

**ANALYSIS OF TEACHER COMPETENCIES IN THE USE OF TECHNOLOGY-BASED
LEARNING MEDIA IN STATE SMP 3 SITOLU ORIGINAL**

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ABSTRACT

This study aims to analyze teacher competency in the use of technology-based learning media at SMP Negeri 3 Sitolu Ori. The background of this study is based on the importance of technology integration in the learning process to improve the effectiveness and efficiency of learning. Teachers as the spearhead of education are expected to have pedagogical, professional, social, and personality competencies that include the ability to operate and utilize learning technology. The research method used is a descriptive qualitative approach, with data collection techniques through interviews, observation, and documentation. The results show that the majority of teachers at SMP Negeri 3 Sitolu Ori have basic skills in using technological devices such as laptops, computers, projectors, and Microsoft Office applications, especially PowerPoint. However, the use of technology still faces several obstacles such as limited internet connection, lack of advanced technology training, and limited time in developing digital learning materials. In addition, the process of selecting learning media generally refers to the teaching module used, but not all teachers are able to optimally develop media independently. This study concludes that although most teachers have demonstrated basic skills in the use of technology-based media, competency improvement is still needed through continuous training and infrastructure support. The results of this study are expected to be a basis for schools and stakeholders to design programs to improve teacher professionalism in utilizing technology to achieve a more innovative and quality learning process.

Keywords : Teacher-Competence; Learning-Media; Technology.

INTRODUCTION

The development of information and communication technology has brought significant changes to various aspects of life, including education. The use of technology-based learning media has become an urgent need to support effective and efficient teaching and learning processes. Teachers, as the spearhead of education, are required to possess the competency to utilize technology as a learning tool. This competency encompasses the understanding, skills, and ability to integrate technology into the learning process to enable students to learn optimally.

Teacher competence in the use of technology-based learning media is not only important for improving the quality of learning but also for preparing students to face the challenges of the 21st century. Technology has become an integral part of students' daily lives, so a technology-relevant learning approach can increase their learning motivation. Furthermore, the use of technology allows students to develop critical thinking, creativity, and collaboration skills, which are essential elements in modern education. According to Mayer's (2014) multimedia learning theory, the use of media involving audio and visuals in the learning process can improve students' conceptual understanding because it provides them with the opportunity to directly see how mathematical concepts are applied. Mayer emphasized that the effective use of multimedia in learning can activate students' visual and auditory memory, allowing them to more easily understand and remember the concepts taught.

However, in practice, many teachers still face challenges in using technology-based learning media. This is due to various factors, such as a lack of adequate training, limited facilities and infrastructure, and technological cultural barriers among educators. In some schools, especially those in remote areas, this problem is compounded by limited access to modern technology. This situation creates a gap in the quality of learning between schools with adequate technological facilities and those without.

The contribution of educational technology to the renewal of education and learning systems can be divided into five categories. First, providing competent professionals to solve learning problems. Second, integrating concepts, principles, and procedures into the education system. Third, developing innovative teaching and learning systems. Fourth, using information and communication technology in the teaching and learning process. Fifth, improving organizational performance and human resources to be more productive (Muh. Yusuf T, 2012 in Haryanto, 2015: 36). The implementation of online learning requires teachers to utilize information and communication technology in learning activities so that learning remains effective and engaging for students.

Based on Edgar Dale's cone of experience, the use of learning media can provide more effective, hands-on experiences for students. Learning media is also an important component in the learning process, serving to attract students' interest and attention. The use of learning media is one area of Educational Technology. The use of media in learning activities can involve any medium, from video, audio, audio-video, computers and internet networks, and other media (Haryanto, 2015: 86). The use of learning media is one of the things a teacher can do to help carry out their duties in delivering learning materials. This is because learning media has a primary function as a teaching aid that also influences the climate, conditions, and learning environment that a teacher arranges and creates. The selection and use of appropriate learning media according to the characteristics of students and learning materials will certainly make learning more interesting, effective, and efficient so that learning objectives can be achieved optimally.

