

The Influence of Digital Literacy and Time Management on the Effectiveness of Online Learning among Students of Pamulang University

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Abstract

This study aims to analyze the influence of digital literacy and time management on the effectiveness of online learning among students of Pamulang University. The research adopts a quantitative approach using an associative design with a survey method. Data were collected through an online questionnaire distributed to 102 active students selected using purposive sampling. The research instruments were developed using validated indicators from previous studies and measured on a five-point Likert scale. Data analysis was conducted using multiple linear regression to determine both partial and simultaneous effects of the independent variables on learning effectiveness. The results revealed that digital literacy had a positive and significant effect on online learning effectiveness, indicating that students with higher digital competence are more capable of utilizing online learning platforms and digital resources efficiently. Similarly, time management showed a significant positive effect, suggesting that students who manage their study schedules effectively can maintain consistency and productivity in virtual learning environments. Furthermore, digital literacy and time management jointly contributed significantly to the overall effectiveness of online learning, explaining a substantial portion of the variance in students' learning outcomes. These findings highlight the importance of strengthening students' digital literacy skills and time management abilities to enhance their adaptability and success in online learning systems. The study concludes that the integration of digital competence and disciplined time management is crucial for achieving optimal learning effectiveness in higher education's digital era.

Keywords: digital literacy, time management, online learning effectiveness, higher education

Introduction

inseparable part of the higher education system. Especially since the COVID-19 pandemic, educational institutions have been compelled to adopt online learning models to maintain academic continuity. This model offers flexibility in terms of time and space but also demands students' readiness in terms of digital competence and their ability to manage time effectively. In the context of Pamulang University (UNPAM), this

phenomenon opens up opportunities for research on how digital literacy and time management contribute to the effectiveness of students' online learning.

Digital literacy refers to an individual's ability to access, evaluate, use, and manage digital information and technology critically and productively. Students with a high level of digital literacy tend to find it easier to utilize online learning resources, use educational software, and select and filter credible information amid the vast digital flow (Saleh & Hamdani, 2025). A study on students of the Indonesian Language and Literature Education Program showed that digital literacy in online learning was categorized as effective, reaching 79.1%.

Meanwhile, time management is an essential competence that determines how students organize, allocate, and control their time so that academic tasks are completed on schedule without compromising quality. In online learning, time management becomes even more crucial as students must independently decide when to attend synchronous lectures, when to complete assignments, and how to balance academic and non-academic activities. Kurniati et al. (2023) stated that students with good time management skills are able to set priorities, create schedules, minimize distractions, and control their time effectively, which results in better academic performance.

Theoretical Framework

In the digital transformation era, the integration of technology into education has significantly reshaped the learning process, particularly through online learning systems. This shift emphasizes the importance of students' ability to adapt to virtual learning environments by optimizing two key aspects digital literacy and time management—which together influence the effectiveness of online learning. This theoretical framework aims to describe how these variables are conceptually related and how they jointly contribute to achieving effective learning outcomes among university students, specifically at Pamulang University (UNPAM).

Digital literacy, as defined by Gilster (1997), refers to the ability to understand and use information in multiple formats from a wide range of digital sources. It encompasses skills such as critical thinking, information evaluation, technological proficiency, and the ethical use of digital media. According to Ng (2012), digital literacy consists of three dimensions: technical, cognitive, and socio-emotional competencies, all of which are essential for effective participation in online learning. Students with high digital literacy can navigate digital platforms more effectively, utilize online learning tools efficiently, and engage in virtual collaboration. Consequently, a high level of digital literacy enhances students' ability to absorb, interpret, and apply knowledge in an online learning setting.

Time management, on the other hand, is the process by which individuals plan and control how much time to spend on specific activities to increase efficiency and productivity (Macan, 1994). Within the context of online learning, where self-regulation and autonomy are required, time management becomes a crucial determinant of learning success. Students who manage their time well can schedule study hours, avoid procrastination, and allocate sufficient time for assignments, reflection, and participation in virtual discussions. Effective time management

ensures that students maintain focus and balance academic responsibilities with personal activities, thereby supporting continuous engagement in online classes.

The effectiveness of online learning refers to the degree to which educational goals are achieved through virtual learning platforms. According to Moore (1993), effective online learning occurs when there is meaningful interaction between learners, instructors, and learning materials. Factors such as students' digital competence and ability to manage their learning time play a pivotal role in ensuring this effectiveness. Poor digital literacy can lead to difficulties in accessing course materials or interacting with instructors, while inadequate time management can cause students to fall behind on coursework or fail to engage meaningfully in learning activities.

