The Effectiveness of Using E-Learning as a Learning Media during the Covid-19 Pandemic

Elda Permata Sari¹, Muldi Yuhendri²

¹ Program Studi Magister Teknologi & Kejuruan, Fakultas Teknik, Universitas Negeri Padang

² Jurusan Teknik Elektro, Fakultas Teknik, Universitas Negeri Padang

eldaps63@gmail.com

Article History

Received : June 9th 2021

Revision : August 13th 2021

Publication : Sept 30th 2021

Abstract

This study aims to determine the effectiveness of using E-learning as a learning medium during the COVID-19 pandemic in the January-June 2021 semester of the Technology and Vocational Education study program, Padang State University. This research is descriptive research with quantitative method. Data collection techniques using a questionnaire given via google form, where the data analysis technique is to see the achievement of the existing indicators. The subjects of this study were postgraduate students of technology and vocational education in the 2020 entry year of the Faculty of Engineering, Padang State University. Based on data analysis, it was found that quantitative data, indicators of learning objectives were seen that the respondent's achievement level (TCR) reached 77.20% with sufficient category. The indicator of learning infrastructure shows that the TCR reaches 82.07% with a good category. The indicator of the ability to use technology is seen that the TCR reaches 81.18% in the good category. The time efficiency indicator shows that the TCR reaches 81.93% with a good category. Indicators of learning outcomes seen that the TCR reached 86.70%. Thus, it can be concluded that the use of E-learning as a learning medium during the COVID-19 pandemic is categorized as effective, it can be seen from the results of research on 5 indicators, there are 4 indicators which are in good category and 1 is in sufficient category.

Keywords: Effectiveness, E-learning, TCR

INTRODUCTION

The World Health Organization in 2020 issued an announcement that Coronavirus Disease 2019 (covid-19) is a pandemic that is endemic throughout the world. Conditions like this are crucial where every part of the world and countries to implement policies so that people can reduce activities carried out outside and stay at home. The President of the Republic of Indonesia issued a policy to follow up the spread of this virus, by implementing Physical Distancing. The World Health

Organization says that Physical Distancing is a behavior to maintain physical distance in avoiding the spread of the corona virus. The spread of the corona virus has had a huge impact on various sectors, as well as in education. For this reason, the Minister of Education and Culture issued Circular Letter Number 4 of 2020 regarding the implementation of education during COVID-19. Followed by the Circular of the Directorate General of Higher Education of the Ministry of Education and Culture Number 1 of 2020 to prevent the spread of covid-19 in universities, student learning is carried out online (in a network).

To support online learning, the E-learning platform is used as a substitute for face-to-face learning in the classroom. The term E-learning comes from the use of the internet and information and communication technology. The use of the internet facilitates the implementation of distance learning which is integrated with online based learning . Electronic Learning, which is abbreviated as E-learning, is the use of electronic media that uses the internet network as a new invention for the learning system (Indrakusuma and Putri, 2016: 2).

Padang State University is one of the educational institutions that uses E-learning for the learning process as a learning medium. Based on instructions from the Ministry of Education and Culture, Padang State University issued the Chancellor's Circular Number: 1593/UN35/AK/2020 regarding campus activities in response to the high spread of COVID-19 in West Sumatra in the status of Extraordinary Events (KLB). All learning activities or lectures are carried out online by utilizing various services provided on the internet network. Since the pandemic in the January – June 2021 academic year, Padang State University in the Postgraduate Program in Technology and Vocational Education (PTK) has conducted online lectures. This means that all learning processes are carried out online, not face to face in the classroom as usual.

According to Setiaji & Jumadi (2018) the use of E-learning can improve the ability to find scientific literacy and analytical thinking. The presence of E-learning can help lecturers and students communicate more optimally (Alqudah et al., 2020). In addition to E-learning learning media that are prepared in the online learning process, there are other factors that must be considered such as learning motivation, because motivation also influences the change from conventional learning to learning using E-learning (Ervina et al., 2015). Motivation also has a significant influence on student academic achievement (Mega et al., 2014).

