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Innovation in the Development of Learning Animation Videos Through the Powtoon App in the Learning Design Course

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Abstract: The learning process for the Learning Design course in the Unimed Building Engineering Education Department (JPTB) has so far only been carried out with a presentation or lecture strategy, where students are more passive and only act as good listeners so that the expected learning objectives and competencies are not achieved. In addition, the implementation of the KKNI-based Merdeka Learning Campus (MBKM) based curriculum requires students to produce learning products. Therefore, to improve students' abilities in Learning Design learning, it is always necessary to change or innovate continuously so that they can achieve the learning objectives that have been set determined, one of which is the ability to develop Video Animation which is not only influenced by the learning model but also the application used. The proposed research aims to produce Learning Video Animations to improve student competence. Advances in information and communication technology have made learning animation videos visible using the Powton application learning can contain the same information as printed textbooks and can insert teaching materials not only in text form, it can be in the form of animation, audio or video and can be stored on CDs, flash discs, computers and smartphones so it doesn't take up a lot of space and carry it more easily, easier than a textbook. On the basis of the above, research will be carried out on the innovation of developing Powton animation videos in the Learning Design course with the aim of knowing the Feasibility of Learning Animation Videos using the Powtoon Application in the Learning Design course. How is Student Response to Learning Animation Videos using the Powtoon Application in the Learning Design course. The learning device development model used in this study is the 4-D Thiagarajan model (1974). This development model consists of 4 stages of development, namely: Define; Design, Develop, and Disseminate. Feasibility of Video Animation is done by asking for expert reviews. Materials, learning media experts and learning design experts. The effectiveness of using the Powton application is from the results of the pretest and post test results of student learning taking the learning design course. The expected results or outputs of this study are: produce learning, animation teaching material products using applications that can be applied to improve students' abilities in learning design materials; and produce scientific publications, both in the form of Seminar Proceedings and international journals about the use of teaching materials to improve skills in the Learning Design course.

Keywords: Animation video; Development innovation; Learning design; Powtoon application

Introduction

The curriculum is one of the most important components in education. All learning processes implemented must be based on the curriculum. For this reason, the curriculum is used as a reference for carrying out learning activities in order to achieve the desired goals. Law No. 20 of 2003 concerning the National

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Education System states that "The curriculum is a set of plans and arrangements regarding the objectives, content and learning materials and methods used as guidelines for organizing learning activities to achieve certain educational goals". The curriculum used in education in Indonesia has undergone several changes. This is done to keep up with changes in the times and science. Currently, Indonesia is implementing the 2013 curriculum (Kurniasi et al., 2014). The 2013 curriculum emphasizes the application of a scientific approach in learning (Daryanto, 2014). The scientific approach is now better known as the scientific approach. This is scientific approach is believed to be the golden bridge for the development (Gusma, 2021) and development of students' attitudes, skills and knowledge (Hosnan, 2014). This scientific approach is intended to provide students with an understanding to know, understand, and practice what is being studied scientifically. Learning with a scientific approach is a learning process that is designed in such a way that students actively construct concepts, laws or principles through the stages of observing, asking, collecting data, processing/associating, and communicating (Cahyani, 2021). These scientific stages are applied to provide more space for students to build learning independence and optimize the potential possessed by the students.

One of the factors that influences the success of learning is the existence of learning media used by teachers in learning activities (Suryani et al., 2020). Learning media is anything that can be used to convey messages from teachers to students so that it can stimulate students' thoughts, feelings, attention, and interests that lead to optimal learning activities (Khoirudin, 2020).

The importance of learning media in education is because learning media can clarify the presentation of messages or information so that it can facilitate and improve the learning process and outcomes (Aunurrahman, 2012; Dimyati, 2009; Musfiqon, 2016; Wati, 2020). According to in addition; learning media can increase and direct students' attention so that it can create learning motivation, direct interaction between students and their environment, and the possibility for students to learn independently according to their abilities and interests. The use of media will make learning in the classroom more varied so that students do not get bored quickly. By optimizing the use of media, learning can take place effectively so that learning objectives can be achieved.

