



Digital Literacy Transformation: Opportunities and Challenges

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ABSTRACT

The transformation of literacy in the digital era has changed how we understand and use information. Digital technology makes it easier to access information and learn. Still, it also presents challenges such as the spread of fake news, digital access gaps, and the negative impact of social media. This study discusses how traditional reading and digital literacy can complement each other to enhance the abilities of younger generations. By reviewing various studies, it is found that education plays a crucial role in bridging the digital literacy gap. Besides technical skills, young people also need to learn how to critically assess and evaluate information. Therefore, innovative education policies, broader access to technology, and more effective learning methods are needed to help them take advantage of opportunities in the digital era while overcoming its challenges.

Keywords: *transformation literacy, digital literacy, young generation, education, technology access*

1. INTRODUCTION

In the rapidly evolving digital era, the concept of literacy has undergone significant changes. Previously, literacy was solely associated with the ability to read and write; however, its scope has now expanded to include comprehension and skills in accessing, evaluating, and effectively utilizing digital information. This transformation has become an urgent necessity for the younger generation, who are growing up amidst the rapid development of information and communication technology. Digitalization presents vast opportunities in education and social life, such as broader access to information, technology-based learning methods, and ease of communication and collaboration (Putrayasa, 2024).

Research conducted by Fajri et al. (2023) indicates that advancements in digital technology have also driven more interactive and personalized learning innovations. However, challenges in digital literacy cannot be overlooked. Several barriers include the digital divide caused by unequal access to technology, the spread of misinformation, and a lack of awareness regarding digital security and ethical media usage (Dahur & Solosumantro, 2024).

According to a study by Putrayasa et al. (2024), the transformation of digital literacy requires an integration of conventional reading literacy with digital skills. The younger generation must not only master technology but also develop critical thinking skills to filter the information they receive. Moreover, digital literacy is not limited to the technical use of digital devices but also involves an understanding of their social, cultural, and ethical implications. In the field of education, digital literacy plays a crucial role in fostering 21st-century competencies, such as problem-solving, collaboration, creativity, and technology-based communication. Therefore, synergy among various stakeholders, including educational institutions and the government, is essential to ensure equitable and high-quality digital literacy education for the younger generation.

This study aims to examine how the transformation of digital literacy affects young people and to identify strategies that can be implemented to address existing challenges. With a more comprehensive understanding of the opportunities and challenges of digital literacy, it is hoped that more effective policy recommendations can be formulated to enhance the quality of digital literacy in the modern era.



2. METHODS

This study employed a systematic literature review approach, analyzing various academic sources such as scientific journals, reports from international organizations, and reference books in depth. The data was derived from articles published over the past thirteen years (2012–2025), focusing on reading literacy, digital literacy, and the challenges and opportunities faced by younger generations. During the data collection process, relevant keywords such as “*literacy in the digital era*,” “*reading and digital literacy*,” “*Generation Z literacy challenges*,” “*misinformation*,” and “*21st-century literacy education*” were used in the search machine. The identified literature was then evaluated and analyzed based on a conceptual framework that links traditional reading skills with digital literacy, exploring how these aspects can either complement or conflict with each other. Through this method, the study identifies various perspectives and strategies for enhancing digital literacy, providing more comprehensive insights into the changes and challenges emerging in the digital era.

3. RESULTS & DISCUSSION

In the digital era, the use of digital technology or the internet is certainly no longer unfamiliar to people in Indonesia, as there has been a massive increase in internet usage (Figure 1).

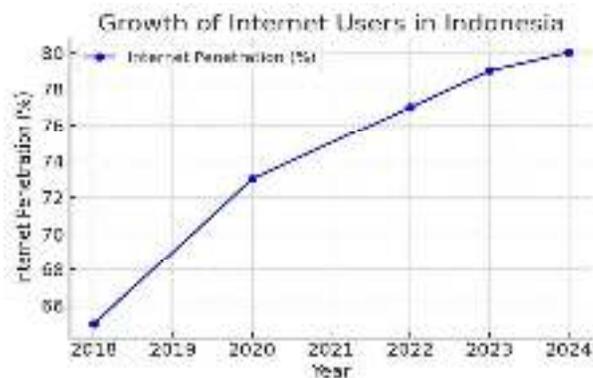


Figure 1. Growth of Internet Users in Indonesia

According to APJII (2024), the number of internet users in Indonesia has been increasing year by year from 2018 to 2024. Among these users, teenagers dominate as the largest group of internet users. This is supported by the following graph (Figure 2).

