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Professional Teachers' Capability in the Implementation of Online-Based Quality Learning in Covid 19 Pandemic Era: Analysis of Technology Infrastructure Support in Indonesia

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ABSTRAK

Abstract: The Covid-19 pandemic has changed teacher's mindset and actions in carrying out learning. The technological infrastructure is a critical factor for teachers in maintaining the quality of online learning. This study aimed to describe the quality of PTC in implementing quality online learning in the Covid 19 pandemic era based on geographical setting and technological infrastructure support in Indonesia. This study used a mixing research approach to conceive 3116 respondents and 39 informants across primary schools in East Java and North Kalimantan. This study showed that 1) there are no significant differences in PTC for different geographical settings; 2) Infrastructure readiness is an important factor for the online learning implementation; 3) teacher's effort is the most important determining factor for the implementation of quality online learning; 4) the quality of the teacher's effort is largely determined by the policy strength and the community response. This study emphasized the need to strengthen and appreciate teachers' efforts in implementing quality learning.

Abstrak: Pandemi Covid-19 telah mengubah pola pikir dan tindakan guru dalam melaksanakan pembelajaran. Infrastruktur teknologi merupakan faktor penting bagi guru dalam menjaga kualitas pembelajaran online. Penelitian ini bertujuan untuk mendeskripsikan kualitas PTC dalam mengimplementasikan pembelajaran online yang berkualitas di era pandemi Covid 19 berdasarkan setting geografis dan dukungan infrastruktur teknologi di Indonesia. Penelitian ini menggunakan pendekatan penelitian campuran dengan melibatkan 3116 responden dan 39 informan di SD di Jawa Timur dan Kalimantan Utara. Penelitian ini menunjukkan bahwa (1) tidak ada perbedaan PTC yang signifikan untuk *setting* geografis yang berbeda; (2) Kesiapan infrastruktur merupakan faktor penting dalam pelaksanaan pembelajaran online; (3) upaya guru merupakan faktor penentu terpenting bagi terselenggaranya pembelajaran online yang berkualitas; (4) kualitas upaya guru sangat ditentukan oleh kekuatan kebijakan dan respon masyarakat. Kajian ini menekankan perlunya penguatan dan apresiasi terhadap upaya guru dalam melaksanakan pembelajaran yang berkualitas.

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The Human Development Index (HDI) is one of the parameters used in determining and mapping the quality of a country's development resources. The data presented in the HDI continues to be the basis for all countries in compiling, determining, implementing as well as orientation focus of their development programs. Competition to build competence in achieving focus targets by the criteria listed as HDI parameters continues to strengthen. HDI data is an arena for contesting the seriousness of the country in accelerating the implementation of various policies quality in all sectors, especially basic human rights, including the economy, health, and education. As shown in figure 1, the progress of HDI Indonesia's achievements is very clear from year to year. Even though there is continued growth, there has been a weakening of movement during the Covid-19 era. Not only that, Indonesia's average achievement which reached 71.94% put Indonesia in the 107th position out of 189 countries in the world (Badan Pusat Statistik, 2020). This means that Indonesia's HDI is still below the other countries' achievements. All these presentations are small examples of the contestation of HDI's achievement data that is explicitly easily accessible in all media, especially digital-based. More than that, these data ultimately become authentic evidence of the stakes in the credibility of the relevant stakeholders, including the education sector. Education is agreed as the only sector that is expected to be the locus for

effective human resources development that has the potential to become agents of development and change towards a more empowered one. (I. Arifin et al., 2018; Juharyanto et al., 2020; Maisyaroh, Juharyanto, Ibrahim, et al., 2021).

