
The Effectiveness of using Web-Based LKS Using Predict, Observe, Explain (Poe) And Non Web LKS Models on Student Learning Outcomes

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Abstract: The Covid-19 pandemic has caused various changes in the world of education, one of which is online learning. Various ways are done to optimize online learning, one of which is the use of website-based student worksheets. Web-based student worksheets are teaching materials that are contained in the form of a website containing problems that refer to the materials and basic competencies that must be achieved. The purpose of the present study is to determine the differences of the effectiveness of the website-based science worksheets Predict, Observe, Explain (POE) with non-website worksheets from schools on the subject of substance pressure. LKS is a student's worksheet that contains materials, learning activities and problems that refer to the basic competencies that must be achieved. This study was conducted at SMP Negeri 6 Tondano with research subjects in class VIII A and B. This study is a development research with a 4D model. The design for the effectiveness test uses a pre-test post-test control group design model. The gain score for the experimental class is 0.76 and 0.66 for the control class. Independent sample t test was used to determine the differences of the effectiveness with a significance value of $t_{count} = 2.466 > t_{table} = 2.093$ with a significance of $0.023 < 0.05$. The results of the study indicate that there was a significant difference in learning outcomes between the application of the predict, observe, explain (POE) WEB-based LKS and non-WEB LKS from the school on substance pressure material on the learning outcomes of eighth grade students at SMP Negeri 6 Tondano. This study is a development research with a 4D model. The design for the effectiveness test uses a pre-test post-test control group design model. The gain score for the experimental class is 0.76 and 0.66 for the control class. Independent sample t test was used to determine the differences of the effectiveness with a significance value of $t_{count} = 2.466 > t_{table} = 2.093$ with a significance of $0.023 < 0.05$. The results of the study indicate that there was a significant difference in learning outcomes between the application of the predict, observe, explain (POE) WEB-based LKS and non-WEB LKS from the school on substance pressure material on the learning outcomes of eighth grade students at SMP Negeri 6 Tondano. This study is a development research with a 4D model. The design for the effectiveness test uses a pre-test post-test control group design model. The gain score for the experimental class is 0.76 and 0.66 for the control class. Independent sample t test was used to determine the differences of the effectiveness with a significance value of $t_{count} = 2.466 > t_{table} = 2.093$ with a significance of $0.023 < 0.05$. The results of the study indicate that there was a significant difference in learning outcomes between the application of the predict, observe, explain (POE) WEB-based LKS and non-WEB LKS from the school on substance pressure material on the learning outcomes of eighth grade students at SMP Negeri 6 Tondano. The design for the effectiveness test uses a pre-test post-test control group design model. The gain score for the experimental class is 0.76 and 0.66 for the control class. Independent sample t test was used to determine the differences of the effectiveness with a significance value of $t_{count} = 2.466 > t_{table} = 2.093$ with a significance of $0.023 < 0.05$. The results of the study indicate that there was a significant difference in learning outcomes between the application of the predict, observe, explain (POE) WEB-based LKS and non-WEB LKS from the school on substance pressure material on the learning outcomes of eighth

grade students at SMP Negeri 6 Tondano. Independent sample t test was used to determine the differences of the effectiveness with a significance value of $t_{count} = 2.466 > t_{table} = 2.093$ with a significance of $0.023 < 0.05$. The results of the study indicate that there was a significant difference in learning outcomes between the application of the predict, observe, explain (POE) WEB-based LKS and non-WEB LKS from the school on substance pressure material on the learning outcomes of eighth grade students at SMP Negeri 6 Tondano. Independent sample t test was used to determine the differences of the effectiveness with a significance value of $t_{count} = 2.466 > t_{table} = 2.093$ with a significance of $0.023 < 0.05$. The results of the study indicate that there was a significant difference in learning outcomes between the application of the predict, observe, explain (POE) WEB-based LKS and non-WEB LKS from the school on substance pressure material on the learning outcomes of eighth grade students at SMP Negeri 6 Tondano.

Keywords: Website, Effectiveness, Predict, Observe, Explain.

PRELIMINARY

Since the Covid-19 pandemic hit Indonesia starting on March 2, 2020, extraordinary changes occurred, including in the field of education. This pandemic seems to have forced the world of education to adapt to online learning. This certainly creates many new problems for educators as described in Haryadi & Selviani (2021) which states that the problems experienced by educators (teachers and lecturers) are in the form of limitations in applying learning media so that students can understand the material presented. In addition, students' perspectives on online learning also need to be considered where based on research results from Nazia (2020) which states that students enjoyed learning through online mode, if proper facilities were accessible to them, flexibility in terms of time and place was found to be most liked feature of online learning. This shows that online learning must use the right media so that it is easily understood by students.

