



The Effect of Internet Use during COVID-19 Pandemic on the Learning Outcomes of Cadets in Merchant Marine Polytechnic of West Sumatera

Faisal Saransi^{1*}, Fauziah Roselia¹ and Nelfi Erlinda¹

¹Merchant Marine Polytechnic of West Sumatera, Indonesia.

Authors' contributions

This work was carried out in collaboration among all authors. Author FS designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author FR managed the analyses of the study. Author NE managed the literature searches. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

This research is based on the policy given by central and local governments to stop the face-to-face learning process during the COVID-19 pandemic. It is due to prevent the coronavirus contagion spread and in exchange, remote learning is conducted by utilizing internet as one of supports. The research objective is to discover the significant effects of internet use during the COVID-19 pandemic toward the learning outcomes of the cadets in Merchant Marine Polytechnic of West Sumatera. Based on the data analysis that the researchers have done, it is found that the value of $t_{count} = 3.166$ is greater than $t_{table} = 1.988$ at the 5% significance level, it can be concluded that there is a significant influence on the internet utilization variable during the pandemic on the learning outcomes of Taruna / I Shipping Polytechnic of West Sumatra.

*Corresponding author: E-mail: faisalsaransi@gmail.com;

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1. INTRODUCTION

The coronavirus disease (COVID-19) pandemic has changed human activities, including routine in education. Working and studying from home is necessity because schools and campuses are closed due to the application of physical distancing. This policy was issued by the Minister of Education to prevent the coronavirus contagious spread. "Learning activities will involve students to learn in an effective and efficient way" [1].

Education is an intended and planned act to create an atmosphere and process of learning so the students can actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state [2].

It emphasizes that education is a very important foundation in the process of forming human resources in a country to develop the potential in each student, which is expected to be useful for the needs of themselves, society and the nation and state. However, one of the problems in the world of education today is the COVID-19 pandemic makes the central and regional governments provide policies to stop the face-to-face learning process in order to prevent the spread of the coronavirus contagion. It indeed requires new media for the teaching and learning process. "However, the best learning is face-to-face and interacting with teachers and peers." [3]. Learning motivation will be easier to give by the teacher with face-to-face interaction. "Motivation is a process that gives encouragement, direction, and persistence in behavior" [4].

The media can be interpreted as an intermediary between sending information and receiving information. The internet use as media supports the learning system nowadays. Through the internet, it seems like a campus or school opens classes in various locations. According to Oetomo [5], "the internet is a collection of networks connected to one another, where the network provides a connection to global information" [5]. Blog yang ada di internet merupakan bagian media masa. Menurut Nurdin "The mass media is able to spread the message almost instantaneously in a limited time" [6].

The researchers are interested in researching the problem of internet use in learning during the pandemic period and inspired by previous researchers [7] in her journal entitled "The effects of Internet Utilization as a Learning Source of Geography toward Learning Outcomes of Class XII Social Sciences Students at Public High School 9 of Banjarmasin". Based on the results of this study, it indicates that there is a significant relationship of the Internet use as a learning resource on the learning outcomes of Geography students of Class XII IPS in Public High School 9 Banjarmasin. This means that there is a positive influence and a rather low correlation between the Internet use as learning resource and student learning outcomes [7].

The other research is conducted by Pratiwi et al [8] to find out the use of Internet and libraries as the media source of learning on the student academic achievement in the Economic Education study program, Sebelas Maret University, Surakarta [8]. This research results indicate that there is a positive and partially significant influence between the use of internet media on academic achievement, there is a positive and partially significant influence between the use of libraries on academic achievement. There is also a significant influence between the internet media and the library along with academic achievement. The difference between this study and previous research is that this study examines the effect of internet use on the learning outcomes of cadets during the COVID-19 pandemic. The purpose of this study was to see the effect of internet use during the COVID-19 pandemic on the learning outcomes of shipping polytechnic cadets.

