

## Research Article

# The Influence of Teacher Communication Models in Online Learning on Students' Learning Outcomes

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## ABSTRACT

The aimed of this study was to determined whether there was an influence of the teacher's communication model during online learning on student learning outcomes at SMA Negeri 5 Lhokseumawe. This study uses a quantitative research approach with experimental methods in the form of quasi-experiments. The population of this study were all students of SMA Negeri 5 Lhokseumawe. The sample is students in grades XI-1 and XI-2 in the 2022/2023 academic year. This research was conducted at SMA Negeri 5 Lhokseumawe for the 2022/2023 academic year. Student learning outcomes tests consist of questions in the form of descriptions given after learning. After the data is obtained from the results of the pre-test and post-test, data processing is carried out. Data processing is done based on the problems in this study. Beginning with conducting data analysis prerequisite tests such as homogeneity and normality tests before analyzing the hypothesis using the t-test. Based on the statistical test results it is known that the Asymp. Sig. (2-tailed) of  $0.001 < 0.05$ , it can be concluded that the hypothesis is accepted. Thus it can be said that there are differences between the Experimental class and the Control class. Because there is a significant difference, it can be said that there is an influence of the teacher's communication model in online learning on student learning outcomes at SMAN 5 Lhokseumawe.

**Keywords:** Teacher Communication; Online Learning; Student Learning Outcomes

## 1. INTRODUCTION

Since the emergence of the Covid-19 pandemic that hit Indonesia in general, especially the province of Aceh, the educational system has changed. Previously, teaching and learning meetings were held face-to-face in class and changed to face-to-face online using various online application platforms, such as Zoom, Google Meet, Google Classroom, and others. Online learning through online applications is also carried out in various high schools (SMA) in Indonesia as an alternative learning. As is the case in SMA Negeri 5 Lhokseumawe they also use the zoom application to teach students every week. One of the alternative learning implemented during the Covid-19 period was online learning. According to Rusman (2013) states that online learning is learning that uses the internet with accessibility, connectivity, flexibility and the ability to bring up various types of learning interactions. In this learning process, a teacher's communication pattern is needed so that students can easily understand well in distance/online learning. Turmudi (2008) suggests that teacher communication patterns and student understanding are a learning strategy regarding a good understanding process for the level of understanding and acceptance of subject matter by students remotely (Melani, 2019; Mulyadi, 2011; Lestari, Yudhanegara, 2015).

According to Riwahyudin (2015) student learning outcomes are language with abstract ideas or concepts that are structured and their reasoning is deductive. According to Shoimin (2014), understanding learning outcomes can encourage people to always move forward, as evidenced by the development of modern technology. Therefore, good learning outcomes are the first step in mastering concepts so that students understand what is being learned. Learning by applying teacher communication patterns to learning outcomes for all students online for all students or students with the ability to think logically, analytically, systematically, critically, and creatively, as well as the ability to work together (Permendiknas No. 20 of 2006). From the sentence above it is clear that the learning potential of teacher communication patterns and learning methods is important to learn and teach all students using the during today approach.

Based on Permendiknas No. 22 of 2006 stated that learning teacher communication patterns aims to enable students to have the ability to: (1) understand the concept of learning material, explain the interrelationships between concepts and apply concepts or algorithms in a flexible, accurate, efficient and precise way in solving problems; (2) using reasoning on patterns and characteristics, manipulating the uptake of learning material in making generalizations, compiling evidence or explaining ideas and lesson statements; (3) solving problems which include the ability to understand problems, design material models, complete models, and interpret the solutions obtained; (4) communicating ideas with symbols, tables, diagrams, or other media to clarify circumstances or situations; and (5) having an attitude of appreciating logical uses in

life, namely having curiosity, concern, and interest in learning subject matter, as well as being tenacious and confident in problem solving.

