

## **Teacher Competence in Online Learning and Technology Adaptation Strategy for Elementary Teachers in Semarang City**



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**ABSTRACT:** This study's aim is to investigate how teachers adapt to technology-based learning, as well as their originality and creativity in post-online or face-to-face learning. Even though Covid-19 has begun to drop, it is still a threat, especially to elementary school students, as is well recognized. During a two-year period, online learning proved ineffective at improving the quality of students's education. The two-year online education program prepares teachers to be proficient with information technology. This inquiry employed a mixed method, which refers to the use of both quantitative and qualitative research approaches in a single investigation. This technique is based on the assumption that integrating quantitative and qualitative data allows for a more comprehensive and synergistic use of the data than using them separately. The study's findings indicate that, from a policy aspect, the government has published Ministerial Circular No. 4 of 2020 Concerning the Implementation of Education Policies During the Emergency Period of the Spread of Coronavirus Disease (Covid-19). This circular letter encourages school administrators in Indonesia to implement and promote students's autonomous study. Students in elementary school from low-income homes face the most difficulty with online learning. Infrastructure is the primary barrier to online education. Due to the cultural shock experienced by parents and students, teacher proficiency in implementing online learning is not yet ideal. The first-semester adaption strategy has yielded innovations in the shape of shows and communication ways with students that strengthen the learning process.

**KEYWORDS:** teacher, adaptation, competence, online, learning

### **INTRODUCTION**

During Covid-19, face-to-face learning had to be replaced with indirect or online learning. Online learning is learning that is conducted and experienced synchronously and asynchronously over the Internet (1). According to Uswatun (2020) and Riyana (2019), as cited by Shelvi, online learning stresses students' thoroughness and forethought in absorbing and digesting online material. Students must be able to comprehend any material offered online (in the network) that is accessible via internet-connected assistive devices such as mobile phones or computers (2).

The government has published Minister of Education and Culture Circular No. 4 of 2020 about the implementation of education policies during the emergency period of the spread of the coronavirus disease (Covid-19). This circular letter encourages school officials in Indonesia to implement and promote students's autonomous study.

Remote and impoverished Early Childhood Education and Elementary School students face the greatest challenges with online learning. In addition to the limited access of the students, the teacher's ability to carry out this procedure demands time and specialized abilities. In urban areas with convenient access, there may be fewer hurdles than in underdeveloped and impoverished regions. Some parents of students lack mobile devices (Android) or laptops to facilitate online learning, particularly for their students. Without sufficient preparation, teachers are unable to keep up with developments in technology and information-based learning as a result of the abrupt shift of conventional learning methods to online systems (due to the Covid-19 pandemic) (3).

The city of Semarang has 509 elementary schools (SD), comprised of 325 public schools and 184 private schools, and 194 junior high schools (SMP), with 46 public schools and 194 private schools. There were 128,182 elementary school students, including 66,005 males and 62,177 girls, while there were 62,835 junior high school students, including 31,954 boys and 30,885 girls. There were 8,626 elementary school teachers, including 6,604 male teachers and 2,022 female teachers, while there were 8,144 junior high school teachers, including 4,582 male teachers and 3,562 female teachers. The ratio of elementary school teachers to students is 15, while the ratio of junior high school teachers to students is 8. This means that each elementary school teacher supervises 15 students, while each junior high school teacher manages 8 students.

Considering these findings, teachers' contact to their students should be minimal; nonetheless, during the Covid-19 outbreak, outreach to students was restricted. The research completed in 2020 regarding the Readiness of Basic Education Teachers for Learning During the Covid-19 Pandemic Period indicates that both teachers and students are unprepared. Some educators do not

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even own a laptop, despite its importance to the educational process. Information about infrastructure and amenities contained in the Primary Educator Only information pertaining to space, such as classrooms, libraries, labs, practices, leaders, teachers, worship services, School Health Units, bathrooms, Warehouses, circulation, playgrounds/sports, Administrative Offices, counseling, and building, is included in the database. The laboratory's status as an information technology laboratory is not explained.

The unexpected attack of Covid-19 hindered teachers' ability to adapt instruction. In addition to poor facilities and infrastructure, teachers often have limited access to the internet, which hinders the educational process. Even if circulars give a variety of instructions and resources for enhancing the competence of elementary school teachers, the primary hurdle to limited knowledge of technology has not been highlighted in great detail. In online education, technology adaptation has not been fully realized.

This study's aim is to investigate how teachers adapt to technology-based learning, as well as their originality and creativity in post-online or face-to-face learning. Adaptation of existing online learning technologies and teacher invention and creativity can serve as a model for the development of learning models or even inspire their creation.

