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Effectiveness Of The Use Google Meet Application In Learning Biology At Class Xi Students Of Sma Negeri 1 Pematang Bandar

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Keywords

Learning Effectiveness, Google Meet, Learning Outcomes

Abstract. This study aims to measure the effectiveness of using Google Meet in online learning on the Excretion System material. This study measures how student learning outcomes using Google Meet. The method used is a descriptive qualitative research method where researchers see learning outcomes before doing learning before and after learning with Google Meet. To measure the effectiveness of using Google Meet, researchers used Observation sheets, Documentation studies and learning outcomes tests. The data from the three instruments were tested first to students outside the sample, this was done to see the validity of the instrument. The data analysis technique used normality test, homogeneity test and t-test. The normality test was carried out using the Kolmogorof Smirnov test with the help of SPSS 26. The normality test was the result of the Asymp value pretest. Sig (2-tailed) 0.319 > 0.05 and the posttest result is Asymp value. Sig (2-tailed) 0.19 > 0.05, it can be seen that the data on student learning outcomes is normally distributed. As for the homogeneity test, it can be seen that the student learning outcomes data have a homogeneous variant because the significance value is 0.71, so 0.71 > 0.05. Hypothesis testing was carried out using the paired t-test using SPSS 26. The results of the paired t-test were the sig. (2-tailed) 0.000 < 0.05 so it can be concluded that H0 is rejected and Ha is accepted, which means that there is an effective use of Google Meet in online learning to improve student learning outcomes in Class XI SMA Negeri 1 Pematang Bandar.

1. INTRODUCTION

At the end of 2019 the world was shocked by the presence of a new virus originating from Wuhan, China. This virus has hit 215 countries in the world. This virus is known as COVID-19 or Coronavirus Diseases-19[1]. This virus attacks the respiratory system in humans with symptoms of acute respiratory problems, fever, cough and shortness of breath. On January 30, WHO (World Health Organization) declared a public health emergency status caused by this virus. This virus has had a huge impact on various areas of life, including education [2]. Since 2020, all aspects of life have been hit by the Covid-19 outbreak, including the world of education. As a result of this virus, all social activities, both from the world of education and offices, which usually run normally have stopped. Most companies and educational facilities are starting to adapt by introducing employees from home (work from home) and creating online learning systems for students. [3].

In this case, many learning media have utilized Information and Communication Technology (ICT) to support distance learning, such as Google Meet media, especially in the world of education and in the world of work, this media can help all learning activities and activities in other worlds, for example there is a study, a company meeting or also a long distance meeting [4]. As stated by [5] Learning media is a powerful tool that can be used to convey learning information. There are several technology-based applications that carry out the learning process online (on the network) and can be used in the learning process, one of which is Google Meet, either via computer or via smartphone device [6]. Based on the analysis carried out by researchers, it was found that the use of Google Meet media is widely liked by students and teachers in carrying out distance learning, where this application is a good means of carrying out long-distance meetings, however, by carrying out distance learning meetings students do not understand what has been said. delivered by the teacher and makes the students underestimate what the teacher conveys so that they do not understand the material that has been conveyed. Each of these applications has its own advantages and disadvantages.

Apart from that, video recordings are secure and have a chat feature so that if someone has good hearing during the video conference, they can talk via chat, and in Google Meet you can schedule the next meeting to be held [7]. Apart from that, the Google Meet application has a unique

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and functional interface that is light and fast, prioritizing more efficient management so that it is easy to use and follow by all users [8]. There is no time limit for using Google Meet, and the Google Meet app is free to use. Based on the thoughts above, at SMA Negeri 1 Pematang Bandar it is necessary to carry out and study the effectiveness of using Google Meet in terms of student learning outcomes on the Excretory System material. The research was carried out considering the distance learning carried out at SMA Negeri 1 Pematang bandar.

