

IMPLEMENTING DIGITAL LITERACY IN SCHOOLS: CHALLENGES AND SOLUTIONS

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Abstract: This article reviews the main challenges and solutions in implementing digital literacy in Indonesia's educational environment. Digital literacy is considered important in facing the current digital era, on which the use of digital technology increasingly dominates daily life. Challenges include low interest in reading, inadequate technology infrastructure, and limited resources. However, with the right strategies, such as improved technology infrastructure, intensive training for teachers, holistic curriculum development, and integration of digital literacy into learning, schools can help students develop essential digital skills. A literature study was used to highlight different sources of information and approaches to address these challenges. This article provides an in-depth insight into the importance of digital literacy as the foundation for effective and sustainable learning in today's digital era.

Keywords: challenges of digital literacy; digital literacy; strategies in implementing digital literacy

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INTRODUCTION

A person's development is highly dependent on their level of knowledge and literacy. In Indonesia, students need to be equipped with the mindset and literacy skills that can shape moral and knowledgeable characters, in accordance with the mandate of Law No. 20/2003 on the National Education System. Literacy plays a crucial role in improving an individual's ability and knowledge, in line with the goal of education to create true learners with a scientific spirit (Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional, n.d.).

According to the World's Most Literate Nations Ranked in 2016, Indonesia ranked 60th out of 61 countries in literacy culture, indicating that the literacy challenge in Indonesia is in a critical situation (Evita De Vega, 2017). A study from the National Library reported by Kompas Daily also revealed that Indonesians' interest in reading is still low in many areas (Syahrul Munir, 2016). It is shown with some provinces and districts/cities experiencing reading interest levels that only reach 25.1%. Despite this, the results of the 2016 APJII survey show that Indonesians have high internet access and

ease in finding information through the internet, reflecting the paradox between the availability of technology and low interest in reading in Indonesia.

In this era of digital knowledge, digital literacy is becoming increasingly important. While traditional literacy remains relevant, the ability to master digital technology is also an absolute necessity. The use of technology in education is inevitable given the rapid development of science and technology. To address the challenges of the 21st century, literacy must evolve into a basic foundation in individuals' attitudes and behaviour, enabling them to communicate effectively and access relevant information (Aufa Muis et al., n.d.).

This article aims to discuss the challenges and solutions in implementing digital literacy in educational settings. The main challenges include low reading interest, inadequate technology infrastructure, and limited resources. However, by improving technology infrastructure, providing intensive training to teachers, providing adequate digital resources, and developing a holistic curriculum, schools can help students develop essential digital competencies to face future challenges.

METHOD

In compiling the article "Implementation of Digital Literacy in Schools: Challenges and Solutions", the author used the literature review method. This method involves searching, analyzing, and synthesizing various sources of information from scientific journals, books, research reports, and other documentation relevant to digital literacy in the educational context (Given, 2008). By referring to the literature, this article aims to provide an in-depth understanding of the challenges faced in implementing digital literacy in schools and the solutions that can be applied to overcome them.

RESULT AND DISCUSSION

Digital Literacy

Digital literacy was first proposed in 1990 by Paul Gilster, who defined it as the ability to understand and use information from various digital sources (Eguz, 2021). This definition highlights the importance of skills in searching, evaluating, and managing information derived from digital media. Digital literacy includes not only the use of technology, but also the ability to participate effectively in a digital environment. Meyers, Ingrid, & Ruth assert that digital literacy is a way for individuals to interact well in this increasingly digital world (Cahyani et al., 2024).

There are three main perspectives related to digital literacy (Meyers et al., 2013). First, skill acquisition of finding information. This perspective sees digital literacy as the ability to effectively utilize digital resources to meet information needs. This includes evaluating digital documents to assess their acceptability and credibility, as well as actively participating in online forums and social media. These skills are essential to ensure that the information accessed is accurate and useful. Second, development of habits of mind. This perspective highlights the importance of cognitive abilities in digital literacy, which involves the ability to process information effectively. For digital natives, digital literacy includes cognitive skills to complete tasks in a digital environment (Anunobi & Udem, 2014). This includes the ability to analyze, evaluate, and make

informed decisions. Third, tight ties in practice and digital culture. This perspective emphasizes the importance of participation in digital culture. Active participation in digital culture allows individuals to learn and develop through interaction with digital technologies and communities. Meyers, Ingrid, & Ruth (Meyers et al., 2013) consider this form of participation to be key in developing digital literacy.

