

# The Influence of Digital Literacy on Student Learning Outcomes in High School

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Article history: Received: June-03-2026 | Revised: June-05-2026 | Available  
Online: June-08-2026

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## ABSTRACT

Digital technology is increasingly being integrated into education, and students must possess digital literacy skills to effectively utilize and access information during the learning process. This study was conducted to study the impact of digital literacy on high school students' learning outcomes through a literature review. This method employs a qualitative approach using a literature review methodology, drawing on various relevant journal articles and scientific publications. An analysis was conducted on ten studies discussing the relationship between digital literacy and student learning outcomes. The findings indicate that digital literacy has a positive effect on learning outcomes because it helps students access a wider range of learning resources and improves their understanding of the learning material. Therefore, strengthening digital literacy is a crucial effort to improve the quality of learning in the era of digital education. Additionally, digital literacy helps students improve their critical thinking, communication, collaboration, creativity, and independent learning skills.

Keywords: Digital Literacy, Learning Outcomes, High School Students, Literature Review, Educational Technology

## INTRODUCTION

In the digital era, advances in information and communication technology can change all aspects of life, including education. The use of digital technology in process learning provides students with a wider connection, fast, and flexible to various sources of information. This development requires the readiness of technical and social skills so that the younger generation is ready to face the future world of work (Mendonca *et al.*, 2021). This situation encourages the emergence of the idea of digital literacy as a main skill that must be mastered by students in the current era. Digital literacy includes not only the ability to use technological means, but also the competence to understand, assess, and use digital information effectively in the learning flow (Ng, 2020; Spante *et al.*, 2020). In addition, the use of this technology also opens up great opportunities for the wider dissemination of scientific and educational publications (Darmawan & Fajar, 2024). Therefore, digital literacy skills are a crucial element that can support student success in today's educational environment.

In the context of education, one of the important indicators of learning success is the learning outcomes of students. The process of transferring knowledge and values is known as learning which is then educated to assess the level of achievement of goals and learning outcomes obtained (Shodiq *et al.*, 2025). Learning outcomes are behavioral transformations felt by students after learning activities, which can be noticed through increased insights, skills, and behavior. Learning outcomes are often used as a benchmark to measure learning outcomes that can be achieved optimally. Based on Moore (2014), learning outcomes can be divided into three main scopes. First, the cognitive scope related to intellectual competence, includes insight, implementation, analysis, understanding, synthesis, and evaluation. The application of inquiry models and interactive media has proven to be very effective in honing students' cognitive and critical thinking aspects (Darmawan *et al.*, 2026b). Second, the affective scope is related to aspects of behavior, principles, interests, emotions, and appreciation that influence students' learning attitudes. The formation of this positive attitude is also important to be directed to build social and environmental awareness from an early age (Gautama & Mardikaningsih, 2022). Third, the psychomotor scope includes skills in performing activities or actions that involve coordination between mental and physical functions. The provision of multidisciplinary expression space greatly supports the optimization of children's physical and social competencies (Hariani, Safira, & Wahyuni, 2021). Many factors, both external and internal, play a role in poor learning outcomes for students, such as learning motivation, learning environment, learning methods, and students' ability to utilize available learning resources (Schunk & DiBenedetto, 2020; Zimmerman, 2020). Through the educational process in schools, the character, intelligence, and ability of students to face global challenges are formed, which in implementation is influenced by various factors, such as the availability of infrastructure, learning strategies, and the quality of educators (Darmawan *et al.*, 2026a). Therefore, direction from competent teachers is needed to foster student learning independence in the digital space (Darmawan & Musonawawi, 2026). Thus, in an effort to encourage the quality of education in schools, one of the main focuses is to improve learning outcomes.

