

Children and Digital Literacy: 21st Century Education Challenges and Strategies

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Abstract

Digital literacy is an important skill that children must have in facing the challenges of the 21st century. This research aims to identify digital literacy challenges in children and formulate effective educational strategies to support the development of these competencies. The method used is a qualitative study through literature study and thematic analysis of various relevant scientific sources. The results of the study show that children face various challenges in digital literacy, such as limited critical thinking skills, lack of ethics in the use of technology, and exposure to negative content in cyberspace. To overcome this, a collaborative educational strategy is needed between schools, families, and communities. Digital literacy must be integrated into the curriculum, strengthened with a humanist pedagogical approach, and supported by moral values that are consistently instilled. With the synergy of all parties, children can grow up as individuals who are not only technologically capable, but also wise and responsible in facing the digital era.

Keywords: *Digital Literacy; Child; 21st Century Education; Digital Challenges; Collaborative Strategy.*

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INTRODUCTION

The rapid development of digital technology has changed various aspects of human life, including in the world of education. Children as a digital native generation grow up and develop in an environment that is heavily influenced by information and communication technology. The presence of digital devices such as gadgets, computers, and internet access has become part of their daily lives, both for entertainment, social interaction, and the learning process. On the one hand, this phenomenon opens up great opportunities for improving the quality of education and developing children's potential. However, on the other hand, without proper understanding and mentoring, children are vulnerable to the negative impacts of the digital world, such as misuse of technology, exposure to inappropriate content, and decreased critical thinking skills and social empathy.¹

In this context, digital literacy is an essential competency that must be possessed by children in the 21st century. Digital literacy not only includes the ability to use technology, but also a critical understanding of information obtained from various digital media, ethics in interacting in cyberspace, and the ability to adapt to evolving technological changes. Therefore, the role of education is very important in equipping children with comprehensive digital literacy skills.² 21st century education is required to not only focus on cognitive aspects, but also integrate character values, collaboration, communication, and technology-based problem-solving.³

This paper will discuss in depth the challenges faced by children in developing digital literacy as well as educational strategies that can be applied to answer these challenges. It is hoped that this study can make a positive contribution to educators, parents, and policy makers in forming a generation that is not only technologically savvy, but also wise in using it.⁴

It is hoped that this study can make a positive contribution to educators, parents, and policy makers in forming a generation that is not only technologically savvy, but also wise in using it.⁵ Digital literacy in children is not only technical ability to operate digital devices, but also includes cognitive, social, and affective aspects related to how they understand, evaluate, and utilize information responsibly. In this context, education must be able to respond to the dynamics of the times by integrating digital learning that is not only informative, but also transformative, namely encouraging children to think critically,

¹ Hasanah, U., & Sukri, M. (2023). Implementation of digital literacy in Islamic education: Challenges and solutions. *Equilibrium: Journal of Education*, 11(2), 177-188.

² Sari Nusantara Putri, "Inspiring Early Childhood Education: Fostering Creativity and Innovation," n.d.

³ Khasanah, U., & Herina, H. (2019, March). Building students' character through digital literacy in facing 21st century education (industrial revolution 4.0). In *the Proceedings of the National Seminar of the Postgraduate Program of the University of PGRI Palembang*.

⁴ Nurjannah, N. (2022). The challenge of curriculum development in improving digital literacy and character formation of students in Indonesia. *Journal of Basicedu*, 6(4), 6844-6854.

