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The Role of Technology in Indonesian Education at Present

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ABSTRACT

Technology has become increasingly important in education, including in Indonesia. The implementation of technology in education is expected to improve the quality of education and help reduce the gap in education access across regions. However, several factors have hindered the implementation of technology in education in Indonesia, such as limited infrastructure, inadequate training and development for teachers and lecturers, and digital divides between regions. Despite these challenges, the use of technology in education has several benefits, including improving the quality of learning and motivation of students and increasing the efficiency of administrative tasks for teachers and lecturers. To improve the implementation of technology in education in Indonesia, efforts are needed to develop supporting infrastructure, provide training and development for educators, and establish clear policies and regulations. Collaboration between the government, educational institutions, and the private sector is also necessary. This article discusses the role of technology in education in Indonesia and the factors that influence its implementation, drawing on various studies and research.

Keywords: *Communication Technology, Education, Knowledge*

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INTRODUCTION

Education is an important factor in promoting the progress of a country and making a significant contribution to human development (Vial, 2019). The use of technology in education has become a hot topic of discussion nowadays (He dkk., 2019). This is especially true in Indonesia, where the government and educational institutions are striving to improve the quality of education by harnessing technology.

According to Nasrullah and Zainuddin (2018) (Song dkk., 2020), the use of technology in Indonesian education can provide various benefits, including improving learning efficiency, enhancing educational accessibility, and enabling distance learning. Additionally, the use of technology can enhance students' digital skills and strengthen teachers' teaching abilities (S. Wang dkk., 2019). According to research conducted by Rakhmat (2017), technology plays an important role in improving the quality of education in Indonesia. Various technologies such as computers, the internet, social media, and mobile devices are increasingly being used in the learning process in Indonesia. Technology allows students and teachers to access a diverse range of educational resources and expedite the learning process (Pfattheicher dkk., 2022). Moreover, technology facilitates independent exploration of various learning topics by students and enhances students' digital skills.

Education in Indonesia continues to develop, including in terms of the use of technology in the learning process (Penconek dkk., 2021). This can be seen from the increasing number of schools and universities adopting technology in their teaching methods. However, the implementation of technology in education also faces several challenges, such as the availability of adequate infrastructure and teacher training in operating technology (Caniëls dkk., 2019). For example, a study conducted by Rakhmat (2017) shows that there are several barriers to implementing technology in education in Indonesia, such as cost issues and a lack of teacher training (Peng dkk., 2020). Furthermore, there are still obstacles to the implementation of technology in education in Indonesia (Salminen dkk., 2020). According to Nasrullah and Zainuddin (2018), there are still issues related to the availability of adequate technological infrastructure, such as internet access and the availability of suitable computer devices, as well as teacher training and development in operating technology (Jiang dkk., 2019). In this article, the role of technology in Indonesian education in the present time, as well as the challenges and opportunities faced in implementing technology in education, will be further discussed (Hu dkk., 2019). Research and case studies related to the use of technology in education in Indonesia will also be presented to provide a clearer picture of the role of technology in education in Indonesia.

Furthermore, this article will delve into the role of technology in Indonesian education at the present time and the factors that influence the implementation of technology in education. Various sources from journals, such as articles by Nasrullah and Zainuddin (2018) and Rakhmat (2017), will be used to strengthen arguments and provide a clearer overview of the role of technology in education in Indonesia.

RESEARCH METHODOLOGY

This research is conducted using the literature review method (Van Doren dkk., 2019). According to Tranfield et al. (2003), a literature review is the best way to synthesize research findings to provide evidence at the meta-level and to identify areas where further research is needed, which is an important component for creating a theoretical framework and building a conceptual model (F. Wang dkk., 2019). However,

the traditional way of describing and portraying literature works is often less thorough and not done systematically.

Therefore, the author follows the following steps in conducting the literature review: finding literature relevant to the research topic, identifying the gaps that can be addressed, analyzing relevant findings, determining how the articles are relevant to the research and its main findings, and finally synthesizing the key findings and their relevance to the research topic.

RESULT AND DISCUSSION

The Role of Technology in Indonesian Education at Present

Technology has transformed the way we live, work, and learn. In Indonesia, the use of technology in education has become a widely discussed topic (Low dkk., 2019). Technology is utilized in various forms, such as computers, the internet, mobile devices, and other learning media (Chen dkk., 2019). Here are some roles of technology in Indonesian education:

