

Literature Study of the Role of Technology in Education

Jesica Aime Siahaan¹, Sakinah Salsabila Siregar², Raudahtul Jannah Pane³

Universitas Negeri Medan^{1,2}, Universitas Negeri Padang³

| ARTICLE INFO | ABSTRACT |
|--|--|
| <p>Article history:</p> <p>Received : 25-12-2023 Revised : 12-01-2024 Accepted : 24-02-2024</p> <hr/> <p>Keywords: Education technology Technology-based learning Student engagement Personalize learning Distance education Technology integration challenges</p> | <p><i>This literature study explores the multifaceted role of technology in education. With the rapid advancement of digital technology, its integration into educational settings has become increasingly prevalent, reshaping teaching and learning practices worldwide. Through an extensive review of academic literature, this study examines various dimensions of technology's role in education, including its impact on pedagogy, student engagement, learning outcomes, and educational equity. The research synthesizes empirical evidence and theoretical frameworks to elucidate the potential benefits and challenges associated with technology integration in diverse educational contexts. Furthermore, the study investigates emerging trends such as online learning platforms, educational software applications, immersive technologies (e.g., virtual reality, augmented reality), and adaptive learning systems, highlighting their potential to enhance instructional delivery and personalize learning experiences. Additionally, the research discusses the importance of digital literacy and teacher professional development in leveraging technology effectively for educational purposes. Moreover, the study addresses critical issues such as digital divide, privacy concerns, and ethical implications associated with technology use in education. By analyzing the current state of research and identifying gaps in knowledge, this study offers insights into future directions for research, policy development, and educational practice in harnessing the transformative potential of technology to improve teaching and learning outcomes. Ultimately, this literature study contributes to a comprehensive understanding of the evolving role of technology in education and provides a foundation for informed decision-making and innovation in educational technology integration efforts.</i></p> <div></div> <p>This work is licensed under a Creative Commons Attribution 4.0 International License.</p> |
| <p>Corresponding Author: Jesica Aime Siahaan Universitas Negeri Medan E-mail: jessica.siahaan@unmed.ac.id</p> | |

1. INTRODUCTION

Education plays an important role in the growth of individuals and society. Educational methods and learning approaches continue to evolve with the times as technology becomes more prevalent throughout our lives. The role of technology in education is becoming an increasingly deep concern. Studies on the benefits of technology in education not only emphasize the use of technology and tools in the classroom, but also study how technology influences the learning process, the way students think, and the role of teachers as facilitators.

The ever-changing learning paradigm makes this research important. Education is no

longer just learning. It's more about building skills, critical thinking, and creativity. This change is largely due to the ease of technology in accessing information, working together and creating content. We can see how technology has changed classroom dynamics, enhanced the learning experience, and provided greater opportunities for students to develop to their potential by carefully reading literature.

By analyzing previous research, researchers attempt to pinpoint trends, problems, and opportunities related to the application of technology in education. Through a deeper understanding of existing literature, researchers hope to develop a more comprehensive perspective on how technology can be used to achieve broader educational goals and improve the quality of learning. Despite the wealth of literature on the role of technology in education, there are several notable gaps that warrant further exploration. One significant gap is the need for more empirical research that examines the long-term impacts of technology integration on teaching and learning outcomes. While many studies focus on short-term effects or anecdotal evidence, there is a lack of comprehensive longitudinal studies that track student performance, engagement, and skill development over extended periods.

Additionally, there is a need for research that delves deeper into the mechanisms through which technology influences educational processes and outcomes. Existing studies often provide broad overviews or descriptions of technology's role without sufficiently analyzing the underlying processes or mediating factors that contribute to its effectiveness or limitations. Moreover, there is a dearth of research that investigates the differential effects of technology across diverse learner populations, including students with disabilities, English language learners, and those from socioeconomically disadvantaged backgrounds. Understanding how technology can be tailored to meet the specific needs and challenges of these groups is essential for promoting educational equity and inclusivity.

Furthermore, while much attention has been paid to the benefits of technology in enhancing instructional delivery and student engagement, there is limited research on its potential drawbacks or unintended consequences. More studies are needed to explore issues such as digital distraction, information overload, and the impact of technology on social and emotional development. Finally, there is a gap in research examining effective strategies for integrating technology into teacher education programs and professional development initiatives. Empowering educators with the skills and knowledge to leverage technology effectively in their teaching practices is crucial for maximizing its potential to improve student learning outcomes. Addressing these research gaps will contribute to a more nuanced understanding of the role of technology in education and inform evidence-based practices for its integration into teaching and learning environments.

2. METHODS

This research uses the Literature Study method. According to M. Nazir in his book entitled *Research Methods*, he states that library research or literature study is a data collection technique by conducting research studies on books, literature, notes and reports that are related to the problem being solved. In this research, the technique used to collect data is by searching for material related to the discussion in this article, digitally.