The need for madrasas to plan teacher competency development, both pedagogical and professional, is motivated by the position of teachers as one of the determining factors in the quality of education. Thanks to the services of educators, we can produce quality human resources with noble character. Improving the quality of education can make a significant contribution to the progress of national development. This is in accordance with Salim's statement that teachers are a profession, just as other professions refer to jobs or positions that require expertise, responsibility, and loyalty. A profession cannot be carried out by just anyone who is not trained or prepared for it. Law Number 20 of 2003 concerning the National Education System (Sisidknas Law) states that teachers are professional personnel tasked with planning and implementing the learning process, assessing learning outcomes, providing guidance and training, and conducting research and community service, especially for educators in higher education.

Teachers, who play a crucial role in education, must possess the competencies outlined in the National Education System Law. Educators must also actively develop a more engaging learning environment and classroom climate that encourages students to feel comfortable learning, develop their professionalism sustainably, and utilize information and communication technology for

personal growth. Of course, this is not a quick and easy process. Teachers must undergo rigorous education to become qualified teachers and eventually produce qualified graduates.

SMP Negeri 3 Sitolu Ori, as one of the educational institutions in the Nias region, is not immune to these challenges. The school strives to improve the quality of learning through the use of technology, but the success of this implementation depends heavily on the competence of teachers in utilizing technology-based learning media. Teachers at SMP Negeri 3 Sitolu Ori need to understand how to use technological devices, such as computers, projectors, or digital learning applications, to create an engaging and interactive learning environment.

This study aims to analyze the competence of teachers at SMP Negeri 3 Sitolu Ori in the use of technology-based learning media. Based on initial observations, there are still various obstacles faced by teachers in utilizing technology. Some of these include teachers' limited understanding of technology, lack of training, and challenges in managing technology in schools. This condition indicates that teacher competence in the use of technology-based learning media needs to be analyzed in depth to identify the influencing factors and find appropriate solutions. The results of this study are expected to provide a clear picture of the actual conditions in the field, as well as serve as a basis for designing appropriate training programs or strategies to improve teacher competence. Thus, this study is expected to contribute to supporting school efforts to improve the quality of learning through the integration of technology in the educational process.

RESEARCH METHODS

This research uses a qualitative method with an exploratory descriptive approach. The aim of this approach is to describe in depth the competence of teachers in the use of technology-based learning media, as well as to identify factors that influence the effectiveness of such media use. is a research approach that aims to understand phenomena in depth by exploring the meaning, views, experiences, and behavior of individuals or groups in a particular context. This research emphasizes the process, meaning, and understanding, rather than generalizing data or numerical measurements.

Qualitative research focuses on collecting non-numerical data, such as interviews, observations, documents, or field notes, which are then analyzed descriptively and interpretively. This approach aims to explain phenomena from the perspective of the research subjects and understand how they interpret the realities of their environment. The variables determined by the researcher in this study are the analysis of teacher competency in the use of technology-based learning media at SMP Negeri 3 Sitolu Ori.

RESULTS AND DISCUSSION

Research Results

The following are the results of interviews conducted by researchers with informants or sources regarding the conditions and facts in the field related to the analysis of teacher competency in the use of technology-based learning media at SMP Negeri 3 Sirtolu Ori.

Most teachers at SMP Negeri 3 Sitolu Ori already have basic skills in using technology-based learning media, such as laptops, computers, projectors, and software such as Microsoft Word and PowerPoint. Although some respondents stated that they are not very proficient, they can still access and utilize the technology to support the learning process in the classroom. This shows that there is a fairly good technological adaptability among teachers, although there is still room for improvement in terms of deep mastery and optimal pedagogical integration.

