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## **Development of Science-V Learning Media on the Water Cycle Sub-Theme at Madrasah Ibtidaiyah**

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**Abstract.** Video-based media is currently being developed with the aim of helping students understand learning material, especially science topics. In this research, video media was created using the Power Director application which has been validated in previous research. This research aims to explain the development of video media created using Power Director for the Water Cycle sub-theme at the Madrasah Ibtidaiyah (MI) level. The method used is an effectiveness test to determine the effectiveness of video media on student learning outcomes using the t-test. This research used as subjects fifth grade students at MI Ma'arif Watuagung in Semarang. Based on an analysis of needs in the field, the school requires a learning video media with Power Director. Video media assisted by Power Director that has been created. The t test is used to test the hypothesis. Based on SPSS calculations, it was obtained -9.173 and the increase in student learning outcomes showed 30.43%. This is shown by the pre-test score of 64.78 and post-test score of 76.95. From these data it can be concluded that the Science-V media is effective in improving MI student learning outcomes on the Water Cycle sub-theme.

**Keywords.** Media Development; Learning Videos; Water Cycle; Madrasah Ibtidaiyah

### **INTRODUCTION**

Natural Science (Science) learning media is developing quite rapidly, not only in information technology-based media or conventional media and/or collaboration (Rusmana et al., 2021). The Covid-19 pandemic has had an impact on changing learning and teaching styles, including when the new normal era has begun (Hanik, 2020). Therefore, it is important to carry out a needs analysis to find out what students' learning needs are during the transition period of the pandemic. Needs analysis is carried out by interviews and observations.

The results of interviews and observations with class V MI teacher Ma'arif Watuagung found problems in the implementation of teaching and learning. The problem that exists is that the use of learning media in the form of textbooks is not yet optimal by teachers and students. Textbooks used as a guide have weaknesses, namely that they take relatively long to produce, and students' interest in reading is also lacking. Books contain a lot of writing and the language is difficult for students to understand, this causes students to be less interested in opening books and affects student learning outcomes (Hidayati et al., 2020; Yamtinah et al., 2020). Insufficient learning results make students less enthusiastic when the learning process takes place.

Teachers in learning apply a lecture model without accompanying interesting and creative learning media, which will make students easily bored (Zainuddin, 2019). Students' way of thinking is less developed and only receives information given from the teacher. If students are directly involved in the learning process, the results obtained by

the students will last much longer in the students' memories.

Teachers have busy teaching hours, so the time is used to develop technology-based learning media as a medium of time. Delivering limited material. Information technology-based media has not been utilized in the learning process to deliver Water Cycle material. Thus, student motivation and learning outcomes are not optimal. This is expressed by several students who have not met the Minimum Completeness Criteria (KKM) set at 70. Based on data obtained from 23 students, there are 10 students (43.47%) who have not reached the Minimum Completeness Criteria (KKM). The problem that often arises is that the teacher's delivery is unclear, so that students do not understand what is being conveyed. Teachers and media in... the delivery of material used by teachers is less interesting and even tends to be monotonous using only pictures on the blackboard.

Media is defined as a tool to convey material (Portanata et al., 2017; Tegeh et al., 2015). Science lessons are a field that studies the universe. Teachers create a fun learning process so that learning does not seem monotonous or just rote learning (Astuti, 2019). This encourages teachers to continue to increase creativity in using media during the learning process. So, learning is more interactive and interesting. Science and technology have indeed taken an important role in human life. Technology has provided many conveniences for humans in all activities including learning (Dabbagh & Castaneda, 2020; Pratiwi & Zuhdi, 2019).

Choosing the right learning media can arouse students' interest, motivation and enthusiasm for learning, and even provide psychological benefits (Kurniawati & Baroroh, 2016; Mudiono et al., 2016). Learning media in the form of videos is quite popular, this is proven by several studies. This video-based media can be used online or offline. This media has been developed with various types and techniques.

Several multimedia software can be used to create videos such as Windows Movie Maker and Power Director (Sunami & Aslam, 2021; Yuliasuti & Sholihah, 2021). The use of video media in science learning through the Power Director application can be used via Windows 7 to 10 with the 64-bit version and can also use Android. The Power Director application can also be used even without an internet network. Based on the results of needs analysis and various literature studies, this research was carried out in the context of developing learning media, especially books. This research develops an online book based on the use of the Power Director application with the aim of increasing student learning effectiveness, especially in the Water Cycle material.

## **METHOD**

The method used in this research is the development/Research and Development (R&D) model which is a research method that aims to plan, improve, develop, produce and test superior products, procedures or models. (Saputro, 2007). The stages in this research use the ADDIE model with stages namely analysis, design, product development, implementation and evaluation designed by Dick and Carry (1996). The ADDIE model was developed to design learning systems. The ADDIE model was developed to design learning systems. This method aims to produce or perfect a product and prove the effectiveness of the product. The steps for the development model with ADDIE stages according to Branch are shown in **Error! Reference source not found.**

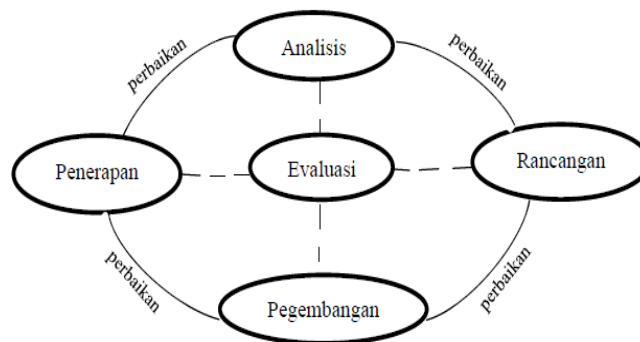


Figure 1. ADDIE Development Model

The research was carried out at the madrasa level, especially at MI Ma'arif in the Watugung area. The development of Power Director-based video media begins with cover design, storyboard (water cycle material flow), learning material, sound recording, and evaluation (practice on the water cycle). Then, a validation process is carried out to see the suitability of the media from a technical and material perspective.

Validation of media and material development was carried out by experts and has undergone improvements. Grid of assessment instruments by media experts as in Table1.

Table1. Validation Grid by Media Experts

Indicator	Rated aspect	No. Instrument Items	Number of Items
Media Design	Instructions for use	1	1
	Design composition	2, 3, 4	3
	