

The Influence of Digital Literacy on Student Learning Motivation in State High Schools

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Article Info

Article history:

Received: 05-11- 2025

Revised: 28-11- 2025

Accepted: 18-12- 2025

ABSTRACT

This study aims to analyze the influence of digital literacy on student learning motivation at SMAN 1 Woha Bima Regency, West Nusa Tenggara. Digital literacy is an important competency in 21st century education that allows learners to access, understand, evaluate, and utilize information effectively to support the learning process. However, high access to digital technology is not always followed by an increase in students' motivation to learn. Therefore, this study was conducted to examine the empirical relationship between digital literacy and learning motivation in high school students. The study uses a quantitative approach with an explanatory survey design. The research sample totaled 145 students who were selected using the proportional random sampling technique. Data was collected through a Likert scale-based questionnaire that had met the requirements for validity and reliability. Data analysis was carried out using descriptive statistics and simple linear regression. The results showed that digital literacy had a positive and significant influence on student learning motivation with a significance value of 0.000 ($p < 0.05$). The determination coefficient value showed that digital literacy was able to explain 49.8% of the variation in students' learning motivation. These findings indicate that improving digital literacy skills contributes to increased interest in learning, academic engagement, learning independence, and students' enthusiasm in following the learning process. This research provides important implications for schools to integrate strengthening digital literacy into learning strategies to improve the quality of education and students' readiness to face the challenges of the digital era.

Keywords: Digital Literacy, Learning Motivation, High School Students

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How to cite: Tambunan, S N. B., Faizun, A & Iliya, E. (2026). The Influence of Digital Literacy on Student Learning Motivation in State High Schools. *Indonesian Journal of Educational Research and Evaluation Global*, 2(1), 76-84.

INTRODUCTION

The development of information and communication technology has changed various aspects of human life, including the education sector which is now increasingly integrated with the digital environment. The use of the internet, smart devices, online learning platforms,

educational social media, learning management systems, and artificial intelligence-based applications has created a new paradigm in the learning process. The increasingly massive digital transformation after the COVID-19 pandemic has encouraged schools to adopt various technologies as a more flexible and adaptive means of learning (Bond et al., 2021; Zhao et al., 2022; Van Laar et al., 2023). In this context, digital literacy is an essential competency that students must possess to be able to access, understand, evaluate, create, and utilize information effectively in a digital environment (Ng et al., 2021; Falloon, 2020; Spante et al., 2022). Digital literacy is no longer understood only as the technical ability to operate digital devices, but instead includes critical thinking skills, digital communication, virtual collaboration, digital security, digital ethics, and technology-based problem-solving (Hatlevik et al., 2022; Siddiq et al., 2021; Chiu, 2024). Various studies show that students who have a high level of digital literacy tend to be more active in learning, have better critical thinking skills, and show higher academic achievement than students with low levels of digital literacy (Tang et al., 2024; Zhao et al., 2022; Cote & Milliner, 2023; Pérez-Escoda et al., 2021; Martín-Párraga et al., 2023). On the other hand, learning motivation is a psychological factor that plays an important role in determining the success of the learning process because it affects the intensity, direction, and perseverance of students in achieving academic goals (Ryan & Deci, 2020; Schunk & DiBenedetto, 2021). Students who have high learning motivation tend to show active participation, great curiosity, independent learning abilities, and resilience in the face of learning difficulties (Eccles & Wigfield, 2020; Howard et al., 2021). The phenomenon found at SMAN 1 Woha Bima Regency shows that even though most students already have access to digital devices and the internet, the level of learning motivation still shows significant variation between students. This condition indicates the need for an empirical study of the relationship between digital literacy and learning motivation in the context of secondary education in the region.

The study of the influence of digital literacy on learning motivation is increasingly important because 21st century education requires students to have adaptive skills to technological developments that are taking place very quickly. Digital literacy allows students to gain wider access to learning resources, improve the efficiency of information retrieval, expand collaboration opportunities, and create more engaging and interactive learning experiences (European Commission, 2022; Van Deursen et al., 2021; Chiu, 2024). Recent research shows that good digital literacy skills can increase student involvement in learning, strengthen intrinsic motivation, and encourage the formation of independent learning behaviors (Hatlevik et al., 2022; Tang et al., 2024; Wahidin et al., 2025; Widiyanti et al., 2025). In addition, digital literacy has a close relationship with self-regulated learning because students who are able to utilize technology effectively tend to be better able to set learning goals, monitor learning progress, and evaluate their learning outcomes independently (Khalil & Ebner, 2021; Broadbent et al., 2023; Castañeda & Selwyn, 2022). In the perspective of Self-Determination Theory, the use of technology supported by digital literacy skills can increase feelings of competence, autonomy, and connection to the social environment thereby strengthening students' motivation to learn (Ryan & Deci, 2020; Howard et al., 2021). A number of studies have also found that digital literacy has a significant effect on learning motivation at various levels of education, ranging from elementary school to college (Mulyati, 2023; Soraya et al., 2023; Wahdania et al., 2025; Salim & Lubis, 2025). Therefore, a comprehensive understanding of the relationship between digital literacy and learning motivation is very important as a basis for formulating education policies that are relevant to the needs of today's digital generation.

