Analysis of Vocational Teacher and Student Readiness in Applying Online Learning in Productive Subjects

Uum Sumirat*, Agus Setiawan*, Syalsabilla Windasmara*

Departemen Pendidikan Teknik Mesin, Universitas Pendidikan Indonesia

[1] syalsabillawindasmara@student.upi.edu
[2] agus_setiawan@upi.edu
[3] sumiratuum@gmail.com

Abstract: This study aimed to analyze vocational teachers' and students' readiness on implementing online learning in productive subjects. The online learning activities were conducted due to the Covid-19 pandemic and represented substitute activities for direct learning. This study used a descriptive method with a quantitative approach. This study used questionnaires as the research instrument. Respondents in this study were 11 productive teachers and 40 students majoring in mechanical engineering at vocational school and were randomly selected using a random sampling technique. The results showed that the readiness of the teacher was very good in implementing online learning in productive subjects as proved by the high achievement percentage scale value of 77%, while the readiness of students achieved was 67%, and defined well according to the percentage of achievement scale table. This study concludes that vocational teachers' and students' readiness for online learning in productive subjects produces high percentage scores with good categories.

Keywords: Covid-19 pandemic, Online Learning, Vocational School.

1. Introduction

The learning method is one of the most important points in the teaching and learning process, if you don't use appropriate and appropriate learning methods, it will be difficult to achieve the learning objectives that have been determined (Kasongo & Sun, 2020). Without careful and structured preparation, it is impossible for doing the teaching and learning process to be well run.

Uum Sumirat
Departemen Pendidikan Teknik Mesin, Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi No. 229 Bandung, Indonesia
sumiratuum@gmail.com

Every teacher or school wants the teaching and learning process to take place well and optimally without experiencing any obstacles. As in the teaching and learning process carried out in vocational school, subjects and KD in groups C2 and C3 are set by the Directorate General of Secondary Education, Ministry of Education and Culture to adapt to technological developments and the needs of the business world and industry, while in practice, there is practical learning carried out in the school workshops (Ministry of Education and Culture No. 70 of 2013).

Theoretical and practical learning in vocational school should ideally be carried out face-to-face, but due to the Novel Corona Virus Disease 2019 (Covid-19) pandemic that attacks the whole world, it requires all people to quarantine in their respective homes (lockdown). This has resulted in various sectors being hampered, one of which is the Education sector which requires learning to be done online (Dewi, 2020). But apart from the Covid-19 pandemic, technological developments in the digital era also affect shifts or changes in the current teaching and learning process (Prasetyo et al., 2021).

Online learning is the use of the internet network in the learning process (Bhuana & Apriliyanti, 2021). In general, online learning is divided into two types, namely synchronous (synchronous) and asynchronous (asynchronous) where the difference lies in how it is implemented. Synchronous online learning is online learning that takes place in a certain location, at the same time wherever the teacher and students are. Commonly used applications such as Zoom Meeting, google meet, video conferencing, and so on. Asynchronous learning is online learning that is carried out independently. Students can study or access this learning anytime and anywhere, according to their respective facilities and learning speed. Devices that can support this learning are Email, WhatsApp group, Edmodo, and so on (Famularsih, 2020). Many articles have been reported for explaining the online learning and its

effectiveness (Albar et al., 2021; Ramdhani & Nandiyanto, 2021; Lathifah & Maryanti, 2021; Azmiyati et al., 2022; Maulidayani et al., 2022; Anh, 2022; Azzahra et al., 2022; Winarni & Rasiban, 2021; Nasution & Nandiyanto, 2021; Huwaidi et al., 2021; Bermudez et al., 2021; Ledesma et al., 2021; Palma et al., 2021; Ganesha et al., 2021; Thapwiroch et al., 2021; Phanse, 2021; Sangsawang, 2020).

Before conducting this research, we interviewed one of the teachers and students majoring in engineering at a vocational school who would later become one of the research respondents. Based on the results of interviews, there are limitations for some students to prepare or carry out online learning, for example, do not have a device; inadequate signal because the majority live in rural areas; the economic limitations of parents to purchase internet data, and does not support the capacity of students' devices to use applications used by teachers to carry out online learning. Meanwhile, according to resource persons from the teacher's side, they stated that there were some teachers approaching retirement who did not master the system or how to carry out online learning. In addition, teachers find it difficult to present material that is dominant in practice because it requires direct practice using machines in the school workshop and the formation of character education of students is not implemented. Therefore, teachers and students must have good readiness in online learning, because the readiness of all learning components will affect the teaching and learning situation and have an impact on the quality of teaching and learning.