Digital literacy is a combination of various skills and competencies. Digital literacy involves an individual's awareness, attitude, and ability to use digital tools and facilities appropriately (Hidayat & Khotimah, n.d.). These abilities enable individuals to recognize, access, manage, integrate, evaluate, analyze, and synthesize digital resources, as well as to construct new knowledge and communicate with others. The e-learning department (2015) outlines that digital literacy involves five core elements that are interconnected and crucial in mastering technology in the digital age (Nawaz & Kundi, 2010). First, information search and evaluation skills refer to the skills to find relevant information from various digital sources and assess its credibility and reliability. Second, creative skills involve producing innovative and meaningful digital content, such as text, images, videos, and other media. Third, communication skills emphasize the importance of conveying ideas and information clearly and effectively through digital platforms, so that messages can be understood by diverse audiences. Fourth, collaboration skills require productive cooperation with others in a digital environment, using collaborative tools to achieve common goals. Finally, online safety highlights the importance of understanding and implementing effective security practices to protect personal data and maintain safety while interacting online. All these five elements are combined to form the basis of a well-rounded digital literacy, enabling individuals to not only function effectively in a digital society but also contribute positively and safely.

Hague & Payton added eight elements to digital literacy: practical skills, creativity, ability to think critically and evaluatively, understanding of culture and social context, collaboration, evaluation of information, ability to communicate effectively, and e-safety (Musfikar & Al-Thariq, n.d.). These elements reflect the complexity of digital literacy which involves different aspects of skills and knowledge.

Digital literacy is very important to implement in schools for several reasons. First, digital technology shapes children's lives. Digital technology has shaped children's lives and keeps fulfilling this function from an early age. Therefore, students are highly recommended to understand and use technology effectively and responsibly. Second, rapid technology development. Technology is constantly evolving, and teachers need to adapt to these changes. The use of digital devices in the classroom helps students learn to use technology that is relevant to their lives outside of school. Third, engaged learning practices. Digital literacy in the classroom is not only about teacher competence in using technology, but also about how students can learn and interact with technology in a collaborative and safe learning environment.

Digital literacy integrates information and communication technology skills, critical thinking, collaboration, and social awareness (Adyanti et al., 2024). Mastering solid skills of digital literacy enables students not only to acquire information, but also to evaluate, analyze, and produce digital content in critical and creative ways. It also prepares them to actively and responsibly participate in an ever-evolving digital society.

Challenges

Activities in the digital world have increased significantly in recent years. According to a Hootsuite survey in 2021, respondents in Indonesia spend an average of 7 hours 52 minutes per day on the internet, exceeding the global average of only 6 hours 54 minutes per day (Alwi et al., 2022). In the global ranking, Indonesia placed eighth out of 42 countries surveyed. UNICEF's 2020 research in Cambodia, Indonesia, Malaysia, and Thailand showed that many young people actively use various social media accounts for entertainment, communication, and education purposes (Usman et al., 2022). They are not only consumers, but also content creators. The COVID-19 pandemic has further accelerated the increase in digital activities, particularly in online education due to long-term school closures, especially in urban areas. As a result, children are exposed to a variety of digital content and products, which emphasizes the urgency of digital literacy in this era of technological advancement.

Digital literacy is essential for young people to prepare them for the social, cultural, economic, civic, and intellectual life of today and tomorrow. Digital literacy gives them the ability to take advantage of ever-evolving technological advances. However, there are major challenges related to the use of the Internet and digital media in Indonesia, which are not always matched by improvements in digital literacy. This includes the ability to use information from social media wisely, understand it, and evaluate it responsibly .

Schools play a strategic role in integrating technology into all subjects in the curriculum. Digital literacy has a positive impact on improving students' knowledge and should not be ignored. Formal education needs to prepare learners to understand and develop socially, intellectually, and economically. Therefore, it is important for formal education to incorporate a culture of digital literacy so that learners can make optimal use of their interactions. However, the application of digital literacy in teaching and learning is still not well understood. Despite the widespread use of digital media, knowledge about digital media education is still lacking. According to a survey conducted by KOMINFO, the use of digital devices in Indonesia is dominated by communication (93.46%), entertainment (65.29%), browsing (76.88%), learning (27.51%), and working (25.70%) (Ameliah et al., 2022). This data indicates that the use of digital media for educational purposes is still low, indicating the need for vigilance and caution in accessing online learning resources and materials.