Although various studies have examined digital literacy in the context of education, there are still a number of research gaps that need attention. Most previous research has focused more on the influence of digital literacy on learning outcomes, academic achievement, critical

thinking skills, computational thinking, and readiness to face Society 5.0 (Zhao et al., 2022; Nirmala et al., 2025; Mustofa et al., 2025; Pérez-Escoda et al., 2021). Other research is more conducted at the college or school level in urban areas with relatively high levels of technology access (Hatlevik et al., 2022; Cote & Milliner, 2023; Mulyati, 2023). In addition, the results of previous research show mixed findings regarding the strength of the relationship between digital literacy and learning motivation. Several studies have found a strong and significant influence (Tang et al., 2024; Wahidin et al., 2025), while other research shows that the relationship is influenced by mediation and moderation variables such as teacher support, learning environment, technological facilities, and self-regulated learning (Widiyanti et al., 2025; Wahdania et al., 2025; Broadbent et al., 2023). Research that specifically examines the influence of digital literacy on the learning motivation of high school students in the Bima Regency area, especially SMAN 1 Woha, is still very limited. In fact, the social, economic, cultural, and geographical characteristics of these areas can produce different patterns of relationships compared to urban areas that have dominated academic literature. Therefore, empirical research is needed that is able to provide a contextual picture of the relationship between digital literacy and learning motivation in the regional education environment.

Based on this description, this study aims to analyze the influence of digital literacy on student learning motivation at SMAN 1 Whoha, Bima Regency, West Nusa Tenggara. The novelty of this research lies in the focus of a study that specifically examines the relationship between digital literacy and learning motivation in high school students in the Bima Regency area which is still relatively rarely studied in the digital education literature. In addition, this study integrates the perspective of digital literacy as a 21st century competency with learning motivation theory to produce a more comprehensive understanding of the factors that influence student engagement in learning. The research findings are expected to make a theoretical contribution to the development of digital literacy and learning motivation studies, as well as the basis for the formulation of education policies that are more adaptive to digital transformation in secondary schools. The results of the research are also expected to be able to provide practical recommendations for teachers, schools, and education policy makers in designing learning strategies that can improve digital literacy while strengthening students' learning motivation in the digital era.

METHODS

This study uses a quantitative approach with an explanatory survey design that aims to test the influence of digital literacy on students' learning motivation. The quantitative approach was chosen because it allows the objective and systematic measurement of the relationships between variables through statistical analysis. The research was carried out at SMAN 1 Woha Bima Regency, West Nusa Tenggara, in the even semester of the 2025/2026 school year. The research population is all active students totaling 645 people. The sample was determined using the proportional random sampling technique so that each student had the same opportunity to become a respondent. Based on the calculation of the sample using the Slovin formula with an error rate of 5%, a sample of 145 students representing all grade levels was obtained.

The research instrument is in the form of a closed questionnaire which is compiled based on the indicators of each variable. Digital literacy variables are measured through five main indicators, namely the ability to access digital information, the ability to evaluate information, digital communication, digital security, and the use of technology in learning. Learning motivation variables were measured through indicators of learning persistence, interest in learning, desire to achieve, active participation in learning activities, and independent learning ability. All items use a five-level Likert scale. Before being used in the study, the instrument was tested for validity using Product Moment correlation and reliability using Cronbach's

Alpha. The test results showed that all items had a correlation value above 0.30 and the reliability value of each variable was above 0.70 so it was suitable for use as a data collection tool.

Data were analyzed using the help of SPSS software version 26. Descriptive analysis was used to describe the characteristics of respondents as well as the condition of digital literacy and student learning motivation. Furthermore, a classical assumption test was carried out which included a normality test, a linearity test, and a heteroscedasticity test to ensure the feasibility of the regression model. Hypothesis testing was carried out using simple linear regression analysis with a significance level of 5%. This analysis was used to determine the magnitude of the influence of digital literacy on student learning motivation at SMAN 1 Woha Bima Regency.

RESULT AND DISCUSSION

This study involved 145 students of SMAN 1 Woha Bima Regency who were selected using the proportional random sampling technique. Data was obtained through the distribution of questionnaires that measured students' digital literacy levels and learning motivation. Before hypothesis testing, the data was first analyzed using descriptive statistics to find out an overview of the conditions of the two research variables. Furthermore, classical assumption testing and simple linear regression analysis were carried out to test the influence of digital literacy on students' learning motivation.