The application of online learning at UNP using E-learning is combined with other online platforms such as zoom cloud meetings , WhatsApp , and google meet which aims to simplify the learning process and student communication with lecturers. In addition, UNP provides E-learning facilities with the Big Blue Button feature with the url <https://elearning2.unp.ac.id> which is used for online meetings or online lectures . Big Blue Button is a web conferencing system developed for

online learning. Big blue buttons allow for the exchange of sounds and images, including chat, presentations and more. However, there are still many students who are not familiar with the Big Blue Button feature because the socialization of the features in E-learning has not been optimal and many lecturers prefer to use zoom cloud meetings because it is easier and more stable to use, only a few lecturers use the Big Blue feature. Blue Button in this E-learning .

Even though the condition is in a state of the Covid-19 pandemic, learning must continue and cannot be stopped, therefore E-learning is used as a learning media . The effectiveness of the use of E-learning as a learning medium is related to a person's acceptance of a new information and communication system, so that students have readiness in using E-learning . The effectiveness of learning needs to be studied to see the success of the system implemented by universities in online learning..

METHOD

In this study, the researcher used descriptive research with quantitative methods. Descriptive research is research that aims to find facts with the right interpretation (Nazir, 2011). In this study, the research method used is a quantitative method because the method used to create research information is in the form of numbers and analysis uses statistics (Sugiyono, 2015). The sampling technique used in this study is probability sampling which means it provides equal opportunities for each member of the population to be selected as a sample (Sugiyono, 2015). To take the sample using Simple Random Sampling, the sampling is done randomly without regard to the strata in the population (Sugiyono, 2015). The sample of this research is the Master of Technology and Vocational Education Student of Padang State University Class A in the Year of Entry 2020. The data collection technique uses a questionnaire given via google form , respondents are asked to provide a checklist () to provide answers that are in accordance with their characteristics. The questionnaire was made using a Likert scale with five alternative answers. Scale Likert used to measure attitudes, opinions and perceptions of individuals or group of people. Research data analysis techniques to see the achievement of existing indicators

RESULT AND DISCUSSION

Based on the results of research that has been carried out on the data, all incoming data meets the requirements to be processed and analyzed. In short, it can be stated that this data description reveals information about the amount of data, mean, median, mode, minimum value, maximum value, standard deviation, and variance obtained. Quantitative data was collected through a questionnaire consisting of 21 statement items that had been tested for validity and reliability.

Furthermore, the questionnaire was given to 21 students to be filled out. The following is a basic statistical calculation based on the collected data.

N	21
mean	85.76
median	85
mode	94
S. Deviation	9.09
Variance	82.59
Min	72
Max	105
Sum	1801

Table 1. Statistical Calculation Results

Source: Processed MS.Excel 2016

Table 1 presents statistical data on research on the effectiveness of using *E-learning* as a learning medium during the COVID-19 pandemic in the January – June 2021 semester for the Technology and Vocational Education study program at Padang State University. The table above shows that the number of data (N) is 21, the mean is 85.76, the median is 85, the mode is 94, the standard deviation is 9.09, the variance is 82.59, the minimum score is 72, the maximum score is 105 and the total score is 1801.

Respondents' Level of Achievement

Learning objectives

The results of the study with indicators of learning objectives consisting of 2 questions. The following is an analysis of the data from each statement.

