

Problem-Based Learning Assisted by Google Classroom on Conceptual Understanding Ability

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ABSTRACT

The purpose of the present study is to determine the effectiveness of the problem-based learning model that assisted Google Classroom in the ability of conceptual understanding. This study adapted experimental research with a post-test-only control design. The population of the study is the students of the English Education study program in the first semester consisting of two classes. The sample used in this study was Class 1B with problem-based learning assisted Google Classroom with question menu and Class 1A using problem-based learning assisted Google Classroom with assignment menu. Test and documentation are used for collecting the data in conducting this study. The technique of analyzing the data used an independent sample t-Test and N-Gain test. The result showed that the students who were taught using problem-based learning assisted Google Classroom model with questions menu had better conceptual understanding skills than the students who were taught problem-based learning assisted Google Classroom with assignment menu.

Keywords: *google classroom, problem-based learning, the ability of conceptual understanding*

INTRODUCTION

Campus policies regarding lectures during the pandemic are carried out with a face-to-face model of 30% and a virtual model of as much as 70%. Molinda (2005) writes virtual or online learning is a form of distance learning that utilizes telecommunications and information technology, such as the internet. With today's technology, many media are easily accessible to do online learning (Sulistianingsih et al., 2021) and can be collaborated, including Zoom with Google Classroom, and Gmeet with Google Classroom.

Google Classroom is a mixed learning platform for an educational scope that can make it easier for teachers to create, share, and classify each assignment on paper. The

advantages of Google Classroom include being easy to use, time-saving, cloud-based, flexible, and free (Graham & Borgen, 2018; Iftakhar, 2016).

One of the menus that are often used in Google Classroom is the task menu where students will collect their assignments or semester exam answers in one pdf file which is then uploaded. The weakness of this menu is that students cannot control their answers so the answers between one student and another are similar.

The selection of a problem-based learning model is considered appropriate if it collaborates with Google Classroom. This is reinforced by several studies, including (Ningrum, 2021) which states that there is a significant effect of the Problem Based Learning learning model assisted by Google Classroom on the learning outcomes of students' knowledge of class X TKJ on Basic programming subject in SMK Negeri 1 Bintan Utara. Amalia (2021) states that the ability to understand students' concepts taught using a problem-based learning model assisted by Google Classroom is better than the ability to understand mathematical concepts of students taught by WhatsApp groups. Putri (2010) states that the effectiveness of developing problem-based learning E-modules using Google Classroom is effective for learning and has a great impact.

The novelty of this research is the application of the problem-based learning model that is combined with Google Classroom by using the question menu so that students can interact with each other in answering the lecturer's questions and are carried out simultaneously so that it is expected to know optimally the ability to understand concepts of students. Learning that uses problem-based learning is expected to make students understand everyday problems. This makes learning more meaningful so that it can improve students' conceptual understanding skills.

Based on the description above, the purpose of this study was to determine the ability of conceptual understanding of students who were taught using a problem-based learning model assisted by Google Classroom with a question menu, which was better than the ability to understand concepts of students who were taught using a problem-based learning model assisted by Google Classroom with a task menu.

LITERATURE REVIEW

There are some previous studies discussing the topic of problem-based learning assisted by Google Classroom. The first study was conducted by Karmila (2021) entitled

“The Effectiveness of Problem Based Learning (PBL) Assisted Google Classroom to Scientific Literacy in Physics Learning”. This is a quasi-experimental study using a pretest and posttest control design. The population was all students of class XI MIA MAN 1 Yogyakarta. The author measures the competency domain using three indicators: identifying the scientific issue, explaining scientific phenomena, and using scientific evidence. The data analysis technique used is the n-gain test. The results showed that the increase in students' scientific literacy skills was in the medium category.

The second study entitled Problem Based Learning Assisted by Google Classroom to the Understanding of Student's Mathematical Concept, is written by Amalia (2021). This study is experimental with a post-test-only control design. The population in this study are students majoring in science, grade X at SMA Negeri 5 Tegal. The data analysis technique in this study is the independent t-test with the help of SPSS. The result of this research is that the understanding of the concept of students who are taught with the google class problem-based learning model is better than the ability to understand the mathematical concepts of students taught by the WhatsApp group.

