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The Impact of Teachers' Mastery of Information and Communication Technology on Student Learning Motivation During Pandemic

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ABSTRACT

This study aimed to determine whether teachers' mastery of ICT influenced students' motivation to learn during this pandemic time. This study employs a quantitative research design with a correlational research design. The participants in this study were 30 fourth-grade students from SDN Karangasem 02 Surakarta. Because every member of the population was sampled, the sampling strategy used in this study was a saturated sampling strategy. A questionnaire was used to collect data on ICT mastery and learning motivation. The Product Moment Correlation is used to test the validity of each item statement, and Cronbach Alpha is used to test the reliability. The normality test employs the Liliefors method, the homogeneity test employs the Harley method, and the hypothesis test employs the t-test. The results of this study indicate that there is an influence of teachers' ICT mastery on students' learning motivation during the pandemic. The teacher's level of ICT mastery could have had a 38% impact on the motivation of students to learn during the pandemic. The findings of this study provide elementary school teachers and school administrators with information about the impact of teachers' ICT mastery in online learning during the pandemic on students' learning motivation.

Keywords: ICT Mastery, Learning Motivation, Online Learning

ABSTRAK

Tujuan dari penelitian ini adalah untuk mengetahui adakah pengaruh penguasaan TIK yang dimiliki oleh guru terhadap motivasi belajar siswa pada pembelajaran dari selama masa pandemi. Penelitian ini menggunakan jenis peneltian kuantitatif dengan desain penelitian korelasional. Populasi dalam penelitian ini adalah siswa kelas IV SDN Karangasem 02 Surakarta (n=30). Teknik pengambilan sampel pada penelitian ini menggunakan teknik sampling jenuh karena seluruh anggota populasi dijadikan sampel. Instrumen pengumpulan data menggunakan metode angket yang berhubungan dengan penguasaan TIK dan motivasi belajar. Uji validitas tiap butir pernyataan menggunakan Korelasi Product Moment, sedangkan uji reliabilitas mengunakan Cronbach Alpha. Uji normalitas menggunakan metode Liliefors, uji homogenitas menggunakan metode Harley, dan uji hipotesis menggunakan uji t. Hasil dari penelitian ini menunjukan bahwa terdapat pengaruh penguasaan TIK guru terhadap motivasi belajar siswa di masa pandemi. Sebesar 38% motivasi belajar siswa di masa pandemi dipengaruhi oleh faktor penguasaan TIK guru. Hasil dari penelitian ini memberikan guru sekolah dasar dan pihak sekolah informasi mengenai pengaruhnya penguasaan TIK guru dalam pembelajaran daring di masa pandemi terhadap motivasi belajar siswa.

Kata kunci: Penguasaan TIK, Motivasi Belajar, Pembelajaran Daring

A. INTRODUCTION

At the end of 2019, the COVID-19 pandemic spread throughout the world. This outbreak first appeared in Indonesia in March 2020. COVID-19, also known as the coronavirus pandemic, is a virus that attacks the respiratory tract and causes mild symptoms such as fever and cough. Most people recover within a few weeks. However, in some cases, this virus can cause difficulty breathing and even death. COVID-19 can spread from person to person through handshakes and another human-to-human contact; at a distance of just one meter, the virus can spread from one person to another. According to the authorities, there is no vaccine or specific medication that can stop the spread of this virus (Yu et al. 2020). So as to prevent the virus from dispersing widely, human interactions must be kept to a minimum.

The effect of the COVID-19 pandemic can be felt in many areas of life, including tourism, the economy, and education. This has resulted in the discontinuation of face-to-face learning activities in schools and universities. As a result, the Indonesian government, through the Ministry of Education and Culture (Kemendikbud), has established distance learning as a substitute for face-to-face learning as of April 2020. There are two main categories of distance learning: online distance learning.

Online learning can be divided into two types: synchronous learning and asynchronous learning (Kurniasari, Pribowo, and Putra 2020). Synchronous learning is learning that occurs at the same time (in real time) (Chaeruman 2017). For instance, when conducting a teleconference-based learning session, the teacher and students will convene simultaneously. Asynchronous learning is learning that does not take place at the same time. Giving assignments through a learning management system (NGO) and providing material through sharing platforms such as YouTube or Google Drive are common examples of asynchronous learning activities.

