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Technological adaptation of the MBKM Kampus Mengajar VII Program for Teknologi Pendidikan FIP UNM students

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ABSTRACT

The Merdeka Belajar Kampus Merdeka (MBKM) Program is integral to higher education in Indonesia. This program provides opportunities for students to gain practical experience in the field. This study explores the technology adaptation process of Teknologi Pendidikan students at FIP UNM in the MBKM Kampus Mengajar VII Program. In addition, this study also identifies the challenges faced by students and the strategies used to overcome them. Using` a qualitative approach with a case study design, data were collected through in-depth interviews, participatory observations during field activities, and analysis of related documents. The data obtained are explained through the reduction, presentation, and interpretation stages. The analysis focused on key themes, such as technology adaptation strategies, challenges faced by students, and the implementation of the MBKM program in the future. This study is expected to provide a more comprehensive insight into the technology adaptation process of Educational Technology students at FIP UNM during the MBKM Kampus Mengajar VII Program. These findings will provide valuable contributions to higher education institutions in improving technology integration in field programs and guiding students and teachers in facing the challenges of technology adaptation.

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ABSTRAK

Program Merdeka Belajar Kampus Merdeka (MBKM) merupakan bagian integral dari pendidikan tinggi di Indonesia. Program ini memberikan kesempatan bagi peserta didik untuk memperoleh pengalaman praktis di lapangan. Penelitian ini bertujuan untuk mengeksplorasi proses adaptasi teknologi mahasiswa Teknologi Pendidikan di FIP UNM dalam Program MBKM Kampus Mengajar VII. Selain itu, penelitian ini juga mengidentifikasi tantangan yang dihadapi peserta didik serta strategi yang digunakan untuk mengatasinya. Menggunakan pendekatan kualitatif dengan desain studi kasus, data dikumpulkan melalui wawancara mendalam, observasi partisipatif selama kegiatan lapangan, dan analisis dokumen terkait. Data yang diperoleh dijelaskan melalui tahapan reduksi, penyajian, dan interpretasi. Analisis difokuskan pada tema-tema utama, seperti strategi adaptasi teknologi, tantangan yang dihadapi mahasiswa, serta penerapan program MBKM di masa depan.Penelitian ini diharapkan dapat memberikan wawasan yang lebih komprehensif tentang proses adaptasi teknologi mahasiswa Teknologi Pendidikan di FIP UNM selama Program MBKM Kampus Mengajar VII. Temuan ini akan memberikan kontribusi berharga bagi perguruan tinggi dalam meningkatkan integrasi teknologi pada program-program lapangan, serta menjadi panduan bagi mahasiswa dan pengajar dalam menghadapi tantangan adaptasi teknologi.

Kata Kunci: *adaptasi teknologi; Kampus Mengajar; MBKM; teknologi pendidikan*

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INTRODUCTION

Higher education has a strategic role in educating the nation's life as mandated in Undang-Undang Republik Nomor 12 Tahun 2012 tentang Pendidikan Tinggi. This law emphasizes the importance of higher education in advancing science and technology while considering human values and sustainably empowering the nation. To support this, the government introduced Merdeka Belajar Kampus Mengajar (MBKM) Program, which is designed to answer the challenges of change in various fields, including education. One of the initiatives in MBKM is Program Kampus Mengajar, which provides opportunities for students to contribute to improving the quality of education in elementary schools through literacy, numeracy, and technological adaptation efforts. According to the Transformational Leadership in Education theory, transformational leadership in education, which involves students as agents of change, can drive innovation and significantly improve the quality of education (Leithwood & Sun, 2020). In addition, the Educational Ecosystem theory explains the importance of collaboration between various stakeholders in creating an educational ecosystem that is holistic and responsive to the challenges of technology and globalization (Biesta et al., 2022). Implementing this theory is very much in line with the objectives of MBKM in advancing education in Indonesia and increasing students' experience in dealing with students directly in schools (Piliano et al., 2023).

