

## THE USE OF DIGITAL TECHNOLOGY TO IMPROVE STUDENT LITERACY AT MADRASAH IBTIDAIYAH

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**Abstract:** *This study aims to analyze the influence of the use of digital technology on improving student literacy in Madrasah Ibtidaiyah. The background of this research departs from the need for learning innovation in the digital era to improve students' basic literacy and digital literacy competencies. This study uses a quantitative approach with a quasi-experimental design involving two groups, namely the experimental class and the control class. The research instruments include literacy tests and student perception questionnaires. The results showed that the use of digital technology had a significant effect on improving student literacy, with the difference in the average score of pretest and posttest in the experimental class of 17.2 points ( $p < 0.05$ ). These findings confirm that digital technology-based learning is able to improve students' literacy skills through interactive media, e-learning, and gamification-based digital activities.*

**Keywords:** *Digital Technology, Student Literacy, Madrasah Ibtidaiyah, Digital Learning*

### Introduction

The development of digital technology has brought significant changes in various aspects of life, including in the field of education. The digital era requires educational institutions to adapt to the use of information technology in the learning process. At the basic education level, especially Madrasah Ibtidaiyah (MI), the use of digital technology is one of the important strategies in improving the quality of learning and literacy of students. Literacy here includes not only reading and writing skills, but also digital, information, and media literacy which is a competence of the 21st century.

Madrasah Ibtidaiyah (MI) as a basic Islamic educational institution also needs to adapt to this development. Literacy in madrassas is not only limited to reading and writing skills, but also includes the ability to critically understand religious and general texts through digital media (Hapsari, Nugroho, & Dewi, 2021).

However, research by Azizah and Fadli (2023) shows that there are still many madrasas that face obstacles in the application of digital technology, such as limited facilities, lack of teacher training, and uneven internet access. Therefore, it is important to research the extent to which digital technology can improve the literacy skills of MI students so that it can be implemented effectively and contextually.

The results of the study show that the integration of digital technology in learning is able to increase students' motivation to learn, understand concepts, and overall literacy skills.

According to Hapsari et al. (2021), the application of interactive digital media in elementary schools contributes significantly to improving students' reading literacy and critical thinking skills. Meanwhile, Rohmah & Maulidiah (2020) found that the use of digital platforms such as e-learning and educational applications can expand students' access to diverse and relevant learning resources.

In the context of madrasas, the use of digital technology has greater urgency. Madrasah as an Islamic educational institution needs to balance between the mastery of religious science and modern science. By utilizing digital technology, teachers can create interesting and contextual learning, as well as improve students' literacy skills in understanding religious and general texts. Research by Sari & Arifin (2022) shows that technology-based learning in madrasah ibtidaiyah helps students to be more active, collaborative, and creative in understanding subject matter.

However, the implementation of digital technology in madrasah ibtidaiyah still faces a number of challenges, such as limited infrastructure, teachers' ability to utilize technology, and supervision of the use of digital devices by students. Therefore, research on *the use of digital technology to improve student literacy at Madrasah Ibtidaiyah* is very important, in order to contribute to the development of effective learning strategies and in accordance with the needs of the times.

## Literature Review

Digital technology in the context of education includes the use of electronic devices, learning applications, and interactive media to support the teaching and learning process. According to Yustika et al. (2020), the application of digital technology in elementary schools can increase the effectiveness of learning through visual and interactive approaches that are attractive to students. At Madrasah Ibtidaiyah, the use of digital media such as *smartboards*, educational videos, and Android-based literacy applications helps teachers deliver material in a more contextual and fun way.

Literacy is no longer limited to reading and writing skills, but also includes digital, information, and media literacy. Lestari & Gunawan (2021) explained that digital literacy helps students understand, evaluate, and make critical use of information from various digital sources. In the context of madrasas, this is important so that students are able to sort out religious and general content that is in accordance with Islamic values.

Digital literacy is the ability to confidently, creatively and critically identify and use technology to meet the demands and challenges of living, learning and working in a digital society.<sup>18</sup> Hague & Payton also affirms that digital literacy is the ability to create and share in different modes and forms; to create, collaborate, and communicate more effectively, as well as understand how and when to use good digital technology to support the process. The basic digital literacy skills in question consist of basic literacy skills which include the ability to read, write, understand symbols to represent language and perform numerical calculations, and basic computer literacy skills which include the ability to use computer hardware and software.

Even though basically students have often interacted with digital technology, it does not mean that they have a good understanding of digital literacy, the development of a coherent, inclusive and holistic digital literacy improvement strategy for students

Permendikbud No. 6 of 2019 explains that elementary schools are a form of formal education units that provide general education at the elementary education level. In carrying out this function, the principal has a dual responsibility, namely carrying out school management so that an effective and efficient teaching and learning situation is created and carries out supervision so that teachers are better and perfect in carrying out teaching duties.