Table 2. Recapitulation of Respondents' Level of Achievement Learning Objectives

No	Item Pernyataan	Tujuan Pembelajaran										n	S Maksimal	Rata-rata	TCR	Kategori
		SB		B		C		KB		SKB						
		f	%	f	%	f	%	f	%	f	%					
1	1	4	19,05	14	66,66	3	14,29	0	0,00	0	0,00	21	5	4,05	81,00	B
2	2	3	14,28	9	42,86	8	38,10	1	4,76	0	0,00	21	5	3,67	73,40	C
Rata-rata		7	16,66	23	54,77	11	26,19	1	2,38	0	0,00	21	5	3,86	77,20	C

From Table 2. it can be seen that the results of the respondents' achievements on the indicators of learning objectives based on the data from the processing of questionnaires distributed to 21 students of S2 PTK FT have a percentage of 16.66% saying very good 54.77% saying good, which says enough 26.19 % for those who said it was not good at 2.38%, and those who said it was very bad, the score was 0%. The maximum ideal score is 5 where the indicator of learning objectives is obtained

an average score of 3.86, then data analysis is carried out by looking at the Respondent Achievement Level (TCR) using percent analysis, namely:

$$\text{Tingkat Capaian Responden} = \frac{\text{skor rata-rata}}{\text{skor ideal maksimum}} \times 100\% = \frac{3.86}{5} \times 100\% = 77.20$$

Thus it can be interpreted that the indicators of learning objectives based on the result data are in the "enough" category with the respondent's level of achievement of 77.20%.

Learning Facilities

The results of the study with indicators of learning infrastructure consisting of 6 questions. The following is an analysis of the data from each statement.

Table 3. Recapitulation of Respondents' Level of Learning Facilities

No	Item Pernyataan	Sarana Prasarana Pembelajaran										n	S Maksimal	Rata-rata	TCR	Kategori
		SB		B		C		KB		SKB						
		f	%	f	%	f	%	f	%	f	%					
1	3	8	38,10	8	38,10	4	19,05	1	4,76	0	0,00	21	5	4,10	82,00	B
2	4	7	33,33	13	61,90	1	4,76	0	0,00	0	0,00	21	5	4,29	85,80	B
3	5	8	38,10	12	57,14	1	4,76	0	0,00	0	0,00	21	5	4,33	86,60	B
4	6	5	23,81	11	52,38	3	14,29	2	9,52	0	0,00	21	5	3,90	78,00	C
5	7	7	33,33	10	47,62	4	19,05	0	0,00	0	0,00	21	5	4,14	82,8	B
6	8	3	14,29	13	61,90	4	19,05	1	4,76	0	0,00	21	5	3,86	77,2	C
Rata-rata		38	30,16	67	53,17	17	13,50	4	3,17	0	0,00	21	5	4,10	82,07	B

From Table 3. it can be seen that the results of respondents' achievements on the indicators of learning infrastructure based on data from the results of questionnaire processing distributed to 21 PTK FT Masters students have a percentage of 30.16% saying very well, 53.17% saying good, which says quite 13,50% for those who said it was not good 3.17% and those who said it was very bad, the score was 0%. The maximum ideal score is 5 where the indicator of learning objectives is obtained an average score of 4.10 then data analysis is carried out by looking at the Respondent Achievement Level (TCR) using percent analysis, namely

$$\text{Tingkat Capaian Responden} = \frac{\text{skor rata-rata}}{\text{skor ideal maksimum}} \times 100\% = \frac{4.10}{5} \times 100\% = 83.04$$

Thus, it can be interpreted that the indicators of learning infrastructure based on the result data are in the "good" category with a respondent's level of achievement of 83.04%.

Ability to Use Technology

The results of the study with indicators of the ability to use technology consisting of 8 questions. The following is an analysis of the data from each statement.

Table 4. Recapitulation of Respondents' Level of Achievement Ability to Use Technology