2. METHOD

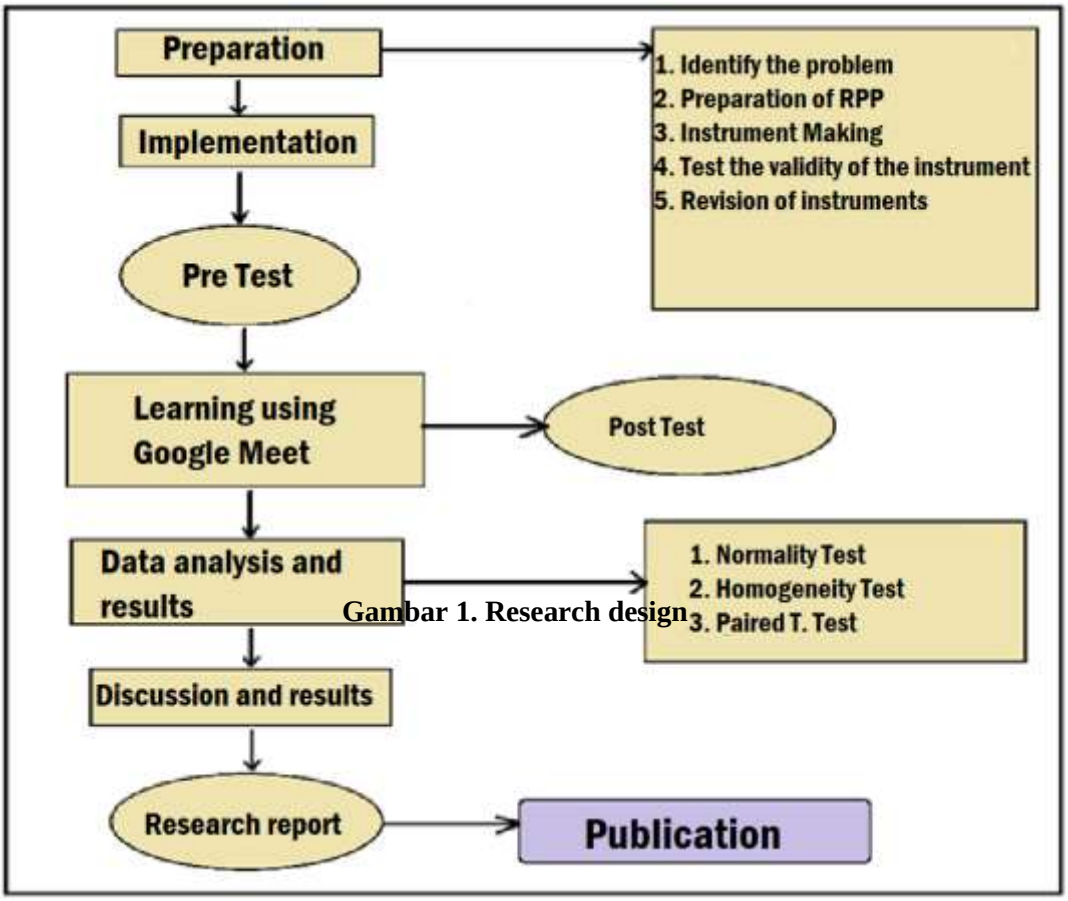
Research Type

The type of research used by researchers in this research is quantitative descriptive. Quantitative itself is defined as an approach to research by measuring indicators of research variables (variable X and variable Y) and then looking for relationships. The quantitative approach places greater emphasis on numerical data (numbers) which are processed using statistical methods [9]. Meanwhile, descriptive is a way to describe symptoms, events and occurrences that occur when conducting research that are described in real terms [10].

The steps taken in this method are to collect data which is then classified, analyzed, and made conclusions about an event objectively in the form of a description. To take samples from the population, cluster random sampling was used, namely randomizing all classes XI. The number taken for samples was 2 classes which were used as the control class and the experimental class.

Research design

Research design is the planning process required in carrying out research. Research design is a guideline needed in determining research instruments, data collection, sample determination up to the data analysis stage [11]. The research design aims to make it easier for researchers to conduct research correctly. The following is a picture of the research design:



Gambar 1. Research design

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Research Instruments

Research instruments are tools used to measure events that have been observed. The following instruments were used in this research:

- Observation Guidelines
  Researchers collect data by observing the objects studied. This observation guide contains a list of types of activities that will be observed. The observation guide used by researchers is a list related to learning such as the Learning Implementation Plan (RPP) used by class XI even semester, namely in the excretion system material.
- Documentation Guidelines
  Researchers collect data by recording or registering data that will be used in research. In this case, the guidelines used by researchers are a list of student test scores, a list of names of students and teachers involved in the research, lesson plans used, and photos during the research.
- Learning Results Test
  The learning outcomes test is carried out by giving 10 multiple choice questions which are arranged based on the achievement indicators in the class XI RPP for the even semester on the excretion system material.