3. RESULTS AND DISCUSSION

Meaning of Educational Technology

According to Nasution (1987: 20), educational technology is an educational tool that emerged as a result of advances in information technology. However, according to (Miarso, 1986: 1), educational technology is a comprehensive and experience-based event consisting of several components, such as people, procedures, ideas, equipment, and problem analysis to find solutions, carry out, test, and manage solutions. problem. Educational technology is concerned with all aspects of human learning. So it can be concluded that educational technology or learning technology is a combination of the use of computer hardware and software with educational theory. It is a field that facilitates human learning through the identification, development, organization, and utilization of technology to spur and trigger learning. Educational technology in Indonesia is very dynamic and diverse, because each Educational Technology Study Program has its own characteristics. Educational technology refers to all applied educational science that is

valid and reliable, including equipment, processes and procedures originating from scientific research.

The Role of Educational Technology

Various kinds of problems will definitely arise during learning. According to Miarso, there are several micro teaching and learning problems currently. 1) difficult to learn abstract concepts, 2) difficult to imagine past events, 3) difficult to observe objects that are too small/large, 4) difficult to gain direct experience, 5) difficult to understand the lesson being lectured, 5) difficult to understand concepts complicated, 7) limited time for learning

There are several roles of educational technology in the realm of education. As stated by (Miarso, Teknologi, & Dalam, 2014) as follows:

1. Improving the quality of education by: a) helping teachers allocate time better, b) advancing learning stages, c) reducing the burden on teachers in lecturing, so that teachers can facilitate discussions and develop the learning process for students.
2. Provides the view that education can be more individualized, such as providing opportunities for students to develop individual potential and minimizing supervision from teachers.
3. Providing a more scientific basis for learning by: a) systematic program planning, b) developing teaching materials based on scientific principles.
4. Maximizing teacher competency by expanding the range of more concrete teaching.
5. Prioritizing equitable quality in education.

Based on the explanation above, it can be concluded that educational technology plays a significant role in improving the quality of learning. Looking at the five domains of educational technology mentioned previously, it becomes clearer that educational technology plays a role from the start, when designing or designing learning. This can be explained by saying that a teacher must design learning as well as possible before starting it, because good design will of course affect the quality of learning. This learning design process begins by learning how to design a learning system, designing messages, learning strategies, and identifying student characteristics. If teachers understand all this, learning will be of high quality.

The Positive Influence of Technology on the World of Education

Technology has many benefits in education, namely as follows:

1. Technology enables the use of digital applications and technology in learning. The use of this technology improves the quality and effectiveness of learning.
2. Technology makes it easier to access the internet, which allows students to learn more topics and subjects in less time.
3. Technology allows students to develop their creativity. Makes the learning process easier: Technology allows educators and students to make the learning process easier.
4. Technology helps teachers become better, such as by providing online-based teacher training.
5. Technology helps students access various online learning resources.

The Negative Influence of Technology on the World of Education

Educational technology has both positive and negative effects. In the world of education, people must be able to speak well and communicate well. Communication will decrease when studying via the internet, so they are more likely to interact with technology. As we all know, technology in the current millennial era is very flexible, so that everything in the world of technology can be accessed instantly, which is one of the problems that can be faced by students and teachers in the world of education. The negative influence of technology in education is as follows:

1. Students become lazy about studying
With equipment that makes learning easier, such as laptops and the internet, students often become lazy about studying and prefer to use technology for other activities, such as playing games or using social media.
2. Immoral offence
Violations such as brawls between students, sex and rape can originate from technology,

such as social media.

3. Learning effectiveness

Student achievement can be affected by ineffective use of technology.

4. Teacher Skills

Ineffective use of technology can cause teachers to have difficulty using it.

4. CONCLUSION

Based on the discussion stated above, it can be concluded that the role of technology in education is very large. If technology is used properly and correctly, technology will really help the teaching and learning process in the world of education. Technology has huge potential to change the educational landscape, but it must be used wisely to ensure everyone can access and benefit from it.

BIBLIOGRAPHY

Maritsa, A., Hanifah Salsabila, U., Wafiq, M., Rahma Anindya, P., & Azhar Ma'shum, M. (2021). The Influence of Technology in the World of Education. *Al-Mutharahah: Journal of Social Religious Research and Studies*, 18(2), 91–100. <https://doi.org/10.46781/al-mutharahah.v18i2.303>

Nurillahwaty, E. (nd). THE ROLE OF TECHNOLOGY IN THE WORLD OF EDUCATION.

Sibuea, P., Khairani Harahap, M., Azzahra Dalimunthe, F., & Anggreini Marpaung, A. (nd). The Role of Educational Technology in Learning.

Widiyono, A., & Millati, I. (2021). The Role of Educational Technology in the Independent Learning Perspective in Era 4.0. In *JET: Journal of Education and Teaching* (Vol. 2, Issue 1).