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DEVELOPMENT OF ANIMATION-BASED LEARNING MEDIA ON HYDROLOGY LEARNING OUTCOMES

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ABSTRACT

Quality human resources will quickly acquire knowledge about digital technology, in this case, it is necessary to improve the quality of human resources in the development of learning in the future. The use of interactive learning media in the form of animation can convey information with sound, video, and motion animation that can improve the hydrology learning process. This study aims to determine the effectiveness of using animation media in hydrology learning for D-3 civil engineering students, this study uses the ADDIE method in the control and experimental classes where the pretest and posttest are treated. The results of the animation media are then validated by design experts, materials, media, and also the product trial process, this is done to improve the quality of the animation media. the results of the expert validation assessment obtained an average value of 89.91%, and the average test results were 90%. the results obtained from validation and testing, the animation media is feasible to use and can be continued for data analysis in the development of animation media in hydrology learning, where the results of data analysis show an increase in learning outcomes by 34.45% after using learning media.

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INTRODUCTION.

The learning process continues to develop along with the times and the development of digitalization. Technology is a means in the teaching and learning process using interactive methods Wahid, 2018).

Fast-paced globalization has led to a restructuring of life, affecting both the world of work and school life (Miftah, 2014). Quality human resources will quickly gain knowledge about digital technology, in this case it is necessary to improve the quality of human resources in the development of future learning (Djamaluddin & Wardana, 2019).

Universities should place more emphasis on achieving student outcomes in knowledge of the use of digitalization to welcome the era of globalization (Djamaluddin & Wardana, 2019). The needs of universities and industry differ in the process and expected outcomes such as understanding theory and practice, possessing individual skills, motivation and learning outcomes, in the use of technology (Shoffa, 2021).

College students are considered to have matured and can search, select, manage and use information that has been widely distributed on the internet or digitalization systems (Adisantoso, 2021).

The use of learning media in the teaching and learning process as videos, e-books, animations, and other interactive media is currently being developed in its use. Interactive learning media besid being able to be used in classroom learning can also help students to learn independently (Kaliky, 2018).

Interactive learning media contains information or guides and tutorials in knowing which lessons in the delivery process are in the form of sound, video, and motion animation that can make students more focused in receiving learning (Windiartha,2017). Animation learning media is one of the learning media that utilizes ICT in its application, which aims to change something from an imagination, idea, concept, visual that triggers the birth of continuous interaction so that understanding of teaching materials increases (Faris, in Sadirman 2011).

According to Aravinthan (2010) Animations can serve as effective multimedia tools to engage the students while facilitating and enhancing the student learning experience by explaining difficult concepts through visual means instead of the traditional way of heavy textual based presentation. This is in line with the relevant research by Rohendi (2012) his research show that students' ability to use learning media based on animation has better than students with conventional learning.

Hydrology is the science of the existence and movement of water in our nature. In particular, according to SNI No. 1724-1989-F, the notion of hydrology is the study of the system of occurrence of water, on the surface and in the soil in the form of gases in the air and on the ground surface (Fitriyanti,2018). In an explanation of the science of hydrology, which requires theory and practice, it is necessary to have interactive learning media to improve student learning outcomes and improve the learning system in the class (Saputri, 2019).

The results of the explanation of the background above, the researchers are interested in "Development of Animation-Based Learning Media On Hydrology Learning Outcomes".

METHOD.

This research was conducted for the process of developing the learning outcomes of D-3 civil engineering students by developing animated digital learning media, as for this development model using ADDIE, considering the use of this model is very specific and complete. As for the research process, it is shown in Figure 1 fishbone diagram.