Digital literacy is an element that is suspected of influencing student learning outcomes. Digital literacy is an important component in the development of individuals and society, especially in the modern era which is marked by the rapid flow of technology-based information (Ghozali *et al.*, 2024). Digital literacy is the competency of students to use digital technology to understand, access, assess, and manage information. Digital literacy ability determines the extent to which students can access a wide range of quality learning resources that enrich the student learning experience (Kholid *et al.*, 2024). Synergy between mastery of technology and active participation is urgently needed in building a healthy digital communication climate (Hariani *et al.*, 2025). Digital literacy includes the ability to understand the use of software, access online

information, evaluate digital resources, and participate productively on various digital platforms (Riizal *et al.*, 2024). In the learning process, students are able to access a variety of digital learning resources, e-books, academic journals, videos, and online learning platforms. The implementation of a flexible and varied learning system has also been shown to help increase students' academic engagement (Darmawan, Zahid, & Fajar, 2024). Digital literacy is the result of three related domains, namely cognitive, social-emotional, and technical (Ng, 2012). This ability can make it easier for participants to gain a broader insight into teaching materials and improve analytical and critical thinking competencies (Gilster, 1997; Falloon, 2020). However, creative expression in the digital world must still be aligned with the cultivation of moral values and good moral education (Darmawan & Sagita, 2026). Therefore, digital literacy is one of the additional competencies that must be possessed to support the effectiveness of learning activities in the digital era.

Based on the relationship between digital literacy and learning outcomes, students' competence to use digital technology optimally can support their improvement in their understanding of the material studied. Good digital literacy tends to be easier for students to explore additional information and understand learning concepts independently, as well as utilize various digital media in learning resources. This situation tends to encourage increased student participation in the learning process to have a positive impact on their learning outcomes (Tang & Chaw, 2020; Kaeophanuek *et al.*, 2021). Thus, digital literacy can be seen as an aspect that has the opportunity to affect the success of student learning in the school environment. Based on this description, the purpose of this is to evaluate through the literature study method, the impact of digital literacy on the acquisition of high school students. The study aims to examine various previous studies that discuss increasing understanding of the contribution of digital literacy to support student learning outcomes in the digital education era.

## METHOD

The impact of digital literacy on the learning outcomes of high school students is researched through qualitative research in the form of literature studies. The study was carried out by examining various relevant sources, including theoretical foundations, previous research results, and educational materials related to digital literacy and student achievement. Data was obtained from scientific journal articles, academic publications, and reliable sources accessed through academic sites such as Google Scholar which were selectively selected based on the relevance of the topic, credibility of the source, and suitability with the focus of the research. In this study, digital literacy was positioned as an independent variable, while the learning outcomes of high school students became a dependent variable. The qualitative descriptive method is used to analyze data, classify, and compare various findings of previous research to illustrate the relationship between digital literacy and student learning outcomes as a whole, providing a clearer picture of how digital literacy affects student learning outcomes.

## RESULTS AND DISCUSSION

### 1. Wedayanti (2024)

The study was conducted to determine how the learning outcomes of economics students affect the learning environment and digital literacy. This research uses a quantitative approach. This method includes multiple linear regression analysis. The data collection technique was used by giving questionnaires to respondents and recording the scores of student learning outcomes. The research was carried out at SMA Negeri 2 Singaraja. The population of all students at SMA Negeri 2 Singaraja, samples were taken from several classes studying economics subjects, the research sample was 297 students. The findings of the

analysis show that digital literacy and the learning environment of students have a positive impact on their ability to learn economics.

**2. Hartobaran (2024)**

The study was conducted to examine how reading interest and digital literacy affect student learning outcomes. Quantitative methods were used in this research. This method includes multiple linear regression studies. Research data was obtained through questionnaires given to students and documentation of learning outcome scores. The research was carried out at Cendana Mandau Private High School. The research population included all students in the school, with a sample of 69 students. As the results of the study show, digital literacy and interest in reading have a positive impact on the quality of student learning.