The role of digital literacy in the curriculum is crucial, to help students achieve several goals (Yuniarto & Panji Yudha, 2021). First, they can acquire the technical knowledge and skills necessary to use digital media effectively. Second, they become competent in utilizing digital media to solve everyday problems. Third, they understand the social dimensions and impacts of digital media in modern society. Fourth, they can form positive attitudes towards digital media and be ready to face the demands of today. Challenges in developing a curriculum to improve digital literacy include the gap between the digital culture that exists in schools and that exists outside schools. David Buckingham identified this digital divide, in which students' knowledge, ideas, and values are often not reflected in formal education. This suggests that the learning system in schools often does not match the way students communicate and seek information outside the school environment.

Teachers need to adapt their teaching according to the digital context of students, with the aim of increasing digital literacy in the core curriculum to support students in

developing their knowledge and becoming critical participants in the teaching-learning process. Traditional textbooks are often unable to compete with the more varied and interactive sources of information available on the internet. Digital literacy is therefore a crucial resource that supports learning, providing opportunities for students to find and assess relevant information and access knowledge in a variety of formats (Arsari, 2022). The development of digital literacy in the curriculum is not about following trends, but responding to changes in knowledge and recognizing that young people need a diverse range of skills, knowledge, and understanding to enhance their ability in a range of subjects.

The technical challenge in implementing digital literacy involves the need to improve educators' digital skills to enable them to cope with the 21st century learning. Educators who have strong digital skills can guide and develop their students' digital literacy abilities. Digital literacy enables a more creative, active, collaborative, and personalized approach to constructing and communicating knowledge through digital media technologies. Training for teachers should include the ability to select appropriate digital tools, determine work strategies that support teaching quality, present materials online, and select evaluation types that are appropriate to the objectives and guidelines (Rokhman, 2017).

Teachers in the digital era need to keep up with technological developments and adapt their teaching skills accordingly. Sharma (Ramadianti et al., 2024) identified five key skills for teachers as facilitators of digital learning, namely networking skills, communication skills, thinking skills, nurturing abilities, and knowledge management. Limitations in digital skills in operating hardware and software can hinder the effective use of digital media. An immature digital culture can result in digital rights violations, low digital ethics, and digital security risks such as personal data leakage and fraud. Therefore, digital literacy is a crucial element that must be well integrated into the education system to prepare the younger generation with relevant skills in the digital era.

Solution

Digital literacy is not just about technical skills, but also about control and a deeper understanding of the limits and uses of cyberspace. Every individual needs to have the "critical awareness" to recognize media reality and distinguish it from social reality. Siberkreasi offer a framework that covers four key competency areas (Agustini, 2021). First, digital skills. An individual's ability to understand and use information and communication technology (ICT) hardware and software as well as digital operating systems. Second, digital culture. Individual ability to integrate the values of nationalism, Pancasila, and Bhinneka Tunggal Ika in daily digital life. Third, digital ethics. Individuals' attitudes in developing digital ethical governance (netiquette) which includes awareness and self-adjustment to the ethics of using media digital. Fourth, digital safety. Individuals' ability to increase digital awareness and security to protect personal data and avoid cyber threats. With this ability, users will be more critical and not easily manipulated by false or misleading information.

In the face of the rapidly evolving digital era, improving digital literacy is an urgent necessity. The first solution is to improve and strengthen the character of digital natives. Digital literacy is not just about the technical ability to use devices and the internet, but also about the critical ability to understand, assess, and use information obtained from

cyberspace. For that, the following abilities such as critical thinking, skill finding information, and understanding digital culture are needed.

One of the most effective ways to improve digital literacy is through the development of critical thinking. Critical thinking can start by questioning, analyzing, and making objective assessments of information obtained from the internet or other media. Thus, individuals will be better able to sort out information that is valid and not. Mastering skills of finding information means this ability is important to be able to sort and evaluate information received or disseminated through digital platforms. Finding information focuses on the ability to master communication science, social awareness, and knowledge of information creation in the digital environment. Digital culture describes how technology and the internet significantly shape the way we interact, behave, think, and communicate in society. By understanding digital culture, we can find out how the internet affects our daily lives and social interactions.

