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Development of an E-Module on movement and style material using Canva to improve learning outcomes and retention in independent Curriculum driving schools

Meygever Onsu[1], Herry Maurits Sumampouw[2], Meike Paat[2]
[1] Department of Master of Science Education Study Program, Faculty of Mathematics, Natural Sciences and Earth, Manado State University, Indonesia
[2] Master of Science Education Study Program, Faculty of Mathematics, Natural Sciences and Earth, Manado State University, Indonesia

Abstract
This research is research into the development of teaching materials in the form of e-modules. The aim of this research is to analyze e-modules for movement and force material in science subjects, develop e-modules for movement and force material using Canva, and improve learning outcomes and student retention by using e-modules using Canva in independent curriculum driving schools. This development research was prepared based on the Research & Development research design with the following development research stages: 1) planning, 2) exploratory study, 3) development of initial product form, 4) research instrument 5) validation, 6) revision, 7) dissemination product. The subjects of this research trial were reviewed by, (1) Material Expert, (1) Media expert, Small group test of 10 students and large group test of 27 grade 7 students at the driving school. The instruments used in this research were questionnaires and learning outcomes tests. The results of the research stated that the product testing developed had a good appearance quality for use because it was on a very strong continuous line, namely at 85%, it could increase learning outcomes with an average of 85.5556 while the retention results showed 89.81% in the high category. Thus, it can be concluded that the e-module on movement and force material using Canva is suitable for use as teaching material in class to improve learning outcomes and student retention in grade 7 science subjects at the Ratahan 1 State Middle School.

Keywords: E-module, movement and style, learning outcomes, retention, Driving school

Introduction

Improving the quality of education is carried out through various continuous policies starting from developing and improving the curriculum, improving educational facilities, upgrading, training in management and utilization of other learning resources. Apart from these policies, efforts that are no less important in improving the quality of education are improvements in the teaching and learning process which includes teaching methods, methods and approaches used in teacher learning. Teachers as teaching managers are required to be more creative in managing learning depending on suitability to the material being taught. The strategic step of equalizing education in order to complete the mandatory nine years of quality basic education for all children in Indonesia has a very strategic meaning to make the nation smarter and is in line with the message of education for all (Lukitasari & Iriani, 2017) [13].

Natural Sciences (IPA) is a term used to refer to a family of sciences where the objects are natural objects with definite and general laws, valid whenever and wherever. As one of the most important subjects for junior high school students, learning science can be encouraged with various media which will provide interesting experiences during learning for students. In line with increasingly rapid technological developments, educators must continue to innovate to provide quality learning according to students' current needs. The government hopes that teachers can align lesson materials by utilizing and using Information and Communication Technology (ICT). The process of learning activities implemented by teachers using ICT will make it easier for students to access knowledge from various sources on the internet (Robin Moss 2006) [19].

Various efforts have been made by all parties in the education sector to improve learning that is relevant for today's students. The use of technology makes learning and teaching activities more interesting. The world of education needs to utilize technology so that it can be used to search for information and convey the results of the knowledge gained. Several learning support facilities can be used as learning resources, but in their implementation there are still few teachers who can or are able to utilize this technology. Utilization of school facilities such as chromebooks, tabs, LCDs and computers, which are currently government aided, is still lacking, which is why there is no innovation from teachers to develop technology. The facilities at the school have a function to support learning and should not only be used by teachers, but can also be used by students. Since 2022, based on the Decree of the Minister of Education, Culture, Research and Technology of the Republic of Indonesia Number 262/M/2022, the government has temporarily implemented the Implementation of the Independent Curriculum. This curriculum aims to provide flexibility for teachers and students to freely determine learning patterns in exploring all student potential by using technology to make it more relevant to meet human resource needs in the future.

The rolling out of the independent curriculum as one of the solutions for learning recovery after the Covid 19 pandemic provides a complete change in the development of learning by utilizing online technology which tends to change learning from only limited textbooks to the use of various

supporting sources with the use of technology in learning which can attract students' interest in learning so as to accommodate different learning needs. In line with the implementation of the independent curriculum, the government is also running several superior programs to encourage the implementation of the independent curriculum, one of which is driving schools.