Learning media according to Schramm in Amalia et al. (2020) is a tool that has a role as a message/material deliverer in the learning process. Media functions as explained by Gagne and Briggs in Arsyad (2019) as one of the tools used in delivering teaching materials. The involvement of media uses is to improve the quality of learning. There are several aspects that need to be considered in choosing the media that will be applied in learning. Good media is developed based on the needs and characteristics of students. This can indicate that the media must be in accordance with child psychology (Djamarah, 2011). An enthusiastic attitude in the learning process is usually influenced by the use of learning media. This attitude is in the form of interest, stimulation, motivation, which can be improved by using media aids (Hamalik, 2011). Then talking about the material, usually the material to be studied becomes the second aspect that must be considered in choosing media. The demonstration of the content must be appropriate so that it can clarify the message that the teacher wants to convey. The selection of media also emphasizes the effectiveness and efficiency of the media (Sadiman et al., 2011). Therefore, the selection of media must also be in accordance with the needs of the material. There are many types of learning media, one of which is video media.

Video media is classified as audiovisual media that is able to display elements of messages and information through images and sounds that are delivered simultaneously (Pribadi, 2018; Soleh, 2020). The advantages of this video media are numerous, in addition to being a means to obtain and communicate complete messages, video media in learning also attracts students' enthusiasm and interest in learning, and facilitates the process of delivering material (Rais et al., 2018).

Before video media developed into digital technology, image and sound recordings were done analogously onto video tape (Syafitri et al., 2018). The video medium at that time was an electronic recording of images and sounds onto magnetic tape. Image and sound recordings on video tape cassettes can be displayed on a monitor screen which is called a video player or VCR. However, nowadays, video media is more sophisticated. With the advancement of the times, the role of video in the world of education should also provide more effectiveness in learning (Nurdiansyah et al., 2018). Moreover, video is one of the media that motivates many students to learn. However, the reality in the field is that video media is only used in elite schools, the use of video media is not evenly distributed to all groups, especially in elementary schools.

For learning, Learning Design is less understood among students. The media used in delivering the material is books or power points which are considered boring and do not attract interest in learning.

Based on the problems above, the researcher put forward the idea for an animated video in providing teaching materials to students (Prastowo, 2012). This study refers to previous research, namely the research of Jerry (2018), this study aims to describe the design of

learning animation videos, describe the results of the validity of the development of learning animation videos, and determine the effectiveness of the developed learning animation videos (Awad et al., 2019). The development model used is the ADDIE model (analyze, design, development, implementation, evaluation). Data in this study were collected using interview and test methods. The second study is Andriana (2014). This study aims to determine the learning outcomes of students who use video and animation learning media in the refrigeration system subject with the material of vacuuming and filling refrigerants (Hasrul, 2011). The two studies above are both animated video developments that are similar to this study, only the material and subjects are different.

From the research above, the researcher is interested in developing an animated video media. The important role of using animated videos as learning media is the ability to visualize material that students cannot see or imagine. Animated video learning media makes it easier for teachers to deliver material (Zulfah, 2020). Several advantages of using animated videos as media are explained by Munir (2015) namely the level of effectiveness and speed in delivering material is higher, repetition in certain discussions can be done, videos can explain a process of events in detail and real, the ability to realize abstract objects or materials into concrete, durable and low level of damage so that it can be applied repeatedly, teacher skills are needed in operating technology, improving basic skills and adding new experiences for students (Yüksel-Arslan et al., 2016; Pais et al., 2017), and this animated media is relevant to learning objectives and curriculum that focuses on learning activities for students (Turk-Oguz, 2016). Based on the explanation that has been described above, the researcher feels the need to conduct research "Innovation in Developing Animated Learning Videos Using the Powton Application in Learning Design Courses".

Method

The learning device development model used in this study is the 4-D Thiagarajan model (Thiagarajan et al., 1974). This development model consists of 4 stages of development, namely Define, Design, Develop, and Disseminate. This research employs a mixed-methods design combining quantitative and qualitative approaches to evaluate Powtoon's effectiveness for creating educational animation videos (Sugiyono, 2010). Participants will include 30-50 students enrolled in Learning Design courses, selected through purposive sampling to ensure relevant instructional design experience (Daryanto, 2011).

