Competence of Vocational Teachers in the Use of Technology in the New Normal Era

Nizwardi Jalinus[1], Sukardi[1], Syahril[1], Syaiful Haq[1,*], Rizky Ema Wulansari[1]

[1] Faculty of Engineering, Universitas Negeri Padang, Indonesia
[*]Corresponding author. Email: syaifulhaq@ft.unp.ac.id

ABSTRACT

The Covid-19 pandemic presents new challenges to education, especially vocational education. Learning activity could not be done face-to-face, but online learning is an alternative. The regulations governing online learning are of common concern because in vocational education there is not only theoretical learning but also practical learning. This pandemic creates new challenges for the competence of vocational education teachers specifically to be able to use of technology to support the implementation of online learning. This research was conducted on vocational education teachers in Sumatra Barat Indonesia, examining their competence and use of technology during the pandemic. Samples were taken from six cities; Padang, Bukittinggi, Tanah Datar, Payakumbuh, Agam, and Pariaman. This result shows that teachers always try to improve their competences during the pandemic by training their self to use information technology in online learning, but it is not easy for them. Teachers still master pedagogical competence, personality competence, professional competence, and social competence. Teachers are more dominant in using computers and smartphones, and using WhatsApp and YouTube applications to support the implementation of learning during the pandemic. Teachers must continue to adapt and innovate in online learning using hardware technology as well as the use of offline and online software applications.

Keywords: Competence, Vocational, Teacher, Technology, Pandemic.

1. INTRODUCTION

The development of technology that we feel today has challenges and threats to humans. Besides that, there are also opportunities to be developed in order to improve the quality of life [1][2]. Therefore, the perspective in seeing these things becomes a very strategic thing for intellectuals [3][4]. This condition is also a new situation and affects almost all Indonesian people, starting from the economic, social, cultural, political, and education aspects. From an educational point of view, this problem is considered a bit complicated. Education has a central role in improving the quality of the nation, so any problems that occur in the nation cannot be separated from the contribution of education. So, it is necessary to explore and analyze together the factors related to education [5][6][7]. The Covid-19 pandemic that occurred and the development of technology that gave a different perspective on modern human life. In recent years, almost all aspects of life have changed according to the characteristics of the industrial

revolution 4.0, which seems to have been designed to deal with this new situation. The big parts that are affected include economic, health, social, cultural aspects, and including education [2][8].

Education as a great asset that must not die in life, but is starting to be disturbed by social restrictions as an effort to stop the spread of the virus during a pandemic, so every effort is made to keep education alive, one of which is online learning. However, there are many criticisms about online learning, especially in vocational education [8][9][10]. Teachers are at the forefront of implementing the educational curriculum, therefore teachers are required to have competence in accordance with professional teacher standards in order to be able to carry out their duties and functions professionally [11]. Professional teachers must have 4 main competencies, such as pedagogical competence, personality competence, social competence, and professional competence [12][13][14]. But not only that, in this new normal era, there is one competency that every teacher must

have, that is the competence to use information technology. It is called information technology competence [11].

Vocational education teachers are certainly required to master the skills or competencies in accordance with their fields, but currently they are also required to be experts in using online learning media. it is necessary to conduct research to reveal the current field conditions regarding teacher

competence in using information technology. Moreover, when viewed in the long term, technological developments require every teacher to be obliged to transform using information technology in the implementation of future learning. This research (survey) was conducted at vocational schools in Sumatra Barat, by distributing online questionnaires in collaboration with the Sumatra Barat Education Office.
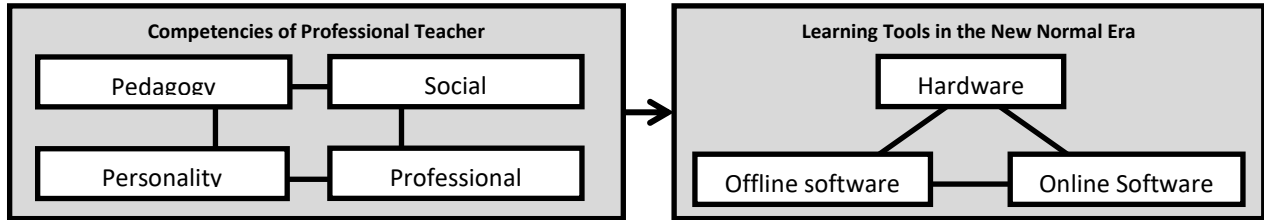
Figure 1. Professional teacher competencies and learning tools

In Fig 1, it can be seen that teacher competence cannot be stand alone, but must be in line with the ability to use learning tools. Learning tools are divided into three, such as hardware, offline software, and online software. This condition is increasingly felt when the Covid-19 pandemic occurs, which causes the world community in the education aspect to have to use technology in learning, such as video conferencing and other forms. Therefore, it is necessary to reveal the current conditions regarding the ability of teachers to use information technology during teaching in the new normal era.

