PROCEEDINGS OF INTERNATIONAL CONFERENCE ON EDUCATION
TEACHER TRAINING & EDUCATION FACULTY
UNIVERSITAS SERAMBI MEKKAH
NO. ISSN 2987-4564

# Strategies to Overcome Learning Challenges Faced by Elementary School Students in Utilizing Technology

Nurrizka[1*], Feriska Ananda[2]
[1,2] Universitas Serambi Mekkah, Banda Aceh, Indonesia
*nurrizzka94@gmail.com

**ABSTRACT**

*The use of technology in learning in primary schools has great potential to improve the quality of education. However, various obstacles are still faced by students in their utilization, such as limited access, lack of digital literacy, as well as lack of support from the learning environment. This study aims to identify the main obstacles facing primary school students in using technology and formulate effective strategies to overcome them. The research method used is a qualitative study with a descriptive approach, involving observation, interviews, and study of literature. The results showed that strategies such as improving digital literacy training for students and teachers, providing adequate technology infrastructure, and collaboration between schools and parents can significantly reduce barriers to technology-based learning. In addition, innovation in teaching methods and the integration of more interactive technologies are also important factors in improving the effectiveness of learning. With the implementation of appropriate strategies, the utilization of technology in elementary education can be more optimal, so as to support the improvement of learning quality and academic results of students.*

**Keywords:** *strategy, learning barriers, technology, elementary school*

## 1. INTRODUCTION

Technological developments have brought significant changes in the world of education, including the policy school floor. According to the theory of multimedia learning presented by Mayer (2001), the use of technology in learning can improve the effectiveness of the process of learning through better visualization and interaction. Furthermore, constructivism theory from Piaget and Vygotsky explains that a student develops his understanding through interaction with the environment, including technology as a learning aid. By leveraging technology, students are able to develop an essential digital skill in the modern era (Eshet-Alkalai, 2004). Yet, in practice, the application of technology in learning still faces various obstacles. Smith et al. (2020) shows that the limitations of access to digital and Internet devices become the key factors that affect the effectiveness of technology-based learning. Moreover, the prevalence of digital literacy among students and teachers (Eshet-Alkalai, 2004) as well as the lack of support from the learning environment, such as guidance from the elderly and training for teachers (Smith et al., 2020), the worse the disparities in technology utilization. Because of this, effective strategies to overcome such barriers to use ensure optimal technological utilization in the learning process. Because of this, effective strategies to overcome such barriers are necessary to ensure optimal technological utilization in the learning process.

Some of the problems faced in the development of technology in learning in policy schools among others:

a. Technology access limitations: not all students have adequate digital devices or Internet access to support technology-based learning (Smith et al., 2020).
b. Lack of digital literacy: Many students and teachers do not yet have sufficient skills in using technology effectively in learning (Eshet-Alkalai, 2004).
c. Minimal environmental support: lack of parental guidance and lack of training for teachers in integrating technology into learning (Smith et al., 2020).
d. Lack of innovation in teaching methods: the utilization of technology is often limited to the use of AIDS without any innovation in learning strategies (Mayer, 2001).

This research aimed to: (1) Identify the main obstacles in the utilization of technology in learning in primary schools, (2) Formulate strategies that can be used to overcome these obstacles, (3) Reviewing the

effectiveness of strategies applied in improving the quality of technology-based learning, (4) Provide recommendations for schools, teachers, and parents in supporting the utilization of technology in primary education.

This research focused on primary schools in urban and rural areas to understand the differences in challenges faced in technology utilization. This study covered aspects of the availability of technology infrastructure, digital competence of students and teachers, as well as the role of parents in supporting technology-based learning.

To overcome obstacles in technology utilization in learning, some of DAP's strategies included: (a) Increased digital literacy through training for teachers and students to improve skills in using technology effectively, (b) Procurement of technological infrastructure by increasing access to digital devices and Internet networks in still limited schools, (c) Collaboration with parents and the community: provide education to parents about the importance of their role in supporting technology-based learning, (d) Innovation in teaching methods by using more interactive technology-based learning models, such as gamification and project-based learning.

This scrutiny articulates some educational theories and relevant concepts, such as: (a) Theory of constructivism emphasizing that students learn by building their own understanding through interaction with technology, (b) Technology-based Learning theory (Mayer, 2001) stating that the use of multimedia can improve understanding of concepts through visualization and interaction, and (c) Digital literacy concept (Eshet-Alkalai, 2004), which draws on the skills necessary to use information and communication technologies effectively in learning. By adopting the right strategy and understanding the theory and concepts that support it, it is expected that the constraints in the use of technology in elementary school learning can be overcome, thus improving the quality of education as a whole.