**3. Tairas *et al.* (2024)**

The study was conducted to examine the impact of digital literacy and achievement motivation on economic learning outcomes. The study applied a quantitative approach, and data were collected through questionnaires and documentation of student learning outcomes. Multiple linear regression analysis is also used as a data collection technique. The research was carried out at SMA Negeri 1 Nanga Taman. The population of all high school students who participated in economics learning, the sample was 88 students. The findings of the analysis indicate that digital literacy and motivation for achievement have a significant influence on students' economic learning outcomes.

**4. Amiruddin *et al.* (2024)**

The study was conducted to examine the impact of digital literacy on students' economic learning outcomes. The quantitative method is used in the research of simple linear regression analysis. Data was obtained through questionnaires and documentation of learning outcomes. The place of research is SMA Negeri 1 Takalar, South Sulawesi. The population of all students who study economics subjects at the school, the sample was taken with a total sampling technique of 70 students. The findings of the analysis indicate that digital literacy has a significant influence on learning outcomes.

**5. Anggraini (2020)**

The study was conducted to analyze the impact of digital literacy competencies and the use of web-based media in discovery learning on students' learning outcomes on Islamic development materials in Indonesia. This study uses quantitative procedures and applies multiple linear regression analysis. Learning outcome tests, digital literacy questionnaires, and documentation were applied to collect research data. The non-probability sampling method through purposive sampling was applied to determine the study sample, which involved as many as 34 students. The findings of the analysis indicate that digital literacy and the use of online media increase students' academic achievement.

**6. Roza *et al.* (2024)**

The study was conducted to examine the impact of digital literacy skills on student learning outcomes. A quantitative method was used for this study, which collected data using simple linear regression analysis. Data collection with questionnaires and documentation of student scores. The research was carried out at SMA Negeri 1 Bukit Sudi. The population of all students in class X, the simple random sampling method was applied so that a total of 115 students was determined. The findings of the analysis indicate that the level of digital literacy contributes to a positive improvement in students' economic learning outcomes.

**7. Aisyah dan Dewi (2022)**

The study was conducted to determine how digital literacy and economic literacy have an impact on the learning outcomes of economics students. The study uses a quantitative approach through an analysis technique in the form of multiple linear regression. Data

collection with questionnaires and documentation of student scores. The study was conducted at SMA Negeri 3 Sidoarjo. The study population included all students in class X, while the sample was taken from classes X-E3 with a total of 22 students. The findings of the analysis reveal that economic literacy and digital literacy play a role in improving students' learning outcomes.

**8. Mabubah *et al.* (2022)**

The study was conducted to analyze student learning outcomes about colloid materials and digital literacy related to each other. The research data was obtained using digital literacy questionnaires and student learning outcome tests. The study was conducted at one of the secondary schools that was the object of research in the journal. The research sample was 60 students. The results of the analysis indicate that digital literacy has a positive influence on student learning outcomes.

**9. Soraya *et al.* (2023)**

The study was conducted to determine how students' digital literacy impacts their learning outcomes in using learning motivation as a moderator variable. Quantitative methods were applied to the study. Data was collected through questionnaires and information about student grades and then moderation regression analysis data. The population of all State High School students in the city of Bandung, a sample was taken probability sampling using the slovin formula of 78 students. Research studies show that digital literacy has an impact on student learning outcomes and this impact is affirmed by the desire to gain knowledge.

**10. Qudsiyah dan Nurhasanah (2021)**

This research is focused on analyzing the influence of digital literacy level on students' economic learning outcomes during the COVID-19 pandemic. This study uses a quantitative approach and uses simple linear regression analysis. The data collection method is in the form of questionnaires and information about student scores. The place of this research is SMA Negeri 6 Tangerang City. Grade XI students were determined as a population, a sample of 114 students was dieted through the Slovin formula. The findings of the analysis indicate that digital literacy advances the economic learning outcomes of students who take it via the network.

