



Journal of Educational Sciences

Journal homepage: <https://jes.ejournal.unri.ac.id/index.php/JES>



P-ISSN
2581-1657

E-ISSN
2581-2203

Needs Analysis of Learning Video Development Using Edpuzzle Based Problem Based Learning to Improve Critical Thinking Skills of High School Students

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ARTICLE INFO

Article history:

Received: 10 Sept 2022

Revised: 03 Jan 2023

Accepted: 04 Jan 2023

Published online: 24 Jan 2023

Keywords:

Critical Thinking Ability;
Direct Current Series;
Edpuzzle;
Needs Analysis;
Physics Learning Videos;
Problem Based Learning;
Student Characteristics Analysis

ABSTRACT

This study aims to determine the extent to which the development of learning videos using Edpuzzle based on Problem Based Learning is needed. The research method used is a survey method where the researcher collects data on the analysis of the needs of teachers and students as well as data on student characteristics through the distribution of questionnaires. Needs analysis data were obtained from 28 teachers and 79 students while student characteristics data were obtained from 93 students in the Riau province education office. Based on the results of the needs analysis, namely from the aspect of the subject, object, process, and learning media, there are 81.3% of teachers in the very high category and 70.1% of students in the high category stating that the development of learning videos using Edpuzzle based Problem Based Learning needs to be done to improve students' critical thinking skills on direct current circuit material. Meanwhile, based on the results of the analysis of student characteristics, 64.6% of students stated that the need for developing learning videos using Edpuzzle based Problem Based Learning to improve students' critical thinking skills was in the high category, so that the development of learning videos using Edpuzzle based Problem Based Learning to improve students' critical thinking skills at direct current circuit material can be done.

1. Introduction

Physics is one of the subjects that are less attractive to students because it is considered a difficult material to understand. Some teachers in practice also feel that meaningful physics learning is difficult to implement (Patandean & Baharuddin, 2017). Caleon et al. (2018) in his research conducted a survey to find

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out the views on learning and teaching physics to five novice teachers and seven experienced teachers from Singapore. The results of the study stated that physics material, especially about electricity, was one of the most difficult topics for students to understand and to be taught by teachers.

Lusiyana et al. (2019) revealed that the lack of understanding of physics concepts makes students think that physics learning is only oriented to the use of formulas. Of the 100 high school students in Padang who were interviewed and given a questionnaire, 80% of the students did not understand the concept of the physics formula being studied. Ellianawati et al. (2018) states that in the learning process that is only teacher-centered without involving student activity, the exploration phase does not appear so that students tend not to understand knowledge perfectly. The teacher's role in Piaget's learning theory is as a facilitator for students to explore knowledge by presenting their own ideas through previous learning experiences. Students actively build (construct) knowledge based on previous learning experiences, namely by linking the process of mutual influence between previous learning and the latest learning.

Mulyadi (2020) in his research found that the level of student involvement in the physics learning process was still very low. As many as 88% of students said that physics learning was experienced by the lecture method. One of the efforts to increase student involvement in the learning process is to use relevant learning media. According to Orcos Palma et al. (2018) video is one of the multimedia (technology involving sound, image, and video) learning that is becoming a trend for the millennial generation in the 21st century. Students prefer watching videos containing learning content rather than reading modules or books, regardless of their learning style.

Currently, there are many interesting applications that can be used to create learning videos, including Edpuzzle. Edpuzzle is a web-based interactive video as well as a formative assessment tool that allows users to cut existing online videos and add content to target specific learning objectives (Amaliah, 2020). Silverajah & Govindaraj (2018) found that learning activities with Edpuzzle have good potential in developing students' independent learning skills and in supporting meaningful learning. Edpuzzle provides additional resources to make it easier for lowachievers to learn from being academically abandoned, which is common practice in the classroom.

Furthermore, Sundi et al. (2020) stated that there was an increase in children's learning motivation after using Edpuzzle and Whatsapp during online learning during the Covid 19 pandemic. 95% of participants accepted the joint learning activities and had a more enjoyable learning experience. In addition, Giyanto et al. (2020) also stated that there was a significant increase in problem solving skills after using Edpuzzle in learning activities in online learning activities with an effectiveness score of 91%. Based on the results of Sirri & Lestari's research (2020) it was also found that 50% of research subjects felt progress after learning by using Edpuzzle and Whatsapp Group, this was evidenced by satisfactory test results.