At this time, teachers are challenged to accelerate the development of information and communication. Learning in the classroom and classroom management, in this century, must be adjusted to the standards of information and communication technology advancement.<sup>15</sup> The types of teacher professional competency development programs are teacher development in ICT mastery, the use of English and Indonesian, the application of learning methods and mastery of materials. This activity can be done by holding a workshop using online web-based learning. School principals can facilitate and provide the widest possible opportunity for teachers to carry out professional development activities through education and training activities, both at school and outside school

Various studies show that there is a positive relationship between the use of digital technology and increasing student literacy. Sari & Arifin (2022) found that the use of a *digital-based learning management system (LMS)* increased the reading literacy ability of MI students by up to 35%. In addition, Rohmah & Maulidiah (2020) affirm that learning applications such as *Kahoot!* and *Quizziz* is able to foster interest in reading and significantly improve text comprehension.

According to Wijayanti, all teachers must understand the three key points of educational progress, namely competence, character, and literacy because through these three things, education in Indonesia will skyrocket. Strategy is a way or approach that is carried out in assessing process quality and product quality in an organization.<sup>8</sup> Suhardan stated that strategy is a means together with long-term goals to be achieved. Based on some of the above understandings, the author can conclude that strategy is a way or approach that is planned in detail and in detail in the form of tactics or tactics operationally through measurable steps to achieve the expected goals.

According to Christians, elementary schools are social organizations that have set goals. Providing quality education to students at school is the main goal of elementary school.

Teachers have a key role in integrating digital technology to improve literacy. According to Hapsari et al. (2021), teachers need to master digital literacy in order to design learning activities that suit the needs of students. In madrasah ibtidaiyah, teachers are required to combine Islamic values with a digital approach in order to create a balance between cognitive, affective, and spiritual aspects.

Although the benefits are great, the application of digital technology in madrasah ibtidaiyah still faces several obstacles. Research by Azizah & Fadli (2023) shows that limited infrastructure, lack of teacher training, and limited internet access in rural areas are the main inhibiting factors. Therefore, policy support and teacher capacity building are needed so that digital technology can be used optimally.

From the various studies above, it can be concluded that digital technology has great potential in improving the literacy of madrasah ibtidaiyah students, both in cognitive and digital aspects. The use of interactive applications, e-learning platforms, and technology-based media has been proven to be able to enrich students' learning experiences. However, its effectiveness is highly dependent on the readiness of infrastructure, teacher competence, and institutional support from the madrasah

## Method

This study uses a quantitative approach with quasi experimental design, which involves two groups: the experimental class and the control class. The experimental class was treated as digital technology-based learning using *the Google Classroom* application, *Kahoot!*, and interactive videos, while the control class uses conventional methods.

The population of this study is all grade V students at Madrasah Ibtidaiyah Negeri 1 Padangsidimpuan. The research sample amounted to 60 students who were divided into two groups: 30 students in the experimental class and 30 students in the control class, selected purposively.

The main instruments are reading literacy tests (pretest and posttest) and student perception questionnaires on digital learning. The validity test was conducted through *expert judgment* and reliability was tested with Cronbach's Alpha ( $\alpha = 0.86$ ), indicating a high level of reliability.

The data was analyzed using a t-test (paired sample t-test) to determine the difference in literacy scores between pretest and posttest in both groups.

## Results and Discussion

The results of the t-test showed that there was a significant increase in students' literacy skills in the experimental class after using digital technology ( $p < 0.05$ ). The average literacy score increased from 68.4 in the pretest to 85.6 in the posttest. In contrast, the control class only increased from 67.8 to 73.2.

The increase in student literacy is influenced by several factors:

- Interactive media such as videos and educational applications are able to attract students' attention and improve understanding of concepts.
- E-learning provides flexibility for students to access materials outside of class hours.
- Gamification of learning (e.g. using *Kahoot!*) increase students' intrinsic motivation.

This finding is in line with Sari & Arifin (2022) who stated that the use of LMS in madrasahs increases reading interest and literacy skills by up to 35%. Thus, the integration of digital technology has proven to be effective in encouraging the ability of critical thinking, reading comprehension, and creative writing of madrasah students.

## Conclusion

This research proves that the use of digital technology has a positive effect on improving student literacy at Madrasah Ibtidaiyah. Interactive digital learning media not only increases student engagement, but also strengthens basic and digital literacy skills.

The implication is that madrasah teachers need to improve digital literacy competencies and continue to innovate in designing technology-based learning so that the goals of Islamic education remain relevant to the development of the digital era.