Before collecting data, prerequisite tests are carried out, namely by carrying out validity tests and instrument reliability tests.

Data Collection Techniques

Data collection techniques are a method used by researchers to obtain data that is used to solve problems. Data collection techniques are divided into 2, namely test and non-test. Collection of tests includes diagnostic tests, formative tests and summative tests. Meanwhile, non-test data collection includes multilevel scales, checklists, questionnaires, observations and interviews. The following are data collection techniques carried out by researchers:

- Observation. The observations carried out in this research were carried out by observing objects indirectly. Observation activities were carried out with the help of tools in the form of using the Google Meet application because learning was carried out online. What the researcher did in this observation was to see the suitability of the RPP with the learning activities carried out.
- Documentation. Documentation is an activity of collecting data by recording the data obtained [12]. Data was obtained from various sources originating from the respondents studied. The documentation carried out by the researcher was to obtain data on student test scores, number of students, lesson plans used, and data on the names of students and teachers involved in the research.
- Test. A test is a measurement technique that is carried out by giving various questions or tasks that must be answered by the respondent [13]. In this research, researchers used tests in the form of pretests and posttests to measure student learning outcomes using the online learning media Google Meet. The data obtained is in the form of scores from the test results given.

Data Analysis Techniques

Data analysis techniques are a way to examine, group and interpret data from an event that has been observed during research [14]. In this research, researchers used quantitative descriptive data analysis techniques, namely the data obtained in the form of numbers narrated from the results of the research carried out. The following are the data analysis techniques used:

a. Normality test
   The normality test is a test used to see whether the data is normally distributed or not. There are many methods that can be used to test normality, one of which is by comparing the Kolmograv-Smirnov values. Calculations are carried out using the SPSS 26 application with the following conditions:
   - If P from the K-S coefficient (0.05) then it can be said that the data is normally distributed, whereas

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- If the P of the K-S coefficient is (0.05) then it can be said that the data is not normally distributed.

b. Homogeneity Test

The homogeneity test is carried out to see whether there are differences between two or more samples. The homogeneity test used in this research is the Levene test. The homogeneity test is calculated with the help of SPSS 26 with the following conditions:

- If the significance value is P (0.05), then the data is homogeneous
- If the significance value is P (0.05), then the data is not homogeneous

c. Paired t test

The paired t test is a test used to compare group averages with paired samples. The paired samples in question are samples with the same subjects but receiving different treatment. In this research, the paired t-test was carried out using the SPSS 26 application with the following conditions:

- If the Sig. (2-tailed) (0.05) then H0 is rejected and Ha is accepted (there is effectiveness in using Google Meet in Biology learning).
- If the Sig. (2-tailed) (0.05) then H0 is accepted and Ha is rejected (there is no effectiveness in using Google Meet in Biology learning).

3. RESULT AND DISCUSSION

Researchers used quantitative descriptive research which was carried out in class XI with a total of 20 students. The research data used are student learning outcomes, namely pretest scores carried out before receiving treatment and posttest scores carried out after receiving treatment.

Instrument Validity Test Results

The validity test carried out in this research was the content validity test. The content validity test was carried out by asking the opinions of experts, namely Mrs. Juliana Saragih, S.Pd, Mrs. Nurmaini Sitepu, S.Pd and Mr. Pratama Sinaga, S.Pd. Apart from that, the researcher also used Microsoft Excel 2016 to make it easier to calculate the validity of the pretest and posttest items. The following are the results of the validated instrument:

Table 1. Validitation test RPP

Validator	Observed aspects			Average	explanation
	Format	content	language		
Juliana Saragih, S.Pd	9	22	8	4,3	Valid
Nurmaini Sitepu, S.Pd	8	24	9	4,5	Valid
Pratama Sinaga, S.Pd	8	22	8	4,2	Valid
	Average Validitas RPP			**4,3**	**Valid**

Source: Calculations with Microsoft EXCEL

From Table 1 above, it is known that the average RPP validation test is 4.3, which means that the RPP can be used.