The third study is Problem-Based Learning Assisted by Google Classroom on Momentum and Impulse for High School Students (Zahra & Jumadi, 2021). This research is using a 4D design. The stages consisted of the defining, planning, developing, and dissemination stages. Researchers analyze the curriculum, learning materials, and the needs of students. At the design stage, the researchers create a design of the learning tools. The product is validated by two experts. At the dissemination stage, learning tools are tested on students at MAN 1 Yogyakarta. The results show that the learning device is very good to use in learning.

Problem Based Learning

Problem Based Learning is a learning model that organizes learning around questions and problems, through the submission of authentic and meaningful real-life situations, which encourage students to conduct investigations and inquiries, by avoiding simple answers and allowing for various solutions to the situation. According to Nugroho et al. (Assegaff & Sontani, 2016) to solve this problem, students need new knowledge to find a solution. Through Problem Based Learning, students gain experience in dealing with real problems and emphasize the use of communication, collaboration, and existing

resources to formulate ideas and develop reasoning skills (Nafiah & Suyanto, 2014).

The advantages of Problem Based Learning are students will get used to dealing with problems and feel challenged to solve problems, not only related to learning in class but also in daily life, fostering social solidarity by getting used to discussing with group friends and then discussing with classmates, increasingly familiarizing educators with students, familiarizing students in applying experimental methods. Meanwhile, the weaknesses are not many educators can lead students to problem-solving. It often requires expensive costs and a long time, and student activities carried out outside the classroom are difficult to monitor by educators stated by

Google Classroom

Google Classroom is an application that is developing in today's industrial era. Google Classroom is better known as an online learning media in all circles, especially in educational circles. This Google Classroom learning media is used as an alternative media for teachers when they organize distance learning with students.

Krisna, Evi Dwi (2020) explain that Google Classroom is a learning management system for schools to facilitate the creation, distribution, and assessment of paperless assignments, and can act as a medium that can be used by teachers and students to create online classes, where the teacher can give announcements or assignments to students that can be directly accepted by these students.

According to Google's official website, the Google Classroom app is a free productivity tool that includes email, documents, and storage. Google Classroom is designed to make it easier for teachers to save time, manage classes and improve communication with students. With Google Classroom, it can make it easier for students and teachers to connect inside and outside school.

An article written by Rosemarie De Loro, a teacher from New York, said in her 60 years of teaching she had never once used a computer. However, since he has a chrome book and Google Classroom in it, he can easily give digital homework to his students and provide feedback directly, anytime, and anywhere. The advantages of Google Classroom include:

1. Google Classroom is easier and simpler for teachers to access. Teachers can easily access and share materials or assignments to be taught to students.
2. Google Classroom can improve collaboration and communication between

teachers and students. Teachers can send notifications to students to start discussing or notify them of learning activities.

3. In Google Classroom, students can easily see all assignments in a certain folder, and students can see the grades of their assignments.
4. Effective time, if students were given assignments, they do not need to chase the time to do the task.
5. As generation Z, you won't feel stiff if you write, you just need to look for references on the internet and then copy and paste them into Google Classroom.

Besides having advantages, Google Classroom also has some disadvantages. The disadvantages include:

1. Using Google Classroom requires a stable internet signal.
2. Google Classroom is more convenient to access via a laptop than through a cellphone.
3. To find out new announcements or information provided by the teacher through Google Classroom, it must be refreshed first.
4. If the internet data is turned off, the connection with Google Classroom will be disconnected.
5. If students are not critical and material errors occurred, it will have an impact on their knowledge.

With the existence of distance learning using Google Classroom, it is attempted to increase students' interest in reading and discussing during the learning process. Even though reading material through cell phones is sometimes an obstacle for students, because of the lack of concentration in understanding the sentences conveyed by the teacher. However, using Google Classroom, it is strived to be effective in the learning process.

Conceptual Understanding

In language learning, there are two main skills; productive and receptive. Besides listening, reading is categorized as a receptive skill. In reading, written texts are introduced and exposed. According to Nunan (1999), reading is a fluent process of combining information from the text and the background knowledge of the reader. Meanwhile, Hornby (2000) claims that reading is the action of a person who reads or

attempts to make meaning from what an author has written. In summary, a reading activity is a process, in which the reader can use their background of knowledge to comprehend the idea or information delivered by the writer in a text.