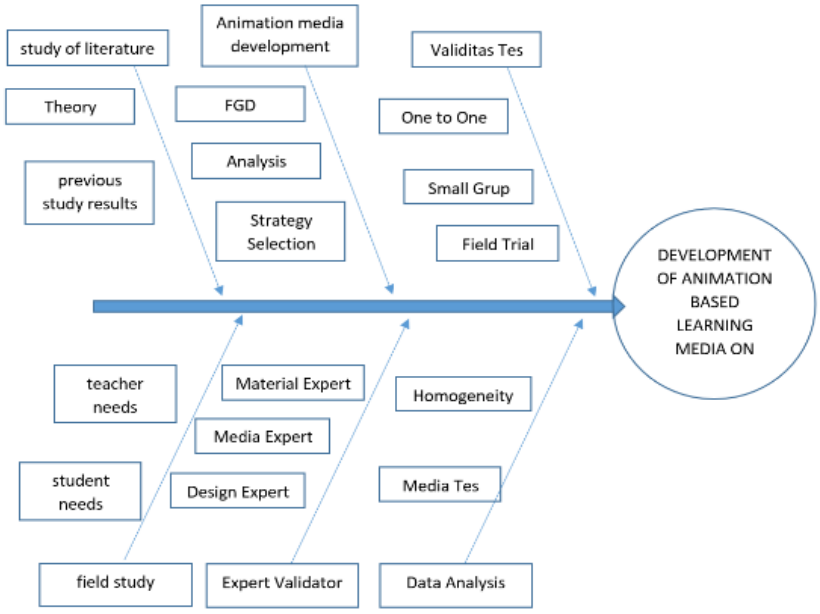

Figure 1. Fishbone Diagram.

The type of data used in this study is quantitative and qualitative data, while the data sources are obtained from expert assessment questionnaires, data analysis, and field trials, while qualitative data is obtained from suggestions, criticisms and input from validators and students.

The effectiveness analysis was carried out using a learning outcome test using item scores and discriminating power, then a test was conducted with a significance level of 0.05 whether the significance of the use of animation media was rejected (H_0) or accepted (H_1), this was done to obtain the results of using media whether there was an improvement of hydrology learning outcomes carried out in the control and experimental classes with the provision of a percentage level of 65% -100%.

RESULT AND DISCUSSION.

This research was conducted for the purpose that animation media can be used in the teaching and learning process and improve hydrology learning outcomes.

The media development stage uses expert validator in providing an assessment of the feasibility of media, materials, and designs to maximize the development of animation media. the validation process uses 3 experts, namely media experts, theory experts, and design experts.

a. Theory Experts.

Validation of theory experts to see the content of the theory in the animation media in hydrology learning which is whether the theory that has been entered into the media is appropriate, the assessment carried out is in the form of scores, as for the results obtained by theory experts, namely:

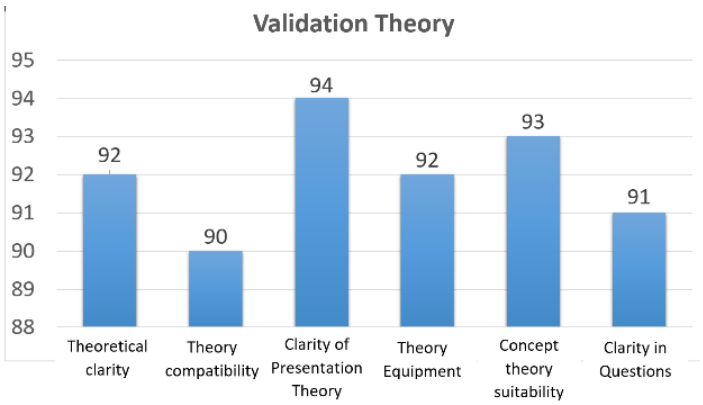

Figure 2. Validation Theory.

The results of the theory expert score obtained an average value of 92% which the hydrological theory contained in the animation media is good and can be understood.

b. Design Expert

The validation of design experts to see interest of animation media in its use, is determined by a questionnaire, in the form of input and opinions from design experts.