One of the appropriate learning media must be flexible so it is necessary to develop a technology-based learning media (website). Asmi & Rukun's research (2020) states that 70% of student needs want web-based learning media that are easy for them to use anywhere, anytime and support independent learning. In addition, research from Barisone (2019) stated that: *Web-based learning could be effectively used to reduce the gap between theory and practice*. This shows that website-based learning media can improve students' conceptual knowledge and skills.

One of the learning media is the Student Worksheet (LKS) which is used as a reference in guiding students to understand the concept of the material. This is in line with research from Darmayanti (2020) which states that worksheets on heat material are effectively applied because the score and average value of students' understanding of concepts increases. In addition to the media, the learning model also affects student learning outcomes. This is in accordance with research from Siti (2020) which states that the POE learning model can effectively improve the mastery of science concepts for grade VII students.

In addition, the POE model can train students to build knowledge according to their way of thinking. This is supported by the results of research by Ayyvacı (2013) which states that POE is effective and attractive in learning the science concepts. The results of research by Adebayo & Olufunke (2015) state that the use of POE Insapat mtructional strategies is effective at improving lower primary school pupils' practical skills in basic science. These results indicate that POE can improve students' basic science process skills.

Based on the results of interviews with science teachers at SMP Negeri 6 Tondano, it was shown that students did not take advantage of practicum activities in science learning during the pandemic. This information is in accordance with the results of interviews conducted with

teachers that they are still having difficulty inviting students to do practicals because of the current pandemic situation. The teacher is only limited to providing material and questions via whatsapp.

For the material chosen, namely the material pressure of substances where in carrying out the experiment students easily get experimental materials such as plasticine, used aqua bottles and mustard greens. This will make it easier for students to carry out experiments from home.

The purpose of this study was to determine the differences in the effectiveness of web-based worksheets using the Predict, Observe, Explain (POE) model and non-web worksheets from schools on substance pressure materials.

METHOD

This research is research and development (R&D) with a 4D model consisting of 4 stages, namely define (definition), Design (planning), Develop (development) and Disseminate (dissemination). The research location is SMP Negeri 6 Tondano with research subjects in the experimental class VIII A and the control class VIII B.

Design for effectiveness test, using model *pre-test post-test control group design*. the experimental class and the control class were given tests before and after the LKS was applied. The difference between the control and experimental classes was calculated using the g factor formula (N-gain) and the independent sample t-test . test

The data collection method used is a post-test with the instrument first testing the validity and reliability of the items. The items used for the post-test in this study were items that met the valid criteria. Based on the analysis of the test data, 10 multiple choice questions and 3 description questions met the valid criteria.

The research data were tested first with normality and homogeneity tests to see if the data were normally distributed and homogeneous. After that, the data were analyzed by parametric statistic which was calculated by using independent sample t-test to see the significance of the difference.

RESULTS AND DISCUSSION

Website-based worksheet design with the predict, observe, explain (POE) model aims to improve students' understanding of using non-website worksheets. Based on the initial research, pre-test and s After getting the pretest score, learning is carried out by providing website-based worksheets with a predict, observe, explain (POE) model in the experimental class and non-website worksheets from schools in the control class. Then a posttest was conducted with the following results:

Table 1 Results of Posttest scores

Class (Class)	Average Score (Average)
Control (Control)	75.9
Experiment (Experiment)	83.5

Based on table 1, it can be concluded that the posttest scores of the two classes are above the KKM with the difference in the value of the experimental class being greater than the control class.

To see the differences that occur between the experimental class and the control class, the N-gain value is obtained as follows:

Table 2 Results of n-Gain . data

Class (Class)	n-Gain	Category
Control (Control)	0.66	currently
Experiment (Experiment)	0.76	tall

Based on table 2, it can be concluded that the N-gain value of the experimental class is higher than that of the control class. The difference can be seen in Figure 1

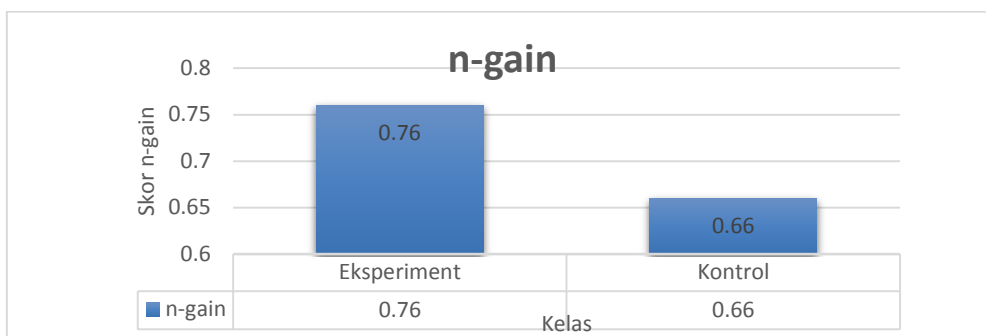


Image 1N-gain value

Furthermore, to find out the data is normally distributed and homogeneous, normality and homogeneity tests are carried out with the following results:

Table 3. Normality Test with One-Sample Kolmogorov Smirnov Test

Class	Mark	Sig
Experiment	<i>Pretest</i>	0.148
	<i>Posttest</i>	0.200
Control	<i>Pretest</i>	0.094
	<i>Posttest</i>	0.063

Table 4. Test of Homogeneity with Test of Homogeneity of Variances

Data Type	Levene Statistics	Df1	Df2	Sig
<i>Pretest</i>	0,121	1	19	0.731
<i>Posttest</i>	1,407	1	19	0.250

Based on tables 3 and 4, it can be concluded that the research data obtained are normally distributed and homogeneous.

