

Use of Google Sites Learning Media to Improve Students' Cognitive Learning Outcomes Excretory System Material

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Abstract

This study aims to analyze the improvement of students' cognitive learning outcomes in the learning process by using google sites media. The method used in this study is a pre-experimental method with the One Group Pretest-Posttest Design model. The sample in this study was class XI IPA in one of the private MA in Bandung with a total of 24 students. The data that has been obtained were analyzed using normality test, paired sample t-test and N-gain test. The results of the data analysis showed that the increase in the N-gain value from the pretest-posttest obtained was 0.67 in the medium category, and the t-count value obtained was -16.353 with a Sig value. (2-tailed) of 0.000. Therefore, the value of Sig. (2-tailed) 0.05, it can be concluded that H₀ is accepted, meaning that there is a significant increase in student cognitive learning outcomes in excretory system learning using google sites media. Based on the results of this study, the use of google sites media has the potential to be used in improving students' cognitive learning outcomes in the learning process.

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Introduction

Education is a conscious effort that can be done systematically to realize learning so that students can develop their potential. The existence of this education can provide benefits for the lives of students, starting with the existence of science, noble morals, intelligence, good personality, skills, and spiritual strength (Dewi, 2020). Education has objectives is contained in the National Education System Law regarding the purpose of national education, namely in article 3 number 20 of 2003, namely the development of students to become human beings who believe and are devoted to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens. This will be done well if the government has prepared a policy and provides adequate facilities that can be used evenly to support a learning process (Affandi, 2017).

Learning is a process that can organize, organize everything around students to add and encourage students to carry out the learning process (Zain, 2006). Learning objectives are an expectation of changes in student behavior after the learning process is carried out (Ramadhan, 2019). The learning used is curriculum learning 2013 which is a science curriculum based on the learning process that prioritizes aspects of experience from individuals through the process of observing, questioning, reasoning, trying, (observation-based learning) and being able to communicate what they have learned. Learning using a scientific approach aims to make students able to better understand, recognize, and build a concept of knowledge with scientific activities (Hosnan, 2014).

Normally, learning is carried out in schools. However, in early March 2020, the health crisis occurred uncontrollably with the COVID-19 pandemic in all countries, especially in Indonesia. Finally, the government made a circular letter Number 3 of 2020 which contained an appeal for learning in schools, to be carried out online (online) intending to reduce physical contact and crowds with others. The government provides several media facilities that can be used to support the online learning process and provides quota subsidies for the community under the Ministry of Education and Culture (Sugama, 2021). The development of COVID-19 cases over time has now improved. This also affects education in the learning system. In July 2021, the Minister of Education and Culture of the Republic of Indonesia confirmed that schools were allowed to carry out the face-to-face learning process, but by following the guidelines for implementing learning during the COVID-19 pandemic issued by the Ministry of Education and Culture and Technology and the Ministry of Agriculture. The guide contains health protocols that need to be done both before and after learning takes place. In the end, schools began to open the face-to-face learning process, especially in schools in green zone areas (Hidayat, 2021).

The existence of face-to-face learning after the pandemic is certainly a new challenge for schools related to the system of learning (Singh et al., 2021). This requires a transition period system from online learning to face-to-face learning because students are accustomed to online learning. Moreover, the estimated time in the learning process in post-pandemic schools has been reduced. This causes teachers to be able to optimize the learning process as well as possible which requires methods, models, and learning media that support the learning, which is adjusted to a predetermined time. The learning methods used today, most still use conventional methods. In fact, along with the development of

the times, what is needed is adequate competence from a teacher so that in this case teachers can change teaching habits in a renewable way that prioritizes student activity (student center). Conventional learning, especially during a pandemic like this, makes students less in forming their concepts, because of the old teaching style (Anjarsari, 2019).

