

The Effect of Using the Zoom Platform on Psychomotor Learning Outcomes During the Covid-19 Pandemic

(In Oil and Gas Chemistry Subject and Practicum)

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Abstract—The Covid-19 pandemic that has hit the whole world, including Indonesia, has made all sectors move quickly to make changes so that everything can continue to run. One very influential sector is education, where almost all Education in Indonesia runs through an online learning system. This study aims to determine the zoom effect on student psychomotor learning outcomes in a practicum in the Oil and Gas Chemistry Course. This type of research is experimental research with a quantitative approach in a one-shot case study research design. The sample in this study were 25 students of the Oil and Gas Processing Engineering D3 Study Program who programmed Oil and Gas Chemistry and Practicum courses. The technique of collecting data is by testing psychomotor learning outcomes through practicum videos. Data were analyzed using a one-sample t-test with the help of SPSS software. The analysis results show that there is an effect of online learning using the zoom platform on psychomotor learning outcomes, at least reaching a value of 80. This is evidenced by the t-count value of 4.379 with a frequency degree of 24 and a significance value of 0.000. If it is seen that the significance value is $0.000 < 0.05$, it can be concluded that H_0 is rejected and H_a is accepted. For the value of t count $4.379 > t$ table 2.063, it can be supposed that H_0 is rejected and H_a is accepted.

Keywords—zoom, psychomotor learning outcomes, Covid-19

I. INTRODUCTION

Since the end of 2019, the Covid 19 pandemics have hit almost the whole world, except Indonesia. All sectors are affected by this pandemic, especially education. As of July 29, 2021, Indonesia has penetrated more than three million positive cases with a death rate of over forty thousand people [1]. Lockdown in various countries has also affected millions of students with limited activities and even the termination of scheduled activities [2].

At STT Migas in particular, until now, face-to-face meetings have not been carried out as usual. There are so many

impacts caused by the closure of this face-to-face learning, such as research conducted by Azevedo et al. [3]. It is explained that the loss is not only in terms of material but also death and spiritual. The study, which was conducted using data from 174 countries, suggests that global education and learning levels will fall substantially. School closures can result in between 0.3 and 1.1 years of quality-adjusted schooling, reducing the practical elementary schooling students achieve over their lifetime from 7.8 years to between 6.7 and 7.5 years. Nearly 11 million students from primary to secondary education could drop out of school due to the income shock caused by the pandemic alone. The government has made various efforts so that Education in Indonesia can continue to run even in a pandemic condition, one of which is the E-learning system.

In Praghlapati [4], UNESCO gives support UNESCO supports countries in their efforts to reduce the direct impact of school closures, especially for the more vulnerable and disadvantaged communities, and to facilitate the continuation of education for all through distance learning. Various efforts have been made, one of which is providing a digital platform to support the continuity of distance learning. Not only in Indonesia, but almost all countries in the world are also making various efforts so that education can continue to run in this COVID-19 pandemic situation, one of which is South Korea.

Baber [5] study explained that efforts had been made to transfer the system from a conventional method to an online learning system. Billy [2] describes several applications that can be used, including Quipper, Google Classroom, Brainly, and Zoom. Among those mentioned above, the zoom platform is one application that uses video conferencing facilities, even up to 1000 participants in it in one meeting. The Oil and Gas Chemistry course is one of the Faculty of Oil and Gas Processing Engineering courses. Oil and Gas Chemistry is a subject that is incorporated in it with a practicum. During the Covid-19 pandemic, students only coordinated distance

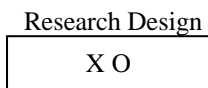
learning through the e-learning system provided by the campus or via WhatsApp groups without using video or face-to-face facilities. It isn't easy to deliver psychomotor assessments to practicum if only through WhatsApp groups or the e-learning system supplied by the campus.

Hoque [6], Bloom states through his taxonomy that the realm of learning is divided into three, namely cognitive (knowledge), affective (attitudes), and psychomotor (skills). Meanwhile, it is known that in the practicum, the assessment is carried out by psychomotor examination. Like the research conducted by Soosay Nathan et al. [7] on the importance of psychomotor and practical evaluation in students, until he made an assessment rubric for the measurement of the two aspects of the learning domain, in his research, it was proven that the psychomotor rubric had strong inter-rater reliability with scores of 0.90 and 0.86, which indicates that the variables in the rubric are outstanding in measuring the final product. The results of another study were also revealed by Baharom et al. [8] that the importance of professional skills for engineering students has led to the increased attention given in technical schools to the development of psychomotor skills in students. Therefore, it is hoped that through WhatsApp groups and the e-learning system from campus and by holding face-to-face interactions through the zoom platform, it is expected that it can affect student psychomotor learning outcomes when carrying out practicum. This is similar to the previous study by Fadda et al. [9], which used a combination of WhatsApp groups and the zoom platform during the Covid-19 pandemic.

II. METHODOLOGY

This type of research is experimental research with a quantitative approach. With a one-shot case study research design [10]. The samples in this study were 25 students of the Oil and Gas Processing Engineering D3 Study Program who programmed Oil and Gas Chemistry and Practicum courses.

This research was conducted using data collection techniques on psychomotor learning outcomes tests through practicum videos. The data were analyzed using simple regression to test the effect of one independent variable on the dependent variable through the t-test.



X: Platform Zoom

O: Observation

With the hypothesis:

- Ho: there is no effect of using the zoom platform on student psychomotor learning outcomes in oil and gas chemistry practicum.
- Ha: there is an effect of using the zoom platform on student psychomotor learning outcomes in oil and gas chemistry practicum.