Test the validity of the pretest questions

Pretest practice questions are prepared based on the indicators contained in the RPP. The questions were validated by testing them on 20 students from other schools. The following are the results of the validity test using Microsoft Excel 2016:

Table 2. Pre-test validity test results

Question	r_{Hitung}	r_{tabel}	Valid	Explanation
Question 1	0,87		Very high	**Valid**
Question 2	0,88		Very high	**Valid**
Question 3	0,77		High	**Valid**
Question 4	0,74	0,63	High	**Valid**
Question 5	0,58		Medium	**Valid**
Question 6	0,83		Very high	**Valid**
Question 7	0,88		Very high	**Valid**

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Question 8	0,34	Very low	**Not Valid**
Question 9	0,98	Very high	**Valid**
Question 10	0,59	Medium	**Valid**
Question 11	0,79	High	**Valid**
Question 12	0,91	Very high	**Valid**
Question 13	0,93	Very high	**Valid**
Question 14	0,39	Very low	**Not Valid**
Question 15	0,82	Very high	**Valid**
Question 16	0,58	Medium	**Valid**
Question 17	0,76	High	**Valid**
Question 18	0,76	High	**Valid**
Question 19	0,72	High	**Valid**
Question 20	0,91	Very high	**Valid**

Source: Calculations with Microsoft EXCEL

From Table 2 above, it can be seen that Question number 1's rcount is 0.87 with an rtable of 0.63, thus it can be said that Question number 1 is valid because rcount > rtable. Question number 10 is considered valid because the validity range is sufficient. The medium for Questions number 8 and 14 is invalid, so these two questions cannot be used and must be replaced.

Posttest Question Validity Test

Posttest practice questions are prepared based on the indicators contained in the RPP. The questions were validated by being tested on students from other schools. The following are the results of the validity test using Microsoft Excel 2016:

Table 3. Post test validity test results

Butir Question	r_{Hitung}	r_{tabel}	Valid	Keterangan
Question 1	0,82		Very high	**Valid**
Question 2	0,75		High	**Valid**
Question 3	0,74		High	**Valid**
Question 4	0,79		High	**Valid**
Question 5	0,33		Very low	**Not Valid**
Question 6	0,81		Very high	**Valid**
Question 7	0,89		Very high	**Valid**
Question 8	0,85		Very high	**Valid**
Question 9	0,98		Very high	**Valid**
Question 10	0,48	0,63	Very high	**Valid**
Question 11	0,75		High	**Valid**
Question 12	0,96		Very high	**Valid**
Question 13	0,92		Very high	**Valid**
Question 14	0,89		Very low	**Valid**
Question 15	0,82		Very high	**Valid**
Question 16	0,87		Medium	**Valid**
Question 17	0,72		High	**Valid**
Question 18	0,79		High	**Valid**
Question 19	0,71		High	**Valid**
Question 20	0,96		Very high	**Valid**

Source: Calculations with Microsoft EXCEL

Dari Tabel 3. di atas dapat dilihat bahwa Question nomor 1 rhitung adalah 0,82dengan $\mathbf{r_{tabel}}$ sebesar 0,63, dengan demikian dapat dikatakan bahwa Question nomer 1 **valid** karena $\mathbf{r_{hitung} > r_{tabel}}$. Untuk Question nomor 16 dianggap valid karena rentang validitas cukup. Mediumkan untuk Question nomor 5 tidak valid, maka Question tersebut tidak dapat digunakan dan harus diganti.

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Instrument Reliability Test Results

After the validity test is carried out, the next stage is for the instrument to be tested for reliability. Reliability testing is used to see whether the instrument is reliable. What is meant here by reliable is that the instrument can be trusted to be correct. Researchers used the Alpha Cronbach formula with the help of Microsoft Excel 2010 to make it easier to calculate reliability tests. The following are the results of the pretest and posttest instrument reliability tests:

a. Pretest Reliability Test Calculation Results

$$r11 = \left(\frac{n}{n-1}\right)\left(\frac{s^2 - \sum pq}{s^2}\right)$$

$$r11 = \left(\frac{20}{20-1}\right)\left(\frac{4.67 - 0,84}{4,67}\right)$$

$$r11 = 0,89$$

From the results of these calculations it can be seen that the calculated reliability results are r11 = 0.89. The instrument can be said to be reliable if the r11 value is > 0.70. It can be concluded that the pretest instrument is reliable with a very high range.