Program Kampus Mengajar aims not only to provide students with practical experience but also to help address the challenges many primary schools face in Indonesia. In support of this goal, the SAMR (Substitution, Augmentation, Modification, Redefinition) model becomes an important framework for analyzing how technology can be applied to improve learning effectiveness. This model helps identify the level of technology integration, from simply replacing traditional methods to innovatively redefining learning practices. Constraints such as limited infrastructure, lack of teacher competence in technology, and lack of resources are the main obstacles to implementing technology-based learning. In this regard, Redecker and Punie's findings in "European Framework for the Digital Competence of Educators: DigCompEdu" reinforce the importance of adopting a technology innovation framework to support inclusive digital learning, where collaboration between students, teachers and learners is key. Recent research shows how technology integration based on the SAMR model can overcome traditional limitations and improve access and quality of learning, especially in resource-constrained environments (Bond et al., 2020). In this context, Program Kampus Mengajar presents a solution by involving students from various majors to support schools in overcoming these problems. However, technology adaptation is often not implemented optimally due to limited facilities and varying levels of competence among technology users.

The application of technology is important to facilitate more interactive learning and increase learner engagement (Haryadi, 2019). Digital skills development is also important for educators and learners to support technology-based learning, especially in basic education (Fisser et al., 2021). This theory aligns with the SAMR model approach, which aims to integrate technology effectively in learning. In the context of technology adaptation in primary schools, the SAMR model is also a relevant reference to evaluate the effectiveness of technology strategies in supporting learners' literacy and numeracy. Digital learning design theory emphasizes the importance of technology-based strategies in creating collaborative, flexible and learner-centered learning environments (Dabbagh et al., 2020). This approach is also supported by previous research that underlines the role of adaptive technology in supporting the personalization of learning according to learners' individual needs (Wang et al., 2022). This research shows the great potential of digital learning strategies in improving learning effectiveness, although it has not specifically examined the application of technology in Program Kampus Mengajar or the implementation of Game-Based Learning (GBL) in specific subjects, such as Pancasila, in elementary schools.

This study aims to fill this gap by analyzing the experiences of Teknologi Pendidikan FIP UNM students in Program Kampus Mengajar VII. The SAMR model is used to evaluate the technology adaptation strategy

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applied and its impact on the digital literacy of learners and teachers in elementary schools. In addition, this research also contributes to the development of constructivist theory in the context of basic education through the use of game-based technology.

The objectives of this study are to:

1. Identify the technology adaptation strategies carried out by Teknologi Pendidikan FIP UNM students in Program Kampus Mengajar VII.

2. Explore the challenges faced by students during program implementation.

3. Analyzing the impact of technological adaptation on the digital literacy of elementary school students and educators.

However, this study has limitations, such as focusing only on FIP UNM Education Technology students and data collected from a specific number of elementary schools, so the results may not fully represent conditions in other schools. In addition, the qualitative approach used did not include quantitative analysis for broader generalization.

LITERATURE REVIEW

Technology Adaptation in Education

Technology adaptation in education is increasingly becoming a significant concern in the rapidly evolving digital era. Technology adaptation includes adjustments to digital devices, applications, and infrastructure used in the teaching and learning process (Haryadi, 2019). Using software such as Microsoft Word, PowerPoint, and Canva is handy in improving learning effectiveness and supporting teacher administration. These technologies make it easier to deliver materials and provide opportunities for learners to be actively involved in the learning process, improve their digital skills, and prepare them to face the challenges of an increasingly technology-dependent world.

Technology can accelerate learners' concept understanding through interactive simulations. Interactive simulations can stimulate learners to understand the material (Fitzgerald & Johnson, 2022). For example, learners using presentation software such as PowerPoint can gain a richer and more engaging visual learning experience than traditional learning methods. Interactive simulations and presentation software help learners understand more abstract concepts more concretely and enjoyably. Technology also enables personalization of learning, where learners can learn according to their own pace and preferences. The use of technology to personalize and enhance learning aligns with the theory of constructivism proposed by Piaget and Vygotsky, which emphasizes active, experiential learning, collaboration, and social interaction in the construction of knowledge.

Ally, in his book "Designing and Developing E-Learning Programs," argues that the development of effective e-learning requires a deep understanding of instructional design, and the application of appropriate technology to achieve learning objectives must be designed by considering various aspects such as accessibility, learner engagement, and adjustment to different learning styles. In this context, technology is a tool and a medium that allows learners to learn independently and more flexibly. Ally's theory also refers to the principle of constructivism, which emphasizes that effective learning occurs when technology-based learning is designed to enable learners to learn. Ally also suggests that in the context of higher education, an effective e-learning platform should facilitate collaborative learning and two-way communication across spaces. Virtual learning connects resources, facilitates interaction, and enables greater access to information and individualized learning. The importance of this theoretical understanding of instructional design and technology application is particularly relevant to the context of technology

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adaptation in basic education, such as the Teaching Campus, where students are required to develop technological skills and design learning that is based on digital media and e-learning.

