

## Limitations of the Use of Learning Technology in Elementary Schools: Case Study

Erni Wijayanti<sup>1✉</sup>, Nur Amalia<sup>2</sup>

<sup>1,2</sup>*Faculty of Teacher Training and Education, Universitas Muhammadiyah Surakarta, Indonesia*

✉Corresponding Email: [a510200045@student.ums.ac.id](mailto:a510200045@student.ums.ac.id)

**Abstract.** Technology plays an important role in education. Technology and specially designed media can contribute to effective teaching and help students reach their highest potential. Therefore, this researcher aims to analyze the views of school residents regarding the use of technology in classroom learning and describe the factors that cause teachers to not utilize or not use technology-based media in learning. In collecting data, researchers used interview, observation, and documentation techniques and used a technical triangulation model. Based on research results, the factors causing teachers not to utilize technology-based media are the lack of facilities and infrastructure, as well as the lack of internet connection at Balangan State Elementary School.

**Keywords:** learning technology, classroom learning, media technology

### 1. Introduction

Entering the present era with widespread and global technological advances, it has had a significant impact on various aspects of life, including politics, economics, culture, the arts, and education (1). Technological advances that continue to develop over time have become something that cannot be avoided in everyday life because technological developments are in line with advances in science. Education cannot be separated from the positive influence of technological advances, which help improve the quality of learning and expand access to knowledge (2). In the realm of education, technology has a significant role in the development of science. Technology education allows students to understand natural phenomena and facts in greater depth. With technology, humans can apply the knowledge they have acquired, creating a connection between theory and practice (3,4). In this way, technology becomes an effective tool to facilitate the understanding and application of science in everyday life (5). In this modern era, technology has become an inseparable partner for humans, playing an important role in creating innovations that make everyday life easier and reduce tiring workloads. With advances in technology, humans can explore the limits of creativity and efficiency to create revolutionary solutions (6,7).

Technological developments are increasingly rapid, bringing many significant changes (8). Technology is a form of knowledge that aims to create tools, processing processes, and the extraction of objects. The use of the term “technology” is common, and each individual has their own interpretation of the concept. Its function includes solving various problems in everyday life. In summary, technology can be described as a product, process, or organization. In addition,

technology plays a role in expanding human capabilities, and humans are considered the most crucial element in every technological system (9,10).

The role of technology in education is very significant. Technology and specially designed media have the potential to make a positive contribution to the teaching process, facilitate effective learning, and help students reach their highest potential (11). Although technological development continues to advance and is inevitable, it is important to remember that the success or failure of a technology depends on how it is used. The majority of educational technology has positive potential, so educators must play a crucial role in directing, educating, and guiding students so that they do not suffer from ongoing technological developments. In educational institutions, students are guided to understand the role and benefits of technology in their lives. Children with special needs require appropriate teaching methods. By involving them in the inclusion process and utilizing technology, we can help students with learning disabilities by providing structured learning situations. This approach replaces previous, less structured knowledge and transforms their abilities through conveying messages into mental concepts that are easier to understand (12,13).

The use of technology in learning aims to make it easier for students to understand and dig deeper into learning concepts. This can also increase learning motivation because the material presented is able to attract students' attention. It is important for teachers to create interesting learning experiences so that students are enthusiastically involved in the teaching and learning process. One way to achieve this is by using media such as images and films projected via a projector device (14). With the availability of computers, teachers can prepare learning plans and materials that students need to study. Apart from that, the availability of the internet also allows students to access information easily from different sources (15). Learning skills using digital technology will help students gain and improve life skills more quickly, and educators can also easily develop learning materials. From a scientific perspective, it is emphasized that, as students, we need to have the ability to follow developments in science and digital technology. Now that digital technology has become integral in the world of education, it has been integrated by the Ministry of Education and Culture of the Republic of Indonesia (Kemendikbud) to design new curricula and online systems and develop education towards a creative Indonesia in 2045. This adaptation is carried out to achieve the suitability of the concept with the capacity of students, the competence of educators, and education personnel (16,17).