Mobilizing Schools is a superior program organized directly by the Ministry of Education, Culture, Research and Technology of the Republic of Indonesia through the North Sulawesi Provincial Teacher Mobilization Center which provides special interventions to implement a curriculum that is relevant to learning conditions in schools through various trainings and the formation of learning committees that are intact, maximizing the school's potential to make breakthroughs and changes in learning that favors students through the use of various learning resources that are appropriate to current conditions.

Science as one of the subjects that is still relevant taught in junior high school is a subject that is less popular because it is complicated and widely integrated because it includes Biology, Chemistry, Physics and other sciences. If learning in science subjects is boring and does not follow current developments, it will have an impact on low learning outcomes and active participation of students during learning. Movement and force material in science lessons is material that is quite difficult to teach because some of the subject matter is abstract and if it is only taught conventionally based on observations in the field, it shows that 65% of students experience a decline in learning independence and student learning outcomes, so learning support materials are needed that are able to provide understanding. in-depth, easy for students to access, simple, foster students' interest and the level of retention of the material will increase, if students are given the opportunity to explore (Sumampouw 2013) [25].

So far, students have only been asked to read books without being given realistic objects as examples. This is based on observations made, showing that students feel bored studying in class. so it has a big impact on student learning outcomes, especially since so far schools have never conducted tests to measure student retention. The use of technological learning media in classroom learning activities is one of the efforts to create a good quality learning system (Anne Williams 2007) [3] with the presence of relevant learning resources, in this case e-modules, is expected to increase students' willingness and participation in learning science, especially class VII Motion and Force material. Teachers as inspiration need the help of technology as a learning reference which can be an effort to create interesting learning for students. The existence of technology now, if seen in terms of form, is indeed simple, but seen in terms of its features, technology will increasingly develop following the times.

Technological devices such as hardware and software are also experiencing developments, one of which is using Canva. Canva can improve learning outcomes in science concepts, increase students' motivation and scientific literacy, and is a suitable supporting media in abstract science learning activities because it can provide visualizations making it easier for students to learn (Cindy 2023) [5] to create various learning support materials Attractive interactive with various supporting features is here to provide solutions for creating relevant e-modules. Moreover, the government provides access for educators through the Belajar.id account to use various pro features with access to various contents of abundant learning needs which have not been utilized optimally by educators, which will provide easy and complete access in providing interactive and interesting learning media for students. in the form of moving animations, joint access between teachers and students, e-modules which are usually made into videos or broadcast materials, as well as interactive games which are rich in interesting animations so that students can switch to using their devices for learning activities, not just limited to games or social media.

The development carried out is designing an e-module product that can be accessed by teachers and students which does not need to be installed by teachers or students but can be accessed anywhere while studying or at home, via smartphones and laptop browsers providing the benefit of fostering learning independence, learning outcomes and increasing student retention in science learning and the hope is that the development of this module will contribute to the successful implementation of the independent curriculum as one of the government's priority programs in educational reform that is relevant and has an impact on students' current learning needs. This research aims to analyze e-modules for movement and force material in science subjects, develop e-modules for movement and force material using Canva, and improve learning outcomes and student retention by using e-modules using Canva in independent curriculum driving schools.

Method

This research includes development research. The development research procedure goes through several stages, namely planning, exploratory studies, development of initial product forms, research instruments, validation, revision based on validation results, and product dissemination. The instruments used in this research were questionnaires (e-module design expert questionnaire, learning material expert questionnaire, student response questionnaire) as well as learning outcomes and retention tests. At the validation stage there are several aspects that must be considered, namely instructional aspects, product aspects, expert validation, validity and reliability tests, and field tests. The research data collection technique is data on student responses to products, expert evaluations and understanding of concepts obtained from the results of distributed questionnaires. Data on student learning outcomes were obtained from the field trial stage in accordance with the same design procedures as the subject. The research data analysis technique is numerical data on student learning outcomes, experimental class post test data is analyzed using the Only Design post-test, aimed at measuring the extent of learning outcomes after using the product by students and described in a descriptive manner (Sugiyono. 2017) [23]. This stage is the final stage of the product produced. The revision stage based on validation results is a stage that is ready for dissemination. Revisions are made based on input from the results of operational field trials which have been explained in the previous step. The next stage is product dissemination, namely the stage of reporting the products produced at scientific meetings and/or scientific journals, with the aim of communicating the product development results so that the products produced are spread more widely and can show the innovativeness of the products produced.

