



Teacher Technology and Communication Utilisation: A Review of Teacher Implementation In 21st Century Elementary Schools

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Keywords:	Abstract
Utilization of Information Technology, Teacher Communication, 21st century, Literature Review	<p>Background: This study aims to describe studies related to how ICT is utilized and the obstacles to the utilization of ICT in 21st century learning in elementary schools.</p> <p>Method: This study uses a qualitative descriptive approach and a type of library research or (literature review). The data analysis technique used is content analysis. The validity of the data used is the persistence of observation and triangulation of sources.</p> <p>Result: The results of the study showed that some teachers have used learning media, both ICT and NON-ICT, to support learning, some class teachers do not use learning media for reasons of limited costs and inefficiency in making media, as well as inadequate ICT skills of teachers, hindering communication between teachers and students or even between students, the possibility of misuse of the use of ICT media in the field of education. In the use of computer media, there are obstacles and constraints such as application errors when used, and technical symptoms of electricity such as power outages. Communication that occurs in learning is still less effective, because in some classes there are still students who are embarrassed to ask, or no one asks questions, so the teacher assumes that students already understand the material that has been delivered.</p> <p>Implication: This study is the importance of improving teacher competence in utilizing ICT optimally to support 21st century learning in elementary schools. The results of this study indicate that although the use of ICT can improve the quality of learning, there are various obstacles, such as limited facilities and lack of teacher ability to integrate technology effectively.</p> <p>Novelty: This research is based on an in-depth understanding of the challenges faced in implementing ICT in primary schools, especially in rural areas, which provides new insights for the development of more targeted policies and training.</p>

INTRODUCTION

The use of Information and Communication Technology (ICT) in education has become an inseparable part of the learning process in the 21st century. ICT not only functions as a subject, but also as a means of cross-subject learning. Teachers are required to be able to use ICT devices such as LCD, internet, and computers/laptops to create efficient and effective learning. However, in reality, there are still teachers who have not utilized the available technology media in the learning process. This shows that the implementation of pedagogical competence, especially in terms of the use of ICT, is still a challenge in elementary school environments.

The use of Information and Communication Technology (ICT) has become an important part of the learning process in the 21st century, in reality there are still elementary school teachers who have not optimally integrated ICT into learning, even though facilities such as LCD, internet, and computers are available. This shows that the implementation of teacher pedagogical competence, especially in terms of ICT utilization, is still a challenge. In addition, teacher communication strategies in delivering materials have not been fully able to encourage active involvement of students, which has an impact on low student participation in learning. This problem needs to be studied further to determine the extent to which teachers have implemented ICT, the obstacles they face, and solutions that can be applied so that the learning process becomes more effective and meaningful.

Previous studies have discussed the importance of teacher mastery of pedagogical competence and the role of ICT in improving learning effectiveness. However, most studies use a quantitative approach or field case studies to assess the extent to which teachers apply ICT. In this study, the approach used is a literature study, which distinguishes it from previous studies.

Previous studies have discussed the importance of teacher pedagogical competence and the use of Information and Communication Technology (ICT) in the learning process. However, most of these studies use a quantitative approach or direct field observation in analyzing the extent to which teachers apply ICT in the classroom. In addition, there are still few studies that review the use of ICT from an in-depth literature study perspective, especially in the context of basic education in the 21st century. Another gap lies in the lack of discussion related to teacher communication strategies in delivering material, especially how communication methods such as "motivation of today" can affect student engagement in learning. Therefore, a study is needed that not only describes field conditions but also examines theoretically through current literature to provide a more comprehensive understanding.

This study aims to provide an overview of how elementary school teachers implement pedagogical competence, especially in the use of ICT in learning in the 21st century. This study also aims to identify various obstacles faced by teachers in using technology as a learning medium, as well as to find and offer solutions that can be applied to improve the effectiveness of ICT use. In addition, this study also highlights the importance of communication strategies used by teachers to build active student involvement, as part of an effort to create more interactive and meaningful learning.

METHOD

Type and Design

This research is a qualitative descriptive study with a library research design or literature review. This approach is used to examine the focus of the research through the analysis of various relevant literature.

Data and Data Sources

The data collected are in the form of words, sentences, and images that have deeper meaning than statistical figures, as explained by Nugrahani (2014). The data sources in this study come from various scientific journals obtained through platforms such as the Directory of Open Access Journals (DOAJ) and other e-journals that are related to the research topic.