Based on research conducted by Cline and Haynes (2001) online learning is not only concerned with the internet but also an important aspect, namely "safer (safer)", then online learning can expand the learning community. In addition, according to Laksana (2021) that the impact of COVID-19 on the implementation of online learning can be carried out properly. Learning activities can run well and effectively following the readiness and creativity of teachers in providing material and practice questions to students, Indeed, practical questions can be used for students' daily scores. Therefore, readiness in online learning is an important aspect because it can affect the effectiveness of online learning.

2. Research Methods

The method used in this study is a descriptive method with a quantitative approach. The descriptive method is research that explains and records conditions or attitudes to explain what was there at that time (Darna & Herlina, 2018). The study began with conducting a preliminary survey, namely conducting online interviews with one of the teachers and students. Then conduct a literature study and identify problems from the sources and information obtained. The research continued with the determination of variables, sub-variables, and indicators to develop the instrument to be used in the form of a questionnaire. There are two types of questionnaires used, namely the teacher readiness questionnaire and the student readiness questionnaire. Next, the questionnaire was distributed online using a google form on the sample to get the data to be processed. Data processing is carried out starting with data recapitulation, data processing, data analysis, and discussion, then

conclusions and suggestions can be drawn from the research carried out so that the research is completed.

The population in this study were all teachers and students majoring in mechanical engineering at vocational school, totaling 11 teachers and 402 students. While sampling is done using a random sampling technique, where the determination of the sample size if the research conducted includes descriptive research that aims to describe a variable, then the sample size is at least 10% of the total population (Muzanny et al., 2019). So that the sample used is 100% from the teacher or involves the entire population, because of the small number of teachers who teach in the engineering department. Furthermore, for student sampling using the Herry King Nomogram with a population of 402, the desired error rate is 10%, the percentage of the population taken as a sample is 13%, and the confidence interval is 80% which has a multiplier factor of 0.780, resulting in 40 samples from the students. (Muzanny et al., 2019). The instrument used in this study is in the form of a questionnaire that has been tested for theoretical validity using a judgment sheet and empirically using the Product Moment correlation formula proposed by Pearson, where if in each item the statement of the validity test results is high than the item the statement, it can be classified as valid. As for the reliability test using the Cronbach alpha formula, this formula can be used in questionnaires whose answers consist of two or more choices, which can be said to be reliable if the value of '*s*.

3. Results and Discussion

The research was continued by testing the validity and reliability of several questionnaire statements that had been made. This test is carried out theoretically using a judgment sheet which serves to assess each statement item in the questionnaire conducted by expert lecturers as supervisors. The way to answer the judgment sheet that the author made is that the expert puts a checkmark in the appropriate or inappropriate column, and if it is not appropriate, the expert explains the discrepancy in the comment column, with the questionnaire assessment interpretation criteria shown in Table 1.

Table 1. Criteria for Interpretation of Questionnaire Assessment.

Interval	Category
0% - 25%	Not Feasible
26% - 50%	Not Worth It
51% - 75%	Worthy
76% - 100%	Very Worth It

The recapitulation of the percentage assessment of the judgment questionnaire is shown in Table 2. Empirical validity testing is done by interpreting the calculated correlation coefficient with the table correlation coefficient at a certain level of significance, if this measurement does not meet or is less than significant then the statement item is tested with the student distribution formula (test -t). This calculation using software in the form of SPSS shows that the questionnaire data for teacher and student readiness is declared valid because it meets the requirements that are higher (>). The value used for teacher readiness for 11 respondents was 0.6021, while for student readiness used for 40 respondents was 0.312 with a significance level of 5%.

152

Furthermore, the reliability test on the teacher readiness questionnaire was declared reliable or consistent and included in the category of very high-reliability correlation index with the value of r table for the number of respondents as many as 11 people was 0.6021. The value of Cronbach's alpha resulted from the reliability test of 0.955. The statement is declared reliable or consistent if the value of s >. Thus, the results of calculations using SPSS software state that all 19 items are declared reliable or consistent and are included in the category of a very high-reliability correlation index. Furthermore, the reliability test on the student readiness questionnaire was declared reliable or consistent and included in the category of very high-reliability correlation index with the r table value for the number of respondents as many as 40 people was 0.312. The value of Cronbach's alpha resulted from the reliability test of 0.894. The statement is declared reliable or consistent if the value of s >. Thus, the results of the calculation using SPSS state that all statements of 20 items are declared reliable or consistent and are included in the category of a very high-reliability correlation index.

Table 2. Recapitulation of the Percentage of Assessment Judgment Questionnaires.

