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# Effectiveness of Learning Using Application Zoom Theon Student Learning Outcomes During COVID-19 at Stkip Muhammadiyah Sungai Penuh

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**Abstract**---Online learning and working from home for educators are changes that must be made by lecturers to continue teaching students. Education with distance has the aim of improving the quality of education and relevance education as well as increasing equitable access and expansion of education. Distance education which is held with good quality assurance and in accordance with the stakeholder needs is one of the mechanisms for expanding access higher education. The purpose of this study was to determine the effect of learning Statistics the basics of using the application *Zoom* on student learning outcomes during the period COVID-19 in Indonesia STKIP Muhammadiyah Sungai Penuh. The method and type of this research is Ex-Post Factor post-event and descriptive correlational measurements. Based on the results of the analysis and discussion of the data that has been stated previously, it can be concluded: there is no effect of learning Basic Statistics using the application *zoom* on student learning outcomes during the period COVID-19 at STKIP Muhammadiyah Sungai Penuh. This matter it can be seen from *rcount >rtable* that is  $0.472 > 0.444$ . Because the price of *rcount >rtable* then  $H_1$  accept, the coefficient of determination = 0.2314.

**Keywords**--COVID-19, education, interest learning, students, zoom application.

## Introduction

All schools and universities in Indonesia are experiencing the impact of the COVID-19 pandemic and so far no evaluation has been carried out regarding learning using online methods. This study describes the implementation of online learning during the COVID-19 pandemic, the research was carried out at STKIP Muhammadiyah Sungai Penuh with basic statistics courses (Afifah et al., 2019; Angranti, 2016; Anugrahana, 2020; Yensy, 2020). In overcoming these problems, lecturers in the Sungai Penuh area try to change face-to-face learning strategies into online learning, online learning has been carried out by lecturers since the establishment of the COVID-19 pandemic, especially in Sungai Penuh City. Currently the education system is faced with a situation that requires lecturers to be able to master the mediadistance learning, especially during this COVID-19 outbreak. WrongOne effort that can be made to overcome difficulties in face-to-face learning with the existence ofrules *physical distancing* considering the problems of time, location, distance and cost that are the big obstacles at this time is conducting online learning (Vaishya et al., 2020; Gilat & Cole, 2020). The current pandemic condition requires educators, in this case, lecturers to innovate in changing face-to-face learning patterns into non-face-to-face learning patterns. Zhafira et al. (2020), explained that "there are other learning models that can be used by teachers or lecturers as a medium for delivering knowledge, namely online learning". The online learning method does not require students to be present in class. Students can access learning through internet media by starting lectures from home (Rotgans & Schmidt, 2011; Ainley & Ainley, 2011).

Electronic learning online or in a network and some call it online learning is a learning activity that utilizes the internet network as a method of delivery, interaction and facilities and is supported by various forms of learning services (Waryanto, 2006). One of the distance learning that can be implemented for students is *video conferencing* (Priyayi et al., 2018; Evita et al., 2015; Fathurrahman et al., 2019; Fuadi et al., 2020). Learning with *video conferencing* can replace learning that is usually done face-to-face in class into virtual face-to-face activities through the help of applications connected to the internet. The use of *video conferencing* in distance learning can help students and educators continue to interact face-to-face even though they are not close together. Learning that ideally has interactivity between educators and students, although not in the same place, with *video conferencing* will help the learning process carried out, because educators will be directly involved with students (Sandiwarno, 2016).

*Video conferencing* is included in synchronous learning, synchronous learning is an activity carried out jointly by educators and students. Synchronous learning is real time. Synchronous learning that uses *video conferencing* and other multimedia techniques can allow educators and students to interact with each other at the same time even though they are in different places (Chen et al., 2005). The use of *video conferencing* in distance learning will greatly assist students in learning because educators can interact even in different places. To

stimulate all aspects of development in students cannot be separated from learning media, this is because students learn to use real learning media, and with this learning media students can run effectively (Fitriyat et al., 2017). The use of *video conferencing* has a very good role, especially if it is done properly (Hamzah, 2007; Ramadhanti et al., 2021).