Figure 1. Indonesia's HDI Growth

Education is alleged to be the main gate to enter other sectors of life. The success or failure of development in a country and other smaller community is determined by the quality of its education. Education is a critical factor for a country's development as well as the existence of the functional role of teachers as the spearhead or frontline for education (Juharyanto, Sultoni, Arifin, I., Nurabadi, 2019). Teachers are the spearhead of education because the quality of education is very dependent on the quality of teachers (Kartowagiran, 2011). Various educational reform movements carried out in the United States and in various countries around the world, it turns out that the biggest contribution lies in the quality of teachers (Meijer et al., 2002; Zbar et al., 2007). If you want to change for better education quality, then the main change must come from teachers/human resources. Likewise, to improve the quality of student performance and competence, what must be improved first is teacher professionalism (Meijer et al., 2002; Thurlings et al., 2015; Zbar et al., 2007).

Realizing the importance of teacher professionalism, the government has enacted Law Number 14 of 2005 concerning Teachers and Lecturers, that teachers are required to be professional through a certification process (Undang-Undang Republik Indonesia Nomor 14 Tahun 2005 Tentang Guru Dan Dosen, 2005). Certification is the process of providing educator certificates for teachers and lecturers. Teachers who have passed the certification will get an educator certificate as proof of education experts. An educator certificate is an official proof of recognition given to teachers as professionals. Thus, teachers who have been certified legally and formally can be referred to as professional teachers. Certified teachers are entitled to a professional allowance. Based on Permendikbud Number 41 of 2019 Article 1 states: "Professional allowances are allowances given to teachers and lecturers who have educator certificates as appreciation for their professionalism" (Kemdikbud RI, 2019). The amount of the certification value is equivalent to one time of the teacher's basic salary. Therefore, the government allocates a large budget every year specifically for the salaries and allowances of the teaching profession. In 2019, in total around 60 percent of the education budget allocation was used for teacher salaries and allowances. Because of the certification allowance as a reward for teacher professionalism, it is necessary to examine whether teachers who have been certified and received certification allowances demonstrate professional performance in carrying out the main tasks and functions of teachers, especially in learning, more specifically related to quality online learning.

Professional teachers are teachers who can carry out their duties well. Referring to Article 39 Paragraph (2) of Law no. 20 of 2003 concerning the National Education System, Article 20 of Law no. 14 of 2005 concerning Teachers and Lecturers and Article 52 of Government Regulation no. 74 of 2008 concerning Teachers, the duties of teachers are: (1) planning learning; (2) implement a quality learning process; (3) assessing and evaluating learning outcomes; (4) guiding and training students; (5) conducting research and community service; (6) carry out additional tasks attached to the appropriate main activities; and (7) continuously improve and develop academic qualifications and competencies.

More details in Permendiknas No. 35 of 2010 concerning Technical Instructions for Teacher's Functional Positions and Credit Scores, namely: (1) compiling a learning curriculum in education units; (2) compiling a learning syllabus; (3) draw up a lesson plan (RPP); (4) carry out learning activities; (5) compiling measuring instruments/questions according to subjects; (6) assessing and evaluating learning processes and outcomes on subjects in class; (7) analyze the results of the learning assessment;

(8) carry out learning/improvement and enrichment by utilizing the results of the assessment and evaluation; (9) carry out guidance and counseling in the class that is their responsibility (specifically for class teachers); (10) to supervise the assessment and evaluation of the learning process and outcomes at the school/madrasah and national levels; (11) guiding novice teachers in the induction program; (12) guiding students in extracurricular activities in the learning process; (13) carry out self-development; (14) carry out scientific publications and/or innovative works; and (15) conduct scientific presentations.

Elementary school (SD) is one level of education that requires professional teachers to deliver students who have broad knowledge, 21st-century skills, and have noble character according to their level. Currently, many elementary school teachers have obtained educator certificates and have received certification incentives. This study aims to determine the description of teacher professionalism in terms of the dimensions of implementing professional work for certified elementary school teachers in implementing quality online learning in the Covid-19 pandemic era in terms of technological infrastructure support. This is intended to determine the real condition of whether teachers who have received educator certificates have adequate capabilities in implementing quality online learning, especially because of the Covid-19 pandemic. The results of the study are valuable data for the government to make policies for fostering elementary school teachers.