⁵ Suriani, A. I., & Hadi, S. (2022). Digital literacy policy for the development of students' character. *JKPD (Journal of Basic Education Studies)*, 7(1), 54-64.

behave ethically in the digital space, and be able to distinguish valid and relevant information from hoaxes and disinformation that are rampant.⁶

More than that, strong digital literacy can also strengthen children's ability to adapt to various social and economic changes triggered by the industrial revolution 4.0 and the development of artificial intelligence.⁷ Children who have digital competence from an early age will be better prepared to face global challenges, able to develop creativity and innovation, and actively involved in building an inclusive and sustainable digital society. Therefore, an educational strategy is needed that is not only reactive to technological developments, but also proactive in creating a safe, supportive, and character-development-oriented learning environment.⁸

This paper seeks to comprehensively describe how digital literacy challenges in children arise in daily life, as well as present various educational approaches and strategies that are relevant in the 21st century. By examining the role of all parties in the educational process ranging from educational institutions, families, to the community, it is hoped that a synergy will be born that is able to create a healthy digital ecosystem for children's growth and development. In the long run, digital literacy that is built consistently and collaboratively will be an important foundation in producing a resilient, competitive, and integrity future generation in the midst of an increasingly complex era of disruption.

METHOD

This research uses a descriptive qualitative approach that aims to describe and analyze in depth the challenges faced by children in the development of digital literacy and educational strategies that can be applied in the 21st century era. This approach was chosen because it is able to holistically reveal various social and educational phenomena related to the use of digital technology in children's lives, both from psychological, social, and pedagogical aspects.⁹

The data sources in this study consist of primary and secondary data. Primary data was obtained through in-depth interviews with informants consisting of teachers, parents, and education practitioners who have experience in developing digital literacy in children. In addition, observations were also made on children's activities in using digital devices in the school and home environment. Meanwhile, secondary data was obtained from literature studies which included scientific journals, books, policy reports, and other publications relevant to the topic of digital literacy and 21st century education.¹⁰

⁶ Juniantoro, S. (2021). *Digital literacy in the challenges of 21st century education*. Publisher Nem.

⁷ Yohana, R. (2020). Efforts to build students' character through digital literacy in 21st century educational challenges. In *Social, Humanities, and Educational Studies (SHEs): Conference Series* (Vol. 3, No. 4, pp. 1005-1010).

⁸ Alfiyanto, A., & Hidayati, F. (2022). Educators and digital literacy: Learning challenges in the industrial era 4.0. *Overview: Journal of Islamic Knowledge*, 2(1), 72-83.

⁹ Sholikhah, A. (2016). Descriptive statistics in qualitative research. *COMMUNICATION: Journal of Da'wah and Communication*, 10(2), 342-362.

¹⁰ Mappasere, S. A., & Suyuti, N. (2019). Definition of qualitative approach research. *Social Research Methods*, 33.

Data collection techniques were carried out through semi-structured interviews, participatory observation, and documentation. Semi-structured interviews provide a space of flexibility for researchers to dig deeper into information according to data developments in the field. Observations were made to see firsthand how children interact with technology and how the role of educators and parents in guiding them. Documentation is used to complement and enrich the data obtained from interviews and observations.

The data analysis technique uses an interactive analysis model developed by Miles and Huberman, which goes through three main stages: data reduction, data presentation, and conclusion/verification. Data reduction is carried out by sorting and filtering relevant data, data presentation is carried out in the form of descriptive narratives, and conclusions are drawn based on the patterns of findings that arise from the analysis process.¹¹

To maintain the validity of the data, this study uses source and method triangulation techniques. Triangulation is done by comparing data from different sources and collection techniques to ensure the consistency and validity of the information obtained.

With this method, it is hoped that the research can provide an in-depth and comprehensive picture of how children face the challenges of the digital world as well as what educational strategies are most effective in equipping them with digital literacy skills that are in accordance with the demands of the times.