Based on the description above, the problem formulation of this research is whether there is a significant effect of internet use during the COVID-19 pandemic toward the learning outcomes of cadets in Merchant Marine Polytechnic of West Sumatra.

2. METHODOLOGY

2.1 Research Methods and Design

The research method used in this research is the experimental method. The experimental method is a method for testing the effectiveness and efficiency of an approach, method, technique, or teaching and learning media, so the results can be applied if they are good, or not if they are not good in actual teaching [9]. The type of

experimental research used is Quasi Experiment, that is, a research that approaches a real experiment where it is impossible to control or manipulate all relevant variables. There must be a compromise in determining internal and external validity in accordance with existing limitations [10].

The reason for using the Quasi Experiment type is that in reality, the circumstances or situations do not allow the use of the control class in this research. Therefore, the Quasi Experiment is chosen by only using one class. The One-Shot-Case-Study form is used as the experimental design in this research. The effect of internet use on student learning outcomes is measured by using the *One-Shot-Case-Study* research design. With this design, one group is examined by giving a treatment and the measurement is conducted once. In learning activities, the teacher provides lesson by utilizing the internet. At the end of the lesson, the teacher provides a test of learning outcome. Then the value of internet use is correlated with the learning outcomes of the cadets.

2.2 Population and Sample

Population is all data concerned within the specified scope and time [11]. The criteria for this population are all cadets of the West Sumatra Merchant Marine Polytechnic batch III and IV who are carrying out online learning. The data obtained from academics contained 429 cadets batch III and IV. In this case, the total population is 429 cadets. In collecting the sample, the *Proportionate Stratified Random Sampling* technique is used.

According to Juliansyah Noor [12], this technique is almost the same as *Simple Random Sampling*, but the strata (levels) in the population takes into account in determining the sample. The sample size determination is based on the opinion expressed by Arikunto [13], "The number of subjects from the population can be taken 10-15% or 20-25% or more depending on at least a) the research ability in terms of time and energy b) the narrow area of observation and subject due to data availability". The sample in this research was set by 20% of the total population. Then the number of samples taken in this research was 86 people.

2.3 Research Variables and Data Sources

According to Sugiyono [14], "Research variables are any form determined by the researcher to be

studied in order to obtain information about it, then be drawn conclusions" [14]. According to [13], "Variable is the object of research or what the point of attention of a study is" [13]. According to Paul [15], "Variable is a concept that expresses groups of objects or things that are judged differently such as gender, ability, intelligence, values, interests, attitudes, motivation, eye color, income, age, etc" [15]. Based on the above opinion, the researchers conclude that variables are anything determined by the researcher to be researched and then a conclusion is drawn.

This research has two variables, which are the independent variable and the dependent variable. The independent variable is the internet use (X_1). The dependent variable (dependent) is the learning outcomes of the cadets in Merchant Marine Polytechnic of West Sumatra (Y). There are two sources of data in this research, which are primary data and secondary data. According to Hasan [16], "primary data is data obtained or collected by the person conducting the research or those who need it".

Primary data in this research were obtained directly from the source, which is the cadets of West Sumatra Merchant Marine Polytechnic as the research samples. The primary data means the data obtained from a questionnaire filled by the cadets. The secondary data referred to the number of cadets in West Sumatra Merchant Marine Polytechnic and the average score obtained by them during the even semester exam 2019/2020.

2.4 Research Instruments

Data collection is a process of obtaining empirical data through respondents by using certain methods [17]. In this research, the instrument used to determine the effect of Internet use during the COVID-19 Pandemic on the Learning Outcomes of cadets in Merchant Marine Polytechnic of West Sumatra was a questionnaire. The questionnaire consisted of statements, which were distributed to respondents and it was used to collect data about the internet use on the learning outcomes of cadets in the West Sumatra Merchant Marine Polytechnic academic year 2019/2020.

