



Elementary School Teacher's Competencies in the Era of Technology Disruption

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Abstract. This study aimed to discover teachers' understanding of the competencies of teachers in the era of technology disruption, the competencies that Elementary schools have in the era of technology disruption, challenges that teachers face in mastering the competencies of teachers in the technological disruption era as well as strategies to improve teacher competences in the era of technology disruption. Research Descriptive quantitative design is used in this study. The data was gathered from 1409 elementary school teachers via questionnaires, then analyzed using descriptive quantitative data analysis. This research showed that 77% of respondents understand the competencies of teachers in the technological disruption era, and most teachers had educational competence in internet-based learning (48%). 35% of respondents reported that they have difficulty mastering technological commercialization competence because of the lack of facilities (37% of respondents). Therefore, teachers believed that joining training and seminar is an effective strategy to improve the teacher's competencies.

Keywords: Competencies · Teachers · Elementary school · Technology disruption

1 Introduction

Disruption is identical to the use of technology in all sectors. Therefore, the disruption era can be defined as the era that is intensely related to technological developments which are known as Industrial Revolution.4.0 [1]. The technological disruption era has replaced the old technology that is more physical to be more digital, which is more efficient and advantageous [2]. Since this disruption era, the education sector experienced the rapid digitization of education [3]. Therefore, to be successful in the era of technology disruption, Indonesia must improve the quality of teachers' competencies as one of the most crucial components of education [4]. Competence teachers are crucial to reach the goals of education [5].

Competency is an assortment of intelligent acts and responsibilities of a person and is considered a qualification for mastery of tasks in a specific area of expertise [5]. Competencies can also be defined as skills and attitudes and appreciations that are critical

to success [6]. Meanwhile, Teacher competency is skills, knowledge, and attitudes in terms of intelligence and responsible action as educators that are necessary to achieve educational goals [7]. A competent teacher must meet requirements in three distinct areas: teaching, law, and practice [8]. There are five competencies that teachers must have in the era of technology disruption era. First, educational competence in internet-based learning is a basic skill [1]. This competency increases teachers' confidence and makes it easier for teachers to teach their students so that the classrooms will become more creative, innovative, and fun. Second, technological commercialization competence, meaning teachers must be able to teach and develop students' entrepreneurial attitudes related to the technology sector [1]. To be able to use this competence, teachers should have an entrepreneurial attitude [9]. Third, globalization competence requires teachers to master various cultures and problem-solving skills. Fourth, future strategies competence, meaning a competence to predict the future and make a strategy to overcome it [10]. This ability need to be acquired along with new skills [11]. Fifth is counselor competence. In the future, the material will be no longer the biggest student problem but are more related to the psychological problem due to the increase in stress and pressure, so teachers must be able to be their counselor [1].

Many recent studies regarding teacher competence focus on teachers' pedagogically and socially competence [12], the use of dynamic interactive workshops and partnerships in stimulating elementary school teachers' competencies [5], enhancement of teacher competence in the technological disruption era [10], and as venues for empowering teachers competencies in the era of technological disruption through professional organizations[1]. However, few empirical studies is conducted regarding elementary school teachers' competencies in the era of technology disruption. Therefore, this research aimed to discover teachers' understanding of the competencies of teachers in the era of technology disruption, the competencies that Elementary schools have in the era of technology disruption, challenges that teachers face in mastering the competencies of teacher in the era of technology disruption as well as strategies to improve teacher competences in the era of technological disruption.

2 Research Method

This research was a descriptive quantitative research design. The data was gathered from 1409 elementary school teachers (can be seen in Table 1) via questionnaires consisting of 8 questions, then analyzed using descriptive quantitative data analysis.