Furthermore, the use of learning models is also able to increase student involvement in learning. There are several learning models that are oriented towards student center learning, including problem-based learning or known as Problem Based Learning (I. Sari et al., 2020). Problem Based Learning model is a learning approach that begins by creating student needs to solve a problem independently and directed. During the problem solving process, students build knowledge concepts and problem solving skills independently to find solutions to problems (Phungsuk et al., 2017).

In addition, the Problem Based Learning model is one of the learning models that can hone students' critical thinking skills. Critical thinking is a thinking process that is based on ideas and thoughts in proposing reasons for concluding and solving problems. Critical thinking skills are needed by students so that students are accustomed to reasoning and reflective thinking so that it is easier for them to understand learning independently (Nugraha et al., 2017).

2. Methodology

This type of research is a descriptive research with survey method. Researchers collect data analysis of the needs of teachers and students as well as data on student characteristics through the distribution of questionnaires. The needs analysis questionnaire contains 18 questions distributed via Google Form to 28 teachers and 79 students in Riau province. The questions given in the questionnaire have the same meaning between teachers and students, the difference is that the teacher questions lead to his knowledge of the student's condition, while the students regarding the direct conditions felt in learning. The profile of the needs analysis is shown in Table 1.

Table 1. Needs Analysis Instrument Profile

No	Aspect	Indicator	No Item
1.	Learning Subject	Students tend to be passive in receiving information in the learning process (Adaptation Patandean & Baharuddin, 2017; Richards, 2020)	1, 2
2.	Learning Object	Physics lessons are one of the subjects that students are less interested in (Adaptation Yustiandi & Saepuzaman, 2016; Caleon et al., 2018; Lusiyanana et al., 2019)	3, 4, 5, 6, 7, 8, 9
3.	Learning Process	Learning is still oriented to the product dimension compared to the process dimension (Adaptation Ervina, 2018; N. Sari et al., 2018; Lestari & Diana, 2018; Carrillo et al., 2021)	10, 11, 12, 13
4.	Learning Media	Learning is still oriented to reference books, causing boredom in the learning process (Adaptation Murdani, 2020)	14,15, 16, 17, 18

Meanwhile, the student characteristics analysis questionnaire contains 10 questions distributed via Google Form to 93 students in the Riau province. The profile analysis of student characteristics is shown in Table 2.

Table 2. Student Characteristics Analysis Instrument Profile

No	Aspect	No Item
1	Motivation to study physics conventionally	1, 2, 3
2	Perception of learning videos in general	4, 5
3	Perception of cognitive abilities through learning videos	6, 7
4	Perception of information through learning videos	8, 9
5	Attractiveness	10

Source: Adaptation Nurliana (2021)

The data from the questionnaire were then taken on average and interpreted based on the categories in Table 3.

Table 3. Data Interpretation

No	Percentage (%)	Category
1	0.00 % - 20.99 %	Very Low
2	21.00 % - 40.99 %	Low
3	41.00 % - 60.99 %	Medium
4	61.00 % - 80.99 %	High
5	81.00 % - 100 %	Very High

Source: Arikunto (2021)

3. Results and Discussion

3.1 Needs Analysis

The results of the needs analysis questionnaire can be seen in Figure 1.

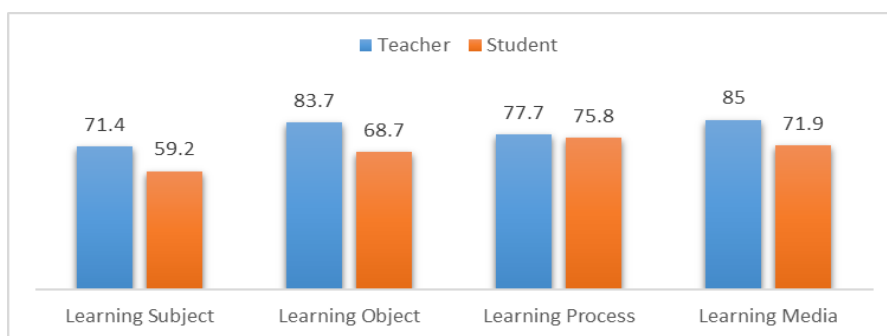


Figure 1. Results of the Needs Analysis Questionnaire

Based on Figure 1, it can be seen that the average approval of the needs analysis for each indicator is in the high category. In the aspect of the subject of learning as much as 71.4% of teachers and 59.2% of students stated that students tend to be passive in receiving information in the learning process in class. Furthermore, in the aspect of learning objects as much as 83.7% of teachers and 68.7% of students stated that physics lessons, especially in direct current circuit material, were less

attractive to students because they were abstract and there were many formulas so that students tended to be slow in doing questions and get low learning outcomes.