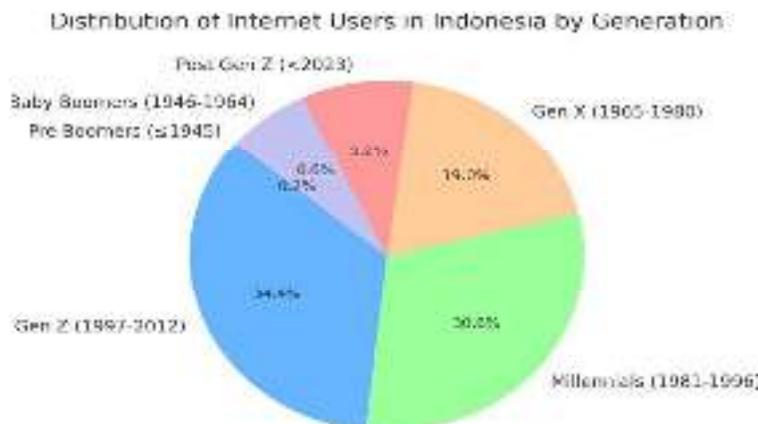


Figure 2. Distribution of Internet Users in Indonesia by Generations



The transformation of digital literacy has had a significant impact on younger generations, bringing both benefits and challenges. Based on research from various sources, literacy in the digital era has shifted from a traditional concept to multimodal literacy. This shift is evident in several key aspects.

First, literacy is no longer limited to reading and writing skills but has evolved into a more complex set of abilities. Digital literacy includes skills in understanding, analyzing, and effectively utilizing digital information (Suherman et al., 2020), including access to digital libraries and the management of electronic resources. Second, there has been a shift from conventional literacy to digital literacy. Generation Alpha, born between 2011 and 2025, is the most proficient in digital technology. However, they also face challenges in traditional literacy (Muttaqin et al., 2024). Despite being accustomed to the internet, their reading, writing, and comprehension skills have declined due to dependence on digital devices.

Lastly, this transformation in literacy is reflected in various educational programs that integrate digital technology. One example is the "*Bhumi Literacy*" program, which incorporates digital literacy and the use of GELIBO (*Gemar Literasi dengan Flipbook*) media to enhance students' interest in reading. These developments indicate that modern literacy encompasses skills in accessing, understanding, and utilizing a wide range of media and digital technologies.

The advancement of digital technology has significantly changed how people access, comprehend, and use information. Digital literacy is not only about operating technological devices but also involves critical thinking in evaluating information. With easier access to the internet and digital media, younger generations face challenges in deeply understanding content and avoiding misinformation.

This article reviews the transformation of digital literacy based on findings from various academic journals. Over the past few decades, digital literacy has developed rapidly. Digital literacy does not only focus on technical skills in using devices but also includes analytical skills in assessing the credibility of information sources (Simamora et al., 2024).

Additionally, a study conducted by the Programme for International Student Assessment (PISA) in 2021 shows that students with greater internet access tend to have lower reading literacy scores compared to those with limited access. This is attributed to the fast and superficial consumption of information (OECD, 2021).

Furthermore, research published in *Computers & Education* revealed that although young people read more through digital media, their comprehension of complex texts tends to be lower compared to reading from print sources (Delgado et al., 2018). These findings suggest that the use of digital technology does not automatically enhance literacy without the support of critical thinking skills.

a. The Development of Digital Literacy in the Digital Era

Digital literacy has developed rapidly over the past few decades. Younger generations now interact more with digital information than with printed books. However, research shows that the level of understanding and utilization of digital literacy still varies:

- Digital literacy skills are not limited to operating devices but also involve critical thinking about the information obtained.
- Although young people read more frequently through digital media, they tend to have a lower level of deep comprehension compared to reading from printed sources (Putrayasa, 2024).
- Teenagers with greater access to digital technology do not necessarily have better literacy skills compared to those with limited access, due to the suboptimal use of technology (Fajri et al., 2023).