Based on the statement above, it is explained that one of the learning objectives by using the teacher's communication pattern is so that students can improve their reasoning abilities on various subject matter and students have curiosity, concern, and interest in learning lessons at school which is a positive attitude. Ministry of National Education (2002: 3) reveals "The subject matter and reasoning about the subject matter are two things that cannot be separated, namely the subject matter is understood through reasoning and reasoning is understood and trained through learning and the learning outcomes achieved". When studying, students will always be faced with a good understanding process. Understanding is an activity or thought process to draw conclusions or make new statements based on previous statements and the truth of which has been proven (Dimiyati & Mudjiono, 2006; Djamarah & Zain, 2010; Ermavianti, D., & Sulistyorini, 2016). Student understanding abilities are needed by students both in the process of understanding various subject matter itself and in everyday life (Hartati, 2015; Hendriana et al, 2017; Hidayat, 2015; Huda, 2013).

Based on Fajriyah's research (2019: 288), the independence of students in learning also affects the ability to understand lessons and material delivered by the teacher. This is evidenced by the results of his research which concluded that learning independence has a positive effect on students' understanding abilities of 46.6% and 53.4% is influenced by other factors outside of student learning independence. Learning that places more emphasis on reasoning and problem solving activities is closely related to high student achievement (Fajriyah et al, 2019; Eliza et al, 2018; Nuharini & Wahyuni, 2008). With the ability of students through the teacher's communication patterns in conveying subject matter during the period, it will make it easy for students to understand. the results of the study show that the average student cannot understand a lesson if the teacher's weak communication pattern will hinder the ability to understand student lessons well, and vice versa if the teacher's communication model skills are good and enthusiastic will help students absorb various information that is conveyed by the teacher well, especially when learning is done remotely/online (Retnawati, 2016; Ramdani, 2012). And this will affect the intended student learning outcomes.

Based on many studies it was revealed that students' understanding needs to be developed in the process of achieving learning outcomes. Because good teacher communication patterns can develop understanding skills well too. By providing the widest possible opportunities for students and helping students develop their thinking skills (Ermavianti & Sulistyorini, 2016; Mulyadi, 2011). This learning must focus on students, while the role of the teacher and teacher communication patterns in this learning is not only as a transmitter of communication and information but as a facilitator, motivator, and mentor who will provide opportunities for students to learn actively in developing their thinking skills. The condition of passive students is clearly not beneficial to increasing students' reasoning abilities in understanding various subject matter. For this reason, the teacher's effort is needed in making teacher communication patterns so that students learn actively and are not boring. With students actively involved, it is possible that students are able to reason and absorb material easily. That way, the teacher must create a learning atmosphere with a model of teacher communication patterns that will be able to encourage student activity by applying an interesting learning model.

The learning process for students in schools is usually carried out face-to-face in class or online, for the last two years it has been more dominant using online learning using the Google Classroom, Zoom, school e-learning platforms and others. This is in accordance with the policy of the minister of education. Likewise with the Circular Letter of the Minister of Education and Culture Number 3 of 2020 dated 9 March 2020 concerning Prevention of various situations to be avoided. Therefore, based on the descriptions above, the researcher is interested in conducting research with the title "The Influence of the Teacher Communication Model in Online Learning on Student Learning Outcomes at SMAN 5 Lhokseumawe", to determine whether there is any influence from the learning activities carried out.

## 2. RESEARCH METHOD

This study used a quantitative research approach with an experimental method in the form of a quasi-experimental. The quasi-experimental method is a design that has a control group, but cannot fully function to control external variables that affect the implementation of the experiment (Arikunto, 2013; Sugiyono, 2018). Therefore, in grouping research subjects based on previously formed groups or existing groups. This study was conducted at SMA Negeri 5 Lhokseumawe for the 2022/2023 academic year. The population of this study were all students of SMA Negeri 5 Lhokseumawe. The sample is students in grades XI-1 and XI-2 in the 2022/2023 academic year. In class XI-1, online learning is carried out, while class XI-2 uses ordinary learning. The design used in this study includes three stages, namely: (1) the research instrument development stage, (2) the research instrument trial phase, (3) the research implementation stage. Each stage is designed in such a way that valid data is obtained according to the variable characteristics and research objectives. The research design used in this study was a non-equivalent control group design. In this design, there are two groups selected by sampling saturation with the experimental design based on Creswell (2012), namely as follows:

Experimental Group	$\frac{O}{O} \quad X \quad \frac{O}{O}$
Control Group	$\frac{O}{O} \quad \frac{O}{O}$

Description:

- O: Pretest or posttest student learning outcomes
- X: Teacher Communication Model

Test students' learning outcomes will be measured through the ability of students to solve questions that contain indicators of this ability. Student learning outcomes tests consist of questions in the form of descriptions given after

learning. In order to obtain good test items, the students' mathematical reasoning test items were first tested and assessed for validity, discriminating power, level of difficulty and reliability. After the data is obtained from the results of the pre-test and post-test, data processing is carried out. Data processing is done based on the problems in this study. Beginning with conducting data analysis prerequisite tests such as homogeneity and normality tests before analyzing the hypothesis using the t-test. In the process of data analysis researchers used SPSS software.

### 3. RESULTS AND DISCUSSION

#### 3.1. Results

To answer the questions contained in the introduction, it is necessary to analyze and interpret the research data. The analysis in question is to determine the effect of the teacher communication model in online learning on student learning outcomes at SMAN 5 Lhokseumawe. The research was conducted at SMA Negeri 5 Lhokseumawe from August to September 2022, by taking the population of all class XI. The sample chosen by the researcher in this study was class XI-1 as the control class and class XI-2 as the experimental class. Class XI-1 and class XI-2 each have 32 students. So it can be said between the two classes have the same comparison. Then data processing is carried out in accordance with what has been determined in the previous introduction, then the data will be processed according to the conditions that have been set. The data collected by the researcher was in the form of student learning outcomes data which was obtained with a test instrument in the form of a post-test. The results of this study include data on student learning outcomes in each class, namely the experimental class and the control class. The processed data is taken from the post-test data conducted at the end of the lesson. Complete data can be seen in the appendix, along with the results of descriptive data.

**Table 1.** Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Experiment	32	2	4	3,19	,931
Control	32	0	4	2,06	1,343
Valid N (listwise)	32				

**Table 1** showed that the minimum post-test score for mathematics learning outcomes in the experimental class is 2, while in the control class it is 0, while the maximum score in the experimental class and control class is the same, namely 4. From the average value it can also be seen that the experimental class has a higher score 3.19 compared to the control class, namely 2.06. Likewise with the standard deviation in the experimental class 0.931 while in the control class 1.343.

#### a. Normality Test Results

The normality test in this study used the Kolmogorov Smirnov normality test on the post-test data. Complete calculation results can be seen in the attachment. The following data normality test results, as showed in **Table 2**.

**Table 2.** Normality Test Results  
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		32
Normal Parameters <sup>a,b</sup>	Mean	,000000
	Std. Deviation	1,34136118
Most Extreme Differences	Absolute	,248
	Positive	,185
	Negative	-,248
Test Statistic		,248
	Asymp. Sig. (2-tailed)	,000c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Based on the results of the normality test, it is known that the significance value is  $0.000 < 0.05$ . Based on the provisions  $H_0$  is rejected and  $H_a$  is accepted if the value is significant  $> 0.05$ . So, it can be concluded that the post-test scores of students' mathematical learning outcomes are not normally distributed.

#### b. Hypothesis Test Results

After testing the prerequisites for data analysis are not fulfilled, data analysis cannot be continued using the t-test, but with Mann-Whitney Non-Parametric. The test was carried out with SPSS 25 software and can be seen in full in **Table 3**. The following is a summary of the Mann-Whitney Non-Parametric test results, as shown in **Table 3**.