**Table 1. Summary of Islamic Education Student**

| Research & Years                 | Research Location                    | Research Focus                                                                    | Key Findings                                                                                     |
|----------------------------------|--------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Wedayanti (2024)                 | SMA Negeri 2 Singaraja, Bali         | The impact of digital literacy and learning environment on learning outcomes      | Digital literacy and learning environment have a positive influence on learning outcomes.        |
| Hartobaran (2024)                | SMA Swasta Cendana Mandau, Bengkalis | The impact of reading interest and digital literacy on learning outcomes          | Digital literacy and interest in reading significantly improve learning outcomes                 |
| Tairas, Basri, & Syamsuri (2024) | SMA Negeri 1 Nanga Taman             | The influence of digital literacy and achievement motivation on learning outcomes | Digital literacy and achievement motivation have a positive effect on student learning outcomes. |

|                                                  |                       |                  |   |                                                                                              |                                                                                                |
|--------------------------------------------------|-----------------------|------------------|---|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| <b>Amiruddin, Azis, &amp; Afiah (2024)</b>       | SMA Takalar           | Negeri           | 1 | The impact of digital literacy on student learning outcomes                                  | Digital literacy has a significant effect on improving student learning outcomes.              |
| <b>Anggraini (2020)</b>                          | SMA Sooko, Mojokerto  | Negeri           | 1 | The influence of website media and digital literacy on learning outcomes                     | The use of website media and digital literacy skills improves student learning outcomes.       |
| <b>Roza, Putri, &amp; Basyirun (2024)</b>        | SMA Bukit Sundi       | Negeri           | 1 | The effect of digital literacy skills on student learning outcomes                           | Digital literacy skills have a positive influence on student learning outcomes.                |
| <b>Aisyah &amp; Dewi (2022)</b>                  | SMA Sidoarjo          | Negeri           | 3 | The influence of economic literacy and digital literacy on learning outcomes                 | Economic literacy and digital literacy have a positive influence on student learning outcomes. |
| <b>Mabubah, Wigati, &amp; Astuti (2022)</b>      | SMA Karya Palembang   | Karya Ibu        |   | The relationship between digital literacy and student learning outcomes                      | Digital literacy has a positive relationship with student learning outcomes.                   |
| <b>Soraya, Kurjono, &amp; Purnamasari (2023)</b> | SMA berada di Bandung | Negeri yang Kota |   | The impact of digital literacy on learning outcomes through motivational moderator variables | Digital literacy affects learning outcomes and is strengthened by learning motivation.         |
| <b>Qudsiyah &amp; Nurhasanah (2021)</b>          | SMA Tangerang Selatan | Negeri           | 6 | The impact of digital literacy on learning outcomes                                          | Digital literacy has a positive influence on learning outcomes.                                |

The findings explain that in the achievement of student learning outcomes, especially at the high school level, there is a significant positive contribution from digital literacy skills. This dimension of digital literacy has proven to be a strong predictor for student engagement and academic success in modern educational institutions (Zahid & Darmawan, 2025). Digital Literacy Theory by Gilster (1997) explains that digital literacy includes individual competencies in using, accessing, communicating, and evaluating information through digital technology effectively and responsibly. This is in line with the findings of Wedayanti (2024), which concludes that digital literacy can have a significant influence on student learning outcomes. On the other hand, Hartobaran's research (2024) also shows that digital literacy supported by an interest in reading is able to significantly increase students' academic achievement. In addition, good mastery of value-based literacy also contributes positively to maintaining students' mental health and social behavior (Khayru *et al.*, 2025). The research of Tairas *et al.* (2024), even emphasizing that digital literacy along with achievement motivation has a strong effect on student learning outcomes. The combination of digital literacy and the proper use of media is considered very effective in boosting the motivation to learn (Kholid & Darmawan, 2023; Kholid *et al.*, 2024). With this, digital literacy is a crucial aspect to support the academic success of students in this era of globalization.