These results are in line with the research from Setyosari and Sihkabuden (2015), who stated that the success of the implementation of technology-based learning media is greatly influenced by the ability of teachers to operate devices and software independently. Internationally, a study by Tondeur et al. (2017) also shows that teachers' training and experience in using ICT (Information and Communication Technology) is highly correlated with the effectiveness of technology integration in the classroom. Therefore, even though teachers already have basic skills, further training support and strengthening ICT competencies are still needed to encourage a more comprehensive digital transformation in learning.

The majority of teachers at SMP Negeri 3 Sitolu Ori stated that they have used various technological devices in learning, especially laptops, computers, and projectors. Software such as Microsoft Word and PowerPoint were also mentioned by some respondents as tools in compiling and delivering learning materials. Some teachers said that they often use projectors when teaching in class, which shows the use of visual media to improve students' understanding of the material.

These results show that teachers in these schools have adopted basic technology functionally, although not all have mentioned the use of interactive digital media or online learning platforms. Research by Purwanto et al. (2020) confirms that the use of ICT by teachers in Indonesia is still dominated by basic applications such as Office and projectors, and has not touched the optimization of learning based on Learning Management System (LMS). Meanwhile, according to an international study by Hennessy, Ruthven, and Brindley (2005), the effectiveness of technology integration in learning does not only depend on the devices used, but also on the pedagogical understanding of teachers in using them strategically to improve the student learning process.

All respondents stated that in choosing technology-based learning media, they referred to the teaching materials and modules used in the classroom. This shows that teachers have applied the principle of conformity between the learning objectives and the chosen media, so that the use of technology is not random, but integrated with learning planning. Projectors, laptops, and applications such as Microsoft Word and PowerPoint are the most commonly used media, adapted to the topic and needs of the class.

This finding is in line with a study by Akhyar (2021) which emphasizes that learning media must be adjusted to basic competencies, material characteristics, and student needs, so that the learning process is more effective and meaningful. Meanwhile, internationally, Mayer (2009) in multimedia learning theory explains that the selection of the right media based on learning objectives can increase knowledge retention and transfer. Thus, teachers' habits of choosing media based on teaching modules are already a practice in accordance with modern pedagogical principles, although their effectiveness still needs to be further evaluated contextually.

All teachers interviewed stated that they had made technology-based teaching materials, mainly using laptops, as well as Microsoft Word and PowerPoint applications. Some teachers also mentioned that they displayed materials that had been created using projectors, and others used internet access through mobile phones to enrich learning content. These findings show that teachers already have basic skills in developing digital teaching media independently, which is very important in facing the challenges of 21st century education.

The ability of teachers to make ICT-based teaching materials is an important indicator in the integration of technology in learning. Research by Kurniawan and Ratnasari (2020) found that teachers who are able to design digital-based teaching materials are better prepared to face changes in learning models, including online learning. Meanwhile, according to Koehler & Mishra (2009) within the framework of Technological Pedagogical Content Knowledge (TPACK), teachers who have an understanding of technology and can integrate it with the content of the material and teaching strategies will be better able to create a meaningful learning experience. Thus, the results of this interview show that teachers at SMP Negeri 3 Sitolu Ori already have a strong foundation in the development of technology-based teaching media, although strengthening innovation and media diversity can still be improved.

The results of the interviews showed that all teachers observed an increase in students' involvement and understanding when using technology-based learning media, such as projectors (Infocus). Students become more active, enthusiastic, and easy to understand the material, compared to book- or module-based learning alone. In addition, most teachers also noted an increase in student learning outcomes, which was shown through assessment, class participation, and achievement of learning objectives.

This finding is strengthened by the results of research from Ningsih and Budiarto (2021) who concluded that the use of technology-based learning media can significantly increase student motivation and learning outcomes, especially in the context of visual and interactive learning. Globally, Clark and Mayer (2016) in the theory of multimedia-based e-learning also stated that the use of appropriate visual and digital media can increase student attention, retention, and understanding, because the learning process becomes more contextual and interesting. Therefore, the use of technology-based media not only supports the comfort of learning, but also contributes to improving the overall quality of learning.

