

Analysis of Class X Students' Understanding of Newton's Law Material Using Canva-Based E-Modules

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Submitted: 13th June 2022

Published: 21th November 2022

ABSTRACT

E-module is a digital module consisting of text and images. The purpose of this study is to determine the feasibility of e-modules in Newton's law material as a learning medium for students. This study used a survey with respondents of grade X students at Al-Hidayah Islamic High School Jember. The sample used was 20 students. Data analysis uses a quantitative approach with a descriptive method. Based on the results of the study, 15% of students got complete criteria and 85% of students were not complete. However, after the explanation of Newton's law material using e-modules by doing a post-test, 90% of students get complete criteria and 10% of students have not completed. Therefore, Canva-based e-modules can be said to be very feasible to be used as a learning medium.

Keywords: e-module, Newton's law, learning media

INTRODUCTION

Electronic modules are an innovative medium that can increase students' interest in learning. In the learning process, there needs to be an effort to improve the achievement of learning outcomes so that support from *the learning guide* is needed.

Learning is a teaching and learning activity between students and teachers with the aim of acquiring skills, knowledge and changing attitudes, so that goals can be achieved well [1].

Science learning is a subject that is used as a tool to measure goal stamping. Physics is the study of events, alam phenomena [2].

According to Ruth Lautfer (1999), learning media is a tool used to teach teachers in delivering material. The existence of learning

media can provide motivation in learning, encouraging students to speak, write, and imagine [3].

Ilmu physics must be mastered well by students. The goal of learning physics is to guide students to understand thoroughly physics concepts so that they can be used in solving problems [4].

In studying physics, students can understand these physical materials in depth. Therefore, in-depth mastery of the material is very important for students to understand in physics learning.

When studying physics in depth, it cannot be separated from the word understanding. Students' understanding must always be improved so that they get a knowledge that is really absorbed in their minds. In essence, understanding is one form of

learning outcomes. With understanding, students or students are asked to do a proof that he understands, meaning that he really understands the relationship that is different between facts or consequences.

Learning in high school, of course, encounters Newton's hukum material. This material on Newton's law basically discusses the laws of 1, 2, and 3 newtons [5].

Some argue that Newton's law material is still considered difficult by students. That's because the material is abstract. Therefore, a way is needed to make it easier for a teacher to deliver material about Newton's law [6].

Over time, learning can be done through various media. One of them is by using e-modules. By using e-modules, students can learn according to their level of ability and target the level of success achieved and can provide opportunities for students to carry out remedial. Remedial is special attention given by educators in the form of evaluation for students who have weaknesses and difficulties in learning. The main steps of remedials are twofold, namely diagnosing learning difficulties and giving remedial learning behaviors [7]. With the e-module, students can also find their own evaluations that are given continuously. Evaluation includes measurement and assessment. Evaluation is a continuous process of determining the quality of something based on criteria and consideration in making decisions [8].

Based on the description above about e-modules used as learning media for students in understanding Newton's law material. Thus, this study was conducted with the aim of determining the feasibility of e-modules in Newton's law material as a learning medium for learners.

RESEARCH METHODS

All research is a problem-solving activity and finding results. The research can be

said to be scientific research or not depending on the way of thinking and methods used in obtaining results [9].

The research method used is a quantitative approach with a descriptive method. Quantitative methods are sciences that have links to methods of collecting data, analyzing, and how to get information, draw conclusions and draw conclusions [10]. Quantitative research is the collection and analysis of numerical data for the description, explanation, production or control of diverse phenomena of interest [11]. Quantitative research approaches require more numerical data, in addition hypothesis statements are tested and specific research is used in the research process [11].

Descriptive is a type of research that explains the current situation. The relationship of this research is about existing conditions or relationships, current practices, beliefs, points of view, ongoing processes, perceived influences, tendencies. Descriptive research has the main purpose of describing a situation that is happening when the research is carried out. The research consists of several categories such as case studies, surveys, documentary analysis [11]. The data that has been obtained is processed using *Microsoft excel*, then analyzed by the description method.

The sample in this study was grade X students of Al-Hidayah Islamic High School Jember. Samples are parts of a number of objects that have the characteristics and qualities studied, then conclusions are drawn. A sample is a subset of a population [12]. By providing pretest questions and posttest questions. Pre-test is a form of test that is carried out before or will start presenting new material to find out the knowledge or insight of students knowing the material to be presented [13]. Post-test is a test carried out to measure the learning that has been done. Post-test is conducted at the end of learning [14]. Data

collection used pretest questions that were carried out before learning began and posttest questions were carried out after learning to 20 students. The questions consist of 10 questions. Students answer pretest and postes questions using google from that has been given. Students are also given canva-based e-modules as a learning medium. The use of e-modules is expected to make it easier for students to learn material without bringing books, students can simply open e-modules through electronic media such as *mobile phones* or applications.