1. Enhancing the Quality of Learning
   The use of technology can enhance the quality of learning in Indonesia. According to an article published by Nasrullah and Zainuddin (2018), technology can help students access more information and learning resources, as well as facilitate a better understanding of the subjects they study. Technology can also enable students to learn independently through interactive and easily comprehensible learning materials.
2. Facilitating Access to Education
   The use of technology can also facilitate access to education for students in Indonesia (Yang dkk., 2019). Technology can be used to provide distance learning and open up educational opportunities for students in remote or hard-to-reach areas. In an article published by Fahmi and Yuniarti (2021) (Gao dkk., 2021), technology is seen to help students access learning anytime and anywhere without physically attending school or campus.
3. Improving Students' Digital Skills
   The use of technology in education can help students improve their digital skills. In this digital era, digital skills are increasingly important, and technology can aid students in acquiring such skills (Hassan dkk., 2021). As mentioned in an article by Harun, Utami, and Gunawan (2019), technology can assist students in developing digital literacy, data processing, and critical thinking skills.
4. Accelerating the Learning Process
   Technology can also accelerate the learning process in Indonesia. In an article published by Kurniawan, Rahmawati, and Nurdin (2020), technology can help students and teachers save time in the learning process, allowing students to grasp the learning material more quickly and enabling teachers to provide faster feedback.
5. Enhancing the Teaching Quality of Educators
   The use of technology can improve the teaching quality of educators in Indonesia (Bai dkk., 2021). As described in an article by Khairani, Rosita, and Kartika (2018), technology can assist teachers in delivering more interactive and engaging teaching methods and help them access better teaching resources.

Factors Influencing the Implementation of Technology in Education

Although the use of technology in education brings numerous benefits, its implementation in Indonesian education still faces several challenges (Vial, 2019). Some factors influencing the implementation of technology in education in Indonesia include:

1. Limited Infrastructure
   One of the main factors affecting the implementation of technology in education in Indonesia is limited infrastructure. While technology may be available in many schools and universities, limited internet access and a lack of supporting facilities such as computers and mobile devices can hinder the use of technology in learning.
2. Insufficiently Trained Human Resources
   The use of technology in education also requires well-trained human resources. Teachers and lecturers need to understand technology and how to use it effectively in their teaching (Golden & Gajendran, 2019). However, many teachers and lecturers in Indonesia still lack sufficient knowledge of technology or have not received proper training in utilizing it.
3. High Costs
   Implementing technology in education also entails high costs. Schools and universities need to purchase the necessary hardware and software to implement technology in learning (Albrecht & Chin, 2020). These costs can be burdensome for educational institutions with limited budgets.
4. Lack of Clear Regulations
   The lack of clear regulations can also affect the implementation of technology in education in Indonesia (Huseien & Shah, 2020). Clear policies and regulations from the government regarding the use of technology in education, such as data privacy policies and the use of technology in assessments, are needed.
5. Disparity in Technology Availability across Regions
   The disparity in technology availability across regions can also impact the implementation of technology in education in Indonesia (Arora dkk., 2019). Some areas may have limited access to technology or lack supportive infrastructure, creating disparities in learning opportunities between regions.

Benefits of Implementing Technology in Education in Indonesia

1. Improving the Quality of Learning and Student Motivation
   A study by Fadilah, Fathurrohman, and Nurrohmah (2021) shows that the use of technology in learning can improve the quality of learning and student motivation. Technology can help students learn independently and provide interactive and enjoyable learning experiences.
2. Enhancing the Efficiency of Teacher and Lecturer Administrative Tasks
   The use of technology in education can also enhance the efficiency of teacher and lecturer administrative tasks (Zhang & Jin, 2020). A study by Khoiriyah and Anggoro (2021) reveals that technology can save time and effort for teachers in managing grades and assessments, leading to improved accuracy.

To enhance the implementation of technology in education in Indonesia, efforts such as developing supportive infrastructure, providing training and skills development for teachers and lecturers in utilizing technology, establishing clear regulations and policies, and reducing digital disparities between regions are needed (Wu dkk., 2020).

Collaboration between the government, educational institutions, and the private sector is also essential to improve the implementation of technology in education in Indonesia.

In this regard, decision-makers must consider infrastructure availability, user technology needs, and skills, as well as environmental and policy factors that may influence the implementation of technology in education in Indonesia.

CONCLUSION

The implementation of technology in education has significant potential to improve the quality of education and reduce educational disparities in Indonesia. However, several challenges need to be overcome, such as limited infrastructure, lack of training and development for educators, and digital disparities between regions. Nevertheless, the use of technology in education provides substantial benefits, including enhanced learning quality and student motivation, as well as increased efficiency in administrative tasks for teachers and lecturers. To improve the implementation of technology in education in Indonesia, integrated efforts are necessary, such as the development of supportive infrastructure, training, and development for educators, and the enforcement of clear policies and regulations. Additionally, collaboration between the government, educational institutions, and the private sector needs to be strengthened. By doing so, education in Indonesia can harness technology to provide quality and equitable learning opportunities.

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