Teachers need support in adapting technology so that technology adaptation in the classroom is successful. Educators skilled in technology use can facilitate learning that is more innovative and relevant to the needs of learners (Rosyiddin et al., 2023). Program Kampus Mengajar is important in equipping educators with technology skills through collaboration with students participating in the program. The program is a means for students to apply their knowledge of Teknologi Pendidikan and provide training to educators in schools with limited facilities. Through this program, students also develop their pedagogical skills in integrating technology into learning effectively.

Although technology adaptation can create more dynamic and flexible learning, its success is highly dependent on the readiness of educators and the existing infrastructure. The dependence of technology adaptation's success on educators' readiness and existing infrastructure demonstrates that successful technology integration in learning relies not only on the technology itself but also on the preparedness of the people who use it (Komara & Hadiapurwa, 2023). It is important to provide continuous training for educators to ensure that technology is used to its full potential in improving learner learning outcomes (Cox & Thomas, 2023). Overall, while adapting technology in education offers much potential to improve the quality of learning, the challenges associated with limited facilities and educators' technological skills must be addressed through ongoing support. Programs such as Kampus Mengajar can significantly address these challenges by training educators and facilitating the broader use of technology in primary schools.

SAMR Model in Technology Implementation

The SAMR (Substitution, Augmentation, Modification, Redefinition) model is often used to evaluate technology implementation in education. According to Puentedura in "SAMR: Moving from substitution to redefinition," this model describes the stages of technology integration in learning, which includes four levels: Substitution, Augmentation, Modification, and Redefinition. At the Substitution stage, technology is used to replace traditional tools without any change in their function. For example, Microsoft Word can be used to type assignments instead of handwriting. Augmentation is the use of technology that enhances the functionality of traditional tools, such as adding sharing and collaboration capabilities in shared documents. The task design is significantly altered at the Modification stage, allowing for more interactive and creative learning. Finally, Redefinition allows for new tasks previously impossible without technology, such as global collaboration in internet-based projects or interactive presentations using platforms like Canva.

The selection of SAMR stages should consider the local context, including the capabilities of learners and educators and the resources available in the school. A flexible approach to implementing the SAMR model can increase the effectiveness of technology in learning (Hamilton et al., 2016). For example, although many schools are just starting to use technology in learning, the SAMR model remains relevant in guiding how technology can be used gradually and effectively. In this study, the use of Canva by students in Program Kampus Mengajar illustrates the application at the Modification stage, where students use technology to improve the quality and creativity of learning tasks and provide opportunities for cross-class collaboration. The use of Canva by students in Program Kampus Mengajar at the Modification stage of the SAMR model also aligns with the Technological Pedagogical Content Knowledge (TPACK) principle, which emphasizes integrating technology, pedagogy, and content in designing compelling learning experiences (Karaduman & Akman, 2024; Tanjung, 2022). Through the application of TPACK, students can combine technology with pedagogical approaches appropriate to the teaching materials, enriching the learning process in elementary schools.

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The Redefinition stage in the SAMR model can increase learners' engagement in project-based learning. Technology gives learners access to global resources, collaborates with learners from other locations, and produces more complex work that would not be possible without technology (Crompton et al., 2021). In the Program Kampus Mengajar context, students who use technology to create more innovative and collaborative learning provide opportunities for learners to learn more deeply and broadly. Educational theory provides a new perspective. Education emphasizes integrating advanced technologies, such as artificial intelligence, blockchain, and virtual reality, to create a more personalized, interactive, and relevant learner experience (Rashid & Alcorin, 2024). In applying technology in the classroom, educators and students must understand how to combine technology with pedagogy and content to create effective and efficient learning experiences (Khaira et al., 2023). Therefore, developing technological skills through programs such as Teaching Campus can help students understand and apply the principles of Education 5.0 in technology-based learning design.