The data collection technique that will be used is guided by the quantitative and qualitative research paradigms. Quantitative data is obtained by calculating the scores of each aspect of the material expert instrument, media expert and student responses (Poggiali, 2018). While qualitative data is obtained from the conversion of quantitative data into qualitative and the results of criticism and suggestions from material experts and media experts.

In this study, the researcher used three types of data collection techniques. The following is a description of the data collection techniques used by the researcher.

Observation

Observations are carried out when searching for initial data. Sugiyono (2017) states that observation is a complex process, a process that consists of various biological and psychological processes.

Interview

Interviews in this study were only conducted when searching for initial data. According to Sugiyono (2017), interviews are used when researchers conduct preliminary studies to find problems that need to be studied and to find out more in-depth things from respondents.

Questionnaires

Questionnaires are used when researchers conduct expert validation of materials, media expert validation and product trials. A questionnaire is a number of written questions used to obtain effective and efficient information from respondents about their personal reports, or things they know. According to Sugiyono (2017), a questionnaire is giving a set of written questions or statements to respondents to answer. The type of questionnaire used is a closed questionnaire, which uses questions with answer choices that have been provided.

Data Analysis Technique

Table 1. Scoring of Questionnaires Based on Likert Scale (Sugiyono, 2013)

Answer Options	Score
Not Good	1
Less Good	2
Good	3
Very Good	4

In this development research, the data analysis technique used is quantitative descriptive analysis technique with percentage. In this research, the data obtained are the results of questionnaires from media expert validators, material experts, lecturers and

students. The validity data analysis is obtained from the media validation sheet data. The answers from the validation sheet use a Likert scale consisting of four answers. The Likert scale used is shown in Table 1.

Then the score obtained from the validator's assessment is presented as a percentage to determine the validity. According to Akbar et al. (2018) the score obtained is calculated using the following formula:

- Calculate the percentage of questionnaire answers to each question using the calculation formula in Sudjana (2010) as follows:

$$V = \frac{\sum K}{\sum MK} \times 100\% \quad (1)$$

Description:
V = Validity percentage
$\sum$ K = total score of assessment by validator
$\sum$ MK = Maximum Score

Interpreting the validation criteria of the percentage analysis of expert validation results using interpretation by Arikunto (2008).

Table 2. Interpretation of Validity Percentage

Percentage (%)	Validity Level	Criteria
100-76	Valid	Eligible/ No Revision Required
75-51	Quite Valid	Quite Eligible/ Partial Revision
60-26	Less Valid	Less Eligible/ Partial Revision
<26	Not Valid	Not Eligible/ Total Revision

- Practicality data analysis was obtained from the results of the student response questionnaire using a Likert scale. The Likert scale consists of 4 answers. The presentation of the Likert scale used can be seen in Table 3.5. Then the score results from the student response questionnaire were calculated using the following formula (Trianto, 2010).

$$RS = \frac{F}{V} \times 100\% \quad (2)$$

Description:
RS = Percentage of student responses
F = Total score for each indicator
V = Maximum score

Interpreting the percentage of the questionnaire using interpretation from Arikunto (2008).

Table 3. Interpretation of Media Practicality

Percentage (%)	Criteria
80.1-100	Very high
60.1-80	High
40.1-60	Currently Low
20.1-40	Low
0-20	Very Low

Result and Discussion

Collecting Initial Information
Theoretical Basis

Based on the literature review, the use of Learning Animation videos using the Powtoon application in the Learning Design course as a learning medium can clarify learning materials with concise presentation of materials that can be used easily so that they are practical for use (Pelangi, 2020).

Field Observations

Pre-research was conducted to determine students' needs for learning media in the form of Learning Animation videos using the Powtoon application in the Learning Design course. The results of the pre-research or field observations obtained were that many students already knew and used learning media but students had not received learning media in the form of Learning Animation videos using the Powtoon application in the Learning Design course, while students wanted learning media in the form of Learning Animation videos using the Powtoon application in the Learning Design course.

Planning

After the problem was identified, the next step was to plan the research based on the stages according to Borg and Gall (Deliviana, 2017). The development design was carried out from the first to the ninth steps, namely: (1) preliminary study; (2) planning; (3) initial product development; (4) initial trial; (5) initial product revision; (6) field trials; (7) revision of the product from the field trial results; (8) operational field trials; and (9) revision of the final product. This is done with consideration of ease in carrying out development.

