Preparing Future Generations: The Importance of Elementary School Students' Technology Adaptation in an Era of Change

Salwa Hikmatu Ridha[1*], Isna Soffi Aristin Rohiman[2], Endang Selly Setiani[3], Sendi Fauzi Giwangsa[4]

[1,2,3,4] Universitas Pendidikan Indonesia, Bandung, Indonesia

salwahikmaturidha@upi.edu, isnasoffii@upi.edu, endangsellysetiani@upi.edu, sendifauzigiwangsa@upi.edu

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Abstract

This study aims to analyze the technological adaptability of elementary school students at SD Muhammadiyah Ciwahang in preparation for the challenges of the digital era. The approach used was qualitative, with a case study method involving students, teachers, and parents as research subjects. Data were collected through interviews, observations, and literature studies and then analyzed using the Miles and Huberman model, which includes data collection, reduction, data presentation, and conclusion drawing. The results showed variations in technology adaptability based on student age, device availability, and parental support. Lower-grade students tend to use technology for entertainment, while higher-grade students understand its benefits for learning. The main obstacles are limited infrastructure and digital literacy. Teachers play an important role in the integration of technology in learning, while parents contribute through supervision and guidance at home. This research recommends collaboration between schools, families, and the government to provide adequate facilities and improve students' technological competencies to support their future readiness.

Keywords – Technology Adaptation; Elementary School; Digital Literacy; Technology-based Learning; Educational Collaboration

1. Introduction

In essence, humans are social creatures who cannot live alone; they needs harmony and interaction between individuals (Frima, 2016). Interaction can be interpreted as a social relationship between individuals in such a way that these individuals can influence each other. This is in line with the opinion (Fahri & Qusyairi, 2019) that social interaction is the basis of social processes, where relationships between individuals and groups are characterized by mutual influence that occurs in certain social contexts. Likewise, in the learning process, social interaction is expected to improve adaptability and a pleasant learning environment. Apart from the various kinds of interactions that exist, social, technological, and scientific changes occur so quickly, it is necessary to have adaptability that can help in dealing with these increasingly dynamic changes, especially in elementary school students.

Elementary school students need to be equipped with various skills that enable them to navigate these changes effectively (Shihab et al., 2023). One of them is adaptability, where adaptation is the process of adjusting individuals to environmental norms and changes so that the behavior that appears is in accordance with the expected ideal conditions (Tangkudung, 2014). This is important because adaptability allows individuals to adjust to the demands and changes that exist around them, be it changes in the social, cultural, and technological environment. Thus, individuals can respond to situations more effectively, maintain a balance in life, and increase their chances of success.

School is the main gateway for each individual to adjust to their environment. Students have many opportunities to interact at school. They not only interact with their teachers but also interact with other students, school culture, and daily routines. All these interactions affect their lives while they are learning at school (Frima, 2016). New students' adaptation to the school environment is positively correlated with their level of academic engagement and emotional well-being (Saragih, 2024). Education in primary schools is ideally designed to develop adaptation skills through student-centered learning

approaches. The use of technology in education requires adaptation in line with the adaptation process already in place in schools, where students not only adjust to the physical and social environment but also to digital developments. This technological adaptation allows students to integrate the use of digital devices and applications into their learning routines, thus enriching the learning experience at school.

Over a long period of time, many changes have occurred in the world of education, especially regarding the use of technology in learning. The growing technology provides new challenges and opportunities for students in the process of adapting to the school environment. The digitization of education has helped students get to know school more interactively, but on the other hand, technology can also be a source of distraction if not used wisely. The rapid development of technology certainly helps a lot in every learning process. However, there is a need for various assistance in adapting to these technological developments.

2. Method

This research uses a qualitative approach with a case study method conducted at SD Muhammadiyah Ciwahang in November 2024. This research design aims to identify the various obstacles that students face in technology adaptation and explore effective strategies and the important roles played by various parties, including teachers, parents, and school authorities, in overcoming these challenges. Through a case study approach, this research also hopes to provide recommendations for educational institutions in designing a more inclusive and effective approach to technology implementation in primary education.

The subjects of this study consisted of 6 students, 2 teachers, and 2 parents from SD Muhammadiyah Ciwahang, Garut. The selection of the research subjects was conducted to obtain a comprehensive picture of students' readiness as well as teachers' and parents' views on technology adaptation in the

elementary school environment. Data collection instruments included draft interviews conducted with students in grades 1-6, designed to collect primary data related to students' readiness, experience, and perceptions of technology use. In addition, secondary data was obtained through literature studies from various relevant studies and articles that support the objectives of this study. The data analysis technique refers to the Miles and Huberman model (Mouwn Erland, 2020), which includes the stages of data collection, data reduction, data presentation, and conclusion drawing. In the final stage, the data presented in the form of narrative text provides an in-depth understanding of the phenomenon under study and facilitates readers in analyzing the context and meaning underlying the data.