III. RESULTS AND DISCUSSION

A. Descriptive Statistical Analysis

TABLE I. THE RESULTS OF THE ACCUMULATION OF CALCULATION

The Highest	The Lowest	Average
97.00	75.00	85.32

Based on the data in the table I above show that the highest practicum score was obtained by students at 97.00, with the lowest score at 75.00 and an average of 85.32.

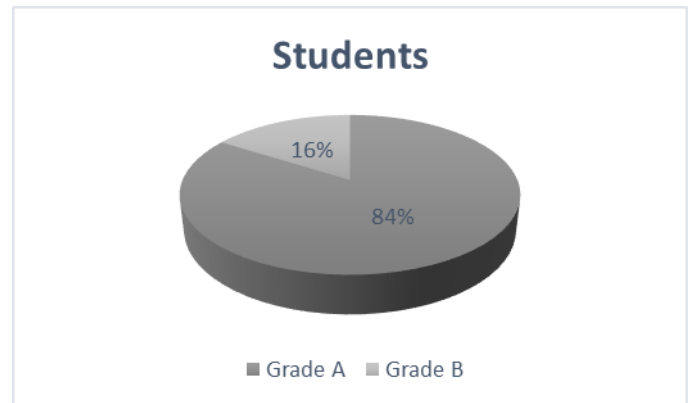


Fig. 1. Comparison of student values.

With the assessment reference set at STT Migas, there are five grades from A-E, grade A with a range of 80-100 (21 students), grade B (4 students) with a range of 67-79. Based on the data in table I, it can be read through the diagram above that dents in one class get an A grade. This shows that the use of zoom in the implementation of online practicum has a good effect; with the high percentage of grade grades above, there are no students who do not pass the oil and gas chemistry practicum.

B. Inferential Statistical Analysis

1) *Normality test:* Before the data were analyzed using the one-sample t-test, the normality test was first performed using SPSS. This test aims to determine whether the data being tested is usually distributed or not.

The following are the results of the data normality test:

TABLE II. NORMALITY TEST

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Psychomotor Learning Outcomes	.151	25	.145	.955	25	.318

^a. Lilliefors Significance Correction

The results from the table II above show that the significance value is 0.318, with a significance level of > 0.05 (greater than 0.05) or 5%. Because the significance of the data is greater than 5% or above 0.05, the data for the psychomotor learning outcomes of Oil and Gas Chemistry students are declared to be normally distributed.

2) *Hypothesis test*: Subsequently, a hypothesis test was conducted through a t-test to determine the effect of using the zoom platform on student psychomotor learning outcomes in oil and gas chemistry courses and a minimum score of 80 at the practicum.

The following are the results of the data hypothesis test:

TABLE III. T-TEST ONE-SAMPLE TEST

One-Sample Test						
Test Value = 80						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Psychomotor Learning Outcomes	4.379	24	.000	5.32000	2.8128	7.8272

The test results in Table III show the results of the analysis that the significance value is below 0.05, which is 0.000 where indicates that the hypothesis that there is no significant effect on the use of the zoom platform on psychomotor learning outcomes (H_0) is rejected. In addition, the value of t arithmetic also shows a more significant number, namely 4.379, compared to the value of the t table for the value of df 24 in sig. (2-tailed) that is equal to 2,603. So the hypothesis which says that there is a significant influence in the use of the zoom platform on psychomotor learning outcomes (H_a) is accepted.

Success in the covid-19 pandemic, especially courses that have practical, can achieve a reasonably good score. Lecturers do so many things to improve student learning outcomes in the learning process, especially during a pandemic like today, one of which is through various digital platforms such as zoom. The shift of practical activities from face-to-face to distance learning requires several recommendations, as stated in the research results by Wilcox et al. [11], one of which is to support problem-solving in a learning environment that supports the technology. Research conducted by Masadeh and Fakhouri [12] states the same thing that students think distance learning can increase positive energy independently through various platforms.

Carrying out a learning system in the network needs to pay attention to the level of effectiveness of the system to the applications used. Applying online learning through face-to-face video conferencing is the right choice to improve learning outcomes, especially in the psychomotor realm. We can only see student's skills if they carry out work assessments directly. The same thing is also stated by Correia et al. [13] through video, conferences can provide very effective support in the

distance learning process. Besides, we can explore teaching approaches through video conferences. And pedagogy for distance education.

The importance of face-to-face interaction in implementing the practicum, even though video conferences, is one of the essential supports in providing assessments to students. This is because the check carried out is in terms of skills. In oil and gas chemistry practicum, skills such as holding and operating tools and mixing other oil ingredients are required.

In research conducted by Baranov [14], not only chemistry but Baranov [14] also runs online practicum in physical science. In this research, development is also carried out, which is used as a virtual practicum development. Dewantara et al. study [15] on digital electronics practicum also applied the zoom platform in carrying out practical activities. His research showed excellent results. There were no students in his courses who did not pass the practicum, with an average score of 78.24 with the highest score of 82.75 and the lowest score of 71.00. Not only in universities, even at the level of non-formal primary education in the United States, the zoom platform is also used in the implementation of practicum [16]. In distance practicum activities, not only are students asked to adapt themselves in carrying out activities, but lecturers are also required to be able to perform educational agility in carrying out this distance learning process [17]. It is hoped that in the future, the practicum using this zoom platform can develop into a particular application for virtual practicums in more specific chemistry materials.

IV. CONCLUSION

Based on the research and discussion above, it can be concluded that the use of the zoom platform on psychomotor learning outcomes during the Covid-19 pandemic is influenced by the use of the zoom platform.

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