2.5 Data Analysis Technique

2.5.1 Descriptive statistics

Before determining the data analysis technique, the type of data in the research has to be known

in advance. Reviewed on the source, the data are empirical data from the field. According to the characteristics of its classification, the data in this research are interval data that, in grading, use the same scaling distance or interval. From the view of the measurement possibility, quantitative data is used in this research data. The data description was conducted by using descriptive statistics, which is by calculating the price of mean (M), Median (Md), Mode (Mo), Variance (σ^2), and Standard Deviation (σ). The IBM SPSS Statistics Subscription software tool was used for further calculations.

2.5.2 Prerequisite test

Regression is a statistical analysis tool that can help research predict the dependent variable by knowing the independent variable. In order for the regression hypothesis test to have a good function, it must meet the requirements, which are the sample is taken randomly and the research data is normally distributed, the relationship between the independent and dependent variables is a linear relationship [18]. The analysis requirements test is a normality test and a linearity test for data analysis is carried out with the IBM SPSS Statistics Subscription software assistance. From the prerequisite test statistics, normal and linear data were obtained.

2.6 Hypothesis Testing

Hypothesis testing in this research uses simple regression analysis with data analysis by IBM SPSS Statistics Subscription software assistance with a significance level of $\alpha = 5\%$.

3. RESULTS AND DISCUSSION

3.1 Description of Research Variables

This research includes the variables studied that consists of one independent variable and one dependent variable. The independent variable is the internet utilization during the COVID-19 pandemic, and the dependent variable is the learning outcomes of cadets in West Sumatra Merchant Marine Polytechnic. The population in this research were all cadets from batch III and IV of West Sumatra Merchant Marine Polytechnic which consisted of 3 study programs, which are the Nautical Study Program, Nautical Technology and Sea Transportation with total of 429 people. Discussion of the data description in this research includes the average price (X), mode

(Mo), median (Me) and standard deviation (SD) of each of the variables studied. Furthermore, a frequency distribution table is also presented for each variable and from the trend of each variable.

3.1.1 Uses of the internet

Data on internet use variables were obtained from a questionnaire with 24 statement items to 86 respondents. Based on the internet use variable (X) which is processed by using the IBM SPSS Statistics Subscription software program, the highest score found is 100 and the lowest score is 74.00. Therefore, the range is about 26.00. In addition, the mean value is 92.29, median 94.00 and mode 99 and the standard deviation is 7.41.

3.1.2 Learning outcomes

The learning outcome variable data (Y) were obtained through data in the form of the average score of 86 respondents at the end of the even semester of the 2019/2020 Academic Year. Based on the learning outcome variable data processed by using the IBM SPSS Statistics Subscription software program, the highest score found was 84.72 and the lowest score was 62.00. Therefore, the range was about 22.72. In addition, the mean value is 76.51, the median is 77.74 and the mode is 77.74 and the standard deviation is 5.21.

3.2 Prerequisite Test

3.2.1 Normality test

Data normality test was used to determine whether the test results are normally distributed or not. The normality test used was the one sample *Kolmogorov-Smirnov* test (K-S).

Based on the table above, the Kolmogorov Simirnov significance value is 0.341. The Kolmogorov Simirnov significance level is higher than the significance level of 5% (0.005) or sig. 0.005. It points that the data are normally distributed.

3.2.2 Linearlitas test

Linearity test is used to determine whether the relationship between the independent variable and the dependent variable is linear or not. Linearity test used is the statistical tests with data analysis by using the IBM SPSS Statistics Subscription software program. For more details, see the table below.

From the table above, it can be seen that the value of the output divesization is 0.100 greater than 0.05. Therefore, it can be concluded that there is a linear relationship between the two variables.

3.2.3 Hypothesis test

Hypothesis testing regarding to the effect of internet use during the COVID-19 pandemic on learning outcomes of Merchant Marine Polytechnic cadets used simple regression analysis.