Data Collection Technique

Data collection using documentation studies and literature studies in this study was carried out by collecting, selecting, analyzing important notes, obtained from 20 literatures which are useful for solving problems in the focus of the research in the form of checklist sheets and interviews with teachers.

Data Validity

In analyzing the data, the researcher used content analysis techniques, which aim to deeply understand the meaning and content of written information related to the research theme. To ensure the validity of the data, the researcher applied the technique of observation persistence through careful repetition of reading the source, and using source triangulation to compare similar information from various references to obtain valid and reliable data.

Data Analysis

Data analysis in this study uses content analysis techniques. This technique aims to examine in depth the meaning of information written in various literature sources that have been collected. Content analysis is carried out by reviewing documents related to the research topic, then identifying, grouping, and interpreting important themes that emerge. This process involves repeated reading of literature sources to understand the context and substance of each piece of information, and assessing its relevance to the focus of the research. With this approach, researchers not only cite the contents of the literature, but also evaluate and synthesize information to obtain meaningful conclusions that are in accordance with the objectives of the research.

RESULT

Utilization of Technology in Learning

To achieve learning objectives, teachers can apply Information and Communication Technology. The use of ICT is carried out by teachers using a projector screen (LCD), sound system to display images, videos or power points. The application of ICT media in learning can foster student activity in participating in learning, where in the 21st century students are required to be active in learning. The importance of using media in learning can make it easier for teachers to be more efficient in delivering material, this is in line with the understanding of technology by Dayat Suryana (2012:26) technology is the development of a media/tool that is used efficiently to process and control a problem.

In the 21st century, the use of technology in everyday life has become a necessity in various fields. According to Rusman, the word technology comes from the Greek, *techne* which means 'skill' and *logia* which means 'knowledge'. In a narrow sense, technology refers to objects that are used to facilitate human activities, such as machines, tools, or hardware. So technology is an object/tool/hardware that functions to facilitate human activities. Eggen and Kauchak (2012) standards for 21st century schools or the digital century for teachers and students are interrelated with the implementation of technology in learning (Eggen. P., and Kauchak 2012).

The use of ICT media is adjusted to the learning material and needs in learning so that learning is not conventional (only using lecture methods, questions and answers and groups/cooperatives). In addition, this can be used by teachers to hone their ICT skills by creating creative and varied media to make students active in learning and learning to gain

broad knowledge through the use of ICT. Previous research conducted by (Karomah nd) utilizing information technology, teachers can quickly access the knowledge material needed so that teachers are not limited to the knowledge they have and only certain fields of study that are mastered. In its implementation, many teachers have used ICT media to support learning, such as that done by a fifth-grade teacher at SD Islam Al-Muslimun, the teacher uses an LCD to display videos (visuals) and images in Indonesian language learning activities (Amalia and Taufik 2019), and teachers use LCDs to support learning activities in the classroom, to display PPT, videos, or images that are relevant to learning, this is in line with previous research Analysis of Teacher Pedagogical Competence in Implementing Basic Teaching Skills in Thematic Learning by Benedicta Monica Anindya Putri, Mudzanatun, Anggun Dwi Setya Putri (Monica et al. 2020). In the study conducted, it was found that several teachers thought that using media would reduce interaction between teachers and students or even between students themselves. (Dewi and Hilman 2018).

Teacher Communication with Students

Teachers who care about their duties will try and find the best way to make abstract concepts real. Teachers provide examples and have the ability to lead discussions effectively and use appropriate learning strategies. Teachers who prioritize their duties will pay more attention to how they perform. Teachers who care more about the impact of learning will try to facilitate understanding to their students and build a learning environment that is not intimidating. Teachers like this communicate by providing a clear and organized learning structure and through discussion. Meanwhile, a learning environment that is not intimidating is built by teachers providing reinforcement, opening up, testing understanding and stating clearly what is expected from their learning. 5 Alo Liliweri's theory says that communication is the exchange of messages in writing and orally through conversation, or even through imaginary depictions (Alo 2011). When the teacher delivers learning materials, the teacher uses simple language with the aim of making it easy for students to understand. If the teacher explains a foreign term, the teacher provides a brief, concise and clear explanation (Monica et al. 2020). Then the teacher will ask students questions about their understanding of the material that has been delivered. When a student asks a question, the teacher responds appropriately and sometimes helps clarify the question the student means.