No	Criteria	Percentage (%)	Category
1	Teacher Readiness	94.4	Very Worth It
2	Student Readiness	94.4	Very Worth It

Furthermore, data processing on 11 respondents from the teacher obtained a total score of 855 from 19 items. The average percentage of all respondents is 77% in the "very good" category. teacher readiness in implementing online learning must meet several aspects that the authors describe in several indicators which are reduced to statement points and presented in the form of a questionnaire, to be able to know and measure the attitudes, opinions, and perceptions of teachers on readiness to apply online learning to their eyes. productive lessons. The achievement per indicator of teacher readiness in implementing online learning in productive subjects at SMK Negeri 2 Tasikmalaya is shown in Table 3.

Table 3. Average Teacher Achievement Scores Per Indicator.

Indicator	Question Items	Percentage (%)	Category
Engineering skills	1-4	83	Very Good
Time management and control	5-10	76	Very Good
Knowledge in online learning education	11-14	82	Very Good
Attitude in online learning education	15-18	67	Good
Equipment readiness	19	78	Very Good

In addition to the per-indicator readiness that must be met by teachers, the subjects are taken by the respondents as teachers also affect the results of the teacher readiness achievement score. The achievement values of teachers' readiness based on the subjects taught are shown in Table 4.

Table 4. Achievement Values Based on Subjects.

No	Subjects	Total
1	Metal fabrication engineering	72
2	Grinding machinery engineering	81
3	Welding technique	72
4	Milling machining technique	72
5	Non-conventional machining techniques	77
6	Lathe machining technique	74
7	Machining technique CNC/CAM	80
8	Manufacturing drawing technique	88
9	Creative and entrepreneurial products	90
10	Conventional machining technique	58
11	engineering design and manufacturing drawing	91

While the processing of 40 respondents from the student side obtained a score of 1326 from 20 items. The average percentage of all respondents is 68% in the "good" category. Students' readiness in implementing online learning must meet several aspects which the authors describe into several indicators which are reduced to statement items and presented in the form of a questionnaire, to be able to know and measure students' attitudes, opinions, and perceptions of readiness in applying online learning to their eyes. productive lessons. The achievement per indicator of student readiness in implementing online learning in productive subjects at public vocational school 2 Tasikmalaya is shown in Table 5.

Based on Table 5, several indicators must be improved, namely the learning spirit indicator which includes statements related to enthusiasm in carrying out online learning and indicators of the availability and skills of the tools used.

Table 5. Average Score of Student Readiness Achievements per Indicator (Winda, 2016; Bariah, 2019).

No	Indicator	Question Items	Percentage (%)	Category
1	Learning spirit	1-3	61	Good
2	Literacy on technology	4-6	69	Good
3	Intrapersonal communication skills	7-9	74	Good
4	Collaboration	10-12	65	Good
5	Skills for self-study	13-16	72	Good
6	The skill of the device used	17-18	62	Good
7	Internet access availability and skills	19-20	67	Good

Teacher readiness in online learning in productive subjects scored 77%. According to the achievement percentage scale table, the value is declared very well (Santoso, 2010). Among the five indicators that need to be improved are attitudes in online learning which include several statements related to presenting creative and innovative materials to motivate and give students interest in online learning (Bariah, 2019). Based on the results of initial

interviews, the obstacles experienced by productive teachers in online learning are difficulties in presenting material in a digital way or not face-to-face, because they are used to explaining and giving examples with tools and machines in the field so that students easily understand and understand. In addition, some of the teachers who are nearing retirement are still unfamiliar and clueless about presenting creative and innovative materials through online learning. Creative, active, fun, and innovative learning is an obligation for every teacher as an educator. As stated in the National Education Law that educators and education staff are obliged to create an educational atmosphere that is meaningful, fun, creative, dynamic, and dialogical. This is related to the learning spirit indicator on student readiness which has a low percentage value, where the lack of motivation and presentation of interesting material for students makes students' enthusiasm for online learning low. Therefore, the interaction of teachers and students must be well established, where the teacher understands the condition of the students and adjusts their learning strategies. So that teachers can apply learning methods/strategies that are following the conditions and character of students. This can affect students' interest and seriousness in learning.

In addition, based on Table 4, it is said that respondents who teach conventional machining techniques, lathe machining techniques, milling machining techniques, metal fabrication, and dominant subjects with practice in the workshop and must use certain machines have a range of readiness scores of 58% - 81% while the subjects of design, creative products and entrepreneurship, manufacturing drawing techniques, and subjects that do little practice and do not have to use certain machines have a range of readiness scores of 88% - 91%. This is reinforced by student responses stating that teachers of productive subjects require the practice of providing unresolved materials and assignments without seeing students at home. Thus, teachers have not found suitable learning for students. Therefore, determining learning strategies following existing situations and conditions is very important, because the learning strategies used are not just active learning strategies, but must be strategies that bring students to a thorough understanding of the material (Casem, 2016).