b. Posttest Reliability Test Calculation Results

$$r11 = \left(\frac{n}{n-1}\right)\left(\frac{s^2 - \sum pq}{s^2}\right)$$

$$r11 = \left(\frac{20}{20-1}\right)\left(\frac{2,55 - 0,8}{2,55}\right)$$

$$r11 = 0,78$$

From the results of these calculations it can be seen that the calculated reliability results are r11 = 0.78. The instrument can be said to be reliable if the r11 value is > 0.70. It can be concluded that the pretest instrument is reliable with a high range.

Analisis Data dan Uji Hipotesis

The next stage is to carry out data analysis of the collected data. The data used are pretest and posttest scores which have been carried out to see student learning outcomes in thematic subjects, namely theme 6 subtheme 1 5th learning using Google Meet in online learning. The following is the data analysis used in this research:

a. Prerequisite Test T-test

- Normaliti Test

  One of the requirements for the T test is the normality test. The normality test is used to determine whether the data is normally distributed or not. The data will be tested using the Kolmogorof Smirnov test. Data has a normal distribution if the significance value α > 0.05. The following are the results of the normality test using SPSS 26:

Table 4. Normality test results of learning outcomes

One-Sample Kolmogorov-Smirnov Test

		Pre-test	**Post-test**
N		20	20
Normal Parameters[a,b]	Mean	65.012	86.172
	Std. Deviation	18.0181	12.9017
Most Extreme Differences	Absolute	.096	1.277
	Positive	.087	1.098
	Negative	-.096	1.904
Kolmogorov-Smirnov Z		.632	.452
Asymp. Sig. (2-tailed)		.319	.19

a. Test distribution is Normal.

Source: Calculations with SPSS 26

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From the picture above it can be seen that the results of the Kolmogorof Smirnov normality test pretest and post test data are normally distributed. This is due to the normality test of the Asymp value pretest results. Sig (2-tailed) 0.319 > 0.05 and posttest results Asymp value. Sig (2-tailed) 0.19 > 0.05 so it can be concluded that the pretest and posttest student learning outcomes data using Google Meet in online learning are both normally distributed.

- Homogeniti Test

  The next stage is the homogeneity test. The homogeneity test was carried out to find out whether the pretest and posttest data had homogeneous variants. The following are the results of the homogeneity test using SPSS 26:

Table 5. Homogeneity test results of learning outcomes

Test of Homogeneity of Variances

LEARNING OUTCOMES

Levene Statistic	df1	df2	Sig.
7.654	1	24	.017

Sumber: Perhitungan dengan SPSS 26

From Table 5 above, it can be seen that the student learning outcomes data has a homogeneous variant because the significance value is > 0.05, namely 0.17 > 0.05 so the data is homogeneous.

b. Hipotesis Test

After passing the prerequisite tests, the next stage is to test the hypothesis using the T-test. The T test used is the Paired T-Test to prove the influence of the effectiveness of using Google Meet in online learning on improving the learning outcomes of Class XI students at SMA Negeri 1 Pematang Bandar. If the Sig value. (2-tailed) (0.05) then H0 is rejected and Ha is accepted. The following are the results of the Paired t-test using SPSS 26:

Tabel 6. Test result *Paired t-test*

Paired Sample Test

Paired Differences

95% Conviden interfal of the Difference

	Mean	Std Deviation	Std Error Mean	Lower	Upper	t	df	Sig (2-tailed)
Pair 1 Pre-test- Post-test	-22.765	11.425	2.971	-25.833	-16.782	-8.826	16	.000

From the picture above it can be seen that the sig value. (2-tailed) namely 0.000 < 0.05 so it can be concluded that H0 is rejected and Ha is accepted, which means that there is an influence between the effectiveness of using Google Meet in online learning on improving the learning outcomes of Class XI students at SMA Negeri 1 Pematang Bandar.