## 2. METHODS

This study used a qualitative approach with a descriptive method to understand the obstacles faced by primary school students in the use of technology and strategies that can be used to overcome them. The qualitative research method aims to explore phenomena in depth through participants' perspectives and natural contexts. In addition, descriptive methods are used to describe the actual conditions that occur in the field. With this approach, research can identify patterns and factors that affect the effectiveness of technology utilization.

Research participants consisted of: (a) Primary school students from Grade 4 to Grade 6, (b) Primary school teachers who actively use or attempt to integrate technology in learning, (c) Parents of students involved in supporting technology-based learning at home, (d) Principal as a policy maker at the educational institution level.

To obtain accurate and in-depth data, this research uses several data collection techniques, namely: (1) In-depth Interviews, which are in accordance with the phenomenological method to explore the experiences of research subjects: Conducted with teachers, parents and school principals to find out the obstacles and strategies that have been or can be implemented; (2) Observation: Observing the learning process in classrooms that have adopted technology, as well as how students and teachers interact with technology in learning; (3) Questionnaire: Distributed to students and teachers to measure the level of technology utilization, constraints faced, and the need for support strategies; (4) Documentation study, which supports data triangulation to increase the validity of the research: Collected data from school documents related to technology policy, technology-based curriculum, as well as reports on the use of technology facilities at school.

The collected data were analyzed using a thematic analysis approach, namely by identifying patterns and themes that emerged from the interview, observation, and questionnaire data. The analysis steps included: (1) Data Reduction involving selecting, simplifying, and categorizing data that is relevant to the research focus, (2) Data Presentation including arranging data in the form of tables, descriptive narratives, and visualizations to facilitate interpretation, (3) Conclusion drawing: Identifying the most effective strategies based on the research findings and providing applicable recommendations for schools, teachers, and parents.

With this approach, the research is expected to provide an in-depth understanding of the constraints in technology utilization as well as the strategies that can be applied to improve the effectiveness of technology-based learning in primary schools.

## 3. RESULTS AND DISCUSSION

The results of this study show that the utilization of technology in learning in elementary schools still faces various obstacles that affect the effectiveness of the teaching and learning process. Data collected from interviews, observations, and documentation were analyzed using a qualitative descriptive approach. In addition, quantitative data from questionnaires were analyzed using descriptive statistics to identify patterns of technology use as well as obstacles faced by students and teachers.

**Table 1. Constraints of Technology Utilization in Learning**

| No. | Obstacles in technology utilization | Percentage (%) |
|---|---|---|
| 1. | Limited access to technology | 65 (%) |
| 2. | Lack of digital literacy | 70 (%) |
| 3. | Lack of parental assistance | 60 (%) |
| 4. | Lack of student motivation | 75 (%) |

Source: Research Data 2024

The data in Table 1 shows that the biggest obstacle in technology utilization is low student motivation (75%). This shows that although access to technology is available for some students, they are still not motivated to use technology for learning. Other factors such as limited access (65%), digital literacy (70%) and lack of parental assistance (60%) also contribute to the low effectiveness of technology-based learning.

Limited access to technology is a major factor in rural areas, where many students do not have adequate devices or stable internet connections. Meanwhile, the lack of digital literacy among both students and teachers means that technology is not fully utilized optimally in learning. Lack of parental assistance is also a challenge in the application of technology in learning. Many parents do not have sufficient understanding of how to support their children in technology-based learning. This results in students using technology more often for entertainment than for learning.

The findings of this study indicate that the main obstacles in utilizing technology in learning are limited access, lack of digital literacy, and low parental involvement. This has an impact on the low effectiveness of technology-based learning, especially in schools with limited infrastructure. This study is in line with Smith et al. (2020) who stated that limited access to technology contributes to gaps in student learning outcomes. However, in contrast to Jones' (2019) study which highlighted teacher training as the main factor, this study shows that the role of parents also plays an important role in improving the effectiveness of digital learning.

In addition, compared to previous studies that only focused on the use of technology in the school environment, this study found that parents' involvement in supporting their children's digital literacy is highly influential in the successful implementation of technology in basic education. Therefore, synergy between schools and parents is needed to ensure that students can optimally utilize technology in their learning process.

## 4. CONCLUSION

This research shows that the main obstacles in utilizing technology in primary schools include limited infrastructure, low digital literacy, and lack of support from parents and teachers. Overcoming these challenges requires strategies to improve digital literacy, provision of adequate infrastructure, and collaboration between schools, parents and communities (Jones, 2019).

The implication of this study shows that without sufficient support from all parties, the utilization of technology in learning will not be optimal. The limitations of this study include the limited sample coverage of only a few schools. Therefore, further research with a wider scope is recommended to gain a deeper understanding of effective solutions for technology utilization in primary schools.

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