The development of information technology or methods of communicating information goes hand in hand with the advancement of human civilization (18). Educational technology plays a very important role in the educational revolution that is taking place, especially in the 21st century educational revolution and especially in the fourth revolution, which is called education 4.0. At this stage, the teacher's function is not central in the learning process but changes to student-centered, where the teacher only becomes a facilitator for providing students' learning needs in an effort to prepare learning resources and media (19). With advances in learning technology, especially in terms of communication technology, various learning activities can be integrated into the learning process itself (20,21). Thus, the researcher wants to know why the Balangan State Elementary

School does not use technology as a medium to support learning, whether it is one of the policies of the school that does not use it, or whether there are other reasons for the school to overcome technology media policies (17).

Based on several background details, the researcher formulated the problems in this research: 1) What are the views of the residents of the Balangan State Elementary School regarding the use of technology in classroom learning? 2) What are the factors that cause teachers not to utilize technology-based media in learning?

The research objectives for the problem that have been formulated are: 1) Analyzing the views of school residents regarding the use of technology in classroom learning. 2) Describe the factors that cause teachers not to utilize or not use technology-based media in learning.

## **2. Method**

This study uses a qualitative method. Qualitative research, in simple terms, can be understood as a type of research whose findings are not obtained through statistical procedures and are more about how the researcher understands and interprets the meaning of events, interactions, or the behavior of subjects in certain situations according to their research perspective (Waris, 2022).

In achieving the objectives of this research, a case study design was used. The aim of case study research and field research is to study intensively the background situation of a social unit currently and environmental interactions (Waris, 2022). Researchers conducted research by looking at school conditions and the use of technology at Balangan State Elementary School, especially in classrooms, in November–December 2023.

Data collection was carried out using techniques, namely, a) interviews with the principal, teachers' class (fourth, fifth, and sixth-grades), and students' class (fourth, fifth, and sixth-grades) aimed at obtaining various data that would be needed. b) Observation to observe learning activities at the Balangan State Elementary School in carrying out teaching and learning activities using learning media, supporting students' learning activities in order to increase learning motivation. c) Documentation is obtained regarding observations of learning plans in class.

This research is to basically test the validity of the data using source triangulation and technical triangulation models. The data will be obtained from source triangulation, namely through interviews with the school principal, homeroom teachers (fourth, fifth, and sixth-grades), and students (fourth, fifth, and sixth-grades) regarding the use of digital technology as learning materials for students. And for technical triangulation data, namely through interviews, observations, and documentation regarding the use of digital technology as learning materials for students, from several sources at the Balangan State Elementary School.

In the data analysis used in this research, first make observations and then conduct interviews. After the data is collected, the author then summarizes the results of the interviews. Drawing conclusions is carried out during the study process, as is the case with the data reduction process. After the data has been collected, it is enough to scan, then interim conclusions are drawn, and after the data is completely complete, final conclusions are drawn.

### 3. Result and Discussion

Technology is knowledge that can be demonstrated to create actions and tools for processing and extracting objects. The term "technology" is widely known, and everyone has their own way of understanding technology. Technology is used to solve various problems in everyday life. In short, we can describe technology as a product, process, or organization. Apart from that, technology is used to expand our capabilities, which makes people the most important part of every technological system (9).

The impact of technology on society and the environment is very broad. In various groups of society, technology has made a positive contribution by improving economic conditions, including the current global economy, as well as providing individuals with more free time. However, some technological processes produce side effects in the form of pollution and the depletion of natural resources, which can harm and damage the Earth and its environment. The diverse applications of technology have influenced the values in a society, and new technologies often raise new ethical questions. For example, the concept of efficiency in the context of human productivity is increasingly widespread, a term that was originally only associated with machines. Apart from that, the emergence of new technology also challenges traditional norms in society (14).

The development of schools and the education system needs to be improved through the implementation of positive innovation. It is important for educational institutions to stay current in terms of technology by providing electronic devices that support learning methods. The availability of optimal facilities and infrastructure will increase the effectiveness and efficiency of implementing learning activities {Formatting Citation}

The results of research that was carried out at the Balangan State Elementary School were collected through a data collection technique, namely interviews with the school principal, teachers of fourth, fifth, and sixth-grade, and students. After the interview, observations were carried out at the Balangan State Elementary School, precisely in each classroom during classroom learning. And the latest research is equipped with documentation when conducting direct observations.