Based on the results of interviews with class XI biology subject teachers at one of the private MAs (Senior High School) in the city of Bandung, learning carried out in schools has been face-to-face but limited. The learning now only has an estimated time of 20 to 25 minutes in one lesson hour. This makes teachers in the school have to be extra in optimizing effective and efficient learning. Of course, this is not easy, especially for teachers who are less professional and less reliable to apply various methods and media in the learning process. This media is considered quite important as a support for the learning process (Dariyadi, 2021). One alternative that can be done to address these problems is to use Google Sites media in the learning process (Akgun and Greenhow, 2022). Media is everything that concerns software and hardware that can be used to deliver teaching material from learning sources to students where this media can stimulate the thoughts, feelings, attention, and interests of students so that the learning process becomes more effective (Jalmur, 2016). Google sites media is one of the media platforms that is easy to use by ordinary users. The use of Google Site media can be a solution in providing easy access to information in learning. The use of this Google Sites media is as a learning resource or student teaching material in the form of text, images, videos, and learning evaluations, then store documentation, where teachers can document activities in class and even documentation of activities at school even with unlimited storage capacity (Abdulrahman et al., 2020). Kusuma and Sumarni (2020) also conducted research that showed that learning using Google Sites media can improve the cognitive learning outcomes of students effectively.

Every learning process is certainly expected by students to obtain good learning results. Learning outcomes are a pattern of actions, values, understanding, attitudes, appreciation, and skills possessed by students after the learning period (Molstad, 2016). There are 3 indicators of learning results according to Bloom, namely cognitive, affective, and psychomotor learning outcomes (Ponto, 2020). Learning outcomes that will be measured in this study are student cognitive learning outcomes which include indicators based on Bloom's revised taxonomy, namely: remember (C1), understand (C2), apply (C3), analyze (C4), evaluate (C5) and create (C6) (Syah, 2011).

One of the Biology materials in Senior High School is the excretory system following those contained in the basic competence, namely analyzing the relationship between the structure of organ constituent tissues in the excretory system concerning bioprocesses and functional disorders that can occur in the human excretory system. This material is less attractive to students in Madrasah because it tends to be boring and students find it difficult to distinguish the process of excretion in humans, as well as an understanding of the process of urine formation which is difficult to understand. In line with research conducted by Simorangkir (2020), it is known that this excretory system is one of the materials in the eyes of biology students that is difficult for students to master because students have to memorize a lot of terminology and Latin in the introduction of organs involved in the process of human expulsion.

Based on the description above, the problem studied in this study is whether there is an increase in student cognitive learning outcomes in learning by using Google Sites media on excretory system material.

Research Method

The method used in this study is a pre-experimental research method with a research design One group pretest-posttest design where in this design there is a pretest before treatment and posttest after treatment. Therefore, the results of the study can be known more accurately because it can compare the situation before being treated and after being treated (Sugiyono, 2017).

Table 1. Desain One group pretest-posttest

<i>Pretest</i>	<i>Treatment</i>	<i>Post test</i>
O_1	X	O_2

In this study, the independent variable is Google Sites learning media and the dependent variable is student cognitive learning outcomes. Learning outcomes are measured and assessed only on cognitive aspects. To measure students' cognitive abilities, pretest (before treatment) and posttest (after treatment) are carried out. This research was carried out at one of the private MAs in the city of Bandung. The sample used in this study was class XI science students as an experimental class with a total of 24 students.

The instruments used are test and non-test instruments. The test instrument in this study is a set of multiple-choice questions with 5 choices to support data on student cognitive learning outcomes of Bloom's revised version of 20 questions. The non-test instruments in this study are observation sheets and questionnaires of student responses related to learning activities using Google Sites media. In the research conducted, this observation was used to observe teacher activities and student activities in the biology learning process at school as well as an object in this study. This observation sheet is filled in by the observer by checking the available column and adjusted to 4 choices in the

implementation of the learning process. While in the questionnaire there were several closed questions asked to students with 5 alternative answers to reveal student perceptions in learning using Google Sites media.