This description leads to the conclusion that online learning is a teaching and learning process based on electronics. Bambang Budhianto (2020) lists the use of information and communication technologies as one of the characteristics of online learning (ICT). Information technology can take the form of web meetings (zoom meetings, Google meetings, and so on) and NGOs (open learning, google classroom, schoology, and so on).

Online learning is relatively new in Indonesian education, particularly at the elementary and secondary school levels. However, during the pandemic, online learning must continue to foster student learning motivation while keeping learning objectives and achievements (Badrudin, Ginanjar, and Wartono 2020). This learning achievement is typically measured

through daily assessments, mid-semester assessments, and end-of-semester assessments.

According to various studies, online learning at the university level can still have a positive impact on students' learning motivation. According to Lockman and Schirmer (2020) also Gopal, Singh, and Aggarwal (2021) at an Indian university who claimed that online learning produced better results for students than traditional instruction (face to face). Yusnilita (2020) mentions in her research at Baturaja University that learning from provides several benefits in the student learning process, such as a more practical and flexible way of learning, despite the fact that students must pay more for internet fees.

This is in contrast to what occurred at the elementary school level, particularly at SDN Karangasem 02 Surakarta. Researchers discovered that students' learning motivation decreased during online learning based on observations and interviews conducted during the School Field Experience (PLP). When students learn face-to-face in school, they are happier and more focused. According to research conducted by Boardman, Vargas, and Cotler (2021), students find it difficult to develop motivation to learn during online learning and frequently procrastinate in completing assignments.

The information presented above indicates that there are issues with the implementation of online learning at SDN Karangasem 02 Surakarta. The implementation of online learning is influenced by numerous factors. The factors that influence the success of online learning, according to Dillon and Gunawardena (in Pangondian, Santosa, and Nugroho 2019), are: a) technological factors; b) teacher competence factors; and c) student characteristics factors.

Teacher competency is critical to the success of online learning. The most important factor is not the technology itself, but how the teacher can use technology to improve the learning process. Students who study in classes taught by teachers who have a good understanding and mastery of ICT tend to produce better learning (Pangondian, Santosa, and Nugroho 2019). With the advancement of technology, the teacher is no longer only a source of learning. Teachers must be able to master information and communication technology as professionals in order to develop self-competence and update their knowledge in response to changing conditions (Andriana, Ramadayanti, and Noviyanti 2020).

Mastery of ICT teachers is one of the elements assessed in teacher professional competence. This is also explained in Regulation of the Minister of National Education Number 16 of 2017, which states that one of the core competencies that classroom teachers must possess is the ability to use information and communication technology for learning purposes. According to Munir (2014) claims that the following ICT competencies must be mastered by teachers in his book, ICT Competency Framework for Teachers: a) knowledge

of, mastery of, and understanding of the ICT curriculum; b) knowledge of and proficiency in the operation of computers and other ICT supporting devices; c) ability in the selection of teaching software; d) knowledge of the techniques of teaching using computers; and e) understanding of ethics, laws, and safety; and f) are aware of the most recent educational technology.

According to the description above, teachers' ICT mastery is critical to achieving learning success and increasing learning motivation. Even more so in this pandemic, where ICT is required for all activities. In a study by Ma'rifah, Mulyanto, and Isfarudi (2021), the correlation between teachers' ICT proficiency and student achievement was found to be both positive and significant. In line with that, Prabowo, Juanda, and Pamungkas (2020) stated that teachers' ICT mastery has a positive and partially significant influence on student learning achievement. Online learning during a pandemic will be the best alternative to face-to-face learning if teachers are skilled in ICT.

In practice, few teachers have fully utilized ICT in the online learning process. Many elementary schools in Surakarta that use online learning only use the WhatsApp application to share pictures, videos, and YouTube links that explain material (Sulistyaningrum, Sutama, and Desstya 2021). This is consistent with the findings of researchers conducting PLP at SDN Karangasem 02 Surakarta. In these elementary schools, not all teachers make full use of ICT in the learning process. Teachers continue to use less technology in the classroom, such as only sending out modules via WhatsApp groups without providing any explanation or having students participate in WhatsApp group video calls with limited time to explain the material.(Batubara 2017)

Due to the facts stated above, students will inevitably be required to study the learning materials independently. This enables students' motivation to learn to decline. Even in the midst of a pandemic, learning will be far more effective if ICT is used. The purpose of this study is to analyze the impact of teachers' ICT mastery at SDN Karangasem 02 Surakarta on students' motivation to learn during the pandemic.

