



# The Role Of Digital Literacy In Enhancing Learning Outcomes In Secondary School Students: A Review

<sup>1</sup>Dr.S. Shamshad, <sup>2</sup>Dr. Ch Baby Prasuna

<sup>1</sup> Research Scholar

<sup>2</sup> Assistant Professor

Department of Education, SPMVV, Tirupati, Andhra Pradesh, India.

## ABSTRACT:

In today's digitally driven world, technology plays a vital role in shaping how students learn and succeed academically. This review analyzes the influence of digital literacy on the academic performance of secondary school students. Competence in digital skills empowers learners to locate information efficiently, collaborate through online platforms, and take an active role in their educational activities. Enhanced digital literacy strengthens critical thinking abilities, improves access to diverse learning resources, and increases student engagement.

However, the advantages of digital literacy are not equally available to all learners. Barriers such as inadequate access to digital devices, limited technological infrastructure, insufficient training, and persistent digital divides create unequal learning opportunities. This review highlights both the positive impacts and the challenges associated with digital literacy in secondary education, underscoring the need to effectively integrate digital skill development into the school curriculum. Equipping students with essential digital competencies can improve academic outcomes and better prepare them for the demands of the future.

**Keywords:** Digital literacy, academic performance, secondary education, educational technology, student engagement, digital divide.

## INTRODUCTION

Digital literacy has become an increasingly important aspect of education, particularly in the context of the ongoing digital transformation. As students navigate the demands of the 21st century, the ability to effectively utilize technology and digital tools has become crucial for academic success. Digital literacy has been widely recognized as a critical factor in improving high school students' academic performance. Students with strong digital literacy skills are better equipped to access, evaluate, and use digital resources for learning. A study by Eshet-Alkalai (2004) emphasizes that digital literacy involves not only technical skills but also cognitive and socio-emotional competencies, such as critical thinking and collaboration.

The digital age has revolutionized the educational landscape, introducing a multitude of technological tools and resources that have the potential to enhance student learning and academic performance (Koltay, 2011). Digital literacy, defined as the ability to effectively utilize digital technologies for information access, communication, and problem-solving, has become increasingly crucial for secondary school students navigating the demands of the 21st-century classroom. Hobbs (2010) emphasizes the need for media literacy education as part of digital literacy programs to help students critically analyze digital media and understand its impact on society. Ferrari (2013) quoted that digital literacy enhances students' ability to create digital

content, such as presentations and portfolios, which are valuable for college applications and job interviews. A study by Jones and Mitchell (2016) revealed that digital literacy training improved students' ability to protect their personal information and navigate online spaces safely.

Recent studies have highlighted the significant impact of digital literacy on the academic performance of secondary school students. Digital literacy not only encompasses the technical proficiency in using digital devices and software but also the sociological, emotional, and cognitive skills required to thrive in a digitally-driven environment. (Khan, 2018) This multifaceted nature of digital literacy has far-reaching implications for student success, as it enables learners to engage with educational content, collaborate with peers, and access a wealth of information at their fingertips. The "Exploring dimensional constructs of digital literacy skills for higher education" excerpt emphasizes that digital literacy skills provide the fundamentals for managing digital environments, enabling students to thrive in the digital information age (Odede & Jiyane, 2019).

The impact of digital literacy on academic performance is not uniform, as evidenced by the persistent digital divide. Differences in access to digital resources and the ability to effectively utilize them are often linked to students' socioeconomic status, geographic location, and the resources available at their schools (Olanrewaju et al., 2021). Digital literacy has been identified as a key factor in determining students' academic success, encompassing the ability to navigate digital environments, evaluate online information, and communicate effectively using digital tools (Fakhrudin & Haryanto, 2023).