No	Item Pernyataan	Kemampuan Menggunakan Teknologi										n	S Maksimal	Rata-rata	TCR	Kategori
		SB		B		C		KB		SKB						
		f	%	f	%	f	%	f	%	f	%					
1	9	7	33,33	11	52,38	3	14,29	0	0,00	0	0,00	21	5	4,19	83,80	B
2	10	5	23,81	9	42,86	7	33,33	0	0,00	0	0,00	21	5	3,90	78,00	C
3	11	8	38,10	11	52,38	1	4,76	1	4,76	0	0,00	21	5	4,24	84,80	B
4	12	5	23,81	13	61,90	3	14,29	0	0,00	0	0,00	21	5	4,10	82,00	B
5	13	6	28,57	11	52,38	3	14,29	1	4,76	0	0,00	21	5	4,05	81,00	B
6	14	2	9,52	15	71,43	4	19,05	0	0,00	0	0,00	21	5	3,90	78,00	C
7	15	5	23,81	14	66,67	2	9,52	0	0,00	0	0,00	21	5	4,14	82,8	B
8	16	4	19,05	12	57,14	5	23,81	0	0,00	0	0,00	21	5	3,95	79	C
Rata-rata		42	25	96	57,14	28	16,67	2	1,19	0	0,00	21	5	4,06	81,18	B

From Table 4. it can be seen that the results of respondents' achievements on the indicator of the ability to use technology based on data from the results of questionnaire processing distributed to 21 PTK FT Masters students have a percentage of 25% saying very good, 57.14% saying good, which says enough 16.67 % for those who said it was not good at 1.19% and those who said it was very bad, the score was 0%. The maximum ideal score is 5 where the indicator of learning objectives is obtained an average score of 4.06, then data analysis is carried out by looking at the Respondent Achievement Level (TCR) using percent analysis, namely:

$$\text{Tingkat Capaian Responden} = \frac{\text{skor rata-rata}}{\text{skor ideal maksimum}} \times 100\% = \frac{4.06}{5} \times 100\% = 81.18$$

Thus, it can be interpreted that the indicator of the ability to use technology based on the results data is in the "good" category with a respondent's level of achievement of 81.18%.

Time efficiency

The results of the study with time efficiency indicators consisting of 3 questions. The following is an analysis of the data from each statement.

Table 5. Recapitulation of Respondents Time Efficiency Level of Achievement

No	Item Pernyataan	Efisiensi Waktu										n	S Maksimal	Rata-rata	TCR	Kategori
		SB		B		C		KB		SKB						
		f	%	f	%	f	%	f	%	f	%					
1	17	8	38,10	11	52,38	2	9,52	0	0,00	0	0,00	21	5	4,29	85,80	B
2	18	8	38,10	11	52,38	2	9,52	0	0,00	0	0,00	21	5	4,29	85,80	B
3	19	3	14,29	11	52,38	5	23,81	2	9,52	0	0,00	21	5	3,71	74,20	C
Rata-rata		19	30,16	33	52,38	9	14,29	2	3,17	0	0,00	21	5	4,10	81,93	B

From Table 5. it can be seen that the results of respondents' achievements on time efficiency indicators based on data from questionnaire processing distributed to 21 PTK FT Masters students have a percentage of 30.16% saying very good, 52.38% saying good, 14 saying enough, 29% for those who say it's not good 3.17% and those who say it's very bad that the value is 0%. The maximum ideal score is 5

where the indicator of learning objectives is obtained an average score of 4.10 then data analysis is carried out by looking at the Respondent Achievement Level (TCR) using percent analysis, namely:

$$\text{Tingkat Capaian Responden} = \frac{\text{skor rata-rata}}{\text{skor ideal maksimum}} \times 100\% = 4.10 / 5 \times 100\% = 81.93$$

Thus, it can be interpreted that the time efficiency indicator based on the result data is in the "good" category with a respondent's level of achievement of 81.93%.

e. Learning Outcomes

The results of the study with indicators of learning outcomes consisting of 2 questions. The following is an analysis of the data from each statement.