Flexible and context-based adaptation of technology in education is important in learning. Hughes (2021) demonstrated in his research that educators with technology skills can create more interactive learning experiences relevant to learners' needs. The SAMR model provides a framework that allows educators and students to make the most of technology, especially in situations often faced in schools with limited facilities. TPACK states that effective technology integration in learning requires an approach focusing on collaboration between educators, learners, and communities (Peter, 2023). They emphasize that technology-based learning should support the development of 21st-century skills involving problem-solving, collaboration, and communication. Programs such as Teaching Campus have the potential to facilitate the development of students' TPACK, which can further improve the quality of teaching in primary schools.

In his book "Designing and Developing e-learning Programs: A Case Study of Instructional Design in Higher Education," Ally emphasizes that to create effective e-learning, it is crucial to consider instructional design that focuses on learning accessible to all learners, including those with limited access to technology. Ally suggested using platforms that enable multimedia-based and interactive learning, which is particularly relevant in using technology in Program Kampus Mengajar to improve learners' digital skills. Technology accessibility and continuous training for educators are key to ensuring the effective implementation of technology in learning (Edwards-Fapohunda & Adediji, 2024). They show that schools that implement continuous technology training can create a more productive learning culture and support the development of learners' digital skills.

MBKM Policy and Its Impact

The MBKM policy significantly impacts students, especially those in the Teknologi Pendidikan department. This program allows students to be directly involved in various learning experiences outside the classroom that enrich their knowledge and skills, both in the context of theory and practice. Research conducted by Saputra and Rasyid showed that students majoring in Teknologi Pendidikan involved in the MBKM policy showed a significant increase in their mastery of technological skills, as well as their ability to design and implement learning technology in a real educational context (Saputra & Rasyid, 2022). The increase in students' mastery of technological skills and their ability to design and implement learning technology greatly supports the development of skills relevant to the demands of the ever-evolving world of digital education. Students learn through theory and apply it in a more practical context, for example, through Program Kampus Mengajar that integrates technology to assist the learning process in elementary schools (Saputra & Rasyid, 2022).

On the other hand, the MBKM policy's impact on Teknologi Pendidikan development is very positive. This program encourages students to be more creative and innovative in utilizing technology to support

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learning. MBKM provides opportunities for students to participate in developing and implementing technological solutions that support learning in primary, secondary, and tertiary schools (Arifin & Rinaldi, 2021). Students are involved in projects that integrate technology-based learning, such as the development of learning applications, the utilization of learning management systems (LMS), and the use of Augmented Reality (AR) and Virtual Reality (VR) technologies in teaching. Digital transformation in education involves using new technologies and fundamental changes in the design, management, and delivery of learning (Kirkwood & Price, 2018). MBKM is a clear example of this transformation, which allows students to be actively involved in creating innovative digital solutions. The project-based learning approach can improve students' skills in integrating theory into real practice, as in Program Kampus Mengajar (Haryanto *et al*., 2024).

The importance of digital collaboration in 21st-century skills development is that modern 21st-century students can work across disciplines through digital platforms to produce Teknologi Pendidikan projects. The ability of modern 21st-century students to work across disciplines through digital platforms to produce Teknologi Pendidikan projects aligns with the MBKM policy, which encourages collaboration to solve educational problems through digital solutions. The MBKM program provides a space for students to hone these competencies by engaging in technology-based projects that meet the needs of society (Abdul et al., 2022). This policy also encourages the development of a more adaptive and personalized learning system. Based on previous research, it is known that Teknologi Pendidikan students involved in MBKM can design technology-based learning systems tailored to students' individual needs regarding learning styles and materials provided (Fajri et al., 2023). Thus, students can significantly contribute to developing a technology-based education ecosystem that is more inclusive and responsive to the times.

Overall, the MBKM policy not only directly benefits students by improving their Teknologi Pendidikan competencies but also contributes to Teknologi Pendidikan itself by producing human resources ready to face the challenges of digitalization in education.

METHODS

This research was carried out in systematic and structured stages to obtain valid and in-depth data on students' experiences in technological adaptation during Program Kampus Mengajar VII. This research procedure is divided into several stages, including planning, data collection, and data analysis, which are explained in more detail as follows:

Planning

The first stage in research is planning, which involves the following steps:

1. Identification of Research Objectives: The researcher set an objective to explore students' experiences in applying technology during Program Kampus Mengajar VII, focusing on the challenges and successes faced in technology adaptation.
2. Determination of Research Subjects: Research subjects were selected based on specific criteria: students from the Education Technology department at Makassar State University (UNM) who had been involved in Program Kampus Mengajar VII.
3. Preparation of Data Collection Instruments: The instruments used in data collection consisted of interview guidelines, observation sheets, and field documentation tailored to the research objectives.