Product Design Results

Based on the pre-research data, the product specifications to be developed are learning media that students can use in the learning process and learn independently. The following is the planning for developing learning media Innovation in Developing Learning Animation Videos Using the Powtoon Application in the Learning Design Course 1) Initial design of the learning video using the Powtoon Application; 2) Next, create an Animation video scenario using the Powtoon Application; 3) prepare tools and materials to make a Learning Animation video Using the Powtoon Application in the Learning Design Course (Towner, 2017); 4) then take/make a video according to the scenario that has been made; 5) edit the video using the Learning Animation application Using the Powtoon Application in the Learning Design Course.

Video Storyboard

Table 4. Video Storyboard Using the Powtoon Application

No.	Scene	Time	Video Narration
1	Opening	20 minutes	The opening of this video shows the narrator saying the opening, greeting and explaining the video that will be made.
2	Discussing the Material	1 minute	The video shown is an explanation of the video developed by the Powtoon application and other software. This application was developed with the aim of facilitating the learning process in the learning design course.
3	Discussing the Material contained in each chapter	1.45 minutes	This video presents the steps on how to use Powtoon.
4	Discussing the Material contained in each subsequent chapter	4.35 minutes	This video presents input material using the Powtoon application or editing that is not in accordance with the Powtoon animation video standards.

Expert Feasibility Test

Validation assessment of Animation Learning Videos Using the Powtoon Application in the Learning Design Course (Johnson et al., 2002), through three aspects, namely validation by material experts, validation by learning design experts, and validation of learning media. To determine the validity, two experts were used, one person assessed the material aspect and the learning design aspect and the other assessed the learning media aspect. Based on expert assessments, the validation of Learning Using the Powtoon Application in the Learning Design Course in learning is in the very good category with a percentage of 92%. Validation of the learning design expert aspect is in the good category with a percentage of 93.91%. Validation of the learning media expert aspect is in the very good category with a percentage of 90%. Visually, it can be presented in Figure 1 below.

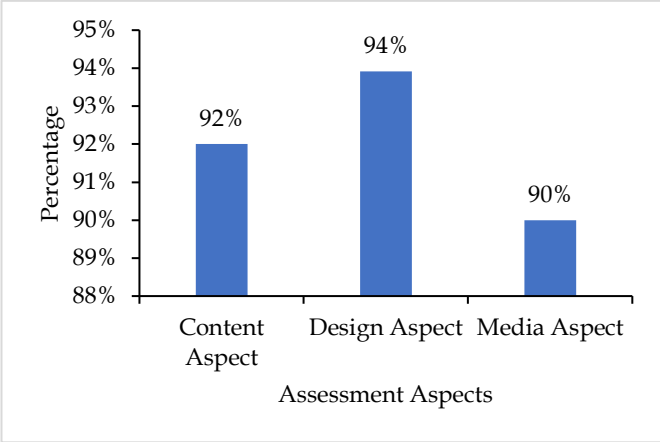

Figure 1. The validation level by expert

In addition to the validation of the three aspects, the Learning Animation Video Using the Powtoon Application in the Learning Design Course was also assessed by students who gave an assessment that the Animation Video using the Powtoon Application was in the good category with a percentage of 85.77%. Visually, the student assessment can be presented in Figure 2.

Learning Animation Video Using Powtoon Application in Design Course Learning has been successfully developed. This model has provided systematic steps so that the development process is more optimal and minimizes errors that occur. Animated Learning Videos Using the Powtoon Application in the Learning Design Course have also been validated by learning material experts, learning design experts, and learning media experts. Based on the assessment of learning material experts, Animated Learning Videos Using the Powtoon Application in the Learning Design Course are in the very good category with a percentage of 92%. This achievement cannot be separated from several aspects. First, the knowledge presented in the video is worthy of being taught to students. The preparation of the content refers to books or Syllabus and RPS that are in accordance with the competency demands of the Learning Design course. The selection of books is based on the characteristics of the competency achievement indicators in each module. The sources referred to are also quite up-to-date so that they are relevant to refer to. The writing of the content also uses references from articles in journals. The contents of the animated video are also interrelated and form a flow that is easy to understand. The order of presentation of the content is from easy to difficult, from known to unknown, and from knowledge to application (Rosita et al., 2019). The content is presented with a learning activity system that has twelve chapters in total. Based on the assessment of material experts, the content of the Learning Animation Video Using the Powtoon Application in the Learning Design Course is in the very good category with a percentage of 92%.