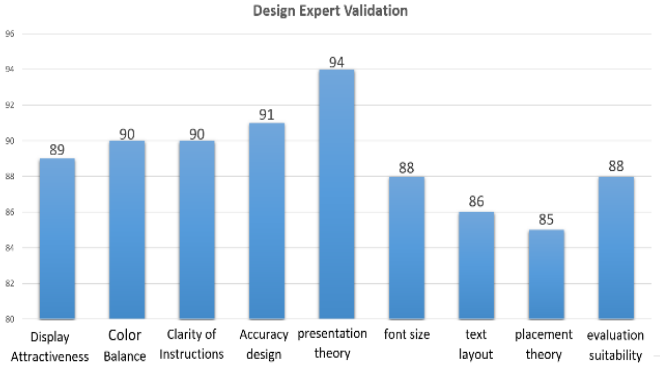

Figure 3. Design Expert Validation.

The results of the validation of design experts with several aspects of the assessment obtained an average value of 89%, which is the result of the assessment is good and can be continued in the use of animation media.

c. Media Expert

Media validation is carried out obtain good and effective animation media quality in the use of the teaching and learning process, while the media validation assessment is shown in Figure 4.

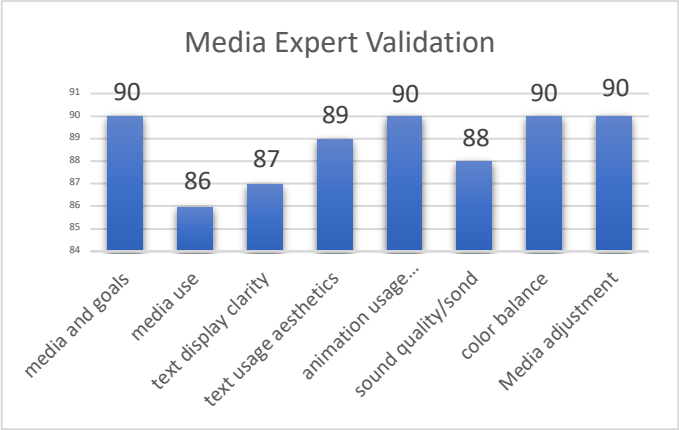

Figure 4. Media Expert Validation.

The value obtained from the validation results of media experts on hydrological animation media with the acquisition of an average value of 88.75% which stated that the results of the animation media were good and suitable for use in the teaching and learning process. The average value obtained from the expert validators is shown in Table 1 and Figure 5, where:

Table 1**.** Analysis of Validation Assessment Results.

No.	Aspect	Average
1	Teory Expert Validation	92%
2	Learning Design Expert Validation	89%
3	Media Expert Validation	88,75%
Average Amount		**89,91%**

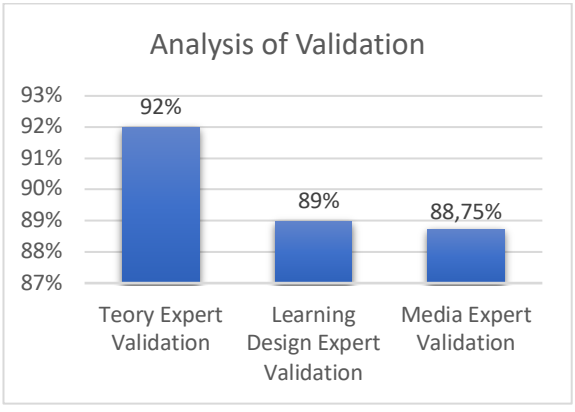

Figure 5. Results Average score of Validation Analysis.

The validity assessment is in the very good category and is feasible to use, where the average score is 89.91%, where the results obtained are still getting suggestions for improvement of animation media, in terms of design, and material. The results of the input from the validation then process improvements and product trials for students.

The trial process was carried out by means of a one to one trial, namely by selecting students individually, and small group trials by dividing students into 5 people with a random system, as for the field/wide trial which amounted to 15 people at random. The test results are shown in table 2.

