


Improving Teachers' Professional Competence through Technology-Based Training in Realizing Innovative Learning Strategies

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ABSTRACT

Education is a strategic process to improve the quality of human resources to be able to compete globally. In Indonesia, the challenges of equalizing and improving the quality of education are very complex, especially due to diverse geographical conditions. One of the main factors determining the success of education is teacher competence, which includes pedagogical, professional, personality, and social aspects. Along with technological advances, there are great opportunities to improve the quality of learning through the use of educational technology. This study aims to analyze efforts to improve teacher professional competence through training and the use of technology in realizing innovative learning. The method used is a literature study with data collection techniques through written sources such as books, journals, scientific articles. The results of this literature study show that structured and ongoing training on the use of technology, such as digital learning platforms and interactive media, has a positive impact on improving teacher teaching skills. Teachers become more creative in designing relevant and interesting learning experiences for students. In conclusion, technology-based training has a significant contribution to improving teacher professional competence and encouraging the creation of innovative learning that is adaptive to the needs of the times.

Keywords: *Teacher Competence, Educational Technology, Innovative Learning.*

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INTRODUCTION

Education is a planned process to improve the quality of human resources (HR) of a nation so that they remain competitive in facing global challenges in the modern world. Education in Indonesia has many challenges to realize quality and equitable education throughout Indonesia due to the vast geographical area of this country. According to the Ministry of Education and Culture's Strategic Plan 2020–2024, there is a gap in the quality of education between Java and other islands, which reflects the geographical inequality in the quality of education.

One of the important factors in realizing quality education is the quality of good teachers and mastering all the required competencies. Professional teachers are teachers who are experts in understanding their fields of science according to their academic qualifications (Suherman, 2021). Teacher competence is the ability of a person who works as a teacher to carry out obligations and also be responsible and worthy in front of people who have interests. Based on the UNESCO Global Education Monitoring Report 2021, teacher quality is the most significant factor in improving student learning outcomes, especially in developing countries like Indonesia.

Law No. 14 of 2005 concerning Teachers and Lecturers in Article 10 states that professional teachers have four competency standards, namely pedagogical competence, professional competence, personality competence, and social competence. Competent teachers

will be able to realize an interesting learning process so that students are motivated to excel and master the learning materials and *soft skills* needed when entering the world of work in the future.

The rapid development of technology today has a major impact on various sectors, one of which is the world of education. The use of technology in the teaching and learning process allows for increased effectiveness, accessibility, and overall quality of education. However, in order for technology to be utilized properly, adequate training is needed for educators. The Ministry of Education, Culture, Research and Technology emphasized that digital transformation is the key to advancing the Indonesian education system, and teachers are required to be able to utilize digital technology to present interesting and more meaningful learning.

Technology brings major changes in various aspects of life, including in the world of education. According to Miarso (in Pinton Setya Mustafa & Muhammad Suryadi, 2022), technology is a process that increases added value; the process uses or produces a product that is an integral part of a system. Bambang Warsita (2011) said that one of the technologies that has a very large influence on various aspects of human life is information technology, especially computers and the internet. The internet allows everyone to communicate and share information quickly and easily at any time. This can be utilized in the world of education.

According to Nurdyansyah and Andiek Widodo (in *Innovation of Learning Technology*, 2015), the involvement of various parties is very important in the development of education so that the learning process is in accordance with the ideals of the nation and the demands of the times. In line with that, M. Musfiqon and Nurdyansyah N. (in *Scientific Learning Approach*, 2015) emphasized that the psychological development of students must be increasingly better and adjusted to the dynamics of social change and the progress of the times that must be well integrated. Nurdyansyah N. and Eni Fariyarul Fahyuni (2016) argue that currently there is a paradigm that assesses students as having learned if they are able to demonstrate the skills taught, in accordance with the learning objectives set. To achieve this, integrated, accurate, targeted, and effective assessment and evaluation are needed, as explained by Nurdyansyah N. and Andiek Widodo (2015).

METHOD

This study uses a descriptive qualitative approach with a literature study method (library research). Researchers explore information from various relevant written sources, such as e-books, scientific journal articles, education policy documents, and previous research reports that discuss teacher professional competence, the use of educational technology, and innovative learning. Source searches are carried out systematically through digital databases and online libraries. Data collection techniques are carried out through documentation and literature reviews which are then analyzed qualitatively with content analysis techniques. The focus of the analysis is directed at finding the main themes, relationships between concepts, and findings that support the formulation of practical recommendations. This study does not involve specific subjects or locations because it is non-empirical and relies on secondary sources that have been widely published.