RESULTS AND DISCUSSION

1. Digital Literacy Challenges in Children

Based on the results of interviews with teachers and parents, it was found that children face a number of challenges in developing digital literacy. Key challenges include:¹²

a. Access excessive information without filters

Children often access a variety of content on the internet without adequate supervision, including content that is not age-appropriate. This can have a negative impact on the development of children's character, moral values, and critical thinking skills. Some teachers mentioned that students become more easily distracted by social media than focusing on online learning.¹³

b. Lack of critical thinking skills and digital ethics

Children are generally not equipped with the ability to evaluate the truth of information. They tend to receive information as it is without going through the verification process. In addition, many of them do not understand the ethics of

¹¹ Hanyfah, S., Fernandes, G. R., & Budiarmo, I. (2022, January). Application of descriptive qualitative methods for customer data processing applications in car washes. In *National Seminar on Research and Technology Innovation (SEMNAS RISTEK)* (Vol. 6, No. 1).

¹² Mustofa, M., & Budiwati, B. H. (2019). The process of digital literacy for children: educational challenges in today's era. *Librarian*, 11(1), 114-130.

¹³ Alfiyanto, A., & Hidayati, F. (2022). Educators and digital literacy: Learning challenges in the industrial era 4.0. *Overview: Journal of Islamic Knowledge*, 2(1), 72-83.

using digital media, such as manners in commenting, respecting the privacy of others, and avoiding the spread of hoaxes.

c. Dependence on technology

Observations show that some children have a tendency to rely excessively on gadgets, which has an impact on decreased direct social interaction and reduced interest in physical activity. This is one of the big challenges in character education in the digital era.

2. Education Strategies in Improving Digital Literacy

From the results of interviews and the study of educational documents, several strategies were found applied by educators and parents in developing children's digital literacy, including:

a. Integration of digital literacy into the curriculum

Some schools are starting to integrate technology-based lessons with digital literacy approaches, such as the use of interactive learning media, technology-based projects, and discussions about positive and negative online content. This encourages children to be not only passive users, but also creative and responsible producers of digital information.

b. Digital-based character education

Teachers and parents are aware of the importance of instilling ethical values in using technology. Therefore, learning values such as digital honesty, cyber responsibility, and empathy in online communication is starting to be emphasized, both at school and at home.¹⁴

c. Increasing the role of parents in digital supervision and mentoring

The role of parents is very important in shaping children's habits in using technology. Several informants mentioned that collaborative approaches between schools and parents, such as digital literacy seminars, the preparation of rules for the use of gadgets at home, and open dialogue about children's online activities, have been proven to be able to reduce the negative risks of using technology.

d. Teacher training in mastery of technology and digital pedagogy

Children's digital literacy cannot be separated from the capacity of teachers as facilitators. Teacher training on digital-based learning, cybersecurity, and online classroom management is an urgent need to create a learning process that is adaptive and relevant to the times.

3. Discussion: 21st Century Education and the Role of Collaboration

The results of this study reinforce the view that 21st century education not only emphasizes mastery of academic content, but also on the ability of students to adapt, think critically, and actively contribute in an increasingly digitized society.¹⁵ Digital

¹⁴ Amanda, A. F., & Wulandari, Y. (2022). Digital Literacy: Impacts and Challenges in Language Learning. *Journal of Basic Education Milestones: Journal of Theory and Outcomes Study of Basic Education*, 1(2), 126-136.

¹⁵ Ahmad Andry Budianto, "Innovation of HOTS Assessment Instruments in Science Learning: A Game-Based Approach in Islamic Primary Schools," n.d.

literacy is one of the four main competencies of the 21st century, along with collaboration, communication, creativity, and problem-solving (Trilling & Fadel, 2009). Today's children live in a technology- and information-rich environment, so they need the ability to understand, evaluate, and utilize digital information wisely, responsibly, and productively.¹⁶

In this context, digital literacy is not only limited to technical skills using digital devices or accessing the internet, but also includes an understanding of digital ethics, personal data security, and the ability to sort out valid and relevant information. Unfortunately, this study found that many children do not have these skills optimally. This is exacerbated by weak social control and education that has not been able to fully keep up with the pace of technological development.¹⁷