Discussion

Before the instrument was used, the researcher carried out a validity and reliability test of the instrument. The validity test of the RPP instrument was carried out with the help of experts. The results of the RPP validity test can be seen in table 1. The RPP is said to be valid because the RPP validity criteria reaches 4.3. Then to test the validity and reliability of the pretest and posttest Question items, it was carried out with the help of Microsoft Excel 2010. The results of the pretest and posttest validity tests can be seen in table 2 and table 3. From this table it can be concluded that the valid pretest Question item is Question item number 1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19 and 20 Medium for Question items number 8 and 14 are invalid. For valid posttest Question items, namely numbers 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 Mediumize the questions that are not valid, namely number 5. Question items that are invalid must be replaced and cannot be used.

The pretest and posttest reliability tests were carried out using the Alpha Cronbach formula using Microsoft Excel 2010. The results of the reliability test can be seen from table 2 and table 3. For the pretest reliability test results, the results were r11 = 0.89 > 0.70. It can be concluded that the pretest instrument is reliable. Mediuming the results of the posttest reliability test, the results were

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r11= 0.78> 0.70. It can be concluded that the posttest instrument is reliable. After all the instruments were proven valid and reliable, the next stage the researcher carried out was to carry out data analysis. The data used in this research are student learning outcomes in biology subjects on the excretory system material.

The normality test was carried out using the Kolmogorof Smirnov test with the help of SPSS 26. The results of the normality test can be seen in table 4. Normality test results of the pretest Asymp value. Sig (2-tailed) 0.319 > 0.05 and posttest results Asymp value. Sig (2-tailed) 0.19 > 0.05 so it can be concluded that the pretest and posttest student learning outcomes data are both normally distributed. The medium for the homogeneity test can be seen in Table 5. From this table it can be seen that the student learning outcomes data has a homogeneous variance because the significance value is > 0.05, namely 0.71 > 0.05. After these prerequisite tests have been fulfilled, the next stage is to carry out hypothesis testing.

Hypothesis testing was carried out using a paired t-test using SPSS 26. The results of the paired t-test can be seen in figure 4.5. The result of this test is the sig value. (2-tailed) 0.000 < 0.05 so it can be concluded that H0 is rejected and Ha is accepted, which means that there is effectiveness in using Google Meet in online learning in improving the learning outcomes of Class XI students at SMA Negeri 1 Pematang Bandar.

The effectiveness of using Google Meet in online learning can also be seen during the implementation process in the field. The use of Google Meet is very effective in online learning. In research [15] Teachers can take advantage of various features in Google Meet such as share screen to share material on the screen, chat column for students to take attendance or convey ideas, thoughts and questions related to material that is not yet understood. Apart from that, the use of Google Meet can also be equipped with audio-visuals so that it can make it easier for teachers and students to interact during the current Covid-19 pandemic. Teachers can carry out evaluations directly by observing students during learning.

By using Google Meet, teachers can evaluate students' spiritual attitudes and students' social attitudes during the online learning process [16]. Evaluation of students' spiritual attitudes that can be observed by teachers is when students become accustomed to holding worship according to their respective beliefs. Not only that, teachers can evaluate students' social attitudes when students and teachers interact with students during questions and answers and convey ideas related to the material being studied. However, in the implementation of using Google Meet, there are still shortcomings such as signal limitations experienced by students so that the teacher's explanation cannot be conveyed properly, the image quality when using the share screen feature is not clear when enlarged. Apart from that, there are several students who experience problems when operating Google Meet. Student learning outcomes also increase by utilizing Google Meet as an online learning medium. This difference can be seen from the pretest score, namely the score before being given treatment with an average of 61.5 and the posttest score, namely the score after being given treatment with an average of 87.4. Thus, it can be said that the use of Google Meet is effective in improving the learning outcomes of Class XI students at SMA Negeri 1 Pematang Bandar.

4. CONCLUSION

Based on the results of this research, several conclusions were obtained. The following are the implications of the research entitled "Effectiveness of Using the Google Meet Application in Biology Learning in Class XI Students of SMA Negeri 1 Pematang Bandar". The effectiveness of using Google Meet with student learning outcomes. This can provide information to students, teachers and the school as an effort to improve student learning outcomes. The increase in student learning outcomes can be seen from the difference in student pretest and posttest scores. This research shows the effectiveness of using Google Meet in online learning in improving student learning outcomes, so Google Meet can be used as an interactive learning media in online learning. This media can be utilized optimally to improve student learning outcomes.

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