Based on question number 6, it was concluded that teachers at SMP Negeri 3 Sitolu Ori consistently cited unstable internet networks as the main obstacle in the implementation of technology-based learning media. Almost all respondents experienced problems accessing online materials, while the number of projectors available was insufficient for use per class. In addition, some teachers also said that the power outage further worsened the situation. These infrastructure constraints directly hinder the effectiveness of technology in the teaching and learning process.

The findings are very much in line with the results of a study in Indonesia reported by Husen et al. (University of Mataram), that the limited number of devices, outdated device conditions, and weak internet networks have a negative impact on the effectiveness of digital learning even though the TPACK model is applied at SD Negeri 3 Jagaraga, (Husen et., al. 2020). Internationally, a study in Sri Lanka by Palagolla & Wickramarachchi found that the use of ICT in secondary schools is often hampered by inadequate infrastructure, lack of management support, and poor school planning, (Palagolla et., al. 2019). The combination of these findings confirms that infrastructure problems are not only local challenges, but general issues that require systematic handling at the institutional and policy levels of education.

All teachers stated that they felt comfortable using technology-based learning media, especially laptops and projectors, in the learning process. The main reason for this convenience is because laptops are accessible, practical, portable, and make it easy to access material from the internet, such as Google. Some teachers also emphasized that the use of laptops and projectors helps in conveying material visually and systematically, so that they feel more confident and efficient when teaching in class.

Temuan ini sejalan dengan hasil penelitian dari Lestari dan Sanjaya (2020) yang menyatakan that the comfort and ease of use of technological devices are important factors in teachers' readiness to integrate ICT in learning. Globally, Davis (1989) through the Technology Acceptance Model (TAM) also explained that perceived ease of use and perceived usefulness are the two main factors that influence a person in accepting and using technology. In other words, the level of comfort of teachers with laptops and projectors is a positive indicator that they are ready and able to adopt technology in learning, as long as the devices used are easy to operate and in accordance with teaching needs.

Most teachers stated that schools have provided facilities such as projectors, computers, and laptops, and encouraged teachers to utilize technology in the learning process. However, they also highlighted that the number of tools available is not enough for each class, so their use must still be done in turn. This shows that although the policy and spirit of schools have supported technology integration, the availability of infrastructure is still a major challenge.

These findings are in line with the results of research from a national journal by Nurtanto et al. (2020), which stated that the support of educational institutions has a great influence on the success of ICT integration in learning, but needs to be balanced with the provision of adequate facilities and infrastructure. Internationally, research by Tondeur et al. (2017) also shows that adequate school management support and facilities are a determining factor in the effectiveness of technology-based learning implementation.

Based on the results of interviews with 15 teachers at SMP Negeri 3 Sitolu Ori regarding expectations for the development of technology-based learning media, it appears that all respondents have high hopes for increasing the number and quality of technological media in schools. Almost all teachers expressed their desire for each class to have a technology device unit such as a projector independently, without having to share or alternate in its use. This reflects the urgent need for equitable distribution of technology facilities to support an effective and efficient learning process.

In addition to the need for the number of devices, some teachers also emphasized the importance of increasing teacher capacity through training in the use of technology-based learning media. This shows that not only the availability of devices is a concern, but also the competence of teachers in operating the media. Other expectations include the continuous development of technology and the improvement of supporting infrastructure such as the stability of the internet network in the school environment. This is in line with the results of research by Zhang & Lin (2020) which stated that strengthening infrastructure and teacher training are key elements in the success of technology integration in learning.

Based on the data from interviews from 15 teachers at SMP Negeri 3 Sitolu Ori, it can be concluded that the majority of teachers emphasize the importance of training for educators in using technology-based learning media. Almost all respondents suggested that the education office and schools provide continuous training so that teachers are more proficient and confident in managing technology learning media in the classroom. This reflects the urgent need to improve teacher competence in today's digital era.