B. LITERATURE REVIEW

1. Teachers' Mastery of ICT

Teachers' mastery of ICT is the knowledge, skills, and attitudes in the use of ICT that must be possessed and mastered by teachers to carry out learning. Teachers' mastery of ICT is also defined as abilities that must be mastered by teachers in the context of developing learning using ICT starting from planning, implementation, and evaluation (Batubara 2017). In the Regulation of the Minister of National Education Number 16 of 2007 concerning Academic Qualification Standards and Teacher Competencies, teachers' mastery of ICT has two functions for teachers, namely ICT functions as self-development and communication (including professional competence) and ICT functions as a supporter of the learning process (including in pedagogical competence).

According to Herliani and Wahyudin (2018), teachers' mastery of ICT can be mapped into three levels of ability, including: a) technological literacy; b) deepening of knowledge; c) knowledge creation. At the knowledge literacy level, teachers must know where, with whom, when, and how to apply ICT in learning activities. This level is closely related to digital tools or applications. At the level of deepening of knowledge, teachers must have the ability to guide students in the process of creating, implementing, and monitoring, as well as providing input in completing student assignments by optimizing the use of ICT. At the level of knowledge creation, teachers must be able to design and create learning processes that can hone students' cognitive, of course by optimizing ICT.

2. Student Learning Motivation

According to Sardiman (2012) in his book entitled Interaksi dan Motivasi Belajar Mengajar, states that learning motivation is a desire in the form of an urge to learn. If individuals want to achieve success in learning, then in him there must be a desire to learn or motivation to learn first.

According to Djaali (2013) in his book entitled Psikologi Pendidikan, states that learning motivation is a physiological and psychological state that exists within an individual that encourages him to carry out certain activities to achieve goals in these activities. In learning activities, the motivation to learn is marked by the achievement of learning objectives.

According to Syaiful (in Badaruddin 2015) motivation is a psychological state in the form of encouragement that comes from the individual in a conscious or unconscious condition to carry out an activity with a specific purpose. Of course, on learning motivation, certain goals to be achieved are learning success.

According to Uno (2011) indicators of student motivation can be grouped into:

a. There is a desire and desire to achieve success. The desire and desire to succeed can also be called the achievement motive. Students who have an achievement motive will complete the task completely.
b. There is a drive and a need to learn. Not all students are motivated to succeed in learning with achievement motives. There are also students who are diligent in studying so as not to be scolded by the teacher or their parents.
c. There are hopes and dreams for the future. For example, a grade increase can be an encouragement in student learning. This is because students think that going to class is a hope.
d. There is a reward in learning. Rewards in this study can be in the form of verbal praise or grades such as smart, excellent, great.
e. There are interesting activities in learning. Interesting activities will make teaching and learning activities more meaningful.
f. There is an environment that is conducive and supports the process of carrying out learning activities.

From some of the expert opinions above, it can be concluded that learning motivation in students is a physiological and psychological state of students in the form of encouragement from within to carry out learning activities with the aim of achieving the learning objectives.

C. RESEARCH METHOD

This study employs quantitative research because it focuses on numerical data analysis using statistical techniques. Quantitative research is research in which the data is in the form of numbers that can be analyzed using statistical techniques with the goal of testing predetermined hypotheses. This study employs a correlational research design. Correlational research, according to Mustafa, Gusdiyanto, and Victoria (2020) correlational research examines the relationship between variables or groups of variables and other variables. The predicting variable is referred to as the independent variable, while the predicted variable is referred to as the dependent variable. The independent variable in this study is the teacher's ICT mastery, while the dependent variable is student learning motivation.

The study was conducted on 30 fourth-grade students at SDN Karangasem 02 Surakarta. In this study, non-probability sampling was used. Given that the entire population is used as

a sample, saturated sampling is the non-probability sampling technique that is employed. As a result, the sample size in this study was 30 fourth-grade students.