Meanwhile, students' readiness in online learning on productive subjects scored 68%. According to the achievement percentage scale table, the value is declared good (Santoso, 2010). Of the seven indicators that need to be improved, namely the spirit of learning which includes several statements related to enthusiasm in carrying out online learning, most students are not enthusiastic because according to some students the implementation of online learning is monotonous, where students are only faced with their respective devices without any direct connection or interaction with teachers and fellow students in schools such as face-to-face learning (Rasouli et al., 2016). In addition, the indicators of availability and skills of the devices used obtained a fairly low achievement score of 62%, according to the results of interviews, this is because parents of students experience economic limitations in facilitating devices such as gadgets/laptops to support online learning that is carried out. One of the causes of the economic limitations experienced by parents making it difficult to facilitate

students in online learning is due to the covid-19 outbreak. Activity restrictions due to this outbreak have caused economic losses nationally, because the PSBB, offices, most industries, and even small traders are prohibited from operating for a long period, therefore causing economic losses for the community.

Based on the discussion above, it can be concluded that the readiness of teachers and students in implementing online learning in productive subjects at SMK Negeri 2 Tasikmalaya is included in the "good" category but needs to be improved on certain indicators, and online learning can be implemented and as a learning method that used due to the covid-19 pandemic with a value acquisition rate of 72.5%. The assessment is the average percentage value of the respondents, namely teachers and students.

4. Conclusion

The readiness of teachers and students in the machining department of SMK Negeri 2 Tasikmalaya in online learning on productive subjects reaches a high percentage value and is included in the good category, so online learning can be carried out with several improvements such as holding training on how to carry out online learning and how to present material that creative and innovative, besides that schools are expected to play a role in increasing the readiness of teachers and students in online learning, namely by facilitating more online learning activities. In addition, the readiness of teachers and students in online learning needs to be supported by the good and effective quality of the teaching and learning process.

References

Albar, C. N., Widiansyah, M. G., Mubarok, S., Aziz, M. A., and Maulana, H. (2021). Application of augmented reality technology with the fuzzy logic method as an online physical education lecture method in the new normal era. Indonesian Journal of Multidiciplinary Research, 1(1), 35-40.

Anh, D. H. M. (2022). Factors affecting satisfaction on online education on students digital teaching page in Ho Chi Minh City, Vietnam, Indonesian Journal of Multidiciplinary Research, 2(1), 179-186.

Azmiyati, I., Nandiyanto, A. B. D., Kurniawan, T., and Bilad, M. R. (2022). Rhythmical learning program on musical notation for junior high school online using the maestro application, Indonesian Journal of Multidiciplinary Research, 2(1), 83-90.

Azzahra, S., Maryanti, R., and Wulandary, V. (2022). Problems faced by elementary school students in the online learning process during the Covid-19 pandemic. Indonesian Journal of Multidiciplinary Research, 2(2), 245-256.

Bariah, S. K. (2019). Rancangan pengembangan instrumen penilaian pembelajaran berbasis daring. Jurnal Petik, 5(1), 31-47.

Bermudez, T. C., Alcaide, A. M., Barcelona, A. M., Peralta, E., and Malaco, A. (2021). Online class: its implication towards academic skills development. Indonesian Journal of Educational Research and Technology, 1(2), 61-66.

Bhuana, G. P., and Apriliyanti, D. L. (2021). teachers' encounter of online learning: Challenges and Support

System. Journal of English Education and Teaching, 5(1), 110-122.

Casem, M. L. (2016). Active Learning Is Not Enough. Journal of College Science Teaching, 35(6), 52–57.

Cline, R. J., and Haynes, K. M. (2001). Consumer health information seeking on the Internet: the state of the art. Health education research, 16(6), 671-692.

Darna, N., and Herlina, E. (2018). Memilih Metode Penelitian Yang Tepat: Bagi Penelitian Bidang Ilmu Manajemen. Jurnal Ekonologi Ilmu Manajemen, 5(1), 287-292.

Dewi, W. A. F. (2020). Dampak Covid-19 terhadap implementasi pembelajaran daring di Sekolah Dasar. Edukatif: Jurnal Ilmu Pendidikan, 2(1), 55-61.