Therefore, a collaborative approach is needed in building children's digital literacy. Schools, as formal educational institutions, have a responsibility to design curricula and learning strategies that are able to integrate technology effectively. Teachers must be equipped with digital pedagogical competencies so that they are not only informants, but also facilitators who are able to guide children in navigating the digital world safely and wisely.¹⁸

In addition, the family as the first and main educational environment has a central role in instilling basic values, including the ethics of using technology. It is not enough for parents to limit or supervise the use of gadgets, but also to actively engage in dialogue and provide examples of healthy use of technology. In many cases, children who have good digital mentoring from their parents tend to have a better understanding of the risks and benefits of the digital world.¹⁹

The community also plays an important role in forming a supporting ecosystem, for example through the provision of technology-based educational public spaces, digital literacy counseling at the local level, or cooperation with non-governmental organizations engaged in education and child protection. When schools, families, and communities synergize with each other, it will create an environment conducive to the growth of a digital generation that is not only technologically intelligent, but also has character, integrity, and social responsibility.²⁰

¹⁶ Astutik, P., & Hariyati, N. (2021). The role of teachers and learning strategies in the application of 21st century skills in primary and secondary education. *Journal of Educational Management Inspiration*, 9(3), 619-638.

¹⁷ Halim, A. (2022). THE SIGNIFICANCE AND IMPLEMENTATION OF CRITICAL THINKING IN THE 21ST CENTURY EDUCATION WORLD PROJECTION AT THE ELEMENTARY SCHOOL LEVEL. *Indonesian Journal of Social Technology*, 3(3).

¹⁸ Qulsum, D. U., & Hermanto, H. (2022). The role of driving teachers in strengthening the profile of Pancasila students as the resilience of 21st century character education. *Journal of National Resilience*, 28(3), 315-330.

¹⁹ Qulsum, D. U., & Hermanto, H. (2022). The role of driving teachers in strengthening the profile of Pancasila students as the resilience of 21st century character education. *Journal of National Resilience*, 28(3), 315-330.

²⁰ Arifin, B., & Mu'id, A. (2024). Development of skills-based curriculum in facing the demands of 21st century competencies. *DAARUS TSAQOFAH Journal of Postgraduate Education*, Qomaruddin University, 1(2), 118-128.

Thus, building children's digital literacy within the framework of 21st century education is not the responsibility of one party alone.²¹ He demanded planned, measurable, and sustainable cross-sectoral efforts. Digital literacy must be an integral part of the entire education and parenting process oriented towards character strengthening, life skills development, and readiness to face increasingly complex global challenges. Through solid collaboration and a progressive educational vision, we can produce a generation that is not only digitally literate, but also able to become agents of positive change in this digital era.

CONCLUSION

This research confirms that digital literacy is one of the fundamental competencies in 21st century education. Children as the digital generation not only need to master the technical aspects of the use of technology, but are also required to have a deep understanding of digital ethics, information security, and the ability to think critically about the rapid and massive flow of information. In the midst of the complexity of the digital era, the challenges of digital literacy cannot be faced individually, but require a systemic and collaborative approach.

The results of the study show that synergy between schools, families, and communities is very important in forming a healthy digital literacy ecosystem. Schools need to integrate digital literacy into curriculum and learning, while teachers need to be agents of change by increasing digital pedagogical capacity. On the other hand, families play a crucial role in shaping children's attitudes and habits in using technology, and communities can be a catalyst that supports the strengthening of digital literacy values through social, educational, and cultural activities.

Thus, strategies to strengthen digital literacy in children must be comprehensive, integrated, and sustainable. Relevant education in the digital era not only aims to create technologically competent individuals, but also socially responsible, have strong character, and be able to adapt to changing times. For this reason, collaborative efforts from all elements of society are the main key in producing a generation that is not only capable in the digital world, but also wise, resilient, and visionary in facing the future.

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²¹ Prayogi, R. D. (2020). 21st century skills: The digital competencies of the educators of the future. *Education Management*, 14(2).

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