Then in the aspect of the learning process as many as 77.7% of teachers and 75.8% of students stated that the current physics learning has not provided opportunities for students to find and apply their own ideas so that students find it difficult to solve problems that are truly in accordance with everyday life. day. Finally, in the aspect of learning media, 85.0% of teachers and 71.9% of students stated that physics learning was still oriented towards reference books, causing boredom and video was one of the media that students were interested in and liked.

Based on the results of the needs analysis instrument, namely from the aspect of the subject, object, process, and learning media there are 81.3% of teachers (very high) and 70.1% of students (high) stating that the development of learning videos using *Edpuzzle* based *Problem Based Learning* needs to be done to improve students' critical thinking skills on direct current circuit material.

3.2 Analysis of Student Characteristics

The results of the student characteristics analysis questionnaire can be seen in Figure 2.

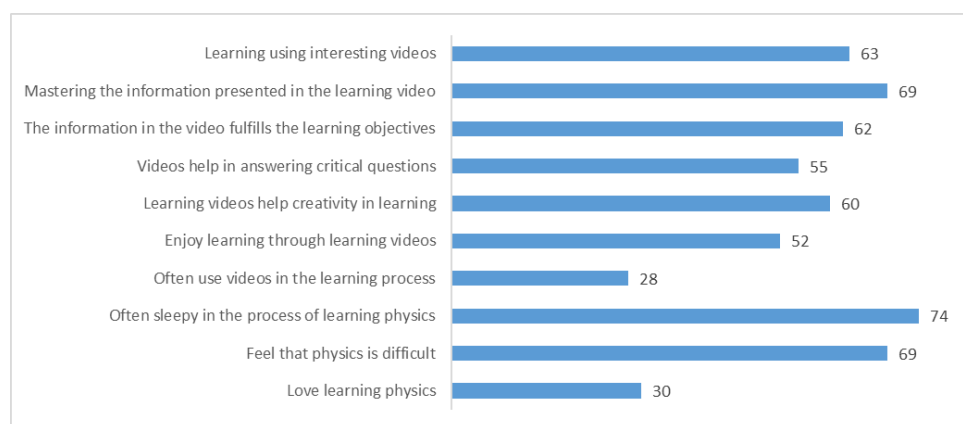


Figure 2. Results of Student Characteristics Analysis Questionnaire

Based on Figure 2, it can be seen that students' motivation in learning physics is still low, this is evidenced by the percentage of students who like learning physics is only 30%, as many as 69% of students feel that physics is difficult and as many as 74% of student's state that they are often sleepy. during physics lessons.

Furthermore, the intensity of the use of video in learning is still very low at 28% even though it is quite attractive to students, where as many as 52% of students enjoy learning through learning videos. Videos also have a positive impact on students' cognitive abilities, where 60% of student's state that learning videos help creativity in learning, 55% of students can answer critical questions with the help of learning videos, 62% of students feel that the information in the video is in

accordance with the learning objectives in class, and 69% of students were able to master the information contained in the learning video.

Furthermore, 63% of students are interested in using video in the learning process in class. Based on the results of the analysis of student characteristics, it can be concluded that the development of learning videos using *Edpuzzle* based on *Problem Based Learning* is very appropriate to improve students' critical thinking skills with a percentage of 64.6% needs in the high category.

4. Conclusion

Based on the results of the analysis of the needs of teachers and students on aspects of subjects, objects, processes, and learning media, as well as the results of the analysis of student characteristics, it can be concluded that the development of learning videos using *Edpuzzle* based on *Problem Based Learning* needs to be done to improve students' critical thinking skills on direct current circuit material.

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How to cite this article:

Hartati, F. D., Islami, N., & Rahmad, M. (2023). Needs Analysis of Learning Video Development Using Edpuzzle Based Problem Based Learning to Improve Critical Thinking Skills of High School Students. *Journal of Educational Sciences*, 7(1), 27-34.