Results and Discussion

A. Learning Planning

The beginning of this research is planning. The planning carried out is:

1. Formulate the learning objectives to be achieved;
2. Determine the success criteria and types of instruments used in this research;
3. Design initial product development activities, in this case teaching materials in the form of E-modules. At this stage the researcher has determined that the subjects of this development research are class 7A of SMP Negeri 5 Ratahan and Class 7D of SMP Negeri 1 Ratahan. The duration of this research is approximately 5 weeks and will start on August 21 2023 with the assumption that the researcher's product trial will take as long as 3 weeks and after that, collect data for real class research for 2 weeks.

B. Exploratory Study

The second stage of development research is an exploratory study activity carried out by collecting and reviewing various literature related to the teaching material products being developed. This includes research that is relevant to research on the development of teaching materials that has been developed as support to strengthen the results of this research. Apart from conducting studies from various literature, a study of the situation in the field was also carried out, what the conditions were like at SMP Negeri 1 Ratahan by conducting short interviews with the school, namely the principal and the science subject teacher, namely Mr. Jefri Hosang S.Pd.

C. Development of the Initial form of the Product

Research on learning planning modules and teaching materials in the form of e-learning modules that are adapted to the curriculum in force at SMP Negeri 1 Ratahan, namely the independent curriculum to help carry out research activities. Preparing the Canva for education application to edit this e-module. Other supporting images in this e-module teaching material product are downloaded from Canva for education. Figure 1 and Figure 2 show the initial cover image of the product and the initial appearance of the motion material and styles that have been produced.

After the e-module has been prepared, it is then consulted with experts. In this case, experts or experts in the design of teaching materials and experts or experts in the content of movement and style materials provide assessment instruments in the form of questionnaires to analyze the feasibility of the product produced. Assessments, input, criticism, suggestions from experts or experts regarding the product being made are accommodated as material for revision as a revision of the initial form of the product.