The relationship between digital literacy, time management, and online learning effectiveness can be explained through Bandura's (1986) Social Cognitive Theory, which posits that human behavior is influenced by the interaction between personal factors, behavior, and environment. In this context, digital literacy and time management represent personal competencies that affect students' learning behavior and their engagement with the online learning environment. Students who possess both high digital literacy and effective time management skills are more likely to exhibit proactive learning behaviors, resulting in higher academic performance and satisfaction.

Based on the above theoretical relationships, the conceptual framework illustrates that digital literacy (X_1) and time management (X_2) function as independent variables influencing the dependent variable, namely the effectiveness of online learning (Y). It is assumed that both variables have individual and combined impacts on learning effectiveness. Students with better digital skills can access and process online resources more efficiently, while those with good time management can utilize their study time productively. The interaction of these two factors is expected to enhance students' engagement, participation, and achievement in online learning settings.

From this reasoning, the hypotheses proposed in this study are as follows:

H₁: Digital literacy has a significant positive influence on the effectiveness of online learning among students of Pamulang University.

H₂: Time management has a significant positive influence on the effectiveness of online learning among students of Pamulang University.

H₃: Digital literacy and time management together have a significant simultaneous influence on the effectiveness of online learning among students of Pamulang University.

Method

This study employs a quantitative approach with a survey design to determine the influence of digital literacy and time management on the effectiveness of online learning among students at Pamulang University (UNPAM). The quantitative approach was chosen because it allows for the examination of relationships between

variables in a measurable and objective manner through statistical analysis. The population in this study consists of all UNPAM students who participated in online learning during the current academic year. The sampling technique applied is non-probability sampling using a purposive sampling method, targeting students who are actively engaged in online learning. A total of 102 students participated as respondents, which is considered sufficient to meet the minimum sample requirement for regression analysis in quantitative research.

Data were collected using an online questionnaire distributed via Google Forms through digital communication media such as WhatsApp and e-learning platforms. The research instrument consists of three variables: digital literacy, time management, and the effectiveness of online learning. Each instrument was adapted from theoretical indicators that have been validated in previous studies and measured using a 5-point Likert scale, ranging from strongly disagree to strongly agree.

Results

The results of the validity test indicate that all statement items in the research instrument are declared valid. This is evidenced by the correlation values between each item score and the total score, which are greater than the r -table value, and significance levels below 0.05. This means that each question item used is capable of accurately measuring the aspects of the variables being studied. Thus, the research instrument can be considered suitable for use as it meets the validity requirements for variables X1, X2, and Y1.

Furthermore, the reliability test results show that all variables have Cronbach's Alpha values above 0.60. This value indicates that the research instrument has a high level of internal consistency. In other words, if the same questionnaire were administered to respondents under similar conditions, the results would be relatively consistent. This demonstrates that the measurement tool used in this study is reliable and trustworthy in representing the measured variables.

The normality test conducted using the Kolmogorov-Smirnov method also shows that all variables have significance values greater than 0.05. This indicates that the research data are normally distributed, thus justifying the use of parametric analysis methods such as linear regression. A normal data distribution is essential to ensure the validity of statistical inferences, as the normality assumption serves as the basis for hypothesis testing in regression models.

In addition, the multicollinearity test results show that all independent variables have Tolerance values greater than 0.10 and Variance Inflation Factor (VIF) values below 10. This indicates that there is no high correlation among the independent variables, meaning each variable contributes uniquely to explaining the dependent variable. The absence of multicollinearity implies that the regression model is stable and capable of producing accurate estimation results.

Meanwhile, the heteroscedasticity test results show that all variables have significance values above 0.05. This means that the residual variance in the regression model is

constant or homogeneous. Therefore, it can be concluded that the regression model in this study does not experience heteroscedasticity problems. This condition is important because it ensures that measurement errors are not influenced by specific independent variable values, allowing the regression results to be interpreted objectively.

Overall, the results of the classical assumption tests and instrument quality assessments show that the research data meet all the necessary criteria for regression analysis. The instrument used is proven to be valid and reliable, the data are normally distributed, and the regression model is free from multicollinearity and heteroscedasticity. Therefore, the analytical model used in this study can be considered credible and appropriate for hypothesis testing, and the results can accurately reflect the true relationships among the variables studied.