METHOD

The search of data on teacher capabilities in implementing quality learning in the Covid-19 pandemic era in this study was approached quantitatively and qualitatively at the same time (mixing research). A quantitative approach is used to analyze data on the difference in the capability index of different samples between the capabilities of certified teachers in Tana Tidung Regency as a representation of regions that have internet infrastructure and related networks with less supportive quantity and quality and certified teachers in East Java with the support of adequate technological infrastructure. The quantitative approach in this study used a comparative descriptive research design. This research is descriptive comparative because it aims to get an overview of the level of teacher ability and determine whether there are differences in the level of teacher ability in the implementation of online-based learning based on different geographical settings (Mertens, 2014; Wiyono, B, 2007). The population of this study was elementary school teachers in East Java and North Kalimantan, with 3116 respondents. The research data collection instrument used a closed questionnaire using google form media. The analytical technique used in this study used descriptive analysis and Independent Samples T-Test, this test was conducted to determine whether there was a difference in average between two groups of unpaired samples. This research is doing data analysis using SPSS version 24.0. Descriptive analysis was done by measuring the capability index. Based on the scores obtained, four teacher capability indexes are classified, as shown in Table 1.

Table 1. Teacher Capabilities Index Criteria

Index	Criteria	Description
Very low	1.00 – 1.75	Teachers do not have the capability in implementing online learning, this condition shows that the teacher's capability is still far from expected and needs serious attention from decision-making officials.
Low	1.76 – 2.50	Teachers lack the capability in implementing online learning, this condition shows that teacher capabilities still need to be improved.
High	2.51 – 3.25	The teacher has the capability in implementing online learning, this condition shows that the teacher's capability is equal to what is expected.
Very high	3.26 – 4.00	Teachers have the capability in implementing online learning that is very adequate, this condition shows that the teacher's capability is more than expected.

A qualitative approach was used to explore the results obtained through a natural approach. Efforts to explore the results were carried out through various discussions in various group discussion forums, which were attended by 36 certified teachers in the two selected provinces. Some of the focus of the discussion included a commitment to the quality of learning, initiatives, and their realization using ICT, problems met, and solutions that have been carried out so far as well as the success achieved from the various solutions implemented. More than that, teachers' expectations of various parties, especially the government and parents for the effectiveness and efficiency of quality learning in the Covid-2019 pandemic era as well as in the use of ICT.

RESULT

Differences in Teacher Capability Based on Geographical Setting of East Java and North Kalimantan Provinces

The data description on teacher capabilities based on the geographical setting of East Java Province and East Kalimantan was obtained through a survey of 3116 teachers from six districts/cities in East Java and three districts/cities in North Kalimantan. In Figure 2, the teacher capability index from East Java Province is sequentially as follows, (a) Ponorogo Regency, 3.16 (high); (b) Probolinggo Regency, 3.28 (very high); (c) Malang City, 3.42 (very high); (d) Kediri Regency, 3.09 (high); (e) Kediri City,

3.31 (very high); and (f) Jombang Regency, 3.01 (high). Meanwhile, the teacher capability index from North Kalimantan Province is sequentially, namely, (a) Bulungan Regency, 2.98 (high); (b) Tana Tidung Regency, 3.24 (high); and (c) Tarakan City, 3.16 (high). Based on the index value, it is known that there are only three regencies/cities that have a very high capability index, namely Malang City, Probolinggo Regency, and Kediri City. While the others are in the high capability index.