Table 6. Recapitulation of Respondents' Level of Learning Outcomes

No	Item Pernyataan	Hasil Pembelajaran										n	S Maksimal	Rata-rata	TCR	Kategori
		SB		B		C		KB		SKB						
		f	%	f	%	f	%	f	%	f	%					
1	20	6	28,57	15	71,43	0	0,00	0	0,00	0	0,00	21	5	4,29	85,80	B
2	21	8	38,10	13	61,90	0	0,00	0	0,00	0	0,00	21	5	4,38	87,60	B
Rata-rata		14	33,33	28	66,67	0	0,00	0	0,00	0	0,00	21	5	4,34	86,70	B

From Table 6. it can be seen that the results of respondents' achievements on learning outcomes indicators based on data from the results of questionnaire processing distributed to 21 PTK FT Masters students have a percentage of 33.33% saying very good, 66.67% saying good, which says 0% enough 0% for those who say it's not good and those who say it's very bad that the value is 0%. The maximum ideal score is 5 where the indicator of learning objectives is obtained an average score of 4.34 then data analysis is carried out by looking at the Respondent Achievement Level (TCR) using percent analysis, namely:

$$\text{Tingkat Capaian Responden} = \frac{\text{skor rata-rata}}{\text{skor ideal maksimum}} \times 100\% = 4.34 / 5 \times 100\% = 86.70$$

Thus it can be interpreted that the learning outcome indicators based on the result data are in the "good" category with the respondent's level of achievement of 86.70%.

Overall the results of the effectiveness of using *E-learning* as a learning medium during the COVID-19 pandemic, the State University of Padang's vocational and technology education study program are depicted in the diagram in Figure 2.

DIAGRAM PENGGUNAAN E-LEARNING SEBAGAI MEDIA PEMBELAJARAN

Figure 1. Respondents' Level of Achievement (TCR) using *E-learning* as a learning medium during the covid-19 pandemic

CONCLUSION

Based on the results of research on the effectiveness of using E-learning as a learning medium during the COVID-19 pandemic, the State University of Padang State University's technology and vocational education study program, it can be concluded that the use of E-learning as a learning medium during the COVID-19 pandemic is categorized as effective, as can be seen from the results of the study. on the 5 indicators there are 4 indicators which are in good category and there is 1 which is in sufficient category. For the sufficient and good categories, it will be a guideline for the future so that the use of E-learning as a learning medium is more effective during the COVID-19 pandemic and can reach the very good category.

1. Learning objectives

Students can find out that learning objectives are achieved and online learning can replace face-to-face.

2. Learning Facilities

Students can find out the factors that support or hinder the implementation of online learning during a pandemic by using E-learning as a learning medium.

3. Ability to Use Technology

Students can find out the ability to use technology in online learning when using E-learning as a learning medium.

4. Time efficiency

Students can find out time efficiency when using E-learning as a learning medium during a pandemic.

5. Learning Outcomes

Students can find out that the learning outcomes achieved when using E-learning as a learning medium during the pandemic..

REFERENCES

- Ervina, M., Sufiawati, N., & Abdul, E. (2015). Awareness, Motivations And Readiness For Professional Accounting Education: A Case Of Accounting Students In Uitm Johor. *Procedia Economics And Finance*, 31(15): 124–133.
- Indrakusuma, A. H., & Putri, A. R. (2016). E-learning. STKIP PGRI Tulungagung: STKIP PGRI Pendidikan Teknologi Informasi.
- Mega, C., Ronconi, L., & De Beni, R. (2014). What Makes a Good Student? How Emotions, Self-Regulated Learning, and Motivation Contribute to Academic Achievement. *Journal of Educational Psychology*. 106 (1), 121-131.
- Nazir, Moh. (2011). *Metode Penelitian*. Bogor: Ghalia Indonesia.
- Setiaji, B., & Jumadi, J. (2018). Developing physics subject-specific pedagogy on problem based learning model assisted by e-learning to enhance student's scientific literacy skill. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 37 (3), 255-268.
- Sugiyono. (2015). *Metode Penelitian dan Pengembangan (R&D)*. Bandung: Alfabeta.
- Surat Edaran Kementerian Pendidikan dan Kebudayaan (Kemendikbud) Direktorat Pendidikan Tinggi No. 1 Tahun 2020.
- Surat Edaran Rektor Universitas Negeri Padang Nomor: 1593/UN35/AK/2020 Tentang Kegiatan Kampus Dalam Rangka Kewaspadaan Pandemi Covid-19. (2020). Padang: UNP