Literacy skills, encompassing both reading and writing, are fundamental for academic achievement (Alneyadi et al., 2023). As digital technologies have become ubiquitous in the classroom and beyond, the need for students to develop digital literacy has become increasingly apparent. Digital literacy has been recognized as a key competency for students to succeed in the modern educational landscape. (Nguyen & Habók, 2023) Additionally, the COVID-19 pandemic has further highlighted the importance of digital literacy, as remote learning and hybrid teaching models have become increasingly prevalent, widening the gap in literacy skills and access to digital learning opportunities. (Alneyadi et al., 2023)

Reading skills are more essential now than ever before, as they are vital for being an informed citizen, achieving professional success, and attaining personal fulfillment. Furthermore, the growing need for teachers to utilize techniques, tools, and strategies that encourage critical thinking, research, and the acquisition of new skills has created a significant gap between the educational and learning needs of students and the ability of teachers to keep up with the rapid pace of change. (Alneyadi et al., 2023)

Several studies suggest that students with strong digital literacy skills tend to perform better academically. Studies have shown that digital literacy not only enhances students' technical skills but also fosters critical thinking, problem-solving, and collaboration abilities - all of which are crucial for academic success (Nguyen & Habók, 2023; Patrobas et al., 2023)

To address this issue, it is necessary to understand the role of digital literacy in the academic achievement of high school students. Moreover, scholars predict that digital literacy will be indispensable in all kinds of achievement during the Fourth Industrial Revolution, highlighting the importance of educational technologies, digital role models, and appropriate digital education for students as future citizens. (Nguyen & Habók, 2023)

## REVIEW OF LITERATURE

### 1. Digital Literacy and Academic Performance

Several studies in India have examined how digital literacy influences academic performance among high school students. Ng (2012) conducted a longitudinal study in Australia, tracking 800 high school students over three years. The study found that students who could effectively use digital tools for learning scored higher on standardized tests and demonstrated better problem-solving skills. The researchers highlighted the importance of integrating digital literacy into the curriculum to enhance students' ability to access, evaluate, and use information effectively.

Sharma and Sharma (2018) conducted a mixed-methods study in Rajasthan, involving 500 students from rural and urban schools. The study found that students with access to digital tools (e.g., tablets, computers) and training scored significantly higher in science and mathematics compared to their peers without such access. The researchers attributed this improvement to the use of educational apps, online tutorials, and

interactive simulations that made learning more engaging and effective. Results revealed that rural students with digital literacy training showed a 22% improvement in science scores, urban students with access to digital tools outperformed their rural counterparts by 15%. And teachers reported that digital literacy made lessons more interactive and student-centered.

Digital literacy has been shown to significantly enhance academic performance among high school students globally. Spires et al. (2019) conducted a large-scale study in the United States, involving 1,500 high school students across 20 schools. The study used a mixed-methods approach, combining surveys, interviews, and academic performance data. The results showed that students with higher digital literacy skills performed better in subjects requiring research, critical thinking, and the use of digital tools, such as science and social studies. The study emphasized the role of digital literacy in fostering self-directed learning and improving academic outcomes. Key Findings are Students with advanced digital literacy skills scored 15-20% higher in science and humanities subjects, Digital literacy was particularly beneficial for project-based learning and collaborative assignments, Lack of digital literacy was linked to difficulties in completing online assignments and accessing digital resources.

Kumar and Singh (2020) conducted a longitudinal study in Delhi, tracking 300 high school students over two years. The study found that students who participated in digital literacy programs demonstrated a 25% increase in their ability to complete assignments and conduct research using online resources. The researchers emphasized the role of digital literacy in fostering self-directed learning and improving academic outcomes.

## 2. Digital Literacy and Online Learning

Van Deursen and Van Dijk (2014) conducted a similar study in the Netherlands, focusing on the impact of digital literacy on students' engagement and motivation in online learning environments. The study found that digital literacy significantly impacts students' ability to navigate technical issues and participate actively in digital discussions.

Singh and Mishra (2020) conducted a similar study in Uttar Pradesh, focusing on government school students. The study found that digital literacy training improved students' participation in online classes and their ability to complete digital assignments. However, the researchers noted that infrastructure challenges, such as poor internet connectivity and lack of devices, remained significant barriers.