FINDINGS AND DISCUSSION

On article time This, competence professional Which will discussed in a way deep is competence develop material learning Which be supported in a way creative and utilize information and communication technology to develop themselves. Developing material lesson Which be supported in a way creative is Wrong One effort to improve the professional competence of teachers. To become a professional teacher, teachers are required to be creative in developing or creating learning. Which innovative Which naturally aiming for increase quality and student achievement.

Learning technology is a theory and practice in the design of development, utilization, management and evaluation of processes and resources for learning. (<https://pai.ftk.uin->

alauddin.ac.id/artikel/detail_artikel/224). Abdulhak & Darmawan (in Pinton Setya Mustafa & Muhammad Suryadi. 2022) argue that learning technology is a scientific process used to develop, implement, and utilize learning products and programs. From the description above, it can be concluded that learning technology is a process. Pinton Setya Mustafa & Muhammad Suryadi (2022) concluded that the definition of learning technology is a learning process through theory and practice that includes various aspects in the planning, development, utilization, management and evaluation processes, which play a role in creating effective solutions through learning resources to implement these aspects. The purpose of applying technology in the learning process is to increase the effectiveness, efficiency, and quality of learning. Learning technology includes various methods, tools, and strategies used to help students obtain and understand material better. The following will explain the role of educational technology in learning and the technology used in learning:

The Role of Educational Technology in Learning

Learning technology has the potential to increase educational productivity such as: 1) accelerating the learning stage (rate of learning), 2) helping teachers to use their time better, 3) reducing the burden on teachers in presenting information, so that teachers can foster and develop students' enthusiasm for learning (Miarso, in Bambang Warsita. 2013). It can be concluded that learning technology has an important role to increase educational productivity in accelerating the learning process, optimizing teachers' time, and reducing the burden in delivering information. Thus, teachers can focus more on fostering and developing students' learning motivation, thus creating a more effective and efficient learning environment.

Miarso (in Non Syafriaedi, 2020) explains that educational technology plays a crucial role in learning by increasing educational productivity through speeding up learning stages, helping teachers manage their time better, and reducing their burden in delivering information so they can focus more on fostering student learning activities. It also allows for more individualized education by reducing rigid traditional teacher control and giving students the opportunity to develop according to their own abilities. Furthermore, educational technology provides a more scientific basis for learning by enabling systematic planning of learning programs and the development of research-based teaching materials. By expanding the ways content is presented and making messages more concrete, it improves learning effectiveness. It also facilitates more intimate learning by bridging the gap between lessons inside and outside the classroom and providing firsthand experiences. Lastly, educational technology enables equal distribution of quality education by utilizing scarce resources efficiently and bringing education to those who need it most.

Based on the description of the role of educational technology in learning above, it can be concluded that the use of learning technology in education can increase productivity by helping to accelerate the learning process, optimize the role of teachers, and reduce the burden in delivering information so that teachers focus more on developing students. In addition, learning technology enables more individual education by providing flexibility in learning according to the abilities of each student. Learning technology also contributes to creating more effective learning through systematic and project-based planning. Learning abilities are increasingly enhanced with broader and more concrete presentations, so that students can more easily understand the material and can make technology a learning experience that is closer to real life and reduces the gap between learning inside and outside of school and in addition technology plays a role in equalizing quality education by expanding access for all levels of society, including those who have limited access to education. Thus, technology becomes an important element in creating a more effective, inclusive, and efficient education system.

Technology used in learning

The most prominent use of technology in education is through various tools or media that support the learning process. According to Husna Lubis (2022), media usage in education generally falls into three categories: mass media, small and large group media, and individual media. Mass media includes platforms like educational radio and television, which can reach

a wide audience simultaneously. Small and large group media involve tools such as film projectors, overhead projectors, and videotapes that facilitate group learning activities. Meanwhile, individual media consists of devices like learning machines and computers that cater to personalized learning experiences.

Educational technology's ability to operate on different scales—from mass communication to individual learning—demonstrates its flexibility and adaptability. This versatility enables it to meet diverse educational needs effectively, enhancing the overall teaching and learning process. By leveraging these varied media types, educators can create more dynamic, engaging, and accessible learning environments tailored to both group and individual learners.

The Importance of Technology Training in Education

Technology training for educators is essential to ensure that they are not only familiar with digital tools, but also understand how to integrate them effectively into their learning. Without proper training, the use of technology in the classroom can be less than optimal or even hinder the teaching and learning process. This training is also important to reduce reliance on traditional methods and introduce new, more interactive methods.