Table 1. Description of respondents

| | Frequency | % |
|---------------|-----------|------|
| Gender | | |
| Male | 1209 | 14.2 |
| Female | 200 | 85.8 |

(continued)

Table 1. (continued)

| | Frequency | % |
|------------------|-----------|------|
| Education | | |
| Bachelor degrees | 1373 | 97.4 |
| Mater degrees | 35 | 2.5 |
| Doctoral degrees | 0 | 0 |
| Teaching | | |
| Grade 1 | 252 | 17.9 |
| Grade 2 | 207 | 14.7 |
| Grade 3 | 187 | 13.3 |
| Grade 4 | 259 | 18.4 |
| Grade 5 | 234 | 16.6 |
| Grade 6 | 270 | 19.2 |

3 Result and Discussion

3.1 Teacher's Understanding of the Competencies of Teachers in the Era of Technology Disruption

This research showed that 77% of respondents understand the competencies of teachers in the era of technological disruption and only 23% who does not understand the competencies. There are five competencies that teachers must understand and master, namely: 1) educational competence in internet-based learning as a basic skill in the technological disruption era [10]. This competence requires a teacher to master the ability to understand and use various internet or digital-based learning tools (Amin, 2021); 2) technological commercialization competence is the ability to teach and educate students to adopt an entrepreneurial attitude towards technology and innovative work [1]. The commercialization of technology refers to a process that begins with techno- market insight and ends with the continuous functioning of the product that the market requires [13]; 3) global competence, teachers should not stammer on are on diverse cultures, hybrid competencies, and have a problem-solving skill [10]. This capability allows teachers to update their teaching based on recent developments as they can view materials online in the classroom [13]; 4) future strategies competence, a competence to calculate the future and make a strategy to overcome it [10]; 5) counselor competence. In the future, the material will be no longer the biggest student problem but are more related to the psychological problem due to the increase in stress and pressure, so teachers must be able to be their counselors [1] (Fig. 1).

3.2 Competencies Possessed by Elementary School Teachers

The data showed that most teachers (48%) had educational competence in internet-based learning. This is because education in this era is internet based [14]. Furthermore, the

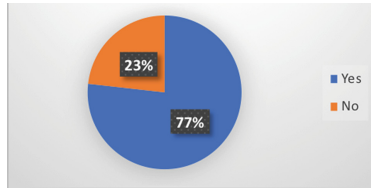


Fig. 1. Teacher's understanding of the competencies of teachers in the era of technology disruption

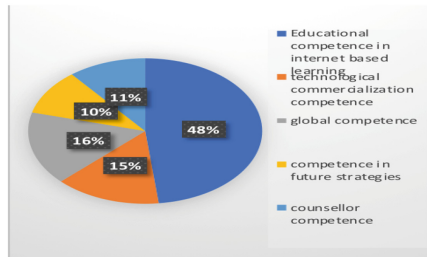


Fig. 2. Competencies possessed by elementary school teachers

teacher needs to have this competence due to the growing interest in integrating digital technologies into education [15]. So, when teachers see technology as a valuable thing, they will be more motivated to use it in their classroom [16]. This competence also supports by teachers' technological literacy, the ability to use computers, the internet, and other digital tools in learning [17] (Fig. 2).

Around 16% state that they have global competence. This competence means the future is changeable and fast, so teachers must have the ability to calculate the future and make a strategy to overcome it [10]. The other 15% of respondents said that they have commercialization of technology competence, which is the ability to educate the students to instill an entrepreneur attitude toward technology development [1]. Then, 11% have counselor competence, where they can act as a counselor to help the students deal with psychological problems (JEET). Last, 10% of respondents have competence in future strategies, a competence to predict the future and make a strategy to overcome it [10].

3.3 The Most Difficult Competencies

The data showed that 35% of respondents reported that they have difficulty mastering technological commercialization competence. This might happen because teachers have inadequate training and irrelevant experiences in the use of technology [18]. This competence also requires the teacher to truly integrate technology into the curriculum to meet student needs [1]. So, this competence is also a challenge for teachers who are still applying the old-fashioned teaching style [19]. Around 18.4% of teachers have difficulties in mastering counselor competence. Teachers might be able to have good counselor competence but still not enough to survive in this technological disruption era [20]. This is because the teacher has not had any counseling training, so they are unable to fulfill

their roles [21]. 18.2% stated that they have difficulties in future strategies competence. Teachers do not have a certain strategy to calculate the future through collaborative lectures, collaborative research, and staff turnover [20]. Furthermore, 11% of respondents choose global competence as the most difficult competence. This can happen because teachers are often not active in updating their existing knowledge [20] (Fig. 3).