The online learning model is the first choice, as many as 80% of the teaching staff use *video conferencing*, where learning materials will be explained through *video conferencing* (Haqiqi, 2018; Hasan, 2018; Hasmira, 2016; Rigianti, 2020; Iskandar, 2009). Even if students still don't understand, the teaching staff will add by sending an explanation video about the lecture material. For the collection of assignments, usually students will take photos of the assignment and then send it to the lecturer, and the way to do the assignment is to do the assignment manually by writing in a book and then sending photos of the results of the assignment via *WhatsApp Chat*. Advantages and Disadvantages of Online Learning:

- Strengths
  - More practical and relaxed. Practical because it can give assignments at any time and report tasks at any time.
  - More flexible. Can be done anytime and anywhere, online learning makes time more flexible for guardians who work outside the home and can adjust their time to assist students in learning.
  - Save time and can be done anytime .
- Weaknesses The  
Weakness in online learning is the lack of maximum student involvement. The student involvement in question can be seen from the results of student involvement in participating in full online learning from the beginning of learning to the end of learning. The results showed that only 50% of students were fully actively involved, 33% of students were actively involved, while the other 17% of students were less active and did not participate in online learning.

Zoom can be categorized as an online learning media which can be interpreted as a type of teaching and learning that allows the delivery of teaching materials to students using Internet media (Achmad, 2015; Monica & Fitriawati, 2020; Muakhirin, 2014; Muhidin & Somantri, 2006). Online learning media as an alternative to electronic-based learning provides many benefits, especially for the educational process carried out by distance. In making online learning media, it is necessary to consider their expectations and goals in following online learning media, speed in accessing the internet or network, bandwidth limitations, costs for internet access, and background knowledge regarding readiness to take part in learning (Brahma, 2020). The purpose of this study was to determine the effect of-based *video conference* learning on student learning outcomes during the period COVID-19 at STKIP Muhammadiyah Sungai Penuh. The results of the research are expected to be an inspiration for educators at university-level institutions in implementing distance learning during the COVID-19 pandemic (Vesper & Gartner, 1997; Chick et al., 2020).

## Method

Method and type of this research is Ex-Post Facto or measurement after the incident and correlational descriptive. This method is used because this study seeks to find out whether there is an influence between learning using the zoom application on student learning outcomes at STKIP Muhammadiyah Sungai Penuh (Nuraeni & Syihabuddin, 2020; Tubagus, 2018; Herviani, 2017). Correlational descriptive is considered in accordance with this study because it aims to obtain an overview of the variables studied and is correlated, because this study aims to find out whether there is a relationship and if there is, how closely related and whether or not the relationship is meaningful (Arikunto, 2002). In this research, it is trying to find out whether there is an influence between learning using the zoom application on student interest in learning at STKIP Muhammadiyah Sungai Penuh. The variable in this study is learning using the application, *zoom* the independent variable (X) on learning outcomes as the dependent variable (Y). The subjects of this study were semester 1 students of STKIP Muhammadiyah Sungai Penuh which was carried out in the odd semester of the 2020/2021 academic year. There are 20 students in the 1st semester of STKIP Muhammadiyah Sungai Penuh, consisting of 7 males and 13 females (Munirah, 2018; Dinatha, 2017; Nugraha, 2018; Septiana et al., 2018).

## The research

Instruments in this study used closed questionnaires and mathematics learning outcomes tests. The closed questionnaire contains statements accompanied by a number of alternative answers provided. Respondents in answering just put a tick (√) in the appropriate column or place. While the assessment of the questionnaire used a Likert scale of 1 to 4.

- Validity questionnaire

$$r_{xy} = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{\{N \sum x^2 - (\sum x)^2\}\{N \sum y^2 - (\sum y)^2\}}}$$

- Questionnaire reliability

$$r_{11} = \frac{n}{n-1} \left[ \frac{S^2 - \sum pq}{S^2} \right]$$

## Learning outcomes

Learning outcomes is taken from student learning outcomes after learning basic statistics online using the application *Zoom* during the COVID-19 period obtained from results posttest/ Final Semester Examination (UAS) scores. The average results of student learning basic statistics are calculated by using the formula proposed Arikunto (2010), as follows:

$$\bar{X} = \frac{\sum f}{n}$$

Where:

$\bar{x}$  = Average(Mean)

$\sum f$  = Number of entire Score

$n$  = Number of Subjects

### Normality test

The hypothesis that has been formulated will be tested with *correlation and regression*. The use of correlation and regression requires that the data for each variable to be analyzed must be normally distributed (Sugiyono, 2013). For this reason, before testing the hypothesis, the normality of the data will be tested using the test *Lilliefors*. In the normality test, the hypothesis will be tested that the data for each variable is normally distributed (Kowalski & Limber, 2007; Flaherty & Richman, 1993).