In addition to training, some teachers also expressed their appreciation for the role of technology media that has facilitated the learning process, as well as the hope that the media will continue to be developed. Some respondents also highlighted the importance of support from the government and schools not only in the form of training, but also in access to learning software and hardware. These

findings are in line with research by Tondeur et al. (2017) which emphasizes that the success of technology integration in education is largely determined by institutional support and ongoing professional training for teachers.

Discussion

Based on the results of interviews with 15 teachers conducted by researchers at SMP Negeri 3 Sitolu Ori, it can be concluded that teachers are competent in using and accessing technology-based learning media in teaching in the classroom. The use of learning media is not only as an aid but also makes it easier for teachers to access learning materials in each teaching module. The use of technology-based learning media has a significant impact on teacher activities in the implementation of teaching and learning activities in the classroom, this can be assessed from several results found by researchers in the field.

1. All teachers who responded to this study stated that they were proficient in operating various technological devices, such as laptops, computers, projectors, and other supporting software, to access and present learning media in the classroom. This ability reflects a relatively good adaptation to developments in educational technology at SMP Negeri 3 Sitolu Ori. Based on these teachers' statements, the researchers concluded that the teachers at the school have thoroughly mastered the use of technology-based learning media. They are not only proficient in using hardware but also demonstrate an understanding of the use of technology as a means to improve the effectiveness of the teaching and learning process. However, the teachers also acknowledged that several obstacles remain, such as limited internet access, lack of further training, and limited time in preparing digital-based materials. These obstacles indicate that despite their good technological proficiency, additional support and facilities are still needed to optimize and distribute the use of technology in learning across all subjects.
2. Respondents had experience using various technology-based learning media, such as laptops, computers, Microsoft Word, PowerPoint, and projectors. Overall, projectors were the most frequently used tool, especially during classroom teaching. This indicates that respondents were not only familiar with using technological devices but also able to utilize them effectively in learning activities. Their ability to access and operate various technological media supports the integration of technology into a more interactive and efficient teaching and learning process.
3. Respondents selected and adapted the learning media used in class based on the teaching modules and material being taught. Projectors were one of the most frequently used media, supported by devices such as laptops, computers, and Microsoft Office applications. This approach ensured an effective learning process, aligned with the desired objectives. By referring to the teaching modules, teachers could deliver material precisely, maximize student understanding, and create a structured, technology-based learning environment.
4. Respondents stated that they had created learning materials using laptops and Microsoft Word and PowerPoint. These tools were used to design materials that were then displayed on a projector during class. Some respondents also used other devices, such as mobile phones, to access resources online. This indicates that teachers are accustomed to using technology to independently prepare learning materials. The use of digital devices supports effective material delivery and creates more interactive learning, in line with the demands of modern, technology-based learning.
5. The use of technology-based learning media has a positive impact on student learning processes and outcomes. The majority of respondents stated that students are more active, engaged, and understand the material more easily when learning using tools such as projectors or inFocus screens. Compared with conventional methods such as textbooks or modules alone, technology makes students more comfortable and focused while learning. This also has a significant impact on improving student learning outcomes. Thus, the integration of technology media in classroom learning has proven effective in maximizing learning objectives.
6. obstacles faced in the use of technology-based learning media at SMP Negeri 3 Sitolu Ori are an unstable internet connection and a limited number of projectors. The weak network makes it difficult for teachers to access online materials, while the insufficient number of projectors forces teachers to take turns using the equipment. Furthermore, power outages also disrupt the learning process. These obstacles result in less than optimal use of technology media to support teaching and learning activities in the classroom. Therefore, improvements to supporting facilities and infrastructure at the school are needed.