The teacher will provide a response to questions or statements submitted by students, this shows the creation of active and conducive learning. However, in its implementation, there are students who do not dare to express their opinions and ask the teacher, this is relevant to previous research conducted by (Mandasari, Waluyo, and Harista 2020), based on the results of observations in the classroom during teaching and learning activities, each teacher delivers material to students then the teacher will ask students about their understanding of the material presented. However, in some classes there are still students who are embarrassed to ask, or no one asks questions, and in other classes when there are students who ask questions, the teacher in the class responds appropriately, and sometimes helps clarify the questions meant by the students.

Constraints in Using Learning Media Technology

The use of technology as a learning medium has several obstacles, including: (1) Teachers do not yet have adequate ICT skills, in the 21st century teachers are required to be able to master ICT skills, this is explained by (Dede 2009) "21st century skills are different from 20th century skills, especially because of the emergence of very sophisticated information and communication technology.", (2) Cost limitations; the existence of cost limitations causes a lack of facilities obtained by schools to support learning, (3) Inefficient to create media; some teachers consider that the media used only makes learning inefficient because they have to prepare the media first, (4) Teachers assume that the use of media can hinder communication between teachers and students or even between

students, (5) The learning process that occurs is less towards education, but more towards training. According to Gerald R. Miller (Deddy Mulyana 2013), "Communication aims to influence the behavior of the recipient, this can happen when a source sends a message to the recipient consciously". This can indicate that teachers assume that students already understand the material and continue to the next material, this causes less effective and efficient communication between teachers and students. In creating effective and efficient communication in its implementation there are obstacles, such as: (1) Students feel embarrassed to ask questions so that no one asks questions, (2) Teachers have not found an effective learning method to build communication with students, (3) Lack of varied methods causes low student interest in participating in learning, (4) Monotonous learning, lack of development of self-confidence in students by giving praise or motivating students to be more confident in their abilities.

Solutions to the Constraints of Using Learning Media Technology

According to Dayat Suryana, technology is the development of a media/tool that can be used more efficiently to process and control a problem. Utilizing ICT available in schools helps teachers be more efficient in delivering learning. However, not all teachers have adequate ICT knowledge. The solution that can be done to help teachers with minimal knowledge of Information and Communication Technology and Teacher Communication is by providing training either through seminars or workshops to help improve teachers' ICT and communication skills through the following methods: (1) Transferring teachers to carry out training activities, seminars, workshops and briefings on ICT. (2) Carrying out ICT socialization and training activities by bringing in resource persons who are experts in the field for all teachers (3) Providing improvements to 7 ICT-based equipment, both facilities and media that support learning. (4) Providing training and implementation of learning using various ICT-based strategies and methods, such as research conducted by (Ika Candra Sayekti, Muhammad Rais Syakur 2016) teachers are given general exposure to media material, then invited to practice making blogs and posting learning materials. Then teachers are given the opportunity to practice (5) Carrying out study visits to schools that are more advanced in the field of ICT. (6) Teachers are more active in building communication that can be done by asking questions to students about their understanding of the material, by building communication that involves students, learning becomes active, there is failure in learning due to weakness and lack of communication systems, therefore teachers must elaborate on effective communication patterns in the teaching and learning process.

CONCLUSION

This study provides novelty in terms of practical approaches related to the use of learning media, especially ICT and non-ICT media, in the context of learning in elementary schools. The focus on teachers' ability to integrate ICT effectively and empathetically shows an important contribution to the understanding of teacher pedagogical competence in the 21st century learning era. In addition, this study also highlights teachers' perceptions of ICT and its impact on learning interactions, which have not been widely studied in the context of elementary education in Indonesia.

This study has several limitations. First, the study is still descriptive and has not reached a deeper analysis related to the relationship between the variables of ICT use and the improvement of student learning outcomes quantitatively. Second, the data obtained is limited to the environment and conditions of certain schools, so the results cannot necessarily be generalized to all elementary schools in Indonesia. Third, the research perspective is still dominated by the teacher's perspective, while the views of students and policy makers have not been fully explored.

The implications of this study indicate the importance of improving teacher competence in the use of ICT to support active and effective teaching and learning processes. Therefore, it is recommended that schools and the government continue to encourage regular ICT training for teachers. Technology-based learning support facilities also need to be improved so that ICT-based learning can run optimally. In addition, teachers are encouraged to build effective and empathetic communication patterns with students in order to create meaningful learning interactions. It is also hoped that further research can develop an ICT-based learning model that is integrated with an interpersonal communication approach in the classroom.

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