Broadly speaking, research shows that digital literacy results are a factor that plays a strategic role in improving the quality of children's learning. Digital literacy is not only useful as a supporting medium in accessing information, but also as a way to help students learn to think critically and analytically. Mastering these digital skills also serves to bridge the inequality of access and opportunities in the future (Arifin & Darmawan, 2021). This is reinforced by the results of Amiruddin *et al.* (2024), this indicates that digital literacy has a significant impact on students' economic learning outcomes. On the other hand, Anggraini (2020) explained that the use of website-based media supported by digital literacy can encourage student learning outcomes to the maximum. In the modern era, popular culture and social media consumption do play a major role in shaping the digital literature of the younger generation (Kurniawan & Khayru, 2021; Kurniawan *et al.*, 2021). The study of Roza *et al.* (2024), also indicates that digital literacy skills contribute to a positive improvement in student learning outcomes. Other findings from Aisyah and Dewi (2022) and Mabubah *et al.* (2022) indicates that digital literacy is significantly related to student learning outcomes, both directly and in certain learning contexts. The use of digital-based social media also simplifies the process of distributing educational publication manuscripts to the public (Darmawan & Fajar, 2024).

Theoretically, the results of the research can be described with the concept of digital literacy which emphasizes the importance of being able to understand, access, evaluate, and use digital information wisely. The understanding of concepts and changes in student learning behavior basically follows the basic principles of organizational behavior (Darmawan, 2013). Anggraini (2020) stated that digital literacy is part of today's skills that are very crucial to encourage student learning success. However, the dynamics of social interaction in the virtual community today have also changed the digital communication patterns of students (Darmawan, 2021). This is emphasized by Aisyah and Dewi (2022), who show that digital literacy not only has an impact on cognitive abilities, but also on students' ability to manage information effectively. In addition to its academic benefits, strengthening digital literacy is also crucial to fortify students from the threat of hoaxes and disinformation (Sinambela, 2022; Rojak, 2023). In addition, Mabubah *et al.* (2022) argues that digital literacy is closely related to increasing conceptual understanding in learning. Therefore, the formulation of adaptive school policies and pedagogical standards is very urgent to ensure a safe learning climate (Darmawan, 2023; Masfufah & Darmawan, 2023). Thus, digital literacy has a strong theoretical and empirical basis in influencing student learning outcomes.

The managerial implication of this study is the need for schools and teachers to actively develop students' digital literacy skills through various innovative learning strategies. Mastery of learning methods and variations in their application by teachers is the main capital for the success of this strategy (Mardikaningsih, 2014). Educators can optimize various digital learning media, such as e-learning, educational videos, and interactive platforms, to increase student participation in learning activities. Through the introduction of digital devices, students are also invited to build awareness of environmental issues and sustainable management (Mardikaningsih *et al.*, 2025). In addition, schools also need to provide supporting facilities such as adequate internet access and a conducive technology-based learning environment. This improvement of technical skills is very important to prepare students' competencies in facing the era of artificial intelligence (Zahid *et al.*, 2025). This effort also needs to be supported by strengthening students' learning motivation and developing varied learning methods so that digital literacy can be optimally utilized. Finally, this space of digital expression must be guarded by cultivating good communication ethics and morality (Al Hakim & Irfan, 2023). With this strategy, it is hoped that the school will be able to produce graduates who not only excel in academics, but also have strong digital competencies in facing the challenges of the modern era.

## CONCLUSION

Based on the results of the research carried out, digital literacy plays a major role in encouraging the learning outcomes of high school students. If students have the competence to access, understand, evaluate, and use digital resources, they will have the competence to get more information and learn more to improve students' understanding of the learning material. As shown by various studies discussed in this study, digital literacy in general has a significant effect on student learning outcomes, directly or through supporting elements such as learning motivation, reading interest, and learning environment. This shows that there is a significant positive contribution of digital literacy skills to improving student learning outcomes. In addition, digital literacy encourages student participation in the learning process and the ability of participants to think analytically and critically. Therefore, improving digital literacy is a crucial way to encourage the quality of education in the digital learning era. Therefore, educational institutions and educators must encourage the improvement of students' digital literacy through the effective use of learning technology and provide adequate supporting facilities. This will help students achieve the best possible learning outcomes.

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