7. Respondents felt very comfortable using technology-based learning media, particularly laptops and projectors. Laptops were considered practical, accessible, and flexible because they could be carried anywhere. Furthermore, laptops made it easier for teachers to access materials from the internet, such as through Google, and to create and deliver learning materials in class. Projectors were also considered helpful in delivering material visually. Overall, the use of technology media increased the comfort and efficiency of the learning process, both in preparation and during classroom teaching.
8. The school strongly supports the use of technology-based learning media in the classroom. This support is demonstrated through the provision of facilities such as projectors, laptops, and computers. Although the number of devices available is still limited and insufficient for each class, the school continues to encourage teachers to utilize them to their full potential. The school is also working to increase the number of devices to ensure equitable use of learning media across all classes. This support demonstrates the school's commitment to improving the quality of learning through the gradual and sustainable use of technology.
9. Teachers at SMP Negeri 3 Sitolu Ori have high hopes for increasing the availability of technology-based learning media, especially projectors, in each classroom. Currently, the limited number of devices forces teachers to divide their time between using them. They also hope for training to improve their skills in using technology-based learning media. Furthermore, internet network stability is a concern. Overall, the teachers hope the school will continue to support and develop technological facilities and competencies to support a more effective and efficient learning process .
10. Teachers highly appreciate the benefits of technology-based learning media in supporting the teaching and learning process in the classroom. They feel they are helpful and hope that these media will continue to be developed. However, teachers' competency in their use remains to be improved. Therefore, teachers recommend that schools and education offices actively provide ongoing training on the use of technology-based learning media. This training is expected to improve teachers' skills in accessing and managing these media, thereby continuously improving the quality of learning in schools.

Comparison of Previous Theories

Competence is a fundamental characteristic possessed by an individual and directly related to superior work performance. Teacher competence encompasses the knowledge, skills, attitudes, and behaviors necessary to carry out learning tasks. In the context of using technology-based learning media, teacher competence encompasses not only pedagogical skills but also technical skills in operating and utilizing technology effectively (Mulyasa, 2019).

According to Bates (2021), technology-based learning media encompasses various digital tools and resources used to support the teaching and learning process, such as computers, the internet, learning applications, and interactive multimedia. These media can enhance learning effectiveness by providing a more engaging and interactive learning experience.

Based on the three theories above, the following is a comparison of the theory with the researcher's findings in the field.

a. Theory (2019)

According to Mulyasa (2019) in the context of using technology-based learning media, teacher competencies not only include pedagogical abilities, but also technical abilities in operating and utilizing technology effectively.

Field findings:

Field findings at SMP Negeri 3 Sitolu Ori are very much in line with this theory, teacher competence, operation of technology-based learning media:

1. Teachers have the ability to operate and utilize technology-based learning technology effectively.
2. Teachers demonstrate a good understanding of the function of technology in increasing learning effectiveness.
3. There are still limitations in supporting infrastructure, especially internet networks.

In addition, teachers do not only use devices, teachers understand that technology can be used to support student engagement, present more interactive materials, and support a variety of learning methods.

b. Bates Theory (2021)

According to Bates (2021), technology-based learning media includes various digital tools and resources used to support the teaching and learning process, such as computers, the internet, learning applications, and interactive multimedia.

Field Findings

Field findings at SMP Negeri 3 Sitolu Ori show that the theory is very relevant to the research results:

1. Projectors are the most frequently used technology learning media in the classroom, supported by devices such as laptops and Microsoft Office applications, indicating a fairly active integration of technology in the teaching and learning process.
2. Unstable internet networks and power outages still hamper the optimal use of technology in learning.
3. The use of technology-based media can increase student understanding, interest, and participation compared to conventional methods, which has a positive impact on learning outcomes.

CONCLUSIONS

The level of teacher competence at SMP Negeri 3 Sitolu Ori in using technology-based learning media is adequate. All informants stated that they are able to operate devices such as laptops, computers, projectors, and using learning software such as PowerPoint and Word. Teachers are also independent in creating digital materials. And adapting learning media to the teaching materials. In addition, teachers also feel comfortable using technological devices, which indicates the presence of individual abilities and readiness to utilize learning technology. However, even though individual teachers have the competence, external constraints such as limited facilities and infrastructure become the main obstacle that reduces the effectiveness of using technology-based media.

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