Data on student cognitive learning outcomes that have been obtained will then be analyzed using normality tests, *paired sample t-tests*, and *N-gain tests* through the SPSS program version 26. The normality test is carried out so that it can be known whether the data that has been obtained is normally distributed or not. Data can be normally distributed if the probability or significance value is greater than 0.05 ($p > 0.05$). The paired sample t-test is performed to determine whether there is an average difference between two samples that are the same in another sense, both are related to each other. If the significance value (2-tailed) < 0.05 , then H_0 is accepted meaning that there is a significant increase in cognitive learning outcomes in learning excretory system material using *Google Sites* media. In analyzing the increase in *pretest* and *posttest* scores obtained by students, you can use the normalized gain score formula (N-gain) expressed in the following formula:

$$\text{Normalized gain (N-gain)} = \frac{\text{Posttest score} - \text{Pretest score}}{\text{Maximum score} - \text{pretest score}}$$

Based on Sugiyono (2017), the calculation of the N-gain value can be categorized in the following table:

Table 2. Score N-Gain Criteria

No	Score N-Gain	N-Gain Criteria
1	$0,00 < N - \text{Gain} < 0,30$	Low
2	$0,30 \leq N - \text{Gain} \leq 0,70$	Medium
3	$N - \text{Gain} > 0,70$	High

Results and discussions

Based on the results of data analysis, it can be seen that this Google Sites learning media can improve the cognitive learning outcomes of grade XI science students on excretory system material. This can be seen from the results of analysis of both tests which show that there is an increase in scores from pretest to posttest. A pretest is given to know the initial abilities possessed by students. The posttest is given to know the final ability of students after the use of Google Sites media in the learning process. Below is Table 3. From the results of the N-Gain test analysis.

Table 3. Test Analysis Results N-Gain

Data	Pretest	Posttest
Mean	45.2083	83.5417
Median	45	85
Standard Deviation	10.15951	6.33815
Lowest Value	25.00	70.00
Highest Value	65.00	95.00
N-gain	0,69	

From Table 3, it shows that the average value of the pretest is 45.21 with a standard deviation of 10.15. The lowest score of students on the pretest is 25 and the highest score is 65. While in the posttest, the average value was 83.54 with a standard deviation of 6.33. The lowest score of students on the post-test is 70 and the highest score is 95. Based on the table, it can be seen that the average score of the pretest is lower than the average score of the posttest because the pretest was carried out before the treatment, so students do not know in depth about the material taught using Google Sites learning media. Conversely, the post-test score obtained is greater than the pretest score because it has been treated, so that students already know the material taught using Google Sites media. The magnitude of the N-gain value or increase from the pretest to the posttest is 0.69. Referring to Table 4., the magnitude of the n-gain value is included in the "medium" category which is almost close to the high category. The increase in student learning outcomes is caused by learning processes or activities designed by teachers that can help students improve their learning outcomes. This can be seen in Table 4.

Table 4. Percentage of Implementation of Learning Activities

The Meeting	Teacher Activities		Student Activities	
	Value	interpretation	Value	interpretation
1	91%	Excellent	90%	Excellent
2	93%	Excellent	91%	Excellent
3	91%	Excellent	82%	Excellent
Average	92%	Excellent	88%	Excellent

Based on the Table 4, it can be seen that teacher and student learning activities from the 1st meeting to the 3rd meeting have a 'very good' interpretation with average scores of 92% and 88%. This indicates that there is a reciprocal process between teachers and students where teachers can provide direction, motivation, and guidance on learning well to their

students, and students can accept and follow teacher directions so that students become more active in the learning process carried out so that it has an impact on student learning outcomes. This is in line with Hamalik's opinion in Kristanto (2015) which explains that increasing student learning activities can improve students' cognitive learning outcomes. Mardiaty (2018) and Huang et al. (2020), explained that the cognitive learning outcomes of students will increase significantly if the learning process carried out involves more senses such as the senses of sight and hearing, in this case, the use of Google Sites media in the learning process.