Research from the Programme for International Student Assessment (PISA) 2021 reveals that in some countries, students with wider access to the internet tend to score lower in reading literacy compared to those who use technology less frequently. This is attributed to the rapid but shallow consumption of information, as well as a lack of critical skills in analyzing digital texts (Putrayasa, 2024).



b. Challenges in Digital Literacy

Although digital technology offers many benefits, there are several key challenges in digital literacy faced by younger generations:

1) Excessive Information Spread (Information Overload)

- Students often struggle to distinguish between valid information and hoaxes, especially on social media.
- A 2020 UNESCO study revealed that 70% of students admitted to having believed fake news (hoaxes) due to a lack of understanding of information sources (Putrayasa, 2024).

2) Digital Divide

- Unequal access to technology remains a major obstacle to improving digital literacy comprehensively.
- A 2023 study by the Ministry of Education and Culture (Kemendikbud) found that urban students have three times greater access to technology compared to their rural counterparts (Fajri et al., 2023).

3) Negative Impact of Social Media on Literacy

- Young generations tend to consume more light content, such as short videos, rather than engaging with more complex texts.
- A study shows that although young people possess high skills in using digital media, they often lack the analytical abilities needed to understand complex information.

4) The Influence of Digital Literacy on Reading Skills

One of the main concerns in digital literacy is its impact on reading skills and text comprehension. Here are some key findings:

- Although young people read more frequently through digital devices, they often struggle to comprehend longer and more complex texts.
- PISA 2021 found that students who overly rely on quick internet searches tend to have lower critical thinking skills compared to those accustomed to reading and analyzing in-depth texts.
- Digital literacy has not been fully integrated into the education curriculum, so students have yet to receive systematic instruction on how to evaluate and use digital information effectively.

Table 1. Several factors on internet usage and their impacts

Factor	Key Findings	Source
Internet usage among teenagers	99.16% of teenagers aged 13-18 actively use the internet	APJII (2024)
Impact of hoaxes on students	70% of students have believed fake news (hoaxes)	UNESCO (2018)
Urban vs rural technology access	Urban students have three times greater access to technology compared to rural students	Septianingsih & Erliza (2021)
Digital vs print reading comprehension	Students who read more from printed books have better deep comprehension than those who read from screens	OECD (2021)



4. CONCLUSION

Changes in digital literacy have had a significant impact on how young generations acquire, understand, and use information. Technological advancements offer various benefits, such as easy access to learning resources, enhanced creativity, and the ability to collaborate through digital platforms. However, on the other hand, there are significant challenges that need to be addressed, including the spread of fake news (hoaxes), the digital divide between urban and rural areas, and the decline in critical thinking skills due to the rapid consumption of instant information.

Based on this research, it was found that although 99.16% of teenagers aged 13–18 actively use the internet, many still struggle to distinguish accurate information. Additionally, 70% of students have believed in fake news, indicating a low level of awareness regarding information literacy. Other findings also reveal that students who read more frequently from screens have lower comprehension levels compared to those who read from printed books.

To improve digital literacy, a comprehensive strategy is needed, including:

- 1) Integrating digital literacy into the education curriculum, with an emphasis on information analysis skills and critical thinking.
- 2) Expanding equitable access to technology, especially for students in remote areas, to prevent gaps in digital skills proficiency.
- 3) Guiding in digital media usage, both by educators and parents, to help students become more selective in receiving and sharing information.
- 4) Developing flexible education policies aligned with technological advancements ensures that digital literacy contributes to improving the quality of human resources.

By implementing these steps, digital literacy will not only serve as a tool for acquiring information but also help shape critical thinking skills, enhance the competitiveness of younger generations, and foster a more intelligent, responsible, and wise society through the use of digital technology.

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