The main barriers are poverty and accessibility in online learning for students and teachers. Teachers' limitations in mastering technology and the availability of learning infrastructure are directly proportional to creativity and innovation in improving students's education. These two things that attract each other will be explored and examined to reveal: (1) how is the adaptation of teacher technology after online learning and (2) how is the innovation and creativity of teachers, especially elementary school teachers, in improving the quality of student learning.

The purpose of this study was to analyze the adaptation of technology learning, creativity and innovation of post- online learning elementary school teachers in Semarang City. The target of this research is elementary school teachers in the city of Semarang as lessons learned from the application of the model to other regions in Indonesia.

### METHOD

Mixed method research refers to the use of both quantitative and qualitative research approaches in a single inquiry. This technique is based on the assumption that integrating quantitative and qualitative data allows for a more comprehensive and synergistic use of the data than using them separately. Mixed Method helps to the research of optimal methods for attaining effectiveness (4).

Mixed methods research is a study strategy whose direction and techniques of investigation are guided by philosophical assumptions. As a technique, it is characterized by philosophical assumptions that drive the path of data collection and analysis, as well as a combination of qualitative and quantitative methodologies at various stages of the research process. It focuses on gathering, evaluating, and combining quantitative and qualitative data in a single research or set of studies. The primary idea is that the combination of quantitative and qualitative methods gives a deeper grasp of the study topic than each method alone. 2007; Creswell & Clark (5).

Using qualitative and quantitative approaches or methods, researchers collect and analyze data, integrate findings, and draw conclusions in mixed method research. This strategy was developed by Sandelowski (2001), Bryan (2007), Tashakkori and Creswell (2007), Hanson et al. (2005), and Bryan (2007). This study's mixed method research design was inspired by The Converging Parallel Design.

The method conducts quantitative and qualitative research concurrently within the same period. The design will be maintained separate from the analysis of the data, which will be incorporated into the overall interpretation. In a convergent research report, the researcher combines the results of the previously processed quantitative data and the previously examined qualitative data. Utilized data gathering methods include Google Forms questionnaires, in-depth interviews, and Focus Group Discussion. 250 primary school teachers were selected as samples, while 20 community leaders, elementary school students, parents, teachers, and Education Office personnel served as informants. Triangulation was utilized to analyze the data, specifically to understand the findings of the questionnaire and in-depth interviews. This procedure will begin with data reduction, categorization, and analysis.

In qualitative research, researchers also serve as instruments and data collectors. There may other instruments besides questionnaires, interview guides, observation guidelines, and FGD guidelines, but their purpose is confined to supporting the researcher's primary instrument. In the research arena, researchers will engage with both human and non-human surroundings. Its presence is active for qualitative instruments but passive for quantitative (6).

### RESULTS AND DISCUSSION

Article 17 of Law 20 of 2003 concerning the National Education System states that basic education is the level of education that underlies secondary education, in the form of elementary schools (SD) and *madrasah ibtidaiyah* (MI) or other equivalent forms as well as junior high schools (SMP) and *madrasah tsanawiyah* (MTs), or other equivalent forms (7).

The necessity of basic education is not only prescribed by the Constitution of 1945, but has also become a need for a country's fundamental necessities. Multiple nations recognize that fundamental education is the basis for future educational sustainability. According to Ilhan Ozturk (2001), basic education facilitates worldwide economic interactions. The state must

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guarantee that all residents obtain a basic education as well as a variety of problem-solving abilities, professional skills, and academic approaches that promote high-level cognitive talents (8).

Some emerging countries also value this fundamental education. The experiences of other nations, such as Nigeria (Agabi, 2010) (9), Ghana (Oduro, 2000) (10), and South Africa (Brenda, 2012)(11), demonstrate the significance of basic education as a path for human resource development. The nation experiences provide insights on development policies and strategies, the nature of investment resources, and the methods for executing effective education programs, engaging stakeholders such as parents, private institutions, teachers, and traditional leaders. This basic education relates to the national standards for basic education, including the required curriculum. The Government Regulation of the Republic of Indonesia Number 57 of 2021 Concerning National Education Standards specifies the requirements that schools must meet to produce highly competitive students (12).

During the Covid-19 epidemic, the learning process underwent a total, synchronous, and unexpected transformation. In Indonesia, online learning techniques have been implemented in the past. This knowledge is utilized to predict challenging distances and access, particularly for persons living in rural places. At that time, radio was the most effective medium for online learning. In the 1980s, online learning techniques were implemented for Open University students (UT). This learning reduces the distance in the process of learning through the application of diverse models by managers.