An understanding of generational characteristics, as described by David Stillman and Jonah Stillman (Hendrastomo & Januarti, 2023), is crucial for determining effective educational strategies. Gen Z, for example, is known for characteristics, such as being digital, fear of missing out (FOMO), hypercustomized, driven, realistic, weconomist, and do it yourself (DIY). In the context of education, effective strategies should consider these characteristics to foster students' love for learning activities.

The first solution is personalization of learning. Giving students the freedom to determine how they learn is an important necessity. Teachers need to personalize ways of learning for each student and give them more opportunities to seek learning resources outside of school. Teachers must understand technology utilization in learning. According to Payton & Hague, learners who intensely utilize technology tend to be more appropriate in adopting learning strategies. The use of computer software and programs can help to complete tasks more effectively. Furthermore, Merdeka Curriculum helps students develop their potential and abilities with a critical, quality, expressive, applicable, varied, and progressive approach. Project-based learning and flexibility for teachers in conducting differentiated learning according to the abilities of students are very important (Hasanah & Sukri, n.d.).

The second solution to improving digital literacy is to strengthen technology infrastructure. Adequate infrastructure is essential to support digital literacy efforts. The availability of fast and stable internet access, as well as adequate technology devices, must be provided equally to all students and educators. With strong infrastructure, digital learning can be implemented smoothly and efficiently, allowing easy access to a wide range of relevant and diverse learning resources. In addition, good technology infrastructure also supports the implementation of a more interactive digital curriculum and facilitates the use of technology in all aspects of learning. This not only improves the quality of learning, but also opens up opportunities for the development of deeper and more integrated digital skills among students and educators.

The third solution is the development of digital literacy curriculum. This curriculum plays an important role in integrating digital literacy understanding and skills into all aspects of learning. The curriculum needs to be carefully crafted to be relevant to the local context and meet the needs of students in today's digital era. One effective approach is to integrate digital literacy into existing subjects such as math, language or science (Desi,

n.d.). This way, students can learn and develop digital skills along with understanding other academic concepts, creating a more holistic and applied learning experience.

The fourth solution is the development of creative and innovative learning methods. The development of creative and innovative learning methods can contribute greatly to improving the effectiveness of digital literacy among students. For example, literature learning using digital literacy can provide significant benefits. Teachers can select relevant children's storybooks and then engage students in various creative activities, such as illustrating the stories, scanning the images they create, adding the text of the retellings in their language, and publishing them through blogs or school websites. Through these activities, students not only practice traditional literacy skills, such as reading and writing but also develop digital literacy skills such as using technology to share and disseminate their work. This approach makes learning more interesting and relevant for students; in addition, it integrates technology effectively with the daily learning process in primary schools. This may help them get ready to face the complex challenges of the digital world.

The fifth solution is to improve teacher competence. Improving teacher competence in digital literacy is a crucial step to advancing education in today's digital era. Teachers with expertise in using digital media can deliver learning materials in a more relevant, engaging, and interactive way. They can utilize various tools such as audio and visual to enrich students' learning experience, thus facilitating their understanding and increasing their engagement in the learning process. In addition, digital literacy also plays an important role in preparing young people for future challenges, especially with curriculum approaches that emphasize creativity, practical application, and contextual adaptation in learning.

The sixth solution is to increase parental participation. Increasing parents' awareness and participation is crucial in supporting their children's digital literacy progress. Parents need to be encouraged to understand how important digital literacy is in the context of their children's future. This includes understanding how technology can be an effective learning tool and how to supervise the use of technology to maintain children's safety and well-being. By having a good understanding, parents can be actively involved in assisting their children to explore the digital world in a safe, responsible, and beneficial way. Concrete steps such as setting screen time, supervising the content accessed, and having open discussions about their children's online experiences can help build a strong digital literacy foundation early on. Thus, parental awareness and participation not only supports children's technological development, but also helps to boost their social and critical skills in dealing with the rapidly evolving digital world.

CONCLUSION

Digital literacy encompasses technical ability, critical thinking skills, information management, and participation in digital culture. While it faces challenges such as low reading interest, inadequate technology infrastructure, and limited resources, solutions such as improved infrastructure, teacher training, holistic curriculum development, and parental participation can address these issues. The integration of digital literacy in the curriculum is essential to prepare students for the challenges of the 21st century. Further research is needed to evaluate and develop effective strategies in its implementation.

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