This achievement cannot be separated from several aspects. First, reviewed from the aspect of formulating learning objectives, it has been developed based on the competencies or performance that students must have. The formulation of learning objectives is then followed

by the breadth of material coverage, so that the review of the material is able to support the achievement of learning objectives. In addition to the suitability of the material coverage, the assessment method is also based on the formulation of operational verbs of indicators or learning objectives. Thus, the assessment method will be different, according to the level of ability being measured. Second, reviewed from the aspect of the method or strategy for delivering messages, the Learning Animation Video Using the Powtoon Application in the Learning Design Course is considered capable of triggering student interest and involvement in learning. Delivery of material based on the characteristics and complexity of knowledge. Third, reviewed from the aspect of presenting project assignments, it is considered capable of encouraging challenging learning and collaborative efforts as well as part of the assessment.

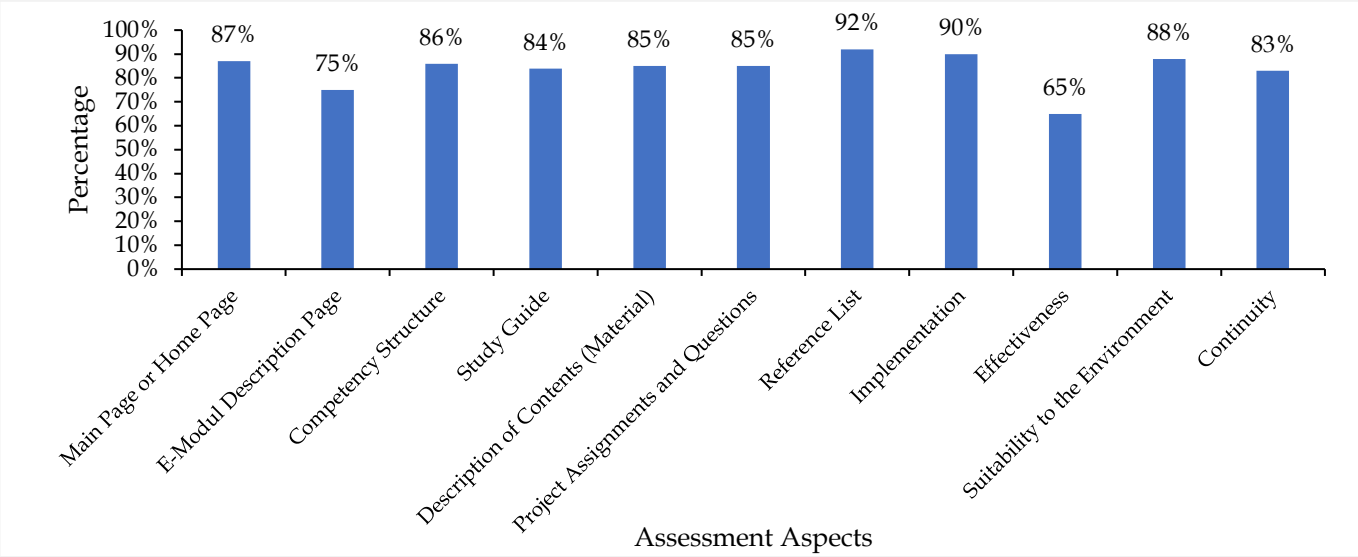

Figure 2. Assessment of animation videos using the Powtoon application in learning by students

Trial of Learning Animation Videos Using the Powtoon Application in the Learning Design Course

The trial of the revised learning media was conducted at the Building Education Department, Faculty of Engineering, UNIMED. The trial included small group trials and field trials. The trial was conducted during the learning process, after learning with the learning media, students were asked to fill out a response questionnaire. The results obtained from the trial are explained as follows.