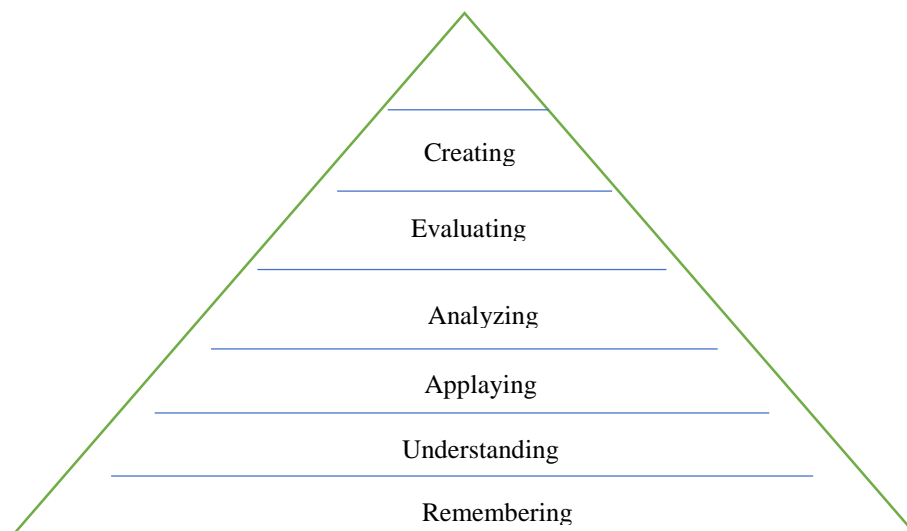
The presence of Covid-19 goes hand in hand with the development of the information age, which has placed online learning policies as the only alternative for learning during a pandemic. The learning from home policy is carried out to break the chain of the spread of Covid-19, as well as strengthen students's education during the pandemic.

The results of the study show that teachers, students and parents are unprepared in the online learning process. Students said that 92.49 percent were not ready for online learning, including parents 88.41 percent said they were not ready, while 30.72 percent teachers said they were not ready and 69.28 teachers said they were not ready.

Teachers expressed unpreparedness, especially in terms of technology mastery and preparation of teaching materials to be presented to students. Parents admitted that apart from not understanding the learning system, they were also unable to provide good supporting infrastructure such as laptops and cellphones (HP). The case for students is even worse because apart from their mastery of information technology, the availability of infrastructure, the mentality of students facing all the demands of online learning is felt to be heavy. Culture shock occurs, namely a sudden change from a safe situation to a situation that changes their behavior patterns.

This online learning process is not simple. This learning requires sufficient readiness, not only infrastructure, but soft skills, especially for teachers who process learning. The teacher is one of the vital elements considering that the teacher is the main actor in this learning (13).

Online learning is indeed different from face-to-face or offline, but the elements and elements of learning should not shift. Based on Bloom's taxonomy theory, there are six levels in the learning process, namely Creating, Evaluating, Analyzing, Applying, Understanding and Remembering (14). The description of these levels can be illustrated in the Bloom pyramid as follows



**Figure 1: Bloom's Taxonomy.**

Creating is bringing elements together to form a coherent or functional whole, and reorganizing elements into new patterns or structures through generation, planning, or producing. Evaluation (evaluation) is making an assessment based on criteria and standards through checking and criticizing. Analyzing is breaking material into its constituent parts, and determining how these parts relate to one another and to an overall structure or purpose through differentiating, organizing, and relating. Applying

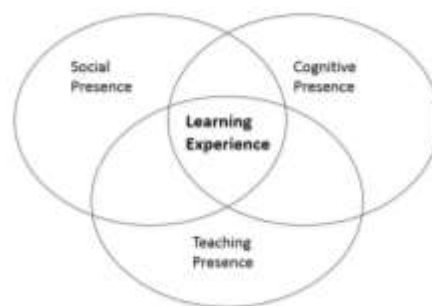
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(applying) is carrying out or using a procedure through implementation or application. Understanding is building meaning from spoken, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, concluding, comparing, and explaining. Remembering is retrieving, recognizing, and recalling relevant knowledge from the long term. Gagne emphasized nine events in instruction that drive the definition of aims and strategies for the design of instructional materials (14).

The implemented learning model was ultimately passed with some effort. Instructions for learning and teacher training are the foundation for adopting online learning. Teachers must adapt rapidly since education cannot be delayed. Ability to master learning methods and technology is the greatest challenge for educators. Approximately 67.8 percent of teachers acknowledge that they must study extra hard and enlist colleagues, family members, and even IT specialists. Additionally, it is believed that learning during a pandemic is not optimum.

Parents and students struggle to understand learning technologies, but the process may be completed successfully with time. This online learning is especially accompanied by mothers, while youngsters begin to adjust to new learning situations.