Data Collection

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Data were collected through three complementary techniques: in-depth interviews, participatory observation, and documentation. Each technique aimed to gain a comprehensive understanding of students' experiences of technology adaptation:

1. In-depth Interviews: Three main groups of informants were interviewed: program students, student teachers, and school principals. The interviews aimed to explore their perspectives on the application and challenges of using technology in the field and the benefits gained by students during the program.
2. Participatory Observation: The researcher was directly involved in the daily activities at the elementary school where the students were taught. This observation provides a direct picture of the technology adaptation process carried out by students and their interactions with students and educators at school.
3. Documentation: Documentation was done by collecting photos, activity reports, and field notes on technology implementation and learning development in elementary schools.

Data Analysis

Data analysis was conducted using an analytical model that included three main stages:

1. Data Reduction: Data collected through interviews, observations, and documentation will be selected and simplified to identify the main themes relevant to the research focus. This reduction aims to focus attention on the most important data.
2. Data Presentation: The reduced data is presented in a straightforward and systematic narrative. Researchers present the main findings in tables, diagrams, and relevant quotes.
3. Conclusion Drawing: Based on the results of the data presentation, the researcher draws conclusions that describe the process of technology adaptation by students, the challenges faced, and the benefits obtained during Program Kampus Mengajar VII.

Sampling Technique

This study used a purposive sampling to select subjects within the research focus. The research sample consisted of six Teknologi Pendidikan students from Fakultas Ilmu Pendidikan, Universitas Negeri Makassar, who had completed Program Kampus Mengajar VII. The purposive sampling technique was chosen because researchers wanted to get in-depth data from students with direct experience with the program.

Data Validation

To ensure the validity and credibility of the data collected, the researchers utilized a triangulation technique involving three types of triangulation.

1. Source Triangulation: Comparing data from various sources, namely students, student teachers, and school principals.
2. Method Triangulation: Comparing the results obtained from interviews, observations, and documentation to ensure data consistency.
3. Time Triangulation involves collecting data at different times to ensure that the findings obtained remain relevant and are not affected by changes in conditions during program implementation.

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RESULTS AND DISCUSSION

This study uses a descriptive qualitative approach to analyze the implementation of technology adaptation by Teknologi Pendidikan FIP UNM students in Program MBKM Kampus Mengajar VII. The primary focus is to describe the technology adaptation process carried out by students during the program and evaluate their real experiences in managing technology-based learning.

Technology Adaptation Process by Students

Teknologi Pendidikan FIP UNM students successfully utilized technologies such as Microsoft Word, PowerPoint, Canva, and Google Drive during Program MBKM Kampus Mengajar VII. These technologies improve the quality of learning by creating teaching materials, interactive presentations, and sharing cloud-based learning resources. Despite facing challenges such as device limitations, students showed creativity with strategies to share devices among learners and utilize cloud-based applications to support collaboration in learning.

This adaptation reflects the importance of digital inclusion in education when equal access to technology can reduce the education gap, as stated by Helsper et al. in the report entitled "Digital Inclusion and Skills: Bridging Divides in a Digital Age" in 2020. In this context, the use of cloud-based technology such as Google Drive allows flexible access to learning materials without the need for additional physical devices. In addition, the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) theory developed by Venkatesh et al. is relevant to explain the successful adoption of this technology. The theory states that the level of technology adoption depends on perceived usefulness and ease of use (Venkatesh et al., 2012). The applications used by students, such as Microsoft Word and PowerPoint, were chosen because they are simple yet effective, thus increasing the motivation of learners and educators to utilize technology in learning.

Students also apply a blended learning approach that combines digital learning with in-person interaction (Hrastinski, 2019). By integrating technology such as PowerPoint and Canva in the direct teaching method, students create a more engaging and relevant learning experience. In addition, students' creativity in utilizing cloud-based technology is also in line with previous research, which shows that this approach is practical in overcoming the limitations of physical devices in schools (Elmasry & Ibrahim, 2021). By sharing devices and utilizing cloud-based technology, students provide more inclusive and flexible access to learning.