Table 2**.** Media Product Trial.

No.	Aspect	Avirage
1	One to one Trial	87,2%
2	Small Group Trial	90,3%
3	Field Trial	92,30%
Avirage Amount		**90%**

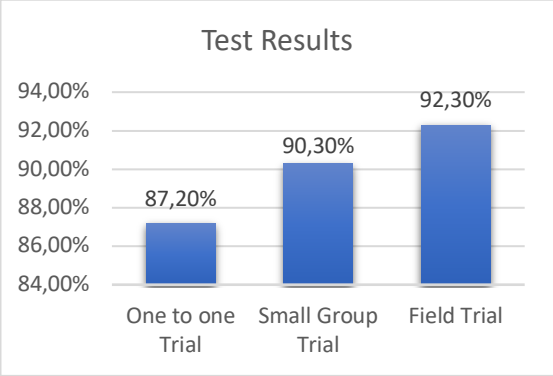

Figure 3. Product Trial Results.

The results obtained in the one-to-one trial were 87.20%, the Small Group was 90.3%, and the field trial was 92.30, with an average value of 90% with very good criteria and appropriate in the development of the Hydrology learning process. the results of the validation assessment are 89.91% and the trial is 90%, it can be concluded that the media can already be used which values are above the assessment threshold of 65%

The analysis of this research uses Civil Engineering D3 students, which is seen from the value before using animation learning media and after, while the value acquisition is shown in Figure 4.

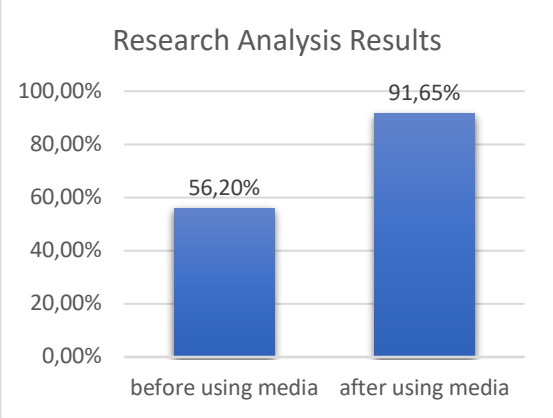

Figure 4. Assessment Analysis.

The value hydrology of learning before using the media was 56.2%, and after using 91.65, from the results obtained, it found that there was an increase in Hydrology learning outcomes for D3 civil engineering students with an average percentage increase of 34.45%, which can be stated that animation

media can improve hydrology learning outcomes with very good criteria. Hal ini berarti bahwa media pembelajaran berbasis animasi dapat digunakan dalam pembelajaran hidrolik.

This is practical and the results of Luppi's research (2019) which states that animation-based learning media is used as a learning medium for students in Purbolinggo Purbolinggo which states that animation-based learning media is very useful for the learning process.

In line with the opinion above, Ansyorie's research (2020) states that the results of the Material Expert Validation show the results of the material validity, which are categorized as very valid with a percentage of 85.0%. The results of Ahi Media's validation show the results of media validity of 88.5% which are categorized as very valid. The results of students' responses to animation-based learning media showed positive results with a percentage value of 91.11%, this shows that animation media can be used in the learning process.

Animation learning media is also effectively used in learning. Animated media can improve learning outcomes. This is in accordance with the results of Umar's research which says that The results of the effectiveness test of the learning model show that between the learning outcomes of the Children's Literature Teaching subject before using animation-based learning media of 70.5% and after using animation-based learning media of 84.7% For this reason, animation-based learning media is effectively used in the Teaching.

CONLUSIONS.

The value of hydrology the learning before using media was 56.2%, and after using 91.65, from the results obtained, it found that there was an increase in Hydrology learning outcomes for D3 civil engineering students with an average percentage increase of 34.45%, which can be stated that animation media can improve hydrology learning outcomes with very good criteria.

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