The Garrison, Anderson, and Archer (2000) community of inquiry paradigm is one alternative. This approach is founded on the concepts of cognitive, social, and instructional presences. This approach promotes online and blended learning systems that rely on teachers and students exchanging ideas, information, and views as active learning environments or communities. Presence is a social phenomena that presents itself through student-teacher relationships. This concept is quite popular since it is intended to be participatory through the use of conversations, blogs, and video conferencing (14). It may be seen more clearly in the image below:



**Figure 2: Community of Inquiry (Garrison, Anderson, Garrison and Archer, 2000)**

This established paradigm necessitates teacher preparation, particularly in the development of engaging virtual communication. It is difficult for teachers in disadvantaged and impoverished communities to do this. To achieve best outcomes, creativity and originality on the part of teachers must be done, not only advocated. Innovative instruction is necessary for creative learning. Innovative teaching is the technique of teaching for creativity and incorporating innovation into the classroom. Both of these factors necessitate an educational culture that recognizes and promotes creativity as an advantage in the classroom. Teachers are essential to fostering a creative environment, but they require assistance from policymakers and organizations (15).

According to the study's findings, teacher competency in the online learning process is deemed inadequate. This was communicated by 76.89% of parents. Students are given LKS, students are given homework, and learning displays are tedious and lack creativity. Comprehending the necessary technologies to compile online learning for novice students is not simple. The primary causes are culture shock and natural ability.

Society shock refers to a person's status and sentiments when confronted with disturbingly different social conditions, such as abruptly migrating to a foreign culture. It is a sequence of emotional responses to unforeseen cultural differences that result in emotions of powerlessness, irritation, and fear of being tricked, harmed, or ignored. Culture shock is bewilderment or disorientation that a person experiences while moving to a new place with a different culture (16). Teachers, students, and parents encounter this. Adaptation to this abrupt circumstance demands a considerable amount of time; at least one semester is required for students to suffer suboptimal learning.

This situation continues when it affects low-income households. In addition to their limited income, and particularly more so during the epidemic, impoverished families must incur unavoidable home costs to satisfy their students's online learning demands. This has a global impact on the state of economic growth. Based on different estimations of the growth impact of COVID-19, it was determined that under the most moderate growth impact of COVID-19, 1,3 million additional people would be living in poverty. According to the most worst forecasts, additional 8.5 million people will be impoverished, reversing the decade-long drop in poverty (17).

As a result of their poverty, students have a weak bargaining position in the learning process. The inability to supply information technology forces parents to choose between satisfying the technological demands of their students or giving up and

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doing nothing, which results in their students not learning. The inability of both parents and students to master technology has a negative effect on education.

Teachers with little economic resources must also adjust to rapid changes in circumstances, while their access to information technology is limited, requiring them to organize education during a pandemic with great care. Coupled with restricted infrastructure, limited capacity necessitates that teachers create ingenuity and innovation so that learning may continue. This task cannot be accomplished without the assistance of the local government and interested parties.

Teachers employ a wide variety of ways for teaching students to master technology. The teacher has a strong interest in adjusting to the circumstance. The majority (23 percent) study with colleagues. Office of Education-designed and -implemented skills training serves just a small percentage of teachers, because both skills training and competency are restricted. The process of learning must be continued autonomously.

Some teachers who master information technology willingly help teachers who are technology stuttering. The learning process is carried out at school during school pickets. The interesting thing is that there are some teachers, although only 13 percent do private learning through online courses. The learning process must be accompanied by teaching and independent learning experiences by strengthening the mindset of lifelong learning (18).

In 2017, McKinsey Global Institute predicted that by 2030, fifty percent of labor tasks will be automated. Soft skills, such as competitive advantage, such as leadership, management, online learning, innovation and complex problem solving, creativity and emotional intelligence, and toughness, are not taken into account. The time of transition in learning compels both students and teachers to discover something new, a method to adapt to the new circumstances they have jointly created (19). Teacher capacity in the online learning process will develop environmental abilities, such as the creation of relevant content and the facilitation of student dialogues. Without a physical presence in the classroom, teachers may immediately build virtual representations (20). Aside from that, if the teacher's competency is combined with creativity, the learning process will be effective and students' respect will increase.

### CONCLUSION

The adaptation of primary school teachers in Semarang City to the Covid-19 epidemic is still far behind expectations. Teachers, parents, and students all acknowledge they are not adept at adjusting. The primary obstacles are limited resources, insufficient information technology infrastructure and infrastructure, and limited creative content production capacity. Teachers, parents, and students must all exert considerable effort to adjust to the new environment. Every factor suffered cultural shock.

The originality of teachers during the Covid-19 epidemic at the beginning of the semester was poor, but the growth in creativity has been positive as time has passed. Strengthening learning sharing amongst teachers, gaining knowledge through online courses, and enlisting the aid of families proficient in information technology all contribute to fostering teacher creativity. In online education, creativity is not the sole requirement for teachers. Soft Skills must complement the creative process in order to enhance the quality of education throughout the co-19 epidemic.

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