2. RESEARCH METHOD

This research is a survey research conducted with a descriptive quantitative approach [15][16][11]. This research reveals the current condition of the relevance of the competence of vocational education teachers to technological developments in Sumatra Barat. The method used was a survey method by distributing questionnaires to all vocational school teachers in Sumatra Barat, in collaboration with the Sumatra Barat Provincial Education Office. In addition, an open discussion was also held with the head of the Sumatra Barat Education Office and the city district regarding strategic issues and solving educational problems, especially in the implementation of learning in vocational education. There were six cities as sampel, that are Padang, Bukittinggi, Tanah Datar, Payakumbuh, Agam, and Pariaman. The sample of this research is 463 vocational teachers spread over six cities. The research instrument was tested at SMK N 5 Padang and SMK N 2 Padang with the

results of the validity of r arithmetic being greater than r table (0.26 /Pearson colleration) and the reliability of Cronbach's alpha 0.939.

3. RESULT AND DISSCUSSION

3.1. Result

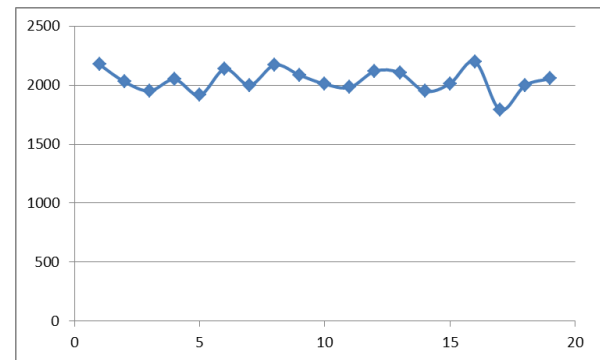After collecting data from six regencies/cities in Sumatra Barat, the following results were obtained:

Figure 2. Pedagogical competence

Based on the data of pedagogical competence, the lowest result was found above 1500 and approaching the maximum lift of 2500. These results indicate that the pedagogical competence of teachers during the implementation of online learning can still be well controlled.
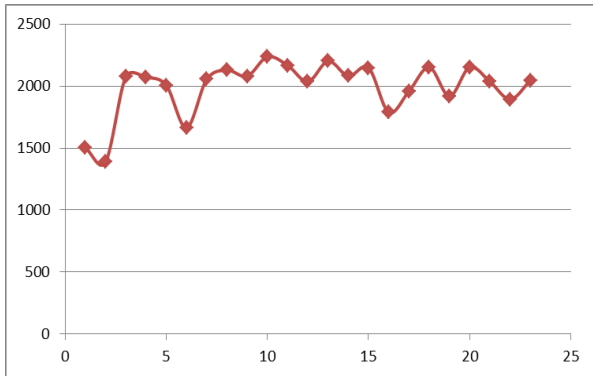
Figure 3. Personal competence

Based on personality competency data, the lowest results were found above 1400 and approaching a maximum number of 2500. These results indicate that the teacher's personality competencies during the implementation of learning during the pandemic can still be controlled by the teacher.
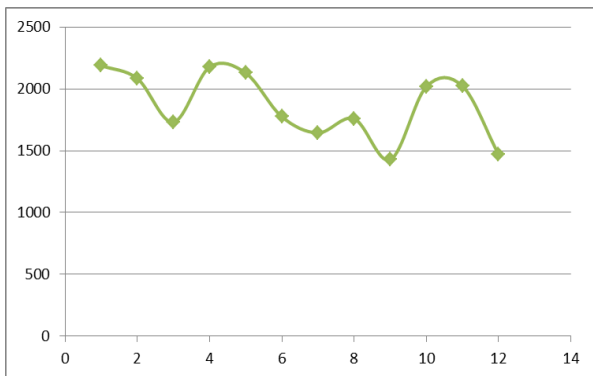

Figure 4. Social competence

Based on social competence data, the lowest results were found to be above 1400 and varied. These results indicate that the social competence of teachers during the implementation of learning during the pandemic is quite varied.
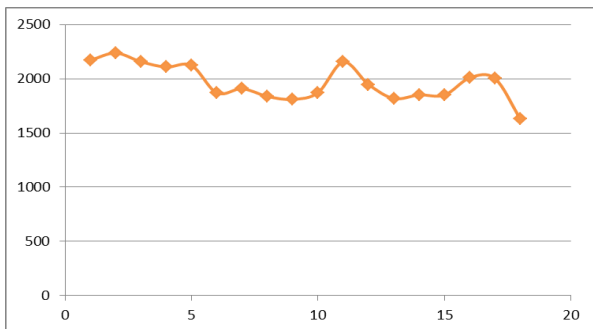