Lastly, to analyze statistically parametric calculated by independent sample t-test with the following results:

Table 6 Results of t-test

<i>Levene's Test For Equality Of Variances</i>		<i>t-Test for Equality of Means</i>		
F	Sig.	t	df	Sig. (2-tailed)
1,407	0.250	2.466	19	0.023

The results of the T-test obtained that t count 2,466 > t table 2,093 then H₀ is rejected, while the 2-tailed significance is 0.023 < 0.05, then H_a is accepted. It means there is a significant difference in learning outcomes between the application of the WEB-based LKS predict,

observe, explain (POE) and non-WEB LKS from the school on substance pressure material on the learning outcomes of class VIII students at SMP Negeri 6 Tondano.

Discussion

The effectiveness of a teaching material can be known by looking at the students' understanding ability through learning outcomes tests. Learning outcomes test is used to measure how much students' conceptual knowledge increases. According to Doyan & Sukmantara, (2014) stated that learning using web-based teaching materials can increase students' conceptual knowledge. In addition, according to Diani (2017) also states that the use of websites in the learning process allows students and teachers to establish interactive communication online.

To determine the difference in the effectiveness of using WEB-based science worksheets, the researchers used 2 classes, namely class VIII A (Experiment Class) and class VIII B (Control Class). Learning in the 2 sample classes was carried out using two different media, the control class, namely non-WEB worksheets from school, while the experimental class used WEB-based worksheets with the predict, observe, explain (POE) model. The research was conducted in 5 meetings. The first meeting was started with a pretest, the second meeting was practicum activity 1, the third meeting was practicum activity 2, the fourth meeting was practicum activity 3 and at the fifth meeting did a posttest.

Posttest was conducted at the fifth meeting with the value obtained, namely the control class average of 75.9 and the experimental class getting an average posttest of 83.5, it can be said that the posttest score or average value in the experimental class is greater than the posttest score. the average posttest obtained by the control class. Referring to these results, it shows that the level of understanding of the concept of the experimental class is greater than the control class using LKS no WEB from the school.

In addition, the difference was also obtained from the n-Gain value for the control class of 0.66 with the medium criteria and the n-Gain value in the experimental class of 0.76 with the high category. The results obtained indicate that there are differences in learning outcomes between the experimental class and the control class. The n-Gain value data obtained are in accordance with the results of research from Prasasti (2019) which states that student learning outcomes using blended learning based learning media is higher with the difference in percentage from pretest to posttest is 15.16.

The difference in the significance of learning outcomes was proven by using the t-test with the results where $t_{count} = 2,466 > t_{table} = 2,093$ with a level of the significance of 2 tailed is $0.023 < 0.05$. This is in line with the results of research from Setiawan (2021) which states that the value of $t_{count} > t_{table}$ is $10,681 > 2,06390$. This means that the Project Based Learning-based Student Worksheet (LKPD) developed has an effect on students' science process skills.

So it can be concluded that H_0 is rejected and H_a is accepted, meaning that there is a significant difference in learning outcomes between the application of the predict, observe, explain (POE) WEB-based LKS and non-WEB worksheets from school on substance stress. This is caused by the use of WEB-based worksheets which is in line with research from Irmawati (2013) which states that there are differences in learning outcomes of hydrospheric geography learning between learning using web-based blended learning models and conventional learning models.

However, it is different from the results of research from Degeng (2016) which states that there is no difference in learning outcomes between the control and experimental groups or groups of students with learning treatment with procedural content types using the web.

While the research results obtained are different, this is influenced by the predict, observe, explain (POE) learning model because it is able to stimulate students' interest in learning according to research from Pamungkas (2017) which states that the POE learning model is a model based on constructivist patterns. involving students in carrying out activities in learning.

Conclusion

Based on the results of research and discussion, it can be concluded that there is a significant difference in learning outcomes between the application of the WEB-based LKS predict, observe, explain (POE) and non-WEB LKS from the school on substance pressure material on the learning outcomes of class VIII students at SMP Negeri 6 Tondano.

WEB-based LKS model predict, observe, explain (POE) is more effective than non-WEB LKS from schools in terms of student learning outcomes of class VIII SMP Negeri 6 Tondano

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