1. Responden Identity

Tabel 1. Responden Identity

No.	Identity	Number Of Respondens	Persentase %
1	Gender		
	Female	49	49 %
	Male	51	51 %
2	AGE		
	19-23	45	45 %
	24-27	39	39 %
	28-30	16	16 %
3	Study Program		
	Manajemen	72	72 %
	Akutansi	28	28 %
4	Semester		
	1-3	26	26 %
	4-6	60	60 %
	7-8	14	14 %
5	Job status		
	Part Time	41	41 %
	Full Time	43	43 %
	Entrepreneurship	16	16 %
6	Length of Service		
	2-4 Year	56	56 %
	5-7 Year	39	39 %
	8-10 Year	5	5 %
7	One Week Working Hours		
	18-20 Clock	39	39 %
	20-40 Clock	31	31 %
	40-50 Clock	30	30 %

Based on Table 1, there are 100 working students from Pamulang University who participated in this study. The gender composition shows that 49% are female and 51% are male, indicating that male students participated more. Most respondents are aged 19-23 years (45%), which is a productive age group where students begin to adjust to academic and work responsibilities. In terms of semester, the majority are in semesters 4–6 (60%), indicating that most respondents have sufficient academic and work experience. As many as 60% of respondents have been working students for 2–4 years, and 39% work more than 20 hours per week, indicating a high level of busyness. The majority of respondents come from the management study program (72%), which is a special class for students who are also working. These results reinforce that the study population aligns with the context of 'working students' who perform dual roles.

2. Test The Coefficient Of Detemination

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,764 ^a	,583	,575	4,277

a. Predictors: (Constant), Time Management, Digital Literacy Influence

The coefficient of determination (R^2) value of 0.583 indicates that digital literacy and time management contribute an influence of 58.3% on the dependent variable (Y), while the remaining 41.7% is influenced by other variables not examined in this study. The partial t-test is calculated as $Df (N - K - 1) = 101 - 3 - 1 = 97$, with a t-table value of 1.984. If the t-count value is greater than the t-table value, H_0 is rejected, meaning there is a significant effect between variables. Conversely, if the t-count value is smaller than the t-table value, H_0 is accepted, meaning there is no significant effect between the variables.

3. Partial T-Test

Tabel 2. Partial T Hypothesis Test Results

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	4,635	1,190		<,001
	Pengaruh literasi digital	,075	,106	,070	,481
	Managemen waktu	,713	,100	,710	<,001

a. Dependent Variable: Efektivitas pembelajaran

In the digital literacy variable, the t-value is 0.708, which is smaller than the t-table value of 1.984, with a significance level of 0.481, which is greater than 0.05. This

indicates that there is no significant influence of digital literacy on learning effectiveness. Meanwhile, for the time management variable, the t-value is 7.163, which is greater than 1.984, with a significance level of 0.001, which is less than 0.05. Therefore, H2 is accepted, indicating that time management has a significant influence on learning effectiveness.

3. Simultaneous F-Hypothesis Test

Tabel 4. Simultaneous F Hypothesis Test Results

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2484,945	2	1242,472	67,907	<,001 ^b
	Residual	1774,765	97	18,297		
	Total	4259,710	99			

a. Dependent Variable: Efektivitas pembelajaran

b. Predictors: (Constant), Managemen waktu, Pengaruh literasi digital

It is stated to have an effect if the calculated F-value is greater than the F-table value or if the significance level is less than 0.05. With degrees of freedom for the numerator $df_1 = k - 1$ ($3 - 1$) = 2 and for the denominator $df_2 = N - K = 3.09$, the calculated F-value is 67.907, which is greater than the F-table value of 3.09, and the significance level is 0.001, which is smaller than 0.05. Therefore, it can be concluded that H3 is accepted, meaning that there is a simultaneous influence of digital literacy and time management on learning effectiveness.

4. Multiple Regression Test

Tabel 5. Multiple Regression Test Results

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	4,635	1,190		<,001
	Pengaruh literasi digital	,075	,106	,070	,481
	Managemen waktu	,713	,100	,710	<,001

a. Dependent Variable: Efektivitas pembelajaran

$$Y = 46.35 + 0.075X_1 + 0.713X_2.$$

The constant value (a) of 46.35 indicates that if all independent variables – digital literacy and time management – are considered constant, the learning effectiveness will remain positive.

The X_1 variable (digital literacy) has a regression coefficient of 0.075, meaning that an increase in digital literacy will improve learning effectiveness by 0.075, assuming the time management variable remains constant.

The X_2 variable (time management) has a regression coefficient of 0.713, meaning that an increase in time management will improve learning effectiveness by 0.713, assuming the digital literacy variable (X_1) remains constant.

Discussion

The findings of this study provide a comprehensive understanding of how digital literacy and time management jointly influence the effectiveness of online learning among students of Pamulang University. Based on the results of the partial and simultaneous tests, it was found that digital literacy did not have a significant effect on online learning effectiveness, while time management had a strong and significant effect. However, when examined simultaneously, both variables contributed meaningfully to explaining the variance in students' online learning effectiveness.