3. Result and Discussion

The results of this study indicate that students' readiness, experience, and perception of technology are strongly influenced by parental support, school programs, and educational policies. In the research results, students' readiness to use technology in elementary schools varies greatly. This difference is influenced by the availability of devices at home as well as an early introduction to technology. Therefore, schools and parents need to provide support in the form of device access as well as adequate mentoring so that all students can develop their technology skills equally. Parents play an important role in supervising and regulating students' technology use at home, while schools are responsible for providing relevant technology-based learning infrastructure and programs. Technology adaptation is also needed to support technological advances in the rapidly growing era of globalization, the ease of finding information without significant restrictions is one of the benefits that can be felt. This is in accordance with what is conveyed by (the Ministry of Education and Culture, 2018), which at this time is a digital period, which can be a period where information can be accessed and disseminated very easily through digital platforms.

In addition to readiness, students' experiences in using technology are mostly positive. They feel enthusiastic, especially when using technology to play games or watch videos. However, there are still technical constraints such as slow devices and unstable internet connections, which often disrupt their activities. Nonetheless, this experience shows that students can adapt to technology if given guidance and solutions to the problems they face. Teachers and schools can play an important role by integrating technology into daily learning, for example, through interactive quizzes or relevant learning videos. In addition, the utilization of interactive learning media can also support the smoothness of students ' ability to adapt to technology. This is in line with the opinion of Mahardika et al. (2021) who said that there is a need for the development of interactive learning media so that the teaching and learning process can be carried out properly. Another opinion states that interactive learning in the world of education can be realized along with the rapid advancement of technology (Arda et al., 2020). However, in its implementation, teachers must still adjust to the characteristics and abilities of the students themselves, as stated by Prensky (in Fitriani et al., 2021), which states that elementary school students are currently included in the generation of digital natives, namely the generation that has been familiar with technology since birth and become its users. This shows that teachers need to adjust learning strategies, one of which is by utilizing relevant technology in the digital era.

Students' views on technology also evolve according to their grade level. Lower-grade students tend to see technology as an entertainment tool, while higher-grade students begin to understand its benefits for learning, such as completing school assignments and searching for information. This difference in perception suggests that technology-based learning approaches need to be adapted to the age and needs of students. In accordance with the opinion of Fitriani et al. (2021), learning media and methods are needed that are in accordance with the characteristics of students so that they can develop critical thinking and computational skills. For lower-grade students, learning can be

packaged in the form of educational games, while higher-grade students can be involved in technology-based projects to improve critical thinking skills.

The gap in access and skills between students of different levels suggests the need for a gradual approach through age-appropriate interactive learning. Collaboration between schools and parents is key in building a technology-adaptive environment, supported by teacher training and the provision of adequate facilities. Teachers and parents have a very important role in helping students adapt to technology. Teachers who are skilled in using digital devices can create engaging and effective learning. However, limited facilities in schools, such as insufficient number of devices and slow internet, are the main obstacles that need to be addressed immediately. This is also proven by the opinion of (Arrazaq, 2023), who states that the current digital era still has challenges, such as shifting learning paradigms, problems of inequality of access, and problems in data security. Therefore, to create competent teachers in adapting technology in schools, there needs to be support from the government and schools to be able to provide better facilities for teachers as educators and especially for students. This is in line with research conducted by Purnasari & Sadewo (2021) which states that schools can organize training or training or workshops for teachers in the field of technology to improve learning strategies in today's digital era. Parents also contribute greatly through mentoring and supervising the use of technology at home. By providing limited but purposeful access, students can learn to use technology productively. The government also needs to integrate technology into the curriculum more deeply to ensure students are ready to face the challenges of the digital era. One step that can be taken is to develop a curriculum that is responsive to the reality of unequal access to technology. Teachers need to adjust teaching methods by utilizing various resources, both online and offline, so that students can benefit from learning from diverse perspectives (Rachmi et al., 2024). This strategic approach can help shape future generations who can utilize technology productively.

Overall, the adaptation of technology in primary schools is an important step in preparing students for the challenges of the digital era, especially now that the need to prepare young people to be ready for the demands of an increasingly digital and globalized society. Technology provides wider access to various learning resources, allows students to learn without being limited by the classroom, and creates a more interactive learning experience that is tailored to individual needs (Rachmi et al., 2024). Collaboration between schools, teachers, parents, and government is needed to overcome barriers such as lack of facilities and digital literacy. With joint efforts, students can utilize technology to support learning and develop relevant skills for their future.

4. Conclusion

This study shows that technology adaptation among elementary school students at SD Muhammadiyah Ciwahang is strongly influenced by various factors, including students' readiness, experience of technology use, and their perception of technology. Interviews with students, teachers, and parents revealed that there are variations in students' readiness to use technology. These include device availability, family support, and previous experience. In the research results, lower-grade students tend to see technology as entertainment, while higher-grade students begin to understand its benefits for learning contexts.

Students' experience in using technology shows the potential for good adaptation if given the right guidance. Despite limited facilities and technical support, teachers play an important role in integrating technology into learning. In addition, parents also have a crucial role in supervising and guiding the use of technology at home, with the hope that technology can be used productively.

Overall, collaboration between schools, teachers, parents, and the government is necessary to overcome barriers and ensure students are ready to face the challenges of the digital era. With the right support, students can utilize technology to support learning and develop relevant skills for their future.

Technology adaptation in primary schools is not just about access, but also about building a learning environment that supports the development of digital skills needed in the modern world.

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