Data collection using observation and documentation techniques. Knowledge of data collection techniques is needed in collecting important data and in preparing research reports. Researchers who are right in choosing and using techniques will make the time spent in carrying out research more effective and efficient [15]. Observation is making observations by looking at learning conditions directly. Documentation is carried out to see directly the physical condition during learning. This research was conducted in May 2021 in Mangli Village, Kaliwates District, Jember Regency.

RESULTS AND DISCUSSION

Table 1. Results of obtaining pre-test siswa

Student Grades	Frequency	Criterion
10	1	Unfinished
20	2	Unfinished
30	3	Unfinished
40	3	Unfinished
50	5	Unfinished
60	3	Unfinished
70	1	Complete
80	2	Complete
90	0	Complete
100	0	Complete

Table 1 is the pre-test results that students have done. The table consists of student grades, frequency and criteria. Nilai 10 obtained as many as 1 student with incomplete

criteria. Students get a score of 20, there are 2 students with incomplete criteria. Siswa who scored 30 as many as 3 people with incomplete criteria. There were 3 students who obtained a score of 40 with the criteria for completion. A score of 50 is obtained oleh 5 students with incomplete criteria. The value of 60 is obtained by 3 students with incomplete criteria. There is 1 student who scores 70 with complete criteria. There were 2 students who scored 80 with complete criteria. At 90, no student gets a 90 with complete criteria. At 100, no student gets a score of 100 with complete criteria. Students who get the criteria have not been completed, meaning that students have not met the Minimal Completeness Criteria (KKM). While students who get the complete criteria mean that students have met the Minimum Completeness Criteria (KKM) and are declared graduated.

Table 2. Calculation of mean, median and mode of result pre-test

Calculation of Mean, Median, and Mode	
Mean	46
Median	50
Mode	50

Table 2 is the average score of grade X students of Al-Hidayah Islamic High School Science on Newton's Law material, which is 46. The median (middle value) is 50 and the value that appears frequently (mode) is 50. The mean is calculated by entering the value multiplied by the frequency, then summing the overall result of the value multiplied by the frequency. The result of the summation is divided by the number of frequencies (number of students). The median was taken the middle grade of 20 students. The middle grades of the 20 students are 50 and 50. The value of 50 is added, meaning that 50 plus 50 then divided by 2 to get the median with a value of 50. The mode of the student's pre-test results is 50, because the value that often appears is 50.

Table 3. Criteria for completeness of siswa

Criterion	Value
Unfinished	10 -60
Complete	70 - 100

Table 3 is the result of student completeness criteria, there are two criteria, namely incomplete and complete. It is said that the criteria have not been completed if the student's score is at 10-60. While the criteria are complete if the student's score is at 70-100.

Table 4. Completeness of the value of pre-test results

Criterion	Frequency	Percentage
Complete	3	15%
Unfinished	17	85%

Table 3 is the completeness of pre-test values in the form of frequency and percentage. In the complete criterion there are 3 students with a percentage result of 15%. Meanwhile, in the unfinished criteria, there were 17 students with a percentage of 85%. In the table above, students who get incomplete criteria are far more than complete criteria.

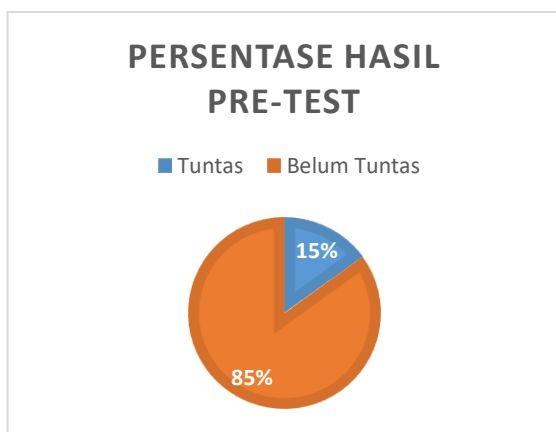


Figure 1. Pie chart of student pre-test result percentages

Figure 1 is the percentage of the pie chart of the pre-test results, it is shown that the pre-test results are completed in the blue section getting a percentage of 15%. Meanwhile, the

pre-test results have not been completed, the orange part gets a percentage of 85%.

