

The Effect of Problem Based Instruction Model Based on Learning Video and Educational Games Media on the Self Efficacy of Students of Class X SMK N 17 Jakarta

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ABSTRACT

This study discusses the differences in self-efficacy of class X students at SMK N 17 Jakarta from the application of the PBI learning model with the help of two different learning media. The media used in this research are learning videos which applied to the experimental class and educational games (quizizz) in the control class. The limitations of the problem in this study include, the broad scope only includes information obtained from the results of the application of the PBI learning model with two different media on student self-efficacy, the information presented, includes : application of the PBI learning model with learning video media and educational games, differences in student self-efficacy. The purpose of the study was to find evidence of whether there was a difference in student self-efficacy after the implementation of the PBI learning model with the help of two different media. Based on the data hypothesis test conducted by comparing the scores of the self-efficacy between the experimental class and the control class, it was concluded that there was a significant difference between the students' self-efficacy in both classes. The average score of self-efficacy in the experimental class is higher than the control class, so that in the future the use of learning video media can be one of the best alternative during the implementation of PBI learning model to support student self-efficacy.

Keywords: *Self Efficacy; Problem Based Instruction; Learning Video; Educational Game.*

INTRODUCTION

Education is one of the main keys in encouraging the progress of a nation. Changes in a country that lead to progress need to be supported by the progress of education. In improving people's living standards, education is needed to make changes in the mindset. This evolving mindset will help a country to be ready to face various global challenges in the future. The high or low quality of a nation's human resources is also determined by the quality of its education. This shows that the quality of good education is an important element that shows the pattern of civilization of a nation that can be seen from its human resources (Utomo & Ratnawati, 2018).

The emergence of the Covid-19 outbreak, resulted in the emergence of obstacles in all aspects of life, especially for human health. The extraordinary impact is also felt in the world of education, especially for teachers, students, parents and all of the school staff. In addition, universities in various parts of the world are also closed to prevent the transmission of this virus (Fredy, Prihandoko, & Anggawirya, 2020).

Another effort made to stop the spread of Covid-19 was that thousands of schools in various countries including Indonesia were closed and did not hold direct learning. UNESCO approved the implementation of learning using online media. It is intended that students and teachers can carry out teaching and learning activities wherever they are. This change in the learning system makes teachers have a crucial role, because they have to control the learning process. By applying online learning, it shows that the industrial revolution 4.0 with the use of digital media can help realize the implementation of online learning (Satrianingrum & Prasetyo, 2020).

Distance learning can be done using special techniques in designing learning materials such as utilizing various computer media, internet, video, and so on that focus on independent learning. Distance learning is designed in such a way that the learning process can be carried out outside the teaching place where between educators and students do not meet face to face (Abidin, Hudaya, & Anjani, 2020).

Another problem in the world of education that has arisen due to Covid-19 is that with the implementation of online learning, the information search process becomes slow due to difficult signal access. This causes students to miss information which then makes students late in collecting assignments that should be collected. On the other hand, the obstacle experienced by teachers is that the storage space for learning devices is limited when checking large numbers of student assignments. This makes teachers think to determine alternative learning models that are effectively used during this online learning process (Siahaan, 2020).

Distance learning is used as an alternative learning system to ensure that teaching and learning activities are carried out even though teachers and students do not meet face-to-face. The main element in online learning is content and interaction between users of online learning media. Teaching materials used during the implementation of distance learning must provide text and presentations and involve interaction so that the process of absorption of information can be more easily conveyed (Argaheni, 2020).

Problem Based Instruction learning model is a learning model based on real-life problems as a background for learning about critical thinking and skills to solve and find solutions to the problems, as well as to acquire basic knowledge and concepts from the subject matter (Nafiah & Suyanto, 2014).

Problem-based learning is a student-centered learning approach that uses clinical problems to help students determine learning needs, conduct independent investigations, integrate theory and practice, and apply knowledge and skills to develop solutions to specific problems (Adiga & Adiga, 2015).

According to Sudarman, problem based instruction is a learning process that adopts problems that occur in the real world as a framework for students to improve

critical thinking skills, problem solving, and find solutions to problems. The problem based instruction learning model is based on constructivist learning theory. Implementation of learning with this model, begins with presenting real problems. In line with this, problems that actually occur in real life can be used as a basis for assessment that can train students to get used to solving problems (Sudarman, 2000).