School principals and class teachers see the use of learning technology in the classroom as an effective tool for improving the quality of learning by presenting information interactively. However, this also requires more support from the facilities and infrastructure at the school. Support from internet connection access, which must be stable, and also sufficient time to prepare learning using technological media.

In the learning process at the Balangan State Elementary School, teachers more often use books and blackboards because, according to the results of interviews, class teachers at the school have limited internet access, which is not sufficient, and the signal is also difficult and not very smooth when using internet access because of the school area. Even in rural areas and during learning, it is less effective to prepare using technological media such as LCDs because every class does not have LCDs, so teachers prepare in advance if they use technological media during learning. However, teachers at the Balangan State Elementary School occasionally provide technology media so that students are not blind to technological advances. Some homeroom teachers use PowerPoint, one of

the technological learning media used by homeroom teachers, which is given to students so that they don't get bored, and it is more practical to give to students. Using power point media, teachers and students can focus on the power point. Class teachers do not often use this medium due to limited internet access in schools, time for learning, and also limited facilities in each classroom. So, teachers rarely or do not often use technological media during learning (23). According to the results of interviews with the school principal, there is a schedule for classes 4-6 for ICT lessons. The school facilitates this by providing 15 laptops. When interviewing students, they were more interested if the teacher used technological media during learning, such as PowerPoint examples, and showed pictures and videos, because they would not get bored and sleepy during class.

The following is a table of observation data results that have been carried out directly at the Balangan State Elementary School:

**Table 1. Observation Results**

Guidelines	Observed	Remarks
<p><b>Activity:</b> The use of media in learning has been the subject of observations made by teachers while teaching students in Balangan State Elementary School classes.</p>	<p>When learning is appropriate to digital management tools and means, appropriate use of interactive teaching and learning strategies, and appropriateness to the material presented.</p>	<p><b>Fourth-grade</b> During learning, teachers use worksheet books for students to write learning material. And when there are students who ask questions about material that is not clear, the teacher gives direct examples using the media around them to provide examples so that students can understand. As I saw, there were students who asked, "Ma'am, what is vibrating?" Then the teacher used a blackboard eraser and hit it on the blackboard so that it vibrated.</p> <p><b>Fifth-grade:</b> In the lesson that I observed, the teacher previously gave the students the task of watching the video that had been given. In today's meeting, the students were given the task of summarizing the story in their notebooks after observing the video that they had seen.</p> <p><b>Sixth-grade:</b> When learning mathematics, the teacher writes material on the board, and there are also several questions. Then students are asked to write what is on the board and also work on the questions that have been given. After being given time, the teacher appoints one of the students to work on the questions on the blackboard.</p>
<p><b>Object:</b> Facilities and infrastructure</p>	<p><b>Facilities and infrastructure:</b></p> <ul style="list-style-type: none"> <li>• LCD</li> <li>• Projector screen</li> <li>• Laptop</li> </ul>	<p>Fourth-grade:</p> <ul style="list-style-type: none"> <li>• LCD: none</li> <li>• Projector screen: yes</li> <li>• Laptop: none</li> </ul> <p>Fifth-grade:</p> <ul style="list-style-type: none"> <li>• LCD: none</li> <li>• Projector screen: Removed</li> </ul>

Guidelines	Observed	Remarks
		<ul style="list-style-type: none"> <li>• Laptop: none</li> <li>Sixth-grade:</li> <li>• LCD: none</li> <li>• Projector screen: yes</li> <li>• Laptop: none</li> </ul>

According to the table that was created during the observation, at the Balangan State Elementary School, each class was not equipped with learning technology facilities and infrastructure. Teachers in class use books and whiteboards more often when teaching. However, students also remain enthusiastic about participating in learning in class (25).

#### 4. Conclusion

Based on the results of the research and discussion, it can be concluded that the views of the residents of the Balangan State Elementary School are related to the use of technology in classroom learning, namely as an effective tool for improving the quality of learning by presenting information interactively. However, there are factors that cause teachers not to use technology-based media when learning in class because they are constrained by facilities and infrastructure and are also constrained by less flexible internet access when using internet access during classroom learning, resulting in less effective learning time in class.

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