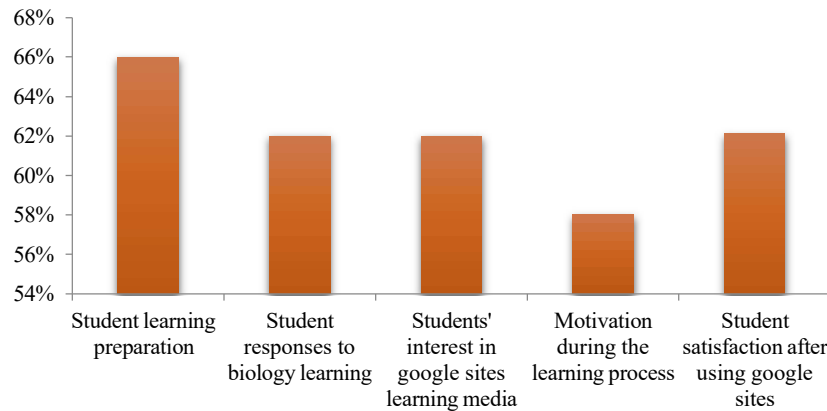


Figure 1. Results of Student Response Analysis

Based on Figure 1, the results of data obtained from filling out questionnaires by students show the average value of student response percentage in giving positive responses of 62% which is included in the strong category. This shows that many students give positive responses to all statements contained in student questionnaires regarding student responses to learning using Google Sites media. It can be seen in the diagram that student response to the aspect of learning preparation is 66% which is included in the good category. This shows that students prepare first before learning. Student responses to biology learning showed a percentage figure of 62% with a strong category. This shows that students are interested in learning biology on excretory system material. Student interest in Google Sites learning media occupies a percentage of 62% with a strong category. This shows that students have a strong enough interest in the use of Google Sites media in learning. The motivational aspect in the student learning process shows a figure of 58% with sufficient category. This shows that students are motivated enough to carry out the learning process. The last aspect is student satisfaction after using Google Site media which shows a percentage of 62% with a strong category. Based on the statements contained in the questionnaire sheet, most of their students feel satisfied after using Google Sites media in learning. These media make them able to remember, understand, analyze, and facilitate the learning process related to excretory system material (Ristiana, 2023).

Table 5. Normality Test Analysis

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-Test	.137	24	.200*	.961	24	.464
Post-Test	.174	24	.057	.947	24	.232

Table 6. Test Analysis Results *Paired Sample T-test*

Pair	Pre-Test - Post Test	Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2- tailed)
					Lower	Upper			
1		-38.33333	11.48408	2.34418	-43.18263	-33.48403	-16.353	23	.000

The results of the normality test calculation data analysis are carried out through the SPSS application program version 26 whose results can be presented in the Table 5. Based on the Table 5, the results of the normality test analysis obtained pretest data with a significance value of 0.46, while posttest data obtained a significance value of 0.23, because the significance value obtained from the pretest-posttest data ≥ 0.05 , it can be concluded that the data is normally distributed. After the normality test, the data is carried out a homogeneity test to determine the uniformity

(homogeneous) or not the variance of samples taken from the same population. The results of the data obtained after the homogeneity test were $0.079 \geq 0.05$, so the data was homogeneous. In the *paired sample t-test* analysis than can be seen at Table 6.

Based on Table 6. Regarding the results of the *paired sample t-test* analysis, it shows that the calculated t-value obtained is -16.35 with a probability value of 0.00, because the probability value is ≤ 0.05 , the two average values, namely *the pretest* and *post-test* values, are not identical in other words, the average value of both is significantly different. It can be concluded that there is an increase between the average *pretest* score to *the posttest* so learning using *Google Sites* media is proven to be able to improve students' cognitive learning outcomes on excretory system material. From the research that has been done, it is hoped that *this Google Sites* learning media can be one of the alternatives that can be used in the learning process both carried out online and carried out offline because this media is quite effective to use. However, in his research, adjustments must be made to schools that do support learning media like this and the methods and materials that will be taught to students.

Conclusion

Based on the results of research that has been done, it can be concluded that learning using *Google Sites* media can improve students' cognitive learning outcomes on excretory system material. This can be proven by the difference between the pretest and posttest values which shows that *the posttest* value is greater than the *pretest* value with an increase in the n-gain value of 0.69 which occupies the medium category. In addition, the calculated t value obtained is -16.353 with a Sig. (2-tailed) value of 0.000. Because the value of Sig. (2-tailed) ≤ 0.05 , it can be concluded that accepted means that there is a significant increase in student cognitive learning outcomes H_0 in learning excretory system material using *Google Sites media*.

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