Documentation and questionnaires were used as data collection instruments in this study. The questionnaire that was selected was a direct closed questionnaire because the questions were meant to explore the events that the respondents had personally experienced, and the respondents only had to select the pre-selected answers in order to respond to them. It is necessary to test the questionnaire before using it. The test consists of two parts: 1) the validity test, which determines whether or not the questionnaire is valid. Each questionnaire item's analysis results will be compared with the r_{table} and a significance level of 5%. If $r_{count} > r_{table}$ then it is declared valid, but if $r_{count} < r_{table}$ then it is declared invalid; and 2) reliability test, which determines whether the questionnaire is reliable or not. The questionnaire analysis results will be compared to the *r alpha* table, with a significance level of 5%. If $r_{count} > r_{table}$ the questionnaire is considered reliable, but if $r_{count} < r_{table}$ then it is considered invalid.

When all of the data had been collected, data analysis was performed. The statistical tests used are as follows: 1) A prerequisite test consists of: a) a normality test to determine whether or not the sample taken is normally distributed. The Lilliefors normality formula was used in this study. If the value $l_{count} < l_{table}$ with a significance level of 5%; b. A homogeneity test is used to determine whether or not a sample is normal. Because the existing data have the same number of n, the Harley homogeneity formula is used in this study. The Harley test compares the largest variant to the smallest variant. If the value of $f_{count} < f_{table}$ with a significance level of 5%: 2) hypothesis testing for the first step using a simple correlation formula / product moment (r test) then t test. This r-test attempts to determine the relationship between two or more variables if the data is interval or ratio and the data source (from two or more variables) is the same. By comparing t_{count} dengan t_{table}. If $t_{count} < t_{table}$ is accepted; however, if $t_{count} > r_{table}$ then HO is rejected. The following hypotheses were tested in this study:

H_O : There is no effect of teacher's ICT mastery on student motivation at SDN Karangasem 2 Surakarta during the pandemic.

H_i : There is an effect of teacher's ICT mastery on student motivation at SDN Karangasem 2 Surakarta during the pandemic.

The questionnaire arrangement was generated using the teacher's ICT mastery indicators, which included computer operation, application software, internet skills, and website skills (Ilsa 2021). In addition, indicators of student learning motivation include students' curiosity about learning materials, enthusiasm during learning, and efforts to

achieve maximum results (Chumairoh 2017). The distribution of the questionnaire indicators is shown in Table 1 below:

Tabel 1. Questionnaire Indicator

Indicator	Question Number
Operating a computer	1, 2, 3, 4
Application software	5, 6, 7, 8, 9, 10
Internet knowledge	11, 12
Website expertise	13, 14, 15
Students' interest in learning materials	16, 17, 18, 19, 20
Enthusiastic learners during lessons	21, 22, 23, 24, 25
Efforts to maximize results	26, 27, 28, 29, 30

D. RESULTS AND DISCUSSION

1. Analysis of Prerequisite Test

a. Instrument Validity Test

Validity test used to determine the validity of each item of the questionnaire statement using the Pearson Product Moment correlation formula, with the following results:

Tabel 2. Validity Test Results

Question	*rxy*	r_{tabel} (0.05; 30)	Result
1	0.486	0.361	Valid
2	0.366	0.361	Valid
3	0.614	0.361	Valid
4	0.757	0.361	Valid
5	0.305	0.361	Invalid
6	0.134	0.361	Invalid
7	0.712	0.361	Valid
8	0.318	0.361	Invalid
9	0.464	0.361	Valid
10	0.484	0.361	Valid
11	0.563	0.361	Valid
12	0.619	0.361	Valid
13	0.198	0.361	Invalid
14	0.592	0.361	Valid
15	0.278	0.361	Invalid
16	0.043	0.361	Invalid
17	-0.365	0.361	Invalid
18	0.439	0.361	Valid
19	0.026	0.361	Invalid
20	0.026	0.361	Invalid
21	0.634	0.361	Valid