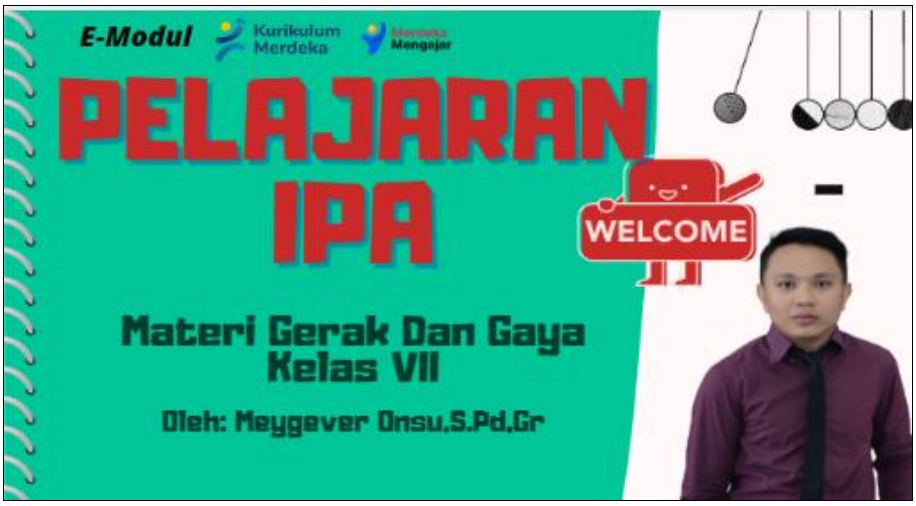

Fig 1: Initial appearance of the product

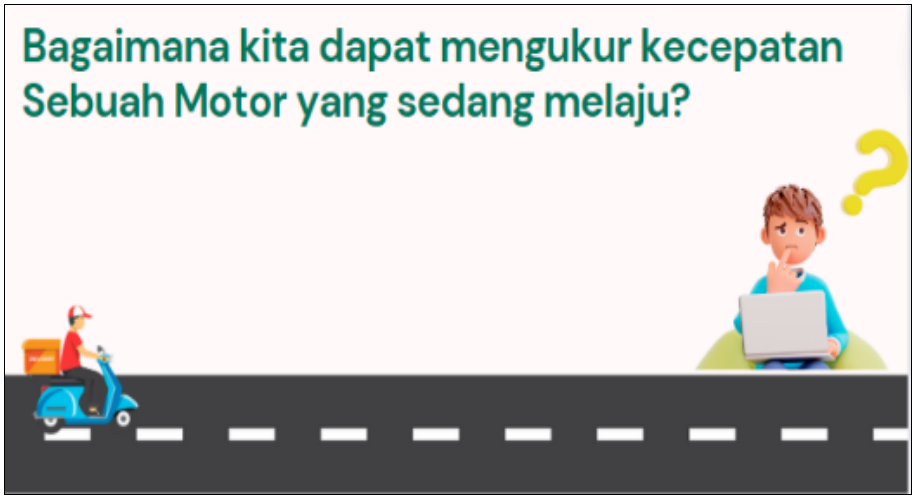

Fig 2: Initial appearance of the material

D. Data Collection and Analysis Instruments

1. Data Collection Instrument

a. Questionnaire

1. Questionnaire (E-Module Design Expert)

This teaching material design expert evaluates the suitability of the resulting product for use in implementing learning activities. To determine the level of consistency of this instrument, reliability analysis was carried out. Apart from that, this analysis plays a role in measuring the validity of statement items using the corrected total correlation technique, namely correlating the item score with the total item and then correcting the correlation coefficient value. This calculation was carried out using the SPSS 29 application.

2. Questionnaire (Learning Material Expert)

This teaching material design or design expert evaluates the suitability of the teaching materials used in implementing learning activities. To determine the level of consistency of this instrument, reliability analysis was carried out. Apart from that, this analysis plays a role in measuring the validity of statement items using the Corrected total Correlation technique, namely correlating the item score with the total item and then correcting the correlation coefficient value. This calculation was carried out using the SPSS 29 application.

3. Student Response Questionnaire

This student response questionnaire is used to determine students' responses to teaching and learning activities and to learning products. Student response instruments include statements of strongly agree, agree, doubtful, disagree, strongly disagree. For analysis purposes, each respondent's answer to a positive statement is given a score of 5, for a strongly agree answer, a score of 4 for an agree answer, a score of 3 for a doubtful answer, a score of 2 for a disagree answer, a score of 1 for a strongly disagree answer. This questionnaire was applied to small groups and large groups and is one of the main instruments in this research. Filling out this questionnaire is carried out after the end of the entire learning process.

b. Learning Outcomes and Retention Tests

This learning outcomes test is used to obtain data on student learning outcomes to measure success or achievement in accordance with the success criteria that have been determined in the implementation of learning and student retention after using E-Module teaching materials on movement and force.

1. Research Data Analysis

Analysis of post test data for the experimental class was analyzed using the Only Design post-test, aimed at measuring the learning outcomes after using the product and the student retention rate after 1 week of learning.

E. Validation

1. Expert Validation

a. Validation of Teaching Material Design Experts

This teaching material design expert assesses whether the product produced is in accordance with the applicable independent curriculum and in accordance with the E-Module preparation procedures or not. After analyzing the data obtained, the percentage is then calculated. The percentage value shows the location of the category on a continuous line. The percentage is calculated by adding up the scores achieved then dividing by the maximum score and the result is multiplied by 100%. The material expert assessment shows a very strong continuous line, which is at 85.33%. This means that teaching materials in the form of modules have received a good assessment and are suitable for use.

b. Expert Validation of Learning Materials

This learning materials expert assesses whether the product produced is in accordance with the applicable curriculum, assesses the suitability of the material with the flow of learning objectives, learning outcomes and learning planning modules, namely the independent curriculum. After analyzing the data obtained, the percentage is then calculated. The percentage value shows the location of the category on a continuous line. The percentage is calculated by adding up the scores achieved then dividing by the maximum score and the result is multiplied by 100%. The material expert assessment shows a very strong continuous line, which is at 83%. This means that teaching materials in the form of e-modules have received a good assessment and are suitable for use.

F. Field Test

1. Small Group Trial

This small group trial was carried out at SMP Negeri 5 Ratahan. The test subjects were class 7 with material on movement and force with a total of 10 students. The data collection instrument used was a student response questionnaire. This small group trial is very important to find out the quality in terms of product appearance, material content, and how the product is written.

Learning is carried out using e-modules for students. After completing learning, students are given a small group student response questionnaire to assess the learning product and provide comments for improving the learning product along with the results of the analysis. In general, the 10 students who were small research subjects gave varying responses to the statements submitted in the student response questionnaire. Based on student response data, it can be concluded that students provide positive responses to learning products. This means that the product in the form of teaching materials (e-modules) produced is suitable and effective for use with revisions in learning activities.