Figure 5. Professional competence

Based on professional competency data, the lowest results were found to be above 1500 and varied. These results indicate that the professional competence of teachers during the implementation of learning during the pandemic is quite varied.
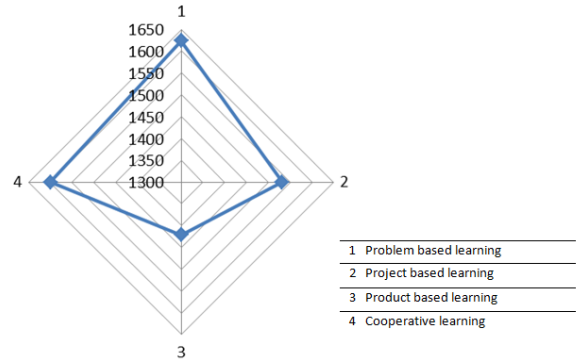

Figure 6. The use of learning models used by teachers during the pandemic

Based on Fig 6, it was found that during the pandemic period teachers were more dominant in using the problem based learning model. Followed by the use of cooperative learning models. After that, the teacher uses a project based learning model and the last one uses product based learning.
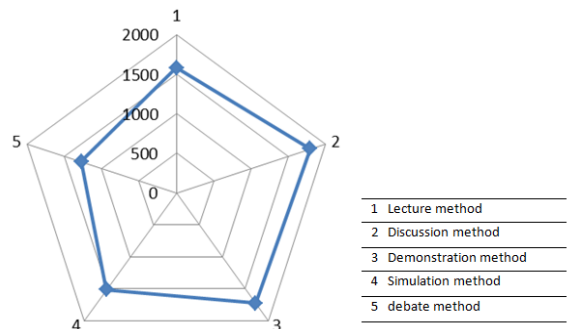

Figure 7. Use of learning methods during the pandemic

Based on Fig 7, it was found that during the pandemic, teachers were more likely to use demonstration and discussion learning methods. After being followed by simulation method and lecture method. Finally, the teacher also uses the debate method.
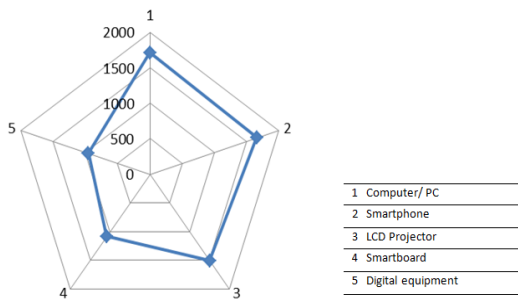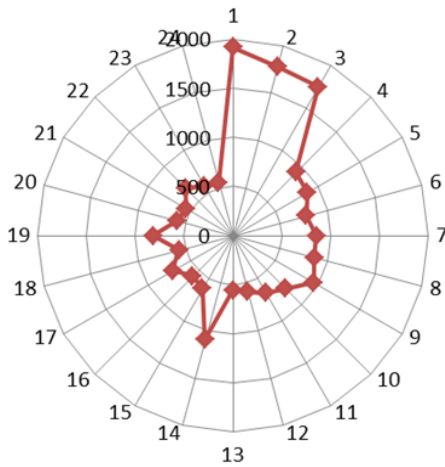
1	Computer/ PC
2	Smartphone
3	LCD Projector
4	Smartboard
5	Digital equipment

Figure 8. Use of hardware technology during the pandemic

Based on Fig 8, the use of hardware in supporting the implementation of learning, it was found that teachers were more dominant in using computers/PCs and followed by the use of smartphones. Most teachers also use LCD projectors. some teachers use hardware such as smartboards and digital equipment.
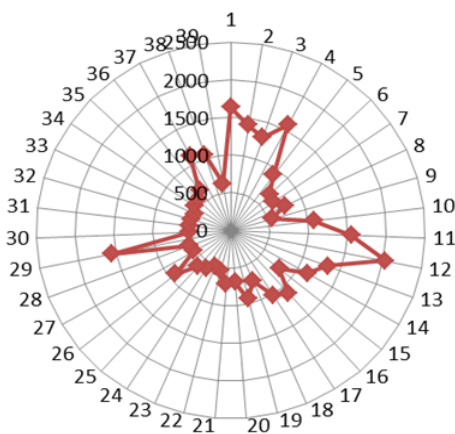

1	Ms. word	9	Paint	17	Camstudio
2	ms. excel	10	autoCAD	18	Mendeley
3	Ms. power point	11	SketchUp	19	Kinemaster
4	Ms. project	12	Solidwork	20	Inventor
5	Ms. access	13	Lumion	21	Catia
6	coreldraw	14	Adobe Reader	22	mastercam
7	Photoshop	15	SPSS	23	Matlab
8	nitro	16	SAP 2000	24	Dev-C++

Figure 9. Use of offline software during the pandemic

Based on Fig 9, the use of offline software during learning during the pandemic, obtained three offline applications from 24 applications that are commonly known by vocational teachers, which are most dominantly used by teachers, namely Microsoft Word, Microsoft Excel, and Microsoft Power Point. After that, it was followed by using Adobe Reader and Kinemaster.