Overall, the technology adaptation process by students in Program MBKM Kampus Mengajar VII improves the digital skills of learners and educators and reflects innovative solutions to logistical challenges in the field. Through a combination of creativity, utilization of relevant technology, and an inclusive approach, students succeeded in improving the quality of learning in schools despite limited resources.

Student Experience in Managing Technology-based Learning

Students in Program MBKM Kampus Mengajar VII, Teknologi Pendidikan FIP UNM play various important roles in supporting technology integration in learning in schools. These roles include learning facilitators, technology-based teaching material developers, technology practice assistants, and learning facility providers. Each of these roles is carried out by utilizing applications such as Microsoft Word, PowerPoint, and Canva to assist learners and educators in understanding and using technology in teaching and learning activities. As learning facilitators, students teach learners and educators how to use technology applications to support academic and administrative tasks. For example, they introduced Microsoft Word for typing assignments, inserting images, and creating reports, and Canva for designing engaging visual materials. Students help create a more dynamic learning environment where technology integration can increase learner engagement (Hrastinski, 2019).

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Students act as developers of technology-based teaching materials, creating interactive learning materials such as PowerPoint presentations. Students design materials with attractive visual and audio elements in line with multimedia theory. Learning with text, images, and audio can improve learners' understanding (Perez, 2022). As technology practice assistants, students directly guide learners in completing technology-based tasks. For example, students help learners create presentations or type reports using technology applications. This approach reflects the guided practice theory by Zimmerman in his book entitled "Self-regulated Learning and Academic Achievement: Theoretical Perspectives. In Self-Regulated Learning: Theory, Research, and Applications", which states that direct guidance in the context of technology learning can increase learners' self-confidence and independent skills.

Students also act as learning facility providers by optimally utilizing available devices. To solve the limited use of devices in schools, students use device-sharing strategies and utilize cloud-based technologies such as Google Drive to ensure learners and educators can access teaching materials flexibly. This approach is supported by previous research emphasizing the importance of cloud-based technologies in creating inclusive learning, especially in resource-constrained environments (Rao et al., 2023). Through this experience, students improve their technological skills and contribute to transforming the learning paradigm in schools. Collaboration between students, learners, and educators creates a more active and creative learning environment. By applying a constructivist approach, as described by Harasim in his book "Learning Theory and Online Technologies", students help learners construct their knowledge through direct experience with technology, as presented in **Table 1.**

Table 1. Student Roles in the Technology Adaptation Program

Role	Implementation Description	Impact
Learning Facilitator	Students deliver materials using Microsoft Word, PowerPoint, and other applications.	Learners begin to understand how to use basic applications for learning tasks, such as typing and inserting images.
Material Developer	Students develop technology-based learning modules, considering the limited facilities available at school.	Provide students with experience in developing technology-based materials that learners can access.
Facility Provider	Students provide technology devices, such as laptops and projectors, and support educators using technology.	Facilitate the smooth running of technology-based learning activities in schools with limited facilities.
Practice Assistant	Students assist students in using Microsoft Word, PowerPoint, and other technology applications.	Help learners understand technology applications through hands-on practice, improving their digital skills.

Source: 2023 Research

Based on the role of students in the technology adaptation program, the results based on the validation of data from observations and interviews show that Teknologi Pendidikan FIP UNM students can implement technology effectively in supporting the learning and administration of elementary schools. They succeeded in improving the digital skills of learners and educators and made a significant contribution to learning that is more interactive, relevant, and adaptive to technological developments.

Impact on Learners' Learning

Program MBKM Kampus Mengajar VII, implemented by Teknologi Pendidikan students of FIP UNM, has a significant impact on student learning, especially in improving digital literacy, independence, learning motivation, and collaboration skills. This impact shows how technology can improve the quality of education and encourage learners to be more actively involved in the learning process.

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Improved Digital Literacy of Learners

One of the main impacts is the improvement of learners' digital literacy skills. With students' assistance, learners became more proficient in using applications such as Microsoft Word to type reports, insert images, and create documents, as well as PowerPoint to create structured presentations. Digital literacy is a key prerequisite in 21st-century education, as these skills provide the foundation for learners' success in the academic and professional world (Bond *et al*., 2020).