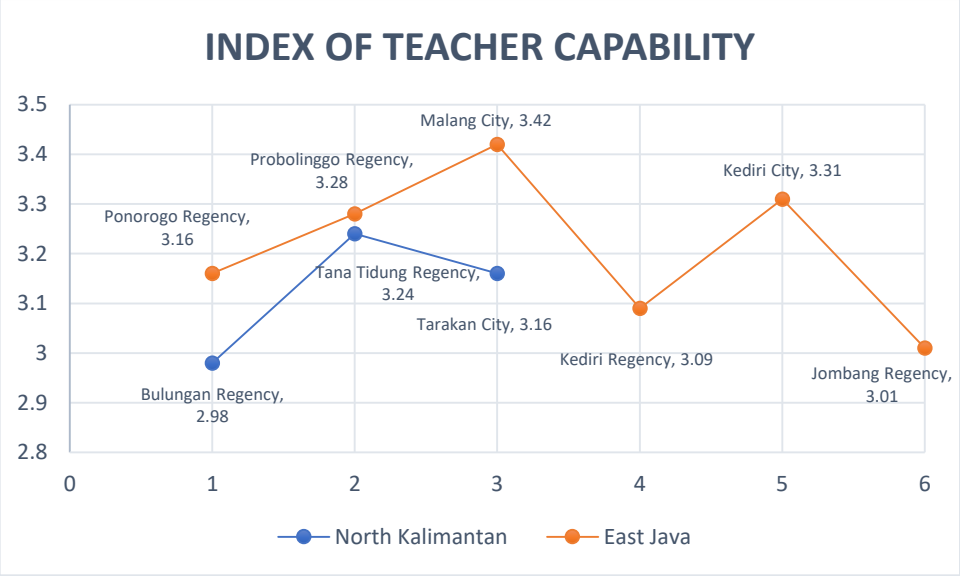

Figure 2. Index of Teacher Capability

To support the teacher capability index data in the implementation of online-based learning based on different geographical settings, a different test was conducted. Before conducting the different tests, first, the data assumption test was carried out, the data assumption test in this study was the normality test and homogeneity test. Normality test is one of the requirements for parametric analysis because, in parametric tests, the data must be normally distributed. The normality test in this study uses the Kolgomorov Smirnov Test with the help of SPSS 24.0, with the criteria if the value is asymp. Sig > 0.05, then the data can be declared normally distributed. Based on the One-Sample Kolgomorov-Smirnov Test, it produces the asymp value. Sig. respectively ie 0.200 and 0.077. Based on these results, the asymp value is known. Sig. data on the level of teacher capability in the implementation of online-based learning based on the geographical setting of the provinces of East Java and North Kalimantan obtained a value (> 0.05), because of the significance value (> 0.05), the data can be declared normally distributed. The next stage in the assumption test in this study is to do a homogeneity test. One of the requirements to obtain accurate test results is the data that is assumed to be homogeneous. The homogeneity test was carried out by Levene's test and obtained a significance value of 0.133. Based on the significance value (> 0.05), then the data can be declared homogeneous.

Testing the difference in the level of teacher ability in the implementation of online-based learning based on the geographical setting of the provinces of East Java and North Kalimantan was carried out using the Independent Samples T-Test, this test was carried out to determine whether there was an average difference between two groups of unpaired samples. The results of hypothesis testing can be seen in Table 2, with the following hypotheses:

H0: there is no difference in the level of teacher capability in the implementation of online-based learning based on the geographical setting of the provinces of East Java and North Kalimantan.

Ha: there is a difference in the level of teacher capability in the implementation of online-based learning based on the geographical setting of the provinces of East Java and North Kalimantan.

Table 2. Hypothesis Testing Results

Groups	*Mean*	Tcount	Sig.	*Cut of value*	Decision
East Java	3.21	1,257	0,231	0,050	H0 accepted
North Kalimantan	3,14				

The criteria for testing the hypothesis if the value of sig. < 0.050, then H0 is rejected. Based on Table 2, the value of sig. found at 0.214, meaning the value of sig, (> 0.05), then H0 was accepted, and Ha is rejected. Thus, it can be stated that there is no significant difference between the differences in the level of teacher capability in the implementation of online-based learning based on the geographical setting of the provinces of East Java and North Kalimantan.