The syntax of problem-based learning, firstly, presents problems related to the context of teaching materials and students must understand the problem. Second, discuss the problems presented; Students are asked to look for something that happened then solve the problem. Third, work in the group to exchange ideas with fellow students and discuss the findings obtained. Fourth, learn independently; Students are asked to estimate answers, and draw conclusions or the essence of the work that has been discussed. Fifth, students present and explain the results of their work. Sixth, re-evaluating the work.(Erawanto & Santoso, 2016)

According to Cangara, media is a tool or means that can be used to convey messages from communicators or market givers to the communicant or message recipient (Cangara, 2006). According to Wardoyo, media in learning has a function as a device to interpret the message conveyed by the teacher (Wardoyo, 2015).

The use of instructional video media in the context of education is a positive way to involve students in realizing collaborative learning, stimulate thinking about authentic problems that occur in life and collaborate for discussions. This is because learning videos provide sound and image formats that adopt concrete examples from the real world according to various contexts (Yin, Bing, Hadi, & Bakar, 2020).

Learning by using video media is a popular form of blended learning. In several studies, it can be concluded that the effectiveness of video-based learning has a positive impact on student learning, especially on readiness, self-efficacy, and comfort in learning. Video-based learning also increases student involvement in the discussion process about a content or subject matter (Tripodi, 2018).

Other media used in this study as a comparison to see the difference in self-efficacy of the experimental class and control class, namely educational game media. Educational games are one type of media that functions for the learning process. Increase user knowledge in unique and interesting media contexts. Educational games are also a part of serious games because they contain educational elements (Amanda & Putri, 2019).

In terms of pedagogy, educational games are more focused on practical activities, related to educating and guiding students. In the pedagogical process, it should have a structure based on the most recent themes and have five important characteristics, namely systematic, planned, directed, have a certain focus (specific), and are useful for the development process of students (Suhartono & Rinabi, 2015).

Tsai and Tsai (2003), found that in learning activities using digital media, students with high self-efficacy have better abilities in using the internet in order to find information related to assignments and learning materials compared to students with low self-efficacy. Students with low self-efficacy do not have confidence that they are

able to use the internet to find information related to learning materials (Tsai & Tsai, 2003).

Self-efficacy is considered as a unique ability that exists in humans. This ability affects motivation, in other words a person can make choices, try to take appropriate actions in different activities, and how a person is able to have persistence in facing challenges and problems. Student self-efficacy was shown to be positively related to integrated motivation, activity selection, career choice, persistence, and task assessment (Skaalvik, Federici, & Klassen, 2015).

The purpose of this study is to find out the difference in students' self-efficacy after being given the application of the Problem Based Instruction learning model based on two different media which are learning video and educational games media.

METHOD

This research is included in experimental research when viewed from the method. Experimental research is used to find the effect of certain treatments on others under controlled conditions. The choice of this experimental method was based on the researcher's desire to compare the effect of the application of the problem-based instruction learning model based on learning video media and educational games on self-efficacy in the two research target groups that were sampled in this study. The research design used was "Posttest Only Control Group Design". In this design, neither the experimental group nor the control group randomly selected and both of the experimental group and the control group are compared. (Sugiyono, 2019) The use of this model is based on the assumption that the experimental group and the control group are compared and analyzed for hypothesis testing materials after giving treatment.

This design can be described as follows :

Table 1. Post-test Only Control Group Design

| Group | Treatment | Post-test |
|--------------|-----------|-----------|
| Experimental | X1 | O1 |
| Control | X2 | O2 |

Description :

Experimental group : Treatment with problem based instruction model based on learning video media

Control group : Treatment with problem based method instruction based on educational game media

The design of this study was used to determine and compare the effect of the application of the problem based instruction learning model in the group that applied the PBI learning model based on video learning media with the group that applied the PBI learning model based on the educational game media. As for the implementation

of the research, the experimental group and the control group attempted to have the same class level, lesson materials and teachers involved in the research.