Results of Small Group Trial

Data from the questionnaire obtained during the small group trial consisting of 3 students at the Building Engineering Education Department, UNIMED, can be seen in Figure 3. Based on the results of a small group trial of students of the Department of Building Engineering Education, FT UNIMED. The results obtained from the small group test are the total value of the percentage of the quality of the content of the Animation Video Learning Media Using the Powtoon Application in the Learning Design Course 87%. In the second aspect of the assessment of the video display, the total value of the percentage was 87% and in the aspect of technical quality, the percentage score was 85%. The average number is 87% with the category Very practical.

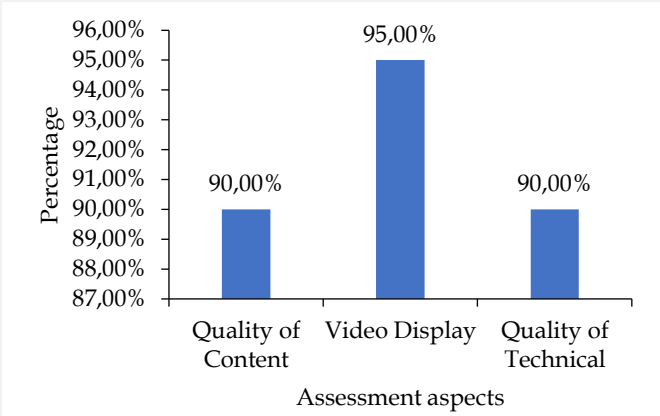

Figure 3. Small group trial validation results

Field Trial Results

This field test was given to 12 students of the Department of Building Engineering Education, FT UNIMED. The field trial procedure is the same as the small group trial, namely by filling out a research questionnaire. The data from the distribution of the questionnaire are presented in the following diagram.

The results obtained from the small group test are the total value of the percentage of the quality of the content of the Animation Learning Video media Using the Powtoon Application in the Learning Design Course

87%. In the second aspect of the assessment of the video display, the total value of the percentage was 87% and in the aspect of technical quality, the percentage score was 85%. The average number is 87% with the Very satisfied category.

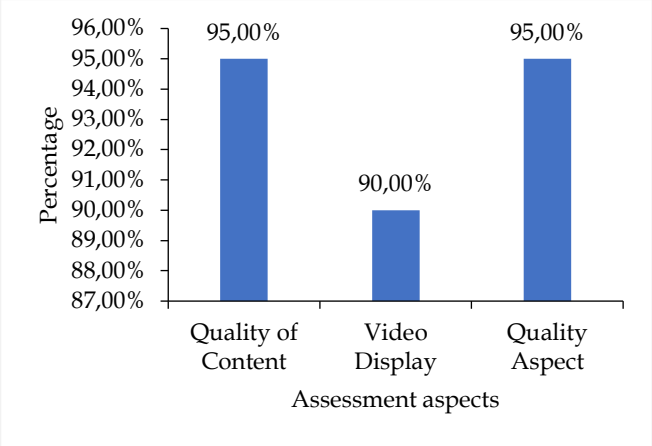

Figure 4. Field trial validation results

Conclusion

Product feasibility is carried out by validating material experts and media experts. After that, the researcher conducted a small group product attractiveness test on 3 students of the Building Engineering Education Department, Faculty of Engineering, State University of Medan and a field trial by 12 students to see the students' responses. This study will produce a product in the form of an Animation Video Using the Powtoon Application. Based on the results of the product validation, the percentage of media expert assessment results was 90% which was in the very good category, material experts 92%, in the very good category and the assessment of learning design experts 93.91%. Which is in the very good category Based on student assessments that the Innovation of Developing Learning Animation Videos Using the Powtoon Application in the Learning Design Course for learning is in the good category with a score of 85.77%. It concluded that the Powtoon Animation Video in the Learning Design course for learning that has been developed is feasible and effective for use in classroom learning and improves the competence of Building Engineering Education students at the State University of Medan.

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Author Contributions
Writing—original draft, conceptualization, methodology, formal analysis, investigation, A.H.K.; writing—review and editing, validation, resources, data curation, preparation, M. and A.W. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest
All author declares that there is no conflict of interest.

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