Certified Teachers Characteristics in the Context of Online Learning in the Covid-19 Era

The conclusion of quantitative data analysis was the main trigger factor to be explored further. If there was no difference in capabilities between teachers in the two provinces, it means that the quality of education services in Indonesia is evenly distributed and there are no problems. After conducting various discussions in group discussion forums, some other interesting information was obtained, including 1) All teachers have a high commitment to the success of quality learning; 2) Teachers continue to make every effort to integrate ICT, both through various social media that are familiar to them and various digital platforms that are already available on the internet, both facilitated by the government and self-developed by schools; 3) the success and failure of these implementation efforts are largely determined by the availability of technology infrastructure in the regions.

As in this finding, all teachers are committed to the success of quality learning. Almost no teacher has given up on the situation due to the Covid-19 pandemic without doing anything for quality learning. The government's policy on the prohibition of face-to-face learning is recognized as a normal policy and must be carried out. All schools must support this policy, including maintaining the quality of learning even though it must be carried out remotely, non-face-to-face, and using the internet. Sabir Taqwa, principal of the Integrated Superior School of Tana Tidung Regency said that:

Covid-19 with its aftermath has strengthened our awareness and the teachers, even the government, about the importance of thinking and acting creatively and innovatively. People still want to get quality learning services. So that we, SMPTU, in coordination with the Education Office (Disdik) at the Summit, have carried out various creative initiatives to answer the challenge. We are committed to that because it has become our duty and responsibility as state servants (KS4.1).

Meanwhile, the Head of the KTT Disdik Curriculum said that: Alhamdulillah, the commitment of the teachers here is unquestionable. The pandemic is not an obstacle for the quality of learning to run. We are not worried, because ICT already provides everything. But Mr. Jo (researcher) has experienced it himself, that sometimes the signal here is difficult, to get it, we must find a strategic place while holding our cellphones up, haha. All teachers do that too, and I think this is a sign of their commitment as well. The Education Office continues to push with other technical policies, including the required budget (PJB4.1-3). The conclusions from the statements of teachers and several KS in several regencies in North Kalimantan and East Java Provinces in various FGDs were also relatively the same, that the commitment to quality learning never diminished and even strengthened, especially the hard work shown to overcome various problems, especially limited technology infrastructure. Pak Syamsul, a teacher at SDN TU 1 KTT stated that: To maintain the quality of learning, we use a platform from the government, create modules such as LAS (Student Activity Sheet), and conduct limited home visits. But online learning is the main activity. We, teachers, are grateful and happy because Disdik has provided adequate support, especially regarding the anticipating Learning Loss policy (GR17.1-3)

Meanwhile, the Head of Curriculum of the Jombang Regency Education and Culture Office (Dikbud) stated that: The results of offline and online monitoring to several elementary schools that have been carried out so far show that in general, the commitment of teachers to continue to provide quality online learning is very visible. Even from various refreshing forums related to increasing teacher professionalism in Jombang district, the enthusiasm for teacher involvement is high. This means that commitment is very visible, the action is also visible, and the government continues to encourage these efforts by facilitating understanding of the use of government funds allocated for quality learning purposes, of course online (PJB35.1-3).

The statement from the Head of Curriculum was also supported by Mr. Jumadi, Secretary of the Education and Culture Office of Jombang Regency that: However, we must oversee the policies of the central government, especially in the current conditions related to the impact of Covid-19. From the beginning, we suspected that this Covid would also have a positive impact on efforts to build education in a better direction. Why, because internet support is so complete and the enthusiasm of teachers to maintain school quality has never faded. Therefore, the regions continue to coordinate with various stakeholders and supervisors to find the best solution, including also related to technology infrastructure which not all locations here are good, yes… to help teachers realize their quality commitments (PJB31.1-3).