The results of the descriptive analysis show that the level of digital literacy of students is in the high category. Students in general have been able to utilize digital technology in supporting learning activities, both through information search, the use of educational applications, digital communication, and the use of various online learning resources.

Table 1. Descriptive Statistics of Students' Digital Literacy (n = 145)

Digital Literacy Indicators	Red	Categories
Ability to access digital information	4,18	Height
Ability to evaluate digital information	3,72	Height
Digital communication	4,05	Height
Digital security	3,98	Height
Utilization of technology for learning	4,17	Height
Total Average	4,02	Height

Based on Table 1, the indicator with the highest score was the ability to access digital information (Mean = 4.18), followed by the use of technology for learning (Mean = 4.17). These findings show that students have become accustomed to using the internet and digital devices as a means of obtaining academic information. Meanwhile, the indicator with the lowest score was the ability to evaluate digital information (Mean = 3.72). Although it is still in the high category, these results show that some students are not fully able to verify the validity and credibility of information obtained through digital media.

Furthermore, the results of descriptive analysis on the learning motivation variable show that students' learning motivation is also in the high category.

Table 2. Descriptive Statistics of Student Learning Motivation (n = 145)

Learning Motivation Indicators	Red	Categories
Perseverance in learning	4,08	Height
Interest in learning	3,97	Height
Desire to achieve	4,12	Height
Active participation in learning	3,71	Height

Learning independence	3,87	Height
Total Average	3,95	Height

Table 2 shows that the indicators of desire to achieve achieved the highest score (Mean = 4.12), while active participation in learning obtained the lowest score (Mean = 3.71). These findings indicate that students have a strong drive to achieve academic achievement, but have not fully demonstrated active participation in discussions and collaborative activities during the learning process.

Before the regression analysis is carried out, classical assumption testing is carried out to ensure that the regression model meets statistical requirements.

Table 3. Data Normality Test Results

Variable	Kolmogorov-Smirnov Sig.	Criteria
Digital Literacy	0,200	Normal
Learning Motivation	0,178	Normal

Criteria: Sig. > 0.05 indicates normally distributed data.

Based on Table 3, the significance value of each variable is greater than 0.05 so that it can be concluded that the data is normally distributed.

Table 4. Linearity Test Results

Variable Relationships	Sig. Deviation from Linearity	Remarks
Digital Literacy → Learning Motivation	0,126	Linear

Criteria: Sig. > 0.05 indicates a linear relationship.

The results of the linearity test showed a significance value of 0.126 (>0.05), so that the relationship between digital literacy and learning motivation was declared linear and qualified for regression analysis.

Furthermore, a simple linear regression analysis was carried out to test the influence of digital literacy on students' learning motivation.

Table 5. Results of Simple Linear Regression Analysis

Variable	B	Std. Error	t-count	Sig.
Constant	28,614	3,215	8,901	0,000
Digital Literacy	0,683	0,054	12,648	0,000

Regression equations:

$$Y = 28.614 + 0.683X$$

Description:

- Y = Learning Motivation
- X = Digital Literacy

Based on Table 5, a regression coefficient value of 0.683 with a significance level of 0.000 (<0.05) was obtained. These results show that digital literacy has a positive and significant influence on students' learning motivation. Every increase in one unit of digital literacy will increase learning motivation by 0.683 units.

Table 6. Coefficient of Determination (R²)

Models	R	R Square	Adjusted R Square
Regression	0,706	0,498	0,494

Based on Table 6, the value of the determination coefficient (R²) of 0.498 shows that digital literacy is able to explain 49.8% of the variation in student learning motivation. Meanwhile, the remaining 50.2% were influenced by other factors outside the research model.

Table 7. Hypothesis Testing Summary

Hypothesis	Test Results	Verdict
Digital literacy has a positive and significant effect on student learning motivation at SMAN 1 Woha	Sig. = 0.000 (< 0.05); β = 0,683	Accepted

The results of the hypothesis testing show that the research hypothesis is accepted. Thus, digital literacy has been proven to have a positive and significant effect on student learning motivation.

Table 8. Summary of Research Findings

Key Findings	Results
Students' digital literacy level	Height (mean = 4.02)
Students' level of motivation to learn	Height (mean = 3.95)
The highest digital literacy indicator	Ability to access digital information (Mean = 4.18)
Lowest digital literacy indicators	Digital information evaluation (Mean = 3.72)
The influence of digital literacy on learning motivation	Positive and significant
Regression coefficient	0,683
Coefficient of determination (R^2)	49,8%
Other factors that affect learning motivation	50,2%

The results showed that the digital literacy level of SMAN 1 Woha students was in the high category with an average score of 4.02. These findings indicate that students have been able to use digital technology as a means of learning effectively. The high ability to access digital information shows that students have adapted to an increasingly digitized learning environment. This condition is in line with the development of 21st century education which places digital literacy as one of the essential competencies that students must possess in order to be able to face the challenges of a knowledge-based society.