Famularsih, S. (2020). Students' experiences in using online learning applications due to COVID-19 in English classroom. Studies in Learning and Teaching, 1(2), 112-121.

Ganesha, P., Nandiyanto, A.B.D. and Razon, B.C. (2021). Application of online learning during the covid-19 pandemic through zoom meeting at elementary school. Indonesian Journal of Teaching in Science, 1(1), 1-8.

Huwaidi, F., Nandiyanto, A. B. D., and Muhammad, N. (2021). The urgency of online learning media during the Covid-19 pandemic at the vocational school in Indonesia. Indonesian Journal of Educational Research and Technology, 1(2), 35-40.

Kasongo, S. M., and Sun, Y. (2020). A deep learning method with wrapper based feature extraction for wireless intrusion detection system. Computers & Security, 92, 101752.

Laksana, D. N. L. (2021). Implementation of online learning in the pandemic covid-19: Student perception in areas with minimum internet access. Journal of Education Technology, 4(4), 502-509.

Lathifah, N. N., and Maryanti, R. (2021). Basic arithmetic learning through math online games for elementary school students during the pandemic. Indonesian Journal of Multidiciplinary Research, 1(2), 379-384.

Ledesma, G. L., Lampedario, K. D., Pequierda, J. D., and Calixtro, V. L. (2021). Online learning and academic performance of bachelor of physical education students. Indonesian Journal of Educational Research and Technology, 1(3), 135-140.

Maulidayani, T., Muktiarni, M., and Mupita, J. (2022). Strengthening the value of pancasila in elementary schools in online learning through whatsapp group media, Indonesian Journal of Multidiciplinary Research, 2(1), 117-124.

Muzanny, M., Siregar, N. S. S., and Isnaini, I. (2019). Analisis Disiplin Aparatur Sipil Negara pada Badan Kepegawaian Dan Pengembangan Sumber Daya Manusia Kabupaten Aceh Timur. Strukturasi: Jurnal Ilmiah Magister Administrasi Publik, 1(2), 138-146

Nasution, A. R., and Nandiyanto, A. B. D. (2021). Utilization of the google meet and quiziz applications in the assistance and strengthening process of online learning during the Covid-19 pandemic. Indonesian Journal of Educational Research and Technology, 1(2), 31-34.

Palma, M. C., Escucha, T. N. V., Distor, Z. B., Tuyao, B. V., Malaco, A., and Estrellan, J. (2021). Parental academic support in online and modular learners amidst pandemic: a comparative study. Indonesian Journal of Community and Special Needs Education, 1(1), 31-36.

Phanse, S. (2021). The online education impact on students during covid- 19 pandemic. Indonesian Journal of Teaching in Science, 1(2), 137-140.

Prasetyo, A. R., Nurtjahjanti, H., and Ardhiani, L. N. (2021). Impact of changes in teaching methods during the COVID-19 pandemic: The effect of integrative e-learning on readiness for change and interest in learning among Indonesian University students. International Review of Research in Open and Distributed Learning, 22(2), 87-101.

Ramdhani, T., and Nandiyanto, A. B. D. (2021). The use of whatsapp social media as reinforcement online learning during the Covid-19 pandemic. Indonesian Journal of Multidiciplinary Research, 1(1), 107-112.

Rasouli, A., Rahbania, Z., and Attaran, M. (2016). Kesiapan Mahasiswa untuk Penerapan E- Learing di Perguruan Tinggi. Jurnal Teknologi Pendidikan Malaysia, 4(3), 27-34.

Sangsawang, T. (2020). An instructional design for online learning in vocational education according to a self-regulated learning framework for problem solving during the COVID-19 crisis. Indonesian Journal of Science and Technology, 283-198.

Santoso, A. (2010). Studi deskriptif effect size penelitian-penelitian di Fakultas Psikologi Universitas Sanata Dharma. Jurnal Penelitian, 14(1), 1-18.

Thapwiroch, K., Kumlue, A., Saoyong, N., Taprasa, P. and Puengsungewan, S. (2021). Online assessment of electric circuit based on machine learning during covid-19 pandemic situation. Indonesian Journal of Teaching in Science, 1(2), 105-112.

Winarni, R. S., Rasiban, L. M., (2021). Perception of japanese students in using online video as a learning media. Indonesian Journal of Educational Research and Technology, 1(2), 15-16.

Winda, N. (2016). Implementasi Kurikulum 2013 dalam Pembelajaran Bahasa Indonesia Berbasis Teknologi Informasi dan Komunikasi. Stilistika: Jurnal Bahasa, Sastra, dan Pengajarannya, 1(1), 87-94.

JEET