DISCUSSION

Teachers have a strategic role in the development of a country. Teachers occupy the forefront of efforts to prepare future generations who can play themselves as agents of change for the better (Juharyanto et al., 2020; Maisyaroh, Juharyanto, Bafadal, et al., 2021). The success and failure of a country's development are largely determined by the quality of teachers who have an inclusive role in development through various types and levels of education. Among the educational levels, elementary school is

the most basic level of education that is responsible for laying the foundations of life and strengthening it into a tradition that is inherent in students' daily lives. Because the psychological characteristics of elementary school students are more inclined to adaptation, duplication, with a high degree of curiosity and response that encourages the desire to think more adequately (Van Petegem et al., 2008).

Elementary school teachers, not only have the responsibility of transforming knowledge but also internalizing various values so that the process of student growth and development can be optimal (Imron Arifin et al., 2018; Mitchell & Castle, 2005; Sigrı´ður Margre ´t Sigurðardo ´ ttir, 2016). Therefore, the quality of teachers as basic needs to be continuously improved and facilitation for teachers to focus on the quality of their involvement in learning is very important to accommodate. Professional elementary school teachers have become very critical and one of the wise actions taken by the government is the educator certification program. The educator certificate is a guarantee of the professional quality of teachers as well as a guarantee of the quality of learning (Farisi, 2007; Permendikbud 22 Tahun 2020, 2020).

This study found that there was no difference in the capabilities of teachers who actively teach in developed and developing areas, especially to carry out quality learning online as a direct impact of the Covid-19 attack. Teachers realize that quality commitment is the main foundation for efforts to produce quality generations. They are aware that efforts to provide quality learning must be integrated with the characteristics of the context, of which technology and pandemics are a part. The teachers have also made great efforts to innovate in such a way as to implement quality learning through digital product interventions that are presented on various platforms on the internet. But elementary school teachers, whose majority of school locations +/- 80% are in suburbs, the support for internet network infrastructure as the main basis for implementing online learning is unstable, often disconnected, and unable to accommodate platforms, media, and creative products proportionally. either through a blended learning approach or online personalized learning (Purbo, 2002; Toyama & Dias, 2008). Therefore, online learning continues to be pursued through various variations combined with offline learning. Even in certain areas, such as Tana Tidung Regency, North Kalimantan, the creativity of teachers is manifested in a variety of learning media, such as LAS (Student Activity Sheet), home visits, personal learning assistance, creation of learning videos by teachers, involvement of school committees and dormitory committees that intensive, and so on. The description is authentic evidence that the capabilities of teachers between regions with different characteristics are almost not different at all. Their commitment is relatively the same. The difference lies in the support of technology infrastructure in the field of learning.

Commitment is the key to success (Fry et al., 2017; Juharyanto et al., 2020; Nir, 2002). Teachers who have completed the professional certification process and are declared graduated, have academically met the professional standards of educators, one of which is a high commitment in carrying out their professional duties and responsibilities in mentoring, education, and teaching. Professionalism can be interpreted as a quality of love for the profession, with which various creative efforts will continue to be made to support the occurrence of quality learning. Professionalism in the context of Covid-19 is shown through various strategic efforts for the occurrence of quality online learning by integrating adequate ICT products. Teacher professionalism is also demonstrated through the involvement of teachers in various forums that interact within the framework of improving the quality of services in education.

CONCLUSION

The ability of teachers to carry out quality online learning cannot be distinguished due to geographical factors and often different infrastructure support, both in quantity and quality. Government policies and the commitment of teachers are the determining factors for the quality of capabilities, which encourage creative and innovative exploration for teachers to carry out learning tasks and responsibilities, both online and offline. Government facilitation in providing technology-based learning infrastructure is an important support for strengthening the quality of teacher commitment. In addition, a proportional appreciation for the various creative efforts of teachers in providing quality learning, especially online affected by Covid-19, needs to be strengthened beyond just the "powerless verdict" which is still often affixed to them.

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