Utilizing Technology for More Interactive Learning

The use of technology in education allows for a more engaging and interactive learning experience. Technology not only provides easy access to a variety of learning materials but also opens up opportunities to implement more innovative learning models. For example, the use of educational applications, learning videos, and learning-based games can increase student participation. The book "Utilization of Information Technology in Society 5.0" (2023) states that the use of technology in education can create more personalized learning, where materials can be adjusted to the needs and learning speed of each student. This not only reduces the gap in learning, but also allows each student to learn in the way that is most effective for them.

Technology as a Tool to Improve Accessibility of Education

One of the biggest benefits of leveraging technology is its ability to increase the accessibility of education. With e-learning platforms, learning materials can be accessed by anyone, anytime, and anywhere. This is especially important in remote areas where educational infrastructure may be limited. Technology opens up opportunities for students in these areas to receive the same education as those in big cities. The book "The Role of Technology in Education" (2023) suggests that technology should be used to bridge the educational gap between one region and another. By using technology, education can be more inclusive, providing greater opportunities for all levels of society to learn.

To enhance understanding and skills in the use of technology in education, several recent books offer valuable insights and practical guidance. Nugroho et al. (2024) in *Information Technology: Strategy for Utilizing Technology in the Digital Era* provide strategic approaches for integrating information technology within the education sector. This book goes beyond discussing technological tools by offering perspectives on effectively embedding technology into the curriculum, making it essential for educators aiming to modernize their teaching methods. Meanwhile, Setiawati et al. (2024) present *Education in the Digital Era: Technological Innovation in Modern Learning Systems*, which reviews various technological innovations that improve the efficiency and effectiveness of teaching and learning processes. This book is particularly useful for teachers eager to explore the latest technology applications suitable for classroom implementation.

Additionally, Rakhman et al. (2024) in *Educational Technology: Building the Learning of the Future* combine theory and practical advice to help educators design more interactive and technology-based learning experiences. The book offers readers valuable insights into how emerging technologies can shape the future of education, fostering more engaging and effective learning environments. Together, these books provide comprehensive resources for educators and professionals seeking to deepen their knowledge and apply educational technology in meaningful ways.

Innovative learning can be inspired by fun learning models. The principle of “Learning is fun” is the key to this approach. By instilling this understanding in the minds of students, we can eliminate passive behavior in class, feelings of pressure, fear of failure, limited choices, and boredom. Innovative learning methods can be developed by measuring the ability of each individual to absorb knowledge.

Syah and Kariadinata stated that innovative learning has the potential to balance the functions of the left and right brain, as long as it is implemented with technology-based media management during the teaching and learning process. With this approach, students can build a strong sense of self-confidence. It is hoped that through innovative learning, students will not only be able to think critically, but also be skilled in solving problems. Students with this ability can use clear reasoning when understanding a concept, so that they are able to make decisions and choose the right options more easily. This can all be achieved thanks to a deep understanding of the problems they face. Moreover, the ability to identify and find relevant questions is key to a more effective problem-solving process. The information they obtain can be developed and analyzed, so that they can provide satisfactory answers to these questions. Students with these characteristics are also able to work effectively in diverse teams, utilizing flexibility and the ability to discuss to achieve common goals.

Recommendation

Training educators in technology is an essential step to ensure the effective and efficient use of technology in education. Technology enables the creation of more interactive, accessible, and personalized learning experiences. The referenced books provide in-depth understanding of how technology can be used to improve the quality of education. By utilizing technology in the right way, education becomes not only more engaging but also more inclusive and accessible to a wider audience.

CONCLUSION

Improving teacher professional competence, especially in developing learning materials creatively and utilizing technology, is an important element in creating innovative and adaptive learning to the needs of the times. Educational technology has been proven to increase the effectiveness and efficiency of the teaching and learning process by accelerating the absorption of materials, reducing the burden on teachers, and providing space for more individual and contextual learning. The use of various media—whether mass, group, or individual—enables the creation of more flexible and interactive learning. In addition, technology plays a strategic role in expanding access to quality education, especially in remote areas. Innovative technology-based learning not only supports mastery of academic materials, but also encourages the development of 21st-century skills such as critical thinking, problem solving, and teamwork. The government and educational institutions need to provide ongoing and applicable technology training for teachers, so that they are able to integrate technology effectively into the learning process. The use of educational technology must be adjusted to the needs and characteristics of students in order to create a more personal and enjoyable learning experience. Schools need to encourage the development of innovative learning models that balance cognitive and affective elements, through the use of digital media, learning applications, and project-based approaches. Publishers and developers of educational content are encouraged to continue providing technology-based learning resources that are relevant, engaging, and easily accessible to teachers and students. Further research is encouraged to measure the specific impact of certain types of technology on improving learning outcomes and student motivation at various levels of education.

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