**Table 3.** Hypothesis Test Results  
Test Statistics<sup>a</sup>

	Post test
Mann-Whitney U	275,500
Wilcoxon W	803,500

Z	-3,378
Asymp. Sig. (2-tailed)	,001

a. Grouping Variable: Kelas

Based on the statistical test output, it is known that the Asymp. Sig. (2-tailed) of  $0.001 < 0.05$ , it can be concluded that the hypothesis is accepted. Thus it can be said that there are differences between the Experimental class and the Control class. Because there is a significant difference, it can be said that there is an influence of the teacher's communication model in online learning on student learning outcomes at SMAN 5 Lhokseumawe.

The test is carried out based on the hypothesis:

$H_0: \mu_1 = \mu_2$ : Through the teacher's communication model in online learning it does not affect students' learning outcomes in mathematics.

$H_a: \mu_1 \neq \mu_2$ : Through the teacher's communication model in online learning it influences students' mathematics learning outcomes.

The decision-making criteria for testing the data are as follows:

- 1) If the significance value = 0.05 then  $H_0$  is rejected.
- 2) If the significance value = 0.05 then  $H_a$  is accepted.

### 3.2. Discussion

This study was conducted to determine the effect of the teacher's communication model in online learning on students' mathematical learning outcomes. The influence of students' mathematical learning outcomes is obtained from the post-test scores. While the post-test scores were obtained from each control and experimental class. The research results obtained from [Table 1](#) can be seen that the minimum post-test score for mathematics learning outcomes in the experimental class is 2, while in the control class it is 0, while the maximum score in the experimental class and the control class is the same, namely 4. From the average value it can also be seen that the class the experiment has a higher value of 3.19 compared to the control class, which is 2.06. Likewise with the standard deviation in the experimental class 0.931 while in the control class 1.343.

Hypothesis testing begins with a normality test whose results can be seen in [Table 2](#). Based on the results of the normality test, it is known that the significance value is  $0.000 < 0.05$ . Based on the provisions  $H_0$  is rejected and  $H_a$  is accepted if the value is significant  $> 0.05$ . So, it can be concluded that the post-test scores of students' mathematical learning outcomes are not normally distributed. After testing the prerequisites for data analysis are not fulfilled, data analysis cannot be continued using the ttest, but with Mann-Whitney Non-Parametric. The test was carried out with SPSS 25 software and can be seen in full in [Table 3](#).

Based on the statistical test output, it is known that the Asymp. Sig. (2-tailed) of  $0.001 < 0.05$ , it can be concluded that the hypothesis is accepted. Thus, it can be said that there are differences between the Experimental class and the Control class. Because there is a significant difference, it can be said that there is an influence of the teacher's communication model in online learning on student learning outcomes at SMAN 5 Lhokseumawe. In addition to the results of the analysis test showing that the teacher's communication model in online learning has a significant effect on students' mathematical learning outcomes, this is also shown in the average post-test score of students' mathematical learning outcomes in the experimental class of 3.19 higher than in the control class that is equal to 2.06. These results illustrate that the teacher's communication model in online learning has a positive effect on developing students' mathematical learning outcomes. This finding is in line with the research results of Sobron et al (2019) and Nugraha et al (2020) that the teacher's ability to teach requires two directions in order to create interactive between teachers and students. Furthermore, these findings prove that teacher teaching communication greatly determines the achievement of student learning outcomes, especially in online learning (Novianti, et al. 2021; Tumembow, et el. 2021).

### 4. CONCLUSION

This study was conducted to determine the effect of the teacher's communication model in online learning on students' mathematical learning outcomes. The influence of students' mathematical learning outcomes is obtained from the post-test scores. While the post-test scores were obtained from each control and experimental class. Based on the statistical test output, it is known that the Asymp. Sig. (2-tailed) of  $0.001 < 0.05$ , it can be concluded that the hypothesis is accepted. Thus it can be said that there are differences between the Experimental class and the Control class. Because there is a significant difference, it can be said that there is an influence of the teacher's communication model in online learning on student learning outcomes at SMAN 5 Lhokseumawe.

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## CONFLICT OF INTEREST

There are no conflicts of interest declared by the authors.

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