22	0.657	0.361	Valid
23	0.579	0.361	Valid
24	0.132	0.361	Invalid
25	-0.167	0.361	Invalid
26	0.498	0.361	Valid
27	0.289	0.361	Invalid
28	0.349	0.361	Invalid
29	-0.471	0.361	Invalid
30	0.188	0.361	Invalid

b. Reliability Test

The reliability test used to determine the level of reliability of an instrument in this study used the Cronbach Alpha formula with the following results:

Tabel 3. Reliability Test Results

Alpha Value	Set Value	Result
0.847	0.6	Reliable

c. Normality Test

The Liliefors formula is used in this study to determine whether the data is normally distributed or not, yielding the following results:

Tabel 4. Normality Test Results

Variable	l_{count}	l_{table}	Result
x	0.135	0.161	Normal
y	0.126	0.161	Normal

d. Homogeneity Test

The Harley test formula was used to determine whether the power in this study has the same characteristics (homogeneous) or not. The following results were obtained:

Tabel 5. Homogeneity Test Results

f_{count}	f_{table}	Result
1.824	1.840	Homogeneous

2. Hypothesis Testing

The first step in testing the hypothesis in this study is to find the r value or correlation coefficient using the product moment correlation formula. The t-test is then used to determine whether or not the hypothesis in this study is accepted. The t-test results are as follows:

Tabel 6. Hypothesis Test Results

t_{count}	t_{table}
3.583	2.048

Based on the table above, it can be seen that the results of $t_{count} = 3.583 > t_{table} = 2.048$ imply that H_o is rejected and H_i is accepted. Teachers' ICT mastery has an impact on student motivation at SDN Karangasem 02 Surakarta during pandemic. This means that there is a positive and significant relationship between teachers' ICT mastery and students' learning motivation of 0.616 (r value).

The correlation above has a coefficient of determination of $0.616^2 = 0.38$. This means that 38% of the variance in the student learning motivation variable can be explained by variables in the teacher's ICT mastery variable. In other words, the teacher's ICT mastery determines 38% of students' learning motivation during the pandemic, while other factors determine 62%.

According to the description given above, it can be concluded that during the pandemic, the fourth grade students at SDN Karangasem 02 Surakarta were less motivated to learn due to their teacher's lack of proficiency with ICT. Teachers with good ICT skills can realize a more effective and efficient learning process, increasing students' learning motivation during the pandemic. According to Shofia and Ahsani (2021), mastery of ICT in learning is crucial. ICT can be used to support the implementation of the distance teaching and learning process with good ICT mastery.

To create fun learning, teachers, as the primary actors in education, must be able to innovate and practice their ICT mastery. In fact, there are numerous ICT-based media, applications, and platforms available to teachers to support online learning. WhatsApp is one platform that is simple to use. Teachers can use WhatsApp to assign homework, interact with students, and collect homework (Kuntarto, Chan, and Pratiwi 2021). Other ICT media that can be used in elementary school learning include computers, laptops, computer networks, printers, scanners, video players, digital cameras, voice recorders, and so on (Elston 2007).

In reality, however, many teachers are still technologically stuttering. Teachers are unable to fully utilize existing ICT applications or platforms for online learning. The lack of teacher quality related to the use of ICT will have an impact on the quality of online learning during the pandemic (Sucipto 2022).

In line with the description above, in the response to the questionnaire that has been filled out by students. Students believe that, while learning occurs through Zoom meetings or Google Meet, teachers rarely use supporting applications with appealing designs, such as Microsoft Power Point. As a result, students are frequently sleepy and bored while learning.

This demonstrates that during the pandemic, the teacher's mastery of ICT has an effect on students' learning motivation in online learning.

E. CONCLUSION

Based on the findings and discussion above, it is possible to conclude that the teacher's mastery of ICT will influence students' learning motivation in online learning during the pandemic. During the pandemic, the teacher's ICT mastery factor influenced up to 38% of students' learning motivation. Other factors accounted for 62% of the total.

The results of this study will be useful for: 1) Teachers in elementary schools. The data from this study can be used as information and insight in improving ICT mastery, particularly on digital platforms in the application of learning online, thereby increasing student motivation and learning outcomes during the pandemic. 2) The institution. This study's findings can be used to evaluate teacher performance and improve online learning strategies.

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