Table 5. Results of obtaining post-test scores

Student Grades	Frequency	Criterion
10	0	Unfinished
20	0	Unfinished
30	0	Unfinished
40	0	Unfinished
50	0	Unfinished
60	2	Unfinished
70	4	Complete
80	6	Complete
90	4	Complete
100	4	Complete

Table 5 is the results of obtaining students' post-test scores. The post-test is carried out after the explanation of the material about Newton's law using e-modules. Based on the data of students who get grades 10, 20, 30, 40, and 50 do not exist. At a grade of 60, 2 students with unfinished criteria were obtained. Nilai 70 there are 4 people with complete categories. Nilai 80 obtained 6 people with complete category. Students who get a score of 90 there are 4 people with complete categories. Students who get a score of 100 there are 4 people with complete categories.

Table 6. Calculation of mean, median and mode of result post-test

Calculation of Mean, Median, and Modus	
Mean	82
Median	80
Mode	80

Table 6 is the calculation of the mean, median, and mode of post-test results. Based on the calculation, the average post-test score of students is 82. The median or middle value obtained is 80. The mode obtained is 80.

Table 7. Completeness grouping nilai post-test siswa

Criterion	Frequency	
	(person)	Percentage
Complete	18	90%
Unfinished	2	10%

Tabel 7 is a grouping of students' post-test score provisions. Based on the data obtained after the explanation of Newton's law material using e-modules, as many as 18 students received complete criteria with a percentage of 90%. In addition, there were 2 students who obtained complete freeze criteria with a percentage of 10%.

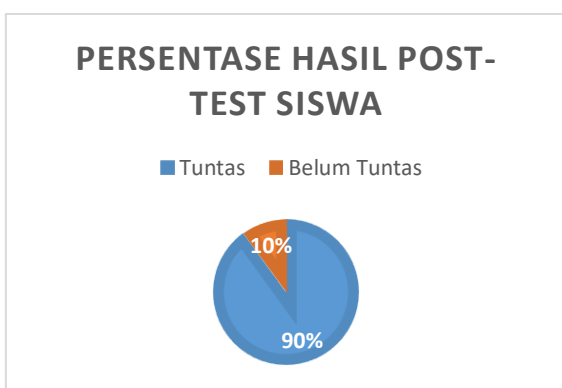


Figure 2. Percentage diagram of students' post-test results

Figure 2 is the presentation of data in the form of a percentage diagram of student post-test results. In the blue diagram, it can be seen that 90% of students are complete in completing the post-test questions. However, the orange graph shows that 10% of students have incomplete criteria.



Figure 3. Documentation of research activities

Figure 3 is a documentation of research

activities by making observations to obtain data. Activities carried out include pre-test, material explanation using e-module on Newton's law, question and answer session, and post-test. Post-test is carried out as an evaluation after explanation using e-module.

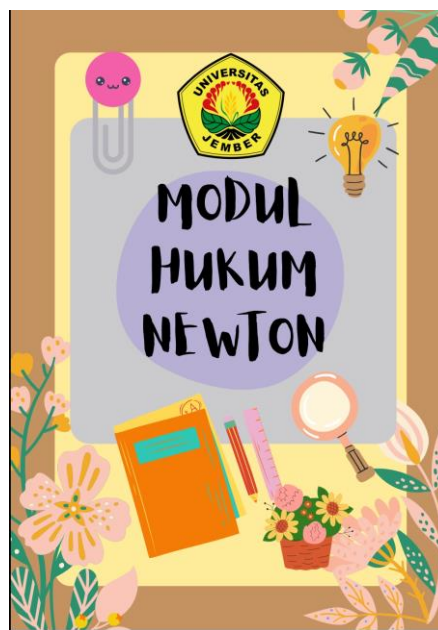


Figure 4. E-modul used in the research world

Figure 4 is the e-module used as a learning medium in this study. This e-module was created using the Canva application. This e-module contains Newton's law material for grade X students. In addition, there is a cover, QR-code to access pre-test and post test questions, and a cover cover.

CONCLUSION

Based on the explanation above, it can be concluded that before the explanation of Newton's law material using e-modules, a pre-test was obtained, 15% of students got complete criteria and 85% of students had not thoroughly. However, after the explanation of Newton's law material using e-modules by doing a post-test, 90% of students get complete criteria and 10% of students get incomplete criteria. Thus, canva-based e-modules can be said to be very feasible to be used as a learning

medium about newton law.

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