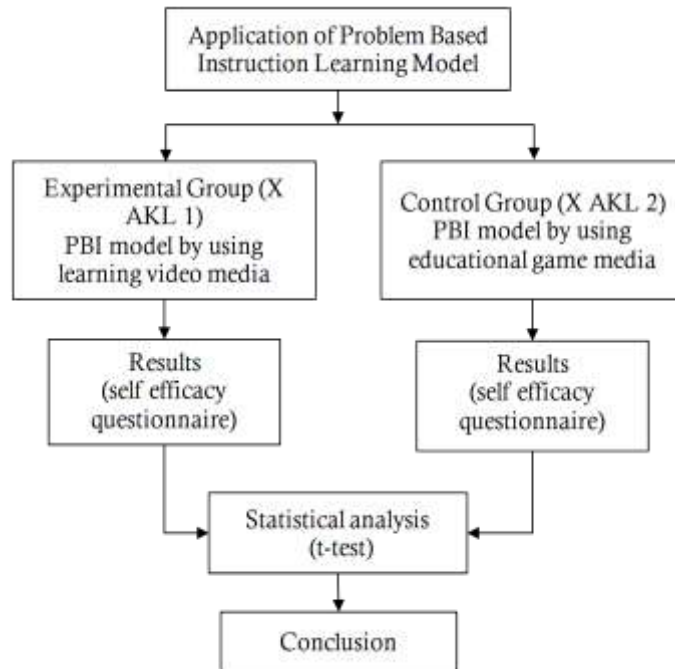


Figure 1. Framework Theory

Based on figure 1 above, hypothesis testing will be conducted between the self-efficacy indicators in the experimental class (X1) and the self-efficacy indicators in the control class (X2).

FINDINGS AND DISCUSSION

Hypothesis testing is done by t test (independent sample t test) to find out whether there is a difference in the mean of two unpaired samples. In this study, it can be seen from the scores of the questionnaire scores for the experimental class and the control class. Based on calculations using SPSS assistance, the results are presented in table 4.10 as follows:

Table 2. Hypothesis Test Results

| | | Independent Samples Test | | | | | |
|-----------------------------|-----------------------------|---|------|------------------------------|--------|-----------------|-----------------|
| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference |
| Student Self Efficacy Score | Equal variances assumed | 1,975 | ,164 | 9,618 | 71 | ,000 | 12,597 |
| | Equal variances not assumed | | | 9,582 | 63,479 | ,000 | 12,597 |

| | | Independent Samples Test | | | | | |
|--------------------------------|-----------------------------------|---|------|------------------------------|--------|---------------------|--------------------|
| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | |
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| Student Self Efficacy Score | Equal variances assumed | 1,975 | ,164 | 9,618 | 71 | ,000 | 12,597 |
| | Equal variances not assumed | | | 9,582 | 63,479 | ,000 | 12,597 |

From the output results of the Independent sample Test in table 2, in the sig. 2 tailed obtained results of $0.000 < 0.05$, which means that there is a difference between the scores of the self-efficacy questionnaire (self-efficacy) between the experimental class that applies the PBI learning model based on video learning media and the control class that applies the PBI learning model based on the educational game media.

Scale categorization of research instrument in the form of a questionnaire to measure the differences in student self-efficacy from the experimental class and control class is needed to determine the number of frequencies of students who fall into the high, medium, and low self-efficacy categories. By classifying students into these three categories of self-efficacy scores, it can be seen which class has a superior self-efficacy score between the experimental class that applies the Problem Based Instruction learning model with the help of learning video media or the control class that applies the PBI model with the help of the educational games media. The distribution of the frequency of students at the level of self-efficacy score categories in the experimental and control classes can be seen in the following table:

Table 3. Output of Student Frequency Distribution at Category Level of Experiment Class Self Efficacy Score

| | | Category | | | |
|-------|---------|-----------------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Average | 4 | 11,1 | 11,1 | 11,1 |
| | High | 32 | 88,9 | 88,9 | 100,0 |
| | Total | 36 | 100,0 | 100,0 | |

Based on the output of the frequency distribution of students at the level of the experimental class self-efficacy score category in table 3, the frequency of students with high self-efficacy score categories was 34 students and 4 students with moderate self-efficacy score categories. This shows that there are more students who have a high level of self-efficacy compared to students with a moderate level of self-efficacy (on average) in the experimental class that applies the problem-based instruction learning model based on video learning media.

Table 4. Output Frequency Distribution of Students at the Level of Self Efficacy Score Category Control Class

| | | Category | | | |
|-------|---------|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Average | 29 | 82,9 | 82,9 | 82,9 |
| | High | 6 | 17,1 | 17,1 | 100,0 |
| | Total | 35 | 100,0 | 100,0 | |

Based on the output of the frequency distribution of students at the level of the control class self-efficacy score category in table 4, it was found that the frequency of students with high self-efficacy score categories was 6 students and 29 students with moderate self-efficacy score categories. This shows that more students who have a level of self-efficacy in the medium category (average) compared to students with a high level of self-efficacy in the control class who apply the problem-based instruction learning model based on educational game media.

CONCLUSION

Based on the results of data processing and discussion, it can be concluded that from the results of hypothesis testing with the t test (independent sample t test), there is a significant difference in the results of the self-efficacy questionnaire in the experimental class and control class. In the output table of the frequency distribution of students at the level of the self-efficacy category of the experimental class and the control class, it can be concluded that the frequency of students in the experimental class who fall into the category of high self-efficacy scores has more numbers when compared to the frequency of students in the control class who fall into the category high self-efficacy scores.

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