Independence in Learning

After receiving training, learners show increased independence in completing technology-based tasks. Students assist them in understanding technology applications so that learners are more confident in using these tools to do assignments without relying too much on educators. The increased independence of learners in completing technology-based tasks, supported by student assistance, aligns with the theory of self-regulated learning developed by Zimmerman in his book, "Self-regulated Learning and Academic Achievement: Theoretical Perspectives." In Self-Regulated Learning: Theory, Research, and Applications," it emphasizes that independent learning allows learners to independently plan, monitor, and evaluate their learning process. With this ability, learners are better prepared to face the challenges of technology-based learning in the future.

Increased Motivation and Interest in Learning

The use of technology in learning also has a positive impact on students' motivation and interest in learning. Technology-based learning media, such as interactive presentations using PowerPoint or visual materials created in Canva, make learning more interesting and fun (Syamsudin et al., 2024). Prensky's digital natives theory in "Digital Natives, Digital Immigrants: Teaching and Learning with Generation Z" is relevant in this context, stating that young people who grew up with technology are more easily engaged and interested in digital-based learning methods. This interactive learning also encourages learners to participate more actively in teaching and learning activities.

Development of Collaboration Skills

Cloud-based technologies such as Google Drive enable students to work collaboratively on group projects, even if they are not in the same place. Students can contribute to each other's task completion by sharing documents and editing in real-time. The use of cloud-based technologies such as Google Drive, which enables students to collaborate on group projects by sharing and editing documents in real-time, reflects the theory of collaborative learning described by Dillenbourg in "Orchestrating Collaborative Learning: Contemporary Issues in Educational Psychology." In this theory, learning that involves interaction between students can improve their understanding by sharing ideas and experiences.

Increased Student Engagement and Creativity

With technology, students also become more creative in completing tasks. They can use technological tools to create more aesthetically appealing presentations, visual designs, or reports. This is in line with research by Mayer in his book Multimedia Learning, which states that multimedia-based learning can improve understanding and retention of information by integrating text, images, and other visual elements.

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Observation Results and Testimonials

Based on observations and interviews, students said they felt more confident using technology after receiving guidance from University students. For example, one student said that he now finds it easier to do his schoolwork using Microsoft Word and PowerPoint. This impact shows that the training provided by University students has significantly benefited students' technological skills.

Challenges in Technology Implementation

Integrating technology, including Artificial Intelligence (AI), in learning faces various challenges that must be overcome. Based on observations and interviews conducted by students, one of the main challenges is limited technological infrastructure, such as unstable internet access, limited hardware, and a lack of other supporting facilities, especially in remote areas. Inadequate infrastructure is often a significant obstacle to technology implementation. In addition, the lack of digital competence among educators and students is also a significant challenge (Lindfors et al., 2021). Many educators do not have sufficient skills to make the most of technology, making intensive training an urgent need (Oliveira et al., 2021). Another obstacle often encountered is the limited school budget for procuring technology devices and AI-based applications. This situation limits access to technology to only a few students, while the rest must share devices.

Resistance to change from some educators is also a significant obstacle, as they feel more comfortable with traditional teaching methods and are reluctant to adopt new technologies. Furthermore, data security and privacy issues are also a concern, especially in the use of AI-based applications that require access to the personal data of students and educators. These challenges are exacerbated by the government's lack of supportive policies to encourage technology implementation in schools. However, solutions such as cloud-based technology, continuous training, and collaboration with external parties can help overcome these obstacles. Program MBKM Kampus Mengajar VII, run by the Faculty of Education, UNM students, exemplifies how technology can still be implemented creatively and collaboratively despite various limitations.

Positive Impact on Educators and Schools

Program MBKM Kampus Mengajar VII has significantly impacted educators and schools, particularly in terms of enhancing educators' understanding and skills in using technology to support the learning process. Through this program, several educators expressed that they feel more confident using technological devices in the classroom after collaborating with students. The program also encourages collaboration between students and educators, ultimately improving school learning quality.

Enhancement of Educators' Digital Skills

One of the most evident impacts of the MBKM Campus Teaching Program VII is the improvement of educators' digital skills. As technology facilitators, students from Teknologi Pendidikan FIP UNM trained educators on using software such as Microsoft Word, PowerPoint, and other technology-based applications to support teaching and administrative processes. This program enables educators to use technology to create teaching materials and manage administrative tasks such as tracking attendance and technology-based assessments. Training and introduction to technology for educators can increase their confidence in using technology in the classroom (Oliveira et al., 2021). The improvement of educators' digital skills through technology training aligns with the findings in this study, where several educators felt

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more capable and prepared to utilize technology after collaborating with students. Thus, this program not only improves educators' digital skills but also improves their teaching methods.