### Simple linear regression analysis

To see the effect of learning using the application *Zoom* (X) on basic statistics learning outcomes (Y), performed a *simple linear regression analysis* was. *Regression analysis* is useful to obtain a functional relationship between two or more variables or to obtain the influence of predictor variables on the criterion variables or predict the effect of predictor variables on the criterion variables. The formula for the simple linear regression equation is as follows:

$$\hat{Y} = a + bX$$

The prices of a and b are obtained by the formula:

$$a = \frac{(\sum Y_i)(\sum X_i^2) - (\sum X_i)(\sum X_i Y_i)}{n \sum X_i^2 - (\sum X_i)^2}$$

$$b = \frac{n(\sum X_i Y_i) - (\sum X_i)(\sum Y_i)}{n \sum X_i^2 - (\sum X_i)^2}$$

The research hypothesis is:

- $H_0 : \mu = 0$  = There is no effect of learning using the *Zoom* application on student learning outcomes of STKIP Muhammadiyah Sungai Penuh.
- $H_1 : \mu \neq 0$  = There is an effect of learning using the *Zoom* application on the learning outcomes of STKIP Muhammadiyah Sungai Penuh students.

### Test of linearity and significance of regression

Aim is to determine the relationship between variables in the regression equation

and to determine whether the linear regression model used is suitable or not. So first, the following hypotheses are formulated:

- The linearity test hypothesis
  - Ho : linear regression model
  - H1 : the non-linear regression model
- The regression significance test hypothesis
  - Ho : there is a relationship between the X variable and the Y variable
  - H1 : none the relationship between the variable X with the variable Y

### Correlation coefficient and coefficient of determination

This correlation technique is used to find the effect of learning using the application *Zoom* (X) on student learning outcomes (Y). To calculate the correlation coefficient (r) based on the data obtained by the technique *Product Moment* proposed by [Sugiyono \(2013\)](#) as follows:

$$r_{xy} = \frac{n \sum X_i Y_i - (\sum X_i)(\sum Y_i)}{\sqrt{\{n \sum X_i^2 - (\sum X_i)^2\} \{n \sum Y_i^2 - (\sum Y_i)^2\}}}$$

Conditions when r count is smaller than the table, then H0 is received and H1 rejected. But when r count larger than r table ( $r_{\text{count}} > r_{\text{table}}$ ) then H1 received. ([Sugiyono, 2013](#)). After the value of r is obtained, the coefficient of determination can be obtained ( $r^2$ ) expressed in % to see the magnitude of the effect of using the application *Zoom* in learning basic statistics ([Sudjana, 2005](#)).

$$P = r^2 \times 100\%$$

### Discussion

Based on the distribution of the questionnaire, the data obtained during the students taking lessons using the *Zoom* application is shown in table 1 below:

Table 1

Tabulation of student interest questionnaire scores using the zoom application in the learning process basic statistics STKIP Muhammadiyah full river

Number of students	Total item	Average	Deviation standard	Score	
				Max	Min
20	17	54.5	6.63	64	32

The above table shows that the average value reached 54.5, whereas questionnaire for the maximum score is 64, p This states that students' interest in learning is categorized as sufficient. Data regarding students' interest in learning basic statistics based on learning outcomes tests are shown in the following table:

Table 2  
Tabulated list of student learning outcomes scores at STKIP Muhammadiyah  
Sungai Penuh

Number of Students	Number of Items	Average	Standard Deviation	Score		Limit Mastery Minimum
				Max	Min	
20	10	51.3	13.7232	85	20	60

From table 2 above it can be seen that the test that the author gave to 20 samples obtained information that many students had not achieved mastery of the material basic statistics with 5 essay questions (Mahr et al., 2021; Li et al., 2020). The average student learning outcomes are 51.3 with a standard deviation of 13.7232. In this data analysis will be discussed about the process to obtain a simple linear regression equation, normality test, linearity test and the significance of the simple regression coefficient, correlation coefficient and coefficient of determination (Pane & Dasopang, 2017; Rahartri, 2019; Rahmat, 2019; Yugiswara et al., 2019).

### Simple linear regression equations

Model simple linier regreecion equation is From the results of the study, it was found that the price of a = -22.46 and b = 1.314 so that the simple linear regression equation obtained was = -22.46 + 1.314X (Manzaba & Rodríguez, 2021; Trong et al., 2021).