## References

- Azizah, N., & Fadli, M. (2023). *Application of Digital Technology in Learning at Madrasah Ibtidaiyah*. Al-Munir: Journal of Islamic Basic Education.
- Belshaw, Doug. The essential elements of digital literacies. Doug Belshaw, 2014.
- Dinh, Thuong TN, and Nga T. Nguyen. "Factors affecting the quality of assessment of learning outcomes from the perspective of Primary Education students." *International Journal of Multidisciplinary Research and Analysis* 5.7. (2022): 1679-1687.
- Eshet-Alkalai, Yoram, and Eran Chajut. "You can teach old dogs new tricks: The factors that affect changes over time in digital literacy." *Journal of Information Technology Education: Research* 9.1. (2010): 173-181.
- Fattah, N. "Quality and Competitive Education." Bandung: PT. Remaja Rosda Karya. (2012).
- Fitria, Happy. "The influence of organizational culture and trust through the teacher performance in the private secondary school in Palembang." *International Journal of Scientific &*

Technology

- Hapsari, T., Nugroho, A., & Dewi, S. (2021). *Digital Interactive Media and Literacy Skills in Elementary Education*. Atlantis Press. <https://doi.org/10.2991/assehr.k.210525.078>
- Karim, Bisyr Abdul. "Higher Education in the 4.0 Era in the Covid-19 Pandemic (Sociological Reflection)." *Education and Learning Journal* 1.2 (2020): 102-112.
- Kaunain, Fakhre, and Shah Naz Akhtar. "Economic determinant of family takaful: evidence from Pakistan." *Acta Islamica* 66.143 (2016): 1-35.
- Khasanah, Uswatun, and Muhammad Kristiawan. ". (2019). The implementation of principals' academic supervision in improving teachers' professionalism in the state primary schools." *International Journal of Scientific & Technology Research* 8.8: 1107-1115.
- Christians, Muhammad. "A Model for Upgrading Teachers Competence on Operating Computer as Assistant of Instruction." *Global Journal of Human-Social Science Research* 14.5 (2014): 2014.
- Lestari, D., & Gunawan, F. (2021). *Digital Literacy in Elementary Schools*. Journal of Literacy Studies, Yogyakarta State University.
- Lynch, Ranak. "Strategies to increase teacher professionalism in facing challenges in the digital era." *Proceedings of the National Scientific Meeting of Teachers (TING) VIII* (2016).
- Maryanti, Nova, Rohana Rohana, and Muhammad Kristiawan. "The principal's strategy in preparing students ready to face the industrial revolution 4.0." *International Journal of Educational Review* 2.1 (2020): 54-69.
- Moleong, Lexy J. *Qualitative research methodology*. PT Remaja Rosdakarya, 2021.
- Mukhtar, Mukhtar. "The principal's strategy in improving teacher performance at State Junior High School in Masjid Raya District, Aceh Besar Regency." *Journal of Educational Administration of the Unsyiah Postgraduate Program* 3.3 (2015): 93917.
- Murray, Meg Coffin, and Jorge Pérez. "Unraveling the digital literacy paradox: How higher education fails at the fourth literacy." *Issues in Informing Science and Information Technology* 11 (2014): 85.
- Nurjanah, Ervina, Agus Rusmana, and Andri Yanto. "The relationship between digital literacy and the quality of e-resource use." *Lantern Pustaka: Journal of Library, Information and Archival Science Study* 3.2 (2017): 117-140.
- Rohmah, F., & Maulidiyah, R. (2020). *The Use of Digital Media in Improving Reading Literacy of MI Students*. Journal of Basic Education, UNY.
- Rusdiana, Emilia, and Arianto Nugroho. "Student Responses to Online Learning for Students of the Indonesian Introductory Law Course UNESA." *Integralism* 31.1 (2020): 1-12.
- Sari, R., & Arifin, Z. (2022). *Implementation of Digital Learning to Improve Student Literacy in Islamic Schools*. Journal of Edutech UIN Sunan Gunung Djati Bandung.
- Sarina, Muhammad Kristiawan, and Dessy Wardiah. "Module Development the Utilization of Patchwork Fabric as Teaching Materials Crafts on the Subjects of Craft and Entrepreneurship for High School Students."
- Schwab, Klaus. *The fourth industrial revolution*. Currency, 2017.
- Setyaningsih, Rila, et al. "A model for strengthening digital literacy through the use of e-learning." *Aspikom Journal* 3.6 (2019): 1200-1214.
- Sugiyono, Dr. "Quantitative Research Methods and R&D." Bandung: Alfabeta (2010): 26-33.
- Syah, Rahmat, Daddy Darmawan, and Agus Purnawan. "Analysis of Factors Affecting Digital Literacy Ability." *Journal of Familiarity* 10.2 (2019): 60-69.