Related to the purpose of reading, Jeremy (2007) identifies two types: Intensive and Extensive Reading. He stated intensive reading activity focuses to learn the composition of the text which is the variants of the text depending on the purpose of the reader. In other words, it is reading for details; the reader will get every detail information in of the text. The detail can be in the form of surface structure such as grammatical forms, meaning, and so on said by (H. Douglas, 2001), and also an understanding of language features being used in the text (Nation, 2009).

During intensive reading, the writer adopts the metacognitive strategy. Using metacognitive instruction will help readers become more aware of their thinking during the reading process. Klein et al. (1991) stated that strategic readers attempt the following while reading:

1. Identifying the purpose of the reading before reading.
2. Identifying the form or type of the text before reading.
3. Thinking about the general character and features of the form or type of the text. For instance, they try to locate a topic sentence and follow supporting details toward a conclusion.
4. Projecting the author's purpose for writing the text (while reading it).
5. Choosing, scanning, or reading in detail.
6. Making continuous predictions about what will occur next, based on information obtained earlier, prior knowledge, and conclusions obtained within the previous stages.

In addition, Pressley (2006) states that metacognitive strategies increase readers, meaning construction, monitoring of text and reading comprehension, and their ability to evaluate the texts that they are reading. This strategy integrates before (pre-reading), monitoring (during reading), and evaluating (post-reading):

1. Planning Strategies

Planning strategies are metacognitive strategies that the reader does early on in the reading process (before reading) to increase reading comprehension. The following planning strategies are utilized by metacognitive readers before reading: (1) activating

prior knowledge; (2) overviewing information in the text; (3) relating text to text; and (4) relating the text to self.

2. Monitoring Strategies

Monitoring strategies usually occur during the reading of a text to help the reader pay attention to meaning construction as well as correct breakdowns in comprehension. The following monitoring strategies are utilized by metacognitive readers during reading: (1) determining word meaning; (2) questioning; (3) reflecting, (4) monitoring; (5) summarizing; and (6) looking for important information.

3. Evaluation Strategies

Evaluation strategies are used after reading that allow the reader to think critically about the text and make a cognitive or affective judgment. The following evaluating strategies are utilized by metacognitive readers after reading: (1) thinking like the author; (2) evaluating the text; (3) anticipating the use of knowledge; (4) monitoring for meaning, knowing when you know, knowing when you don't know; (5) using and creating schema, making connections between the new and the known, building and activating background knowledge; (6) asking questions, generating questions before, during, and after reading that lead you deeper into the text; (7) determining importance, deciding what matters most, what is worth remembering; (8) inferring, combining background knowledge with information from the text to predict, conclude, make judgments, interpret; (9) using sensory and emotional images, creating mental images to deepen and stretch meaning; and (10) synthesizing- creating an evolution of meaning by combining understanding with knowledge from other texts/sources.

METHOD

This research is an experimental study with a post-test-only control design (Sugiyono, 2016). The research was conducted by applying a problem-based learning model assisted by Google Classroom with a question menu in the experimental class and a problem-based learning model assisted by Google Classroom with a task menu in the control class. After the next treatment, a post-test was carried out to gain students' conceptual understanding skills.

The research was conducted at the English Education Study Program, Faculty of Teacher Training and Education, Universitas Pancasakti Tegal. The population in this study were first-semester students consisting of 2 classes. The sample used is Class 1B a

class that is taught with a problem-based learning model assisted by Google Classroom with a question menu and Class 1A using a problem-based learning model assisted by Google Classroom with an assignment menu.

For collecting the data, this research used two methods, the documentation method to find out the names of students and the test method to obtain the data on students' ability in conceptual understanding. Furthermore, the test is adjusted to the indicator's ability of conceptual understanding. Independent sample t-Test and N-Gain test were used as the technique for analyzing the data.

RESULTS AND DISCUSSIONS

The research was conducted by applying a problem-based learning model assisted by Google Classroom with a question menu in Class 1B and a problem-based learning model assisted by Google Classroom with a task menu in Class 1A. At the time of learning, the lecturer makes material with Microsoft PowerPoint, uploads it to Google Classroom, and conveys it through Gmeet first. In addition to the material, some exercises are uploaded. In Class 1B, exercises are uploaded through the question menu and written with numbers and in Class 1A, exercises are uploaded through the task menu. After the learning process, the lecturer gave a post-test to obtain data on students' conceptual understanding abilities.

