graphic visualization.

RESULTS AND DISCUSSION

The data for this research was obtained through the implementation of a post-test conducted after two groups, namely the experimental class and the control class. This section presents the results of data processing and a discussion of these results as a whole, with reference to the simple linear regression approach used in this research.

Normality Test Results

Prior to the regression analysis, the data were tested for normality using the Shapiro-Wilk test, which is a data distribution test for small to medium sample sizes. The results of the normality test indicated that both variables were normally distributed, as shown in Table 1.

Variabel	p-value	Keterangan
X (Penggunaan Media Sosial)	0,219	Normal (> 0,05)
Y (Prestasi Belajar)	0,104	Normal (> 0,05)

Table 1. Normality Test Results

Since both p-values are > 0.05, the data can be further analyzed using a simple linear regression parametric approach.

Subsection 2

The results of a simple linear regression analysis show that there is a significant influence between the variable of social media use (X) and mathematics learning achievement (Y). The regression equation obtained is written as follows:

$$Y = 0,296X + 7,626)$$

Where:

Y is the total value of students' mathematics learning achievement.

X is the social media usage score

0.296 is the regression coefficient

7.626 is the regression constant

Based on further analysis, the correlation value was obtained $r = 0.747$, the coefficient of determination value $R^2 = 0.558$, and a significance value $p = 0.000$. This

indicates that 55.8% of the variation in learning achievement can be explained by productive social media use. The remainder is influenced by other factors outside the research variables.

Regression Visualization

A visualization of the relationship between variables X and Y is shown in Figure 1 below. The red line shows the predicted linear regression line based on respondent data.

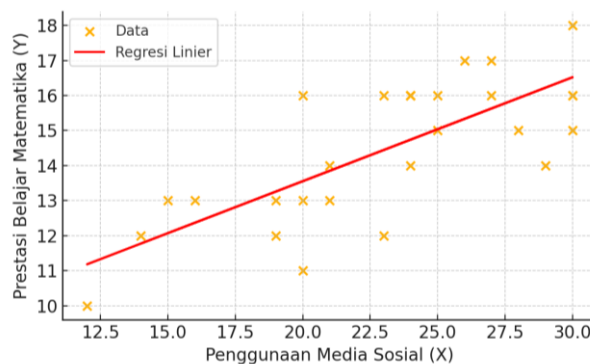


Figure 1. Linear Regression Graph of Social Media Use on Learning Achievement

This figure shows that most of the data points cluster around the regression line, indicating a consistent positive relationship between the social media usage variables and mathematics learning achievement.

These results support the research of Siswanto et al., which concluded that academic social media use positively contributes to improved student achievement. This study expands this context to the student level, and the results confirm that social media also significantly influences student mathematics learning outcomes.

Furthermore, the results of this study are in line with a number of previous findings which emphasize the important role of active involvement in the online environment (online engagement) as a supporting factor in strengthening the understanding of mathematical concepts.(Uzma & Mandailina, 2024)This engagement includes participation in virtual discussions, access to digital materials, and academic interaction through social platforms. However, the effectiveness of social media as a learning support tool depends heavily on how students utilize it.(Hadi Siswanto et al., 2025)If its use is dominated by entertainment activities irrelevant to academic goals, social media can become a source of distraction, hindering concentration and reducing the quality of the learning process.

These findings have important practical implications, namely the need to strengthen digital literacy among students so they can use social media wisely and purposefully to support their learning process. With adequate digital literacy skills, students are expected to use social media not only for entertainment but also as a productive medium for accessing information, deepening material, and building academic interactions. Furthermore, the role of lecturers is also crucial in this regard, namely by providing interactive social media-based spaces such as discussion forums, online study groups, or sharing supplementary materials to encourage active student engagement in more collaborative and dynamic learning activities.

CONCLUSION

Based on the results of the research conducted, it can be concluded that the Realistic Mathematics Approach. This study shows that the use of social media has a positive and significant influence on the mathematics learning achievement of students in the Mathematics Education Study Program at Nurul Jadid University. In general, students who use social media academically to access materials, discuss online, and follow educational content tend to have better learning outcomes compared to those who do not. These results confirm the findings of previous research, and broaden the context at the higher education level. The use of social media is not only a means of communication, but can also function as an interactive learning platform that can increase motivation, engagement, and conceptual understanding in mathematics learning.

However, the effectiveness of social media utilization depends heavily on the goals and patterns of use. If not directed productively, negative potentials such as impaired focus, digital addiction, and decreased learning performance can arise. Therefore, digital literacy development and guidance from lecturers are needed to ensure optimal use of social media to support the learning process. As a follow-up, this research can be expanded to a broader scope by involving a larger and more diverse sample size, and by adding control variables such as gender, learning intensity, or learning style. Further research is also recommended to adopt advanced statistical approaches, such as path analysis or structural equation modeling, to explore causal relationships between variables in more depth. As a suggestion, this research can be further developed by involving a larger sample size, control variables such as gender or grade point average, and advanced quantitative approaches such as path analysis to examine more complex relationships between variables.

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