3.4 The Reason Why Teachers Have Difficulties in Mastering Competencies in the Era of Technological Disruption

Most of the respondents (37%) said they difficult to master these competencies because of the lack of facilities. Lack of facilities is indeed one of the problems why education is decreasing, especially for the teachers' competencies [5]. Schools do not provide learning facilities and learning media makes it teachers difficult to improve and train their competence [22]. Meanwhile, 34% said causes are the lack of time, energy, and cost caused by their lack of competence. Most teachers are already tired of dealing with students' learning problems so they don't have time to improve their competence [22]. Teachers also accuse the government of not paying enough attention to education funding [5]. Furthermore, 25% said that they have no interest and knowledge in those competencies. This can happen because teachers often did not have an active in updating their knowledge [20]. Last, 4% choose the other reason such as age factor and this competence is the new term for them (Fig. 4).

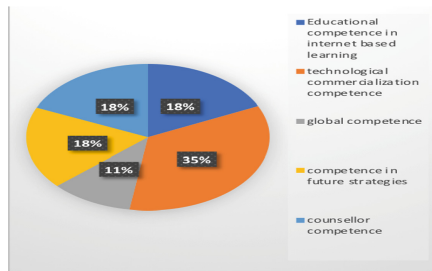


Fig. 3. The most difficult competencies

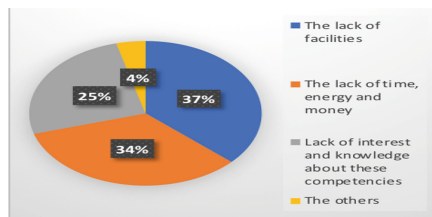


Fig. 4. The reason why teachers have difficulties in mastering competencies in the era of technological disruption

3.5 The Need for Special Training to Master These Competencies

Most of the respondents (95%) said yes and only 5% said no. Education and training programs must also be designed to adapt to the developments in the era of technology disruption so that teachers become more competent [20]. Training increase teachers' ability to handle different activities, increase self-confidence, and increases information about different teachers' competencies [23]. When teachers acquire competencies, they can practice these competencies with their students [15]. The steps for conducting developmental training are 1) identification of training needs, design, and platform contents, 4) selection of training media and learning principles, and 5) tutoring delivery and evaluation [15] (Fig. 5).

3.6 The Need for Special Training to Master These Competencies

Seminars, workshops, training, technical guidance, and teacher organization are some effective training to improve teachers' competencies. Seminars can build continuous development models to enhance teacher competencies and provide teachers with opportunities to make scientific connections to peer teaching competencies [24]. Teacher organizations are a form of communication forums that address teachers' issues related to their competencies [25]. Workshops were also held to ensure that teachers' teaching competencies were improved [15] (Fig. 6).

3.7 The Effective Strategies to Improve Teacher Competencies

Teachers (69%) believed that participating in training/seminars is an effective strategy to improve the teacher's competencies. There are two ways to conduct training, namely:

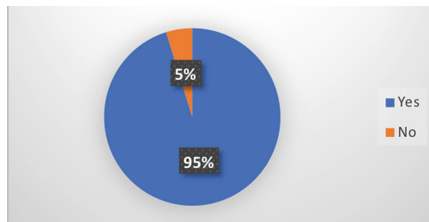


Fig. 5. The need for special training to master these competencies

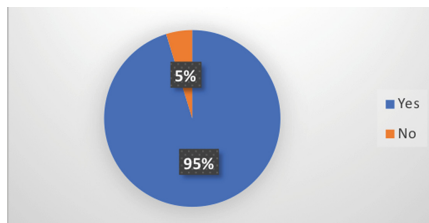


Fig. 6. The need for special training to master these competencies

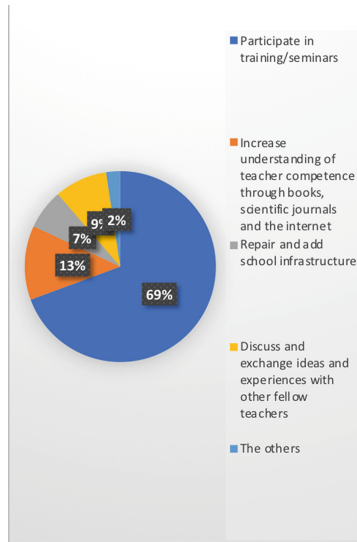


Fig. 7. The effective strategies to improve teacher competencies

1) formal training, in which a teacher is sent to participate in educational training by an institution. 2) non-formal training, in which teachers participate in training by their initiative [13]. Then, 13% choose to increase their understanding of teacher competence through books, scientific journals, and the internet as the way to improve their competencies. To face the era of technology disruption, every teacher should have the skills such as digital information literacy, media literacy, and information technology and communication to improve their competencies [20] (Fig. 7).

About 9% stated that discussing and exchanging ideas and experiences with other fellow teachers is an effective strategy to improve teacher competencies. All issues related to teacher competencies need to be addressed in collaboration with other teachers to improve teacher competencies and address issues teachers face while completing assignments [28]. Partnership with fellow teachers in solving all teacher competencies matters is needed to improve teacher competencies and solve teacher's duty problems [5]. Through periodic discussion, the teacher can find solutions to increasing their competence and their careers [13].

Meanwhile, 7% of respondents believe that improving school infrastructure is needed to improve teachers' competencies. High quality of education, including teacher competencies, can be achieved if the facilities and infrastructure have a good standardization [13].

3.8 The Party that is Responsible for Improving Teacher Competencies

The data above shows that 47% of respondents believe that teaching is the most responsible party for improving teacher competencies. High-competence teachers are important to accomplish the core goals of education [5]. Teachers are required to increase their competence and prepare for future development [10] (Fig. 8).

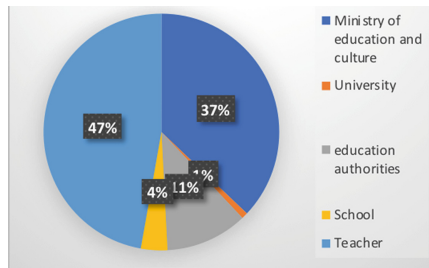


Fig. 8. The party that is responsible for improving teacher competencies

About 37% of respondents said that the Ministry of Education and Culture is responsible for improving teacher competencies. Therefore, several attempts have been made related to this issue. The Ministry of education stated that they will prioritize infrastructure, teacher training, and quality to improve teachers' competencies [26].

Then, 11% of respondents choose education authorities as a party that is responsible for teachers' competencies. Education authorities also do many efforts regarding teacher competencies problems, such as conducting many upgrading and intensive training and even sending teachers to have an exchange program abroad to improve their competence [27].

Meanwhile, 4% of respondents think the school is responsible for improving teacher competencies. Schools need to be open and use innovative tools and advanced methods to help teachers improve their competencies [28].

Only 1% think universities are responsible to improve teachers' competencies. Universities exist to develop teachers or pre-service teachers by delivering excellent curriculum, creative learning, enhancing the educators and teachers' professionalism, partnership with other education sectors, infrastructure, and institutional organization [29].

4 Conclusion

In conclusion, there are five competencies that teachers must have in the era of technology disruption era, namely: 1) educational competence in internet-based learning as a basic skill; 2) technological commercialization competence; 3) globalization competence; 4) Future strategies competence; 5) counselor competence.

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