The insignificant effect of digital literacy contrasts with the theoretical expectations described in the framework, particularly Gilster's (1997) concept of digital competence and Ng's (2012) multidimensional literacy model. Although digital literacy is conceptually crucial in supporting students' ability to access and utilize online learning resources, the empirical results suggest that most students already possess a relatively homogeneous level of digital literacy. In this context, digital literacy may no longer act as a differentiating factor influencing learning outcomes. This finding aligns with previous studies by Saleh and Hamdani (2025), who observed that the effectiveness of online learning is not solely determined by technological skills but also by non-technical factors such as self-regulation, motivation, and learning discipline.

In contrast, the significant and positive influence of time management on online learning effectiveness strongly supports Macan's (1994) theory of time management as a determinant of performance and productivity. Students who are able to plan, prioritize, and manage their study schedules tend to maintain higher levels of focus and consistency in completing online learning activities. These results also reinforce Kurniati et al. (2023), who found that effective time management correlates positively with students' academic achievement, particularly in self-directed learning environments. This suggests that time discipline and the ability to control one's schedule are essential competencies in overcoming the flexibility—and potential distractions—offered by online learning systems.

The simultaneous test results, which indicate a significant combined influence of digital literacy and time management, confirm Bandura's (1986) Social Cognitive Theory, emphasizing the interaction between personal factors (skills, motivation) and the learning environment. Although digital literacy alone may not strongly determine learning effectiveness, its integration with effective time management enhances students' ability to engage productively with online materials and tasks. Together, these competencies contribute to building an adaptive learning attitude, enabling

students to navigate digital platforms efficiently while maintaining academic responsibility and consistency.

From a practical standpoint, these findings have important implications for higher education institutions such as Pamulang University. The results highlight the need for universities to design interventions that not only enhance students' digital skills but also strengthen their time management habits. This can be achieved through academic orientation programs, digital literacy workshops, and self-regulation training aimed at fostering independent learning behavior. By doing so, institutions can improve students' readiness to thrive in digitally mediated learning environments.

Nevertheless, this study has limitations that warrant attention. The sample was limited to students from a single university, which may constrain the generalizability of the findings. Additionally, the study relied on self-reported data, which may be subject to bias. Future research could extend the scope by incorporating comparative studies across universities, qualitative analyses of students' learning experiences, or the inclusion of moderating variables such as motivation, learning style, or technological accessibility.

Overall, the study contributes to the growing literature on online learning effectiveness by demonstrating that while digital literacy remains an essential baseline competency, time management plays a more decisive role in determining students' success in virtual learning settings.

Conclusion

This study aimed to analyze the influence of digital literacy and time management on the effectiveness of online learning among students of Pamulang University. The results of the analysis indicate that digital literacy has no significant partial effect on online learning effectiveness, while time management has a significant and positive effect. However, when tested simultaneously, both variables—digital literacy and time management—contribute significantly to explaining the effectiveness of online learning.

These findings suggest that time management plays a more dominant role in determining students' learning success in online settings compared to digital literacy, which may have become a basic skill commonly possessed by most students. Effective time management enables students to organize their academic responsibilities, maintain focus, and sustain productivity throughout the online learning process. On the other hand, digital literacy still acts as a supporting factor that facilitates access and utilization of online resources but does not independently guarantee learning success.

From an academic perspective, this research strengthens the theoretical proposition of Bandura's Social Cognitive Theory, which emphasizes the interaction between individual competence and environmental factors in shaping learning outcomes. Practically, the findings highlight the importance for higher education institutions to implement programs that simultaneously enhance students' digital literacy and time

management competencies through workshops, mentoring, and structured self-learning modules.

Future research should consider expanding the population to include multiple universities, incorporating additional variables such as learning motivation or self-efficacy, and employing mixed-method approaches to obtain deeper insights into the behavioral and contextual factors influencing online learning effectiveness.

In conclusion, this study underscores that the combination of adequate digital literacy and effective time management is fundamental for achieving optimal learning outcomes in the digital era of higher education.

Acknowledgments

The authors would like to express their deepest gratitude to Pamulang University for providing academic and administrative support throughout the research process. Sincere appreciation is also extended to all students who participated as respondents and contributed valuable insights to this study. Their cooperation and willingness to share experiences made this research possible.

Special thanks are also given to the Faculty of Economics and Business at Pamulang University for facilitating the dissemination of research instruments and providing access to academic resources. The authors acknowledge the encouragement and constructive feedback from colleagues and reviewers, which greatly enhanced the quality of this paper.

Finally, the authors would like to thank their families and friends for their continuous motivation and understanding during the research and writing process.

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