2. Large Group Trial

Large group trials to determine the effectiveness of the product being developed to achieve the expected learning quality. This research was carried out at SMP Negeri 1 Ratahan with a total of 27 students on movement and force material which was carried out over 3 meetings. At the beginning of the lesson the teacher explains the types of technology that will be used in the lesson. At the first meeting, before using the product in the form of teaching materials (e-module), guide students to learn by using the product produced in the form of E-module teaching materials for students. Students carry out assignments in the E-module using chrome books and students' devices with the aim of explaining the concepts of motion, speed and acceleration. The second meeting before the researcher guided students to learn to use the product with the aim of learning to explain Newton's laws. At the third meeting, as

the final meeting, students took part in learning activities using teaching material products (modules) to reflect and complete several questions for the post test. After one week, students are tested again using the same questions to measure retention or the amount of knowledge remaining in students' minds. Based on learning outcome data obtained from research, the test results for 27 students, with a standard deviation value of 8.35894, compare the average learning outcome of 85.5556 with the expected KKTP of at least 70. Thus, student learning outcomes have increased significantly. significant. This means that the products used have the same effect, namely they can improve student learning outcomes.

Student retention results are categorized as retention criteria based on Setiawan *et al*. (2012) [20] with three levels of retention, namely: 1) $R \geq 70\%$ is categorized as high, 2) $60\% < R < 70\%$ is categorized as medium, and 3) $R \leq 60\%$ is categorized as low. The results show that the value is 89.81% so it is categorized as high. Apart from that, there was a decrease in the average test score from the 2nd posttest (retention) compared to the average score from the 1st posttest. This was due to forgetting experienced by students because the 2nd posttest was carried out within one week after the 1st posttest was given. At the stage of implementing the 1st posttest, students receive notification before the 1st posttest will be held, so that students can prepare themselves to face the test using e-modules. Meanwhile, the 2nd posttest (retention test) was carried out without notification, so it is likely that students were not prepared to face the 2nd posttest. According to Rahman (2002) [17] "forgetting is normal everyday and constant reminder of our limitations", forgetting is a normal occurrence because of human limitations in remembering. By carrying out the second posttest within a period of one week where students have received some new material, both in science subjects and other subjects, new material is one of the factors that influences the recall of material that has been stored in memory. Based on student response data, it can be concluded that students gave a positive response to the learning products developed in the form of e-modules. This means that e-module teaching material products produced in the form of modules are effective in increasing students' responses to science learning and improving student learning outcomes in science subjects.

G. Revision Based on Validation Results

After going through the development and testing stages in small groups and large groups, this learning product has undergone revisions or improvements. Improvements to the final product are needed to perfect the tool based on input from reviewers and students. The following is the final development product:

1. Teaching materials are more focused on developing E-modules, in accordance with learning objectives.
2. There is the addition of a concept map so that students quickly understand what is being studied, and the images supporting the material are made clearer.

H. Product Dissemination

The results of the development of this learning product were presented at a scientific meeting. This development product turned out to have a positive impact on the development of learning quality, including:

1. Implementation of development products can improve student learning outcomes. Implementation of learning using development products increases learning outcomes before and after implementation of learning.
2. Help teachers in implementing classroom learning and can encourage teachers to innovate to develop better learning e-modules.

Based on the analysis of learning outcomes, the average score of students after participating in learning with e-modules shows a score that exceeds the criteria for achieving student learning objectives. Meanwhile, for retention analysis, after comparing the scores of post-test one, the test was carried out with thorough preparation and was informed to students and post-test two without notification to students so that students did not prepare and were in the condition they were. According to Sumampouw (2012), measuring retention after learning aims to find out how much the learner is able to remember the learning material they have received. Conditions in the field, basically, retention measurements are often carried out by teachers but they are not aware of it. Retention measurements such as asking about previous material or lessons that students have studied, which have relationships or prerequisites when studying new material. Apart from that, you will get a common thread and connection with the material that will be studied next.

Conclusion

1. The e-module on movement and style material for junior high school science that was developed is good and suitable for use to assist teachers in learning activities in the classroom.
2. The product in the form of an e-module on movement and Style material that was developed increased the learning outcomes and retention of students at SMP Negeri 1 Ratahan grade 7.
3. The product in the form of an e-module received a positive response from students, especially on the material on Motion and Force.

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