Before conducting the independent sample t-test and N-Gain test, prerequisite tests were carried out, namely the normality test and homogeneity test. The results of the normality test are as follows:

Table 1. The result *Test of Normality*

Tests of Normality			
	Shapiro-Wilk		
	Statistic	df	Sig.
PBL_GC_T	0,953	22	0,354
PBL_GC_P	0,940	22	0,200

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on table 1, it is found that the significant value of Shapiro-Wilk for the class that applied the problem-based learning model assisted by Google Classroom with the task menu is $0.354 > 0.05$, and the class that applied the problem-based learning model assisted by Google Classroom with the question menu is $0.200 > 0,05$ then both data are normally distributed. The results of the homogeneity are as follows:

Table 2.
Result of Levene's Test

Levene's Test for Equality of Variances			
		F	Sig.
post_all	Equal variances assumed	0,090	0,765
	Equal variances not assumed		

Based on table 2, the results show that the significant value of Levene's Test is $0.765 > 0.05$ so the data are homogeneous. After the prerequisite test is fulfilled, the independent sample t-test is carried out and continued with the N-Gain test. The results of the independent sample t-test are as follows:

Table 3.
Test independent sampel t Test

Independent Samples Test								
		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
post_all	Equal variances assumed	-2,303	43	0,026	-6,263	2,720	-	-0,778 11,748
	Equal variances not assumed	-2,303	42,956	0,026	-6,263	2,719	-	-0,779 11,746

From table 3, the results show that the value of Sig. (2-tailed) < 0.05 . There is an average difference between the control and experimental groups because the independent t-test concludes that there is an average difference between classes that apply the problem-based learning model assisted by Google Classroom with task menu and classes that apply the problem-based learning model assisted by Google Classroom with a menu of questions, then continued with the N-Gain score test to see the level of influence of the given experiment.

Table 4. N-Gain Score

Group	N-Gain Score Average	Interpretation
Control Group	68,322	Quite Effective
Experimental Group	76,807	Effective

Thus, students who are taught with the problem-based learning model assisted by Google Classroom by using the question menu have a better concept understanding ability than students who are taught with the problem-based learning model of the Google Classroom with the task menu. The test results are following the reality in the field. The application of the problem-based learning model assisted by Google Classroom using the question menu is carried out with several learning steps, namely orienting students to problems, organizing students to learn, guiding individual or group experiences, developing and presenting work, and analyzing and evaluating the learning process. At the problem orientation stage, students are given problems related to the real world that must be solved. Students can develop the ability to understand concepts by seeking information and choosing the right solution to the problem. This makes students understand the material better and learning is more meaningful. After that, students are allowed to present their work in the space provided by the lecturer in Google Classroom. Students are allowed to ask questions and can directly discuss with friends on the problem. This can help students who still do not understand the material and see how far their conceptual understanding abilities are.

During the evaluation, the problem-solver provides an evaluation of the results of the problem experienced carried out. This stage makes students avoid experiencing the wrong concept because the lecturer has provided direction and guidance to solve the

problem properly. Based on the description above, it can be concluded that the application of the problem-based learning model assisted by Google Classroom by using the question menu affects the ability to understand concepts. Meanwhile, the application of the problem-based learning model assisted by Google Classroom using the task menu is carried out in the same steps, but the difference lies in the presentation of the work that cannot be directly observed by the lecturer; often there are student answers that are relatively the same with one another, and there is no discussion space so that there is a lack of conceptual understanding ability.

Cahyani (2012) said that technology, as believed by language teachers is inseparable from the success of teaching and learning activities indicating that the presence of technology in language classes is a prerequisite for interesting and successful language teaching language learning. This also reinforced that the LMS-assisted ICARE learning design can help increase the effectiveness of learning Aulia (2017). This research implies that the application of the problem-based learning model assisted by Google Classroom can be a learning solution during this pandemic, but the problem-based learning model assisted by Google Classroom by using the question menu can be applied to improve the ability to understand concepts because there can be good interaction between students and students or students with lecturers.

CONCLUSION

Based on the results of the study, it can be concluded that the understanding of students' concepts who are taught using the problem-based learning model assisted by Google Classroom using the question menu is better than the problem-based learning model assisted by Google Classroom using the task menu.

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