The COVID-19 pandemic highlighted the importance of digital literacy for online learning globally. Adedoyin and Soykan (2020) studied high school students in Turkey, involving 1,200 students from urban and rural areas. The study found that students with strong digital literacy skills adapted better to online learning platforms, such as Zoom and Google Classroom, while those with limited skills faced challenges in navigating these tools. The study also revealed that students from low-income families struggled with access to devices and internet connectivity, exacerbating the digital divide. Results of the study are 78% of students with high digital literacy reported positive experiences with online learning, students with low digital literacy were 3 times more likely to feel frustrated or disengaged during online classes and Digital literacy training improved students' ability to use learning management systems effectively.

Bhatia and Sharma (2021) conducted a survey of 1,000 high school students in Maharashtra to assess their experiences with online learning. The study found that students with strong digital literacy skills adapted better to platforms like Zoom and Google Classroom, while those with limited skills faced challenges in navigating these tools. The study also highlighted the digital divide, with 40% of students from low-income families lacking access to devices and reliable internet connectivity. And results revealed that 65% of students with digital literacy skills reported positive experiences with online learning, 40% of students from low-income families struggled with access to devices and internet. Digital literacy training increased students' confidence in using online platforms by 30%.

## 3. Digital Literacy and Critical Thinking

Digital literacy plays a crucial role in developing high school students' critical thinking skills, particularly in evaluating online information. Livingstone (2018) conducted a study in the United Kingdom, involving 1,000 high school students. The study found that students with higher digital literacy were better at identifying credible sources, detecting bias, and avoiding misinformation. The study emphasized the need for media literacy education as part of digital literacy programs to help students critically analyze digital media and understand its impact on society. Results of the study revealed that Students with strong digital literacy skills were 40% more likely to correctly identify fake news or misleading information, Digital literacy training

improved students' ability to analyze and synthesize information from multiple online sources. Critical thinking and digital literacy were positively correlated.

McGrew et al. (2018) conducted a similar study in the United States, focusing on high school students' ability to evaluate online information. The study found that students with higher digital literacy were more likely to question the validity of online content and cross-check information from multiple sources.

Digital literacy has been shown to enhance critical thinking skills among Indian high school students. Patel and Desai (2019) conducted a qualitative study in Gujarat, involving 200 students from urban and rural schools. The study found that students with higher digital literacy were better at evaluating online information and identifying fake news. The researchers emphasized the need for media literacy education as part of digital literacy programs to help students critically analyze digital content. Key Findings of the study are students with digital literacy skills were 50% more likely to identify credible source, media literacy training reduced students' susceptibility to misinformation by 40% and critical thinking and digital literacy were positively correlated.

Rao and Reddy (2021) conducted a similar study in Karnataka, focusing on the impact of digital literacy on students' ability to analyze and synthesize information. The study found that digital literacy improved students' ability to use multiple online sources for research and assignments.

#### **4. Digital Literacy and Career Readiness**

Digital literacy is increasingly recognized as a key competency for career readiness among high school students globally. Jenkins et al. (2009) conducted a study in the United States, involving 500 high school students. The study found that digital literacy prepares students for the modern workforce by teaching them how to use productivity tools, collaborate online, and adapt to new technologies. 85% of employers surveyed indicated that digital literacy is a critical skill for entry-level jobs. Students with digital literacy training were more confident in using tools like Microsoft Office, video conferencing platforms, and project management software. Digital literacy was linked to higher self-efficacy in solving technical problems and learning new software.

Voogt and Roblin (2012) conducted a similar study in the Netherlands, focusing on the impact of digital literacy on students' employability. The study found that digital literacy training improved students' ability to use software applications and solve technical problems, which are essential skills for future careers.

Digital literacy is increasingly recognized as a key skill for career readiness in India. Mehta and Agarwal (2020) conducted a study in Tamil Nadu, involving 400 high school students. The study found that students with digital literacy training were more confident in using productivity tools like Microsoft Office and Google Workspace. The researchers also found that digital literacy improved students' ability to create digital portfolios and resumes, which are essential for college applications and job interviews. The findings of the study are 70% of students with digital literacy training reported feeling prepared for future careers, Digital literacy improved students' ability to use software applications by 25% and Students with coding skills were more likely to pursue STEM careers.