### Normality test

In the normality test, the hypothesis will be tested that the questionnaire data uses the application *Zoom* and the learning outcomes are normally distributed or not. The normality test of the questionnaire based on the calculation results obtained the price of  $L_0 = 0,1013$  while  $L_{tabel} = 0,190$ . So,  $L_0 < L_{tabel}$  that is  $0.1013 < 0.190$  for the 95% confidence level. The normality test of learning interest based on the calculation results obtained the price  $L_0 = 0,1105$  while  $L_{tabel} = 0,190$  So,  $L_0 < L_{tabel}$ , namely  $0.1105 < 0.190$  for the 95% confidence level, so it can be concluded that the questionnaire data used the *Zoom* application and the learning outcomes data came from samples that were normally distributed (Rahayu et al., 2021; Amori, 2021).

### Test of linearity and significance of regression

- Linearity Test  
For regression linearity, it is obtained that the value of Farithmetic = 1.022 and the value of  $F_{(0,05)(9,5)} = 3.65$  Because F arithmetic < F table , the regression is linear at a significant level of 95%, it can be concluded that there are linear relationship between learning using the application *Zoom* (variable X) and learning outcomes (variable Y).
- Significance

Test To test the significance of the regression, the F value calculated= 8.5046 and the value  $F_{(0.05)(1.14)} = 4.41$ , so that  $F_{count} > F_{table}$ , the regression means significantly for a significant level of 95% or The linear relationship between the X variable and the Y variable means that there is a significant relationship from using the Zoom application to the learning outcomes of STKIP Muhammadiyah Sungai Penuh students.

Table 3  
List of variance analysis results for regression linearity test

Source of variance	Dk	JK	RJK	$F_{hitung}$	$F_{tabel}$
Total	20	59800	57301		
Regression (a)	1	57725	54185		
Regression (b/a)	1	1467,575	1355,655	8,5046	4,41
Residue	17	295,323	142,43		
Tuna is suitable	12	1672,315	158,255		
Mistake	8	1150	148	1,012	3,65

### Correlation coefficient and coefficient of determination

Product moment correlation technique aims to look at the extent to which direction the relation ship one independent variable and dependent. The independent variable in this study is the application *Zoom* (X) while the dependent variable is the student learning outcomes of STKIP Muhammadiyah Sungai Penuh (Y) (Rohmawati, 2015; Rosada & Rosada, 2016; Sanjaya, 2008; Santosa, 2018). The correlation coefficient:  $r_{count} > r_{table}$  is  $0.472 > 0.444$ , as the price of  $r_{count} > r_{table}$  then  $H_1$  dit received, coefficient of determination  $(r)^2 = 0.2314$ . So the magnitude of the relationship between variable X and Variable Y is 23.14%. This means that the effect of learning Basic Statistics using the application *Zoom* on student learning outcomes during the period *COVID-19* at STKIP Muhammadiyah Sungai Penuh is 23.14%. It can be said that the effect of the *Zoom* application on student interest in learning is in the low category (Widana et al., 2020; Konwar et al., 2022).

### Conclusion

Based on student responses expressed through questionnaires given to students, it was found that students' attitudes towards learning by using the zoom application on basic statistical learning during the study were positive (Setyosari, 2010; Sobron & Bayu, 2019; Ais, 2020; Sudjana & Rivai, 2002). Based on the results of the analysis and discussion of the data that have been stated previously, it can be concluded: There is an effect of learning using the zoom application on the learning outcomes of STKIP Muhammadiyah Sungai Penuh students. It can be seen from the  $r_{count} > r_{table}$  that is  $0.472 > 0.444$ . because the value of rarithmetic  $> r_{table}$  then  $H_1$  is accepted, the coefficient of determination  $(r)^2 = 0.2314$ . So the magnitude of the relationship between variable X and variable Y is 23.14%, this means that the effect of learning using the zoom application on student learning outcomes at STKIP Muhammadiyah Sungai Penuh is 23.14%. Lecturers should always pay attention to all kinds of aspects that will affect student learning outcomes. Especially how important is the

selection of learning applications during this COVID-19 so that it can motivate students to be able to study independently and improve their own understanding abilities. As for the advantages of this research, we can see and judge that not all zoom applications provide satisfaction for teaching and learning activities, be it students, students or lecturers. Suggestions from this research are:

- For lecturers at public and private universities to continue to learn and innovate in using learning strategies to improve learning outcomes both online and offline.
- Lecturers must be creative in choosing the right learning strategies, so that the delivery of material can be accepted by students when using online learning methods.
- The Zoom application can be used for relational meetings or meetings.

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