Improvement in Learning Quality at Schools

Another impact of this program is the improvement in learning quality at schools. Integrating technology into the learning process allows students and educators to deliver more interactive, engaging, and relevant learning experiences that align with contemporary developments. Microsoft PowerPoint and other applications allow for more visual and dynamic delivery of material, which can help students better understand complex concepts. Integrating technology into the learning process aligns with previous research showing that using technology in education can result in more engaging learning experiences and increased student motivation (Panagiotidis et al., 2023).

In this program, students act as technology instructors for learners and as educator mentors to facilitate the use of technology in daily teaching. Students collaborate with educators to adapt technology-based instructional materials suitable for the school's conditions and limitations. Therefore, collaboration between students and educators helps create a more dynamic and innovative learning environment, ultimately improving the quality of education at the school.

Development of Technological Infrastructure in Schools

Program MBKM Kampus Mengajar VII also contributes to developing technological infrastructure in schools. As part of this initiative, students help introduce and implement technology in school environments that may not be familiar with technology before. Despite limitations in facilities, such as the number of devices and internet connections, the collaboration between students and school officials encourages schools to be more open to using technology in learning. Previous research shows that collaboration between educators and schools in integrating technology can accelerate the digital transformation process in schools (Timotheou *et al*., 2023). The positive impact of student assistance is also evident in this study, as educators became more confident in using technology and schools began to consider developing technological infrastructure to support digital-based learning.

Impact on School Administration Quality

In addition to improving the quality of learning, this program positively impacts school administration. Many educators who previously had difficulty creating digital teaching materials and managing administration using technology now feel more confident after receiving student training and support. This program helps educators adopt technological tools to speed up administrative processes, such as creating PowerPoint-based teaching materials and managing student data using computer-based applications. Previous research shows that using technology in school administration improves efficiency and helps educators and school officials collaborate more effectively (Vargas & Calvo, 2021). With this training, educators feel more prepared to use technological tools in their daily administrative activities, which can improve educational management in schools.

Increased Educator Satisfaction and Confidence

Increased teacher confidence is a significant impact of this program. Based on interviews, several teachers revealed that they felt more confident integrating technology into their teaching after receiving hands-on

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student training. For example, Rosdiana, a homeroom teacher, stated that with students' guidance, she can now better create PowerPoint-based teaching materials and use them to deliver more interesting lessons for students. The increased teacher confidence observed after hands-on technology training from students aligns with previous research emphasizing that technology training for educators can enhance their confidence in using technology in the classroom (Kirkwood & Price, 2018).

Validation

These findings are supported by interviews with educators and students and direct observations during the program implementation. Educators and students agreed that the program improved educators' digital skills and gave them the confidence to be more active in using technology in their teaching. In addition, the program also paved the way for schools to adopt more efficient and innovative digital practices in administration and learning. Overall, the positive impact of the MBKM Kampus Mengajar VII Program on educators and schools is significant. The program not only improved educators' digital skills and the quality of learning but also encouraged the development of technological infrastructure in schools. The long-term impact will create a more modern learning environment relevant to the needs of education in the digital age. In addition, educators' confidence in using technology has also increased, which will affect the quality of education in the future.

CONCLUSION

Based on the results of the study, it can be concluded that Teknologi Pendidikan FIP UNM students successfully adapted technology in learning during the MBKM Kampus Mengajar VII Program despite facing several obstacles, such as limited devices and unstable internet access. Nevertheless, they showed creativity in finding solutions, for example, by utilizing cloud-based applications to compile teaching materials and collaborate with educators and students. Using technology improved the quality of learning and enriched the students' technological skills, which will benefit their careers. On the other hand, students involved in technology-based learning also experienced increased digital skills, making them more confident in completing technology-based tasks. Furthermore, this program strengthens collaboration between students and educators, which positively impacts the quality of teaching in the participating schools. Despite some challenges related to facilities, students were able to overcome these challenges in creative ways. Overall, Program MBKM Kampus Mengajar VII has positively impacted students, learners, and educators and demonstrates great potential for further development in education technology.

AUTHOR'S NOTE

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