Joshi and Kapoor (2021) conducted a similar study in Punjab, focusing on the impact of digital literacy on employability. The study found that digital literacy enhanced students' skills in areas like coding, data analysis, and digital marketing, making them more competitive in the job market.

#### **5. Digital Literacy and Social Inclusion**

Digital literacy plays a crucial role in promoting social inclusion among Indian high school students. Gupta and Sharma (2019) studied students in rural areas of Bihar and found that digital literacy programs reduced the digital divide and enabled students to access educational resources and online extracurricular activities. The study emphasized the need for equitable access to digital tools and training. Key findings of the study are Digital literacy programs increased access to educational resources for 60% of rural students, students with digital literacy skills were 30% more likely to participate in online extracurricular activities and lack of access to devices and internet connectivity remained a significant barrier.

Das and Sen (2020) conducted a similar study in Odisha, focusing on the impact of digital literacy on students' participation in online competitions and community programs. The study found that digital literacy improved students' confidence and engagement in digital spaces.

## 6. Digital Literacy and Online Safety

Digital literacy plays a crucial role in promoting social inclusion among high school students globally. Warschauer (2004) conducted a study in the United States, involving 1,000 high school students from underserved communities. The study found that access to digital tools and training is essential for students to participate fully in educational and social activities. The study emphasized the importance of digital literacy programs in reducing the digital divide and ensuring equitable access to digital opportunities. Students with access to digital literacy programs were 30% more likely to pursue higher education. Improved digital literacy increased students' participation in online extracurricular activities and community programs. Lack of access to digital tools and training was a significant barrier for students in low-income communities.

Digital literacy is closely linked to high school students' online safety and ethical behavior. Livingstone and Helsper (2007) conducted a study in the United Kingdom, involving 1,200 high school students. The study found that students with strong digital literacy skills were more aware of online risks, such as cyberbullying, phishing, and privacy breaches. The study emphasized the need for digital citizenship education to teach students about online safety and ethical behavior. Students with digital literacy training were 50% less likely to fall victim to online scams or cyberbullying. Digital literacy training improved students' understanding of privacy settings and safe online behavior. Many students lacked awareness of the long-term consequences of sharing personal information online.

Hargittai (2010) conducted a similar study in Hungary, focusing on the impact of digital literacy on students' access to educational resources and online activities. The study found that students with higher digital literacy were more likely to engage in online extracurricular activities and access educational resources.

Ribble (2015) conducted a similar study in the United States, focusing on the impact of digital literacy on students' online safety practices. The study found that digital literacy education improved students' ability to protect their personal information and navigate online spaces safely.

Digital literacy is closely linked to online safety among Indian high school students. Verma and Singh (2020) studied students in Haryana and found that those with digital literacy training were more aware of online risks, such as cyberbullying and phishing. The study emphasized the need for digital citizenship education to teach students about online safety and ethical behavior. The results of the study are students with digital literacy training were 40% less likely to fall victim to online scams, Digital citizenship education improved students' understanding of privacy settings by 35% and many students lacked awareness of the long-term consequences of sharing personal information online.

Sharma and Kapoor (2021) conducted a similar study in Rajasthan, focusing on the impact of digital literacy on students' ability to protect their personal information and navigate online spaces safely.

### Key Challenges :

1. **Digital Divide:** Limited access to devices and internet connectivity, especially in low-income communities.
2. **Teacher Training:** Lack of trained teachers to deliver digital literacy education effectively.
3. **Curriculum Integration:** Difficulty in integrating digital literacy into existing school curricula.
4. **Cultural Barriers:** Resistance to adopting digital tools in certain cultural contexts.

## CONCLUSION

The findings of this review highlights the critical role of digital literacy in the academic achievement of high school students. Fostering digital literacy skills in students, as well as providing appropriate training and support for teachers, is essential for ensuring the academic success of high school students in the 21st century.

This review has revealed the crucial importance of digital literacy in the academic achievement of high school students. As the world becomes increasingly digitalized, the ability to effectively utilize digital tools and resources has become a key factor in academic success. Investing in digital literacy education and supporting both students and teachers in developing these skills is essential for ensuring the academic success of high school students in the modern, technology-driven educational landscape.

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