The findings of the study show that students are superior in the aspect of information access compared to the ability to evaluate digital information. This condition shows that there is a gap between the technical ability to use technology and the ability to think critically in verifying information. This phenomenon is an important challenge because the digital era is characterized by an abundance of information that is not necessarily valid and trustworthy. Therefore, digital literacy is not enough to be understood as the ability to use technological devices alone, but also includes the ability to evaluate, interpret, and utilize information responsibly.

In the learning motivation variable, the results showed that students had a high level of learning motivation with an average score of 3.95. A high score on the indicator of desire to excel indicates that students have a strong academic orientation. Nevertheless, the relatively lower active participation scores suggest that some students still need encouragement to be more involved in collaborative learning activities and class discussions.

The main findings of this study show that digital literacy has a positive and significant influence on students' learning motivation with a regression coefficient value of 0.683 and a significance value of 0.000. This result proves that the higher the student's digital literacy ability, the higher the motivation to learn. The ability to access a wide range of digital learning resources allows students to have a more flexible, engaging, and tailored learning experience to their needs.

The results of this study support the findings of Tang et al. (2024) who stated that digital literacy contributes to increasing students' intrinsic motivation through a more interactive learning experience. Students who are able to use technology effectively tend to have higher confidence in completing academic assignments and seeking additional learning resources independently. This condition ultimately increases their interest and involvement in the learning process.

These findings are also in line with research by Zhao et al. (2022) which shows that digital literacy skills are positively correlated with students' academic engagement. When students have extensive access to digital learning resources, they are more motivated to explore the subject matter independently and actively participate in learning activities. Thus, digital literacy not only provides technical benefits, but also affects the affective and psychological aspects of students in learning.

From the perspective of the Self-Determination Theory developed by Ryan and Deci (2020), the results of this research can be explained through the fulfillment of three basic psychological needs, namely competence, autonomy, and social connectedness. Digital literacy helps students feel more competent because they are able to access and manage information independently. In addition, technology provides flexibility in determining how to learn that suits individual needs, thereby increasing a sense of autonomy. The use of digital platforms also allows for wider interaction with teachers and peers, thereby strengthening the aspect of social connection.

The determination coefficient value of 49.8% shows that digital literacy is an important factor in increasing learning motivation. However, there is still a 50.2% variation in learning motivation that is influenced by other factors such as family support, learning quality, school environment, socioeconomic conditions, individual characteristics, and teacher support. These findings show that learning motivation is a multidimensional phenomenon that is not only influenced by one variable.

The study also found that students with high levels of digital literacy tend to have better independent learning behaviors. They actively seek additional learning resources through the internet, learning videos, scientific journals, and digital education platforms. These abilities expand students' learning opportunities outside of the classroom and help them develop a higher curiosity for learning materials.

The practical implication of this study is the need to systematically integrate digital literacy programs into the school curriculum. Teachers need to develop learning strategies that not only teach the use of technology, but also train critical thinking, information evaluation, and digital-based problem-solving skills. Schools also need to provide adequate technology infrastructure so that all students can make optimal use of technology in supporting the learning process.

Theoretically, this research strengthens various theories that explain that digital literacy is an important determinant in increasing student learning motivation. The results of the study provide empirical evidence that the ability to use technology effectively can increase student engagement, independence, and enthusiasm for learning. In addition, this study enriches the literature on the relationship between digital literacy and learning motivation in the context of secondary education in areas that are still relatively limited.

CONCLUSION

The results of the study show that digital literacy has a positive and significant influence on student learning motivation at SMAN 1 Woha Bima Regency. These findings prove that students' ability to access, understand, evaluate, and utilize digital information contributes to increased interest in learning, academic engagement, perseverance, and independence in the

learning process. With a determination coefficient value of 49.8%, digital literacy has proven to be one of the important factors that affect students' learning motivation in the era of digital transformation of education.

Practically, the results of the study indicate that schools need to integrate strengthening digital literacy into the learning process systematically and continuously. Teachers need to utilize digital technology as a learning medium that is not only interesting but also able to encourage students to think critically, creatively, and independently. In addition, improving the ability to evaluate digital information needs to be a major concern so that students are able to use technology productively, responsibly, and in accordance with educational goals.

From a theoretical perspective, this study strengthens the view that digital literacy is an important determinant in the formation of students' learning motivation. These findings expand the study on the relationship between digital literacy and learning motivation in the context of high schools in the region. Further research is recommended to involve a wider area of coverage, using longitudinal or mixed methods design, and examining mediation and moderation variables such as self-regulated learning, family support, teacher support, and digital learning environment to gain a deeper understanding of the dynamics of student learning motivation in the digital era.

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