1	Youtube	14	Telegram	27	Kipin
2	Zoom	15	Twitter	28	Meja Kita
3	Google meet	16	Firefox	29	Google classroom
4	Gmail	17	sekolahmu	30	icando
5	Opera	18	Cisco webex	31	Cerebrum
6	Java	19	Ruang guru	32	indonesiaX
7	Bing	20	Brainly	33	NF Juara
8	Cloud	21	Edmodo	34	Quipper
9	Ebsco	22	Snapask	35	Zenius
10	Yahoo	23	EdX	36	Microsoft Edge
11	Google drive	24	Classting	37	Elearning
12	whatsApp	25	Kelas pintar	38	Akun Guru Belajar
13	Instagram	26	Rumah belajar	39	Canva for education

Figure 10. Use of online software during a pandemic

Based on Fig 10, the use of online software during learning during the pandemic, from 39 online software applications commonly known by vocational teachers, the application that was used the most/dominantly was whatsapp. After that, it was followed by the use of the YouTube, Gmail,

Google Drive, and Google Classroom applications. At the next level the teacher also uses a lot of zoom, google meet, instagram, and learning teacher accounts.

3.2. Discussion

The implementation of learning during the pandemic is a challenge for teachers and students, especially for learning in vocational education. Social distancing regulations make face-to-face learning not allowed, therefore it is necessary to research the competence of vocational teachers and the level of technology use while teaching students during the pandemic. First, the competence of vocational teachers is examined based on four professional teacher competencies, namely pedagogical competence, personality competence, social competence, and professional competence. Based on the four competencies studied, it was found that during the pandemic period teachers were still able to control the four competencies, but the highest one was pedagogical competence. Furthermore, personality competence and professional competence, while social competence has the lowest value. The low level of social competence is due to the application of social distancing regulations for interactions between teachers and students, due to the existence of these regulations. Next, related to the use of learning models and methods, it was found that during the pandemic period teachers were more dominant in using problem based learning models. Followed by the use of cooperative based learning models. After that, the teacher uses a project based learning model and the last one uses product learning. As for the use of learning methods during the pandemic, teachers are more likely to use demonstration and discussion learning methods. After being followed by simulation and lecture methods. Finally, the teacher also uses the debate method. In the third part, it was examined related to the use of hardware technology devices during learning during the pandemic, the use of hardware in supporting the implementation of learning, it was found that teachers were more dominant in using computers/PCs and followed by the use of smartphones. Most teachers also use LCD projectors. A small number of teachers use hardware such as smartboards and digital equipment.

Based on the use of offline software during learning during the pandemic, it was found that three of the 24 offline applications commonly known to vocational teachers were the most dominant used by teachers, such as Microsoft Word, Microsoft Excel, and Microsoft Power Point. After that, it was followed by the use of Adobe Reader and Kinemaster. In addition, based on the use of online software during learning during the pandemic, from 39 online software applications commonly known to vocational teachers, the most frequently/dominantly used application was WhatsApp. After that, it is followed by using the YouTube, Gmail, Google Drive, and Google Classroom applications. At the next level the teacher also uses a lot of zoom, google meet, instagram, and learning teacher accounts. Based on these results, it can be seen that during the pandemic, teachers continue to try to teach based on their competencies and are still dominantly controlled by pedagogical competencies in managing online learning, while on the one hand teachers experience a decrease in social competence due to limited interaction between teachers and students due to restrictions. social activities during the pandemic. In addition, teachers have also dominantly used computers in teaching during the pandemic by using Microsoft Word, Microsoft Excel, and Microsoft PowerPoint applications, and followed by the use of WhatsApp, YouTube, Gmail, Google Drive, and Google Classroom, Zoom, Google meet and instagram.

4. CONCLUSION

The implementation of learning in vocational education during the Covid-19 pandemic is something that deserves attention. Vocational teachers work hard to maintain and develop their competencies during the pandemic, as evidenced by the high level of pedagogical competence, personality competence, and professional competence of teachers in learning. Teachers have problems with social competence due to social distancing regulations making it difficult to interact with students. Teachers use a lot of problem based learning models, and more dominantly use discussion and demonstration methods via whatsapp, youtube, gmail, google classroom, and google drive in supporting the implementation of learning during the covid 19 pandemic.

AUTHORS' CONTRIBUTIONS

The first author is the main contributor while the other authors are member contributions.

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