3.2.4 Coefficient of Determination (R Square)

The coefficient of determination shows the level of permanence of the regression line. The regression line is used to explain the proportion of the various learning outcomes of cadets (Y) which are explained by the independent variable. Based on the results of data analysis using SPSS, it shows that R Square is 0.104. It implies that the influence of the independent variable (Internet use during the COVID-19 Pandemic) on the dependent variable (Learning Outcomes) is 10.4%.

Table 1. Summary of Normality Test Results

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual	
N		86	
Normal Parameters ^{a,b}	Mean	.0000000	
	Std. Deviation	4.95845738	
Most Extreme Differences	Absolute	.071	
	Positive	.060	
	Negative	-.071	
Test Statistic		.071	
Asymp. Sig. (2-tailed) ^c		.200 ^d	
Monte Carlo Sig. (2-tailed) ^e	Sig. 99% Confidence Interval	Lower Bound	.341
		Upper Bound	.328
			.353

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.
- d. This is a lower bound of the true significance.
- e. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.

Table 2. Rangkuman Hasil Uji Linearlitas

ANOVA Table			Sum of squares	df	Mean square	F	Sig.
Learning outcomes* during Covid-19 pandemic	Between Groups	(Combined)	719.835	14	51.417	2.265	.013
		Linearity	241.560	1	241.560	10.642	.002
		Deviation from Linearity	478.275	13	36.790	1.621	.100
	Within Groups		1611.560	71	22.698		
	Total		2331.395	85			

3.2.5 Testing the Significance of Simple Regression with the t test

Significance testing aims to determine the significance effect of internet use (X) on learning outcomes (Y). The hypothesis being tested is

that there is an effect of internet use on learning outcomes of cadets of West Sumatra Merchant Marine Polytechnic. The significance test used are the t test. Based on the t test results, the t value is 3.116. If compared to the t-table value of 1.988 at the 5% significance level, the tcount >

ttable so the hypothesis can be accepted. It means that there is a significant effect on the uses of Internet on learning outcomes of cadets in the West Sumatra Merchant Marine Polytechnic.

3.3 DISCUSSION

This research aims to examine the effect of Internet use during the COVID-19 pandemic (X) on the learning outcomes of cadets in the Merchant Marine Polytechnic of West Sumatra. Based on the data analyzed with SPSS version 2.0 assistance, a discussion of the research results was carried out as follows; the results shows that there is a significant effect of internet use during the COVID-19 pandemic on the learning outcomes of cadets in Merchant Marine Polytechnic of West Sumatra. It was shown through regression simple with the results of the regression coefficient of 0.104 or the contribution of the influence of internet uses on learning outcomes is 0.104 or 10.4%, and then continued with the success test of the regression coefficient by using the t test at the 5% significance level.

The calculation result shows that the tcount is 3,166 and the ttable is 1,988. The tcount price is greater than ttable. Therefore, it can be concluded that the uses of Internet has a positive and significant effect on the learning outcomes of cadets in Merchant Marine Polytechnic of West Sumatra. It can be said that the uses of the internet has an effect on learning outcomes. Intensive uses of the internet can encourage cadets to study harder and get more information and knowledge, because optimalization of the internet use can make cadets to be more easily understand the exercises and campus assignments obtained in class that will increase the learning outcomes. From these results we can see that the education management system is important. The Education Management Information System is a combination of human resources and information technology applications to select, store, process, and retrieve data in order to support the decision-making process in the field of education [19].

4. CONCLUSION

Based on the data analysis that researchers have done, the value of tcount = 3.166 is greater than ttable = 1.988 at the significance level of 5%. It means that the hypothesis is acceptable, so it can be concluded that there is a significant effect on the internet use during the COVID-19 pandemic towards the learning outcomes of

cadets in Merchant Marine Polytechnic of West Sumatra.

5. SUGGESTIONS

For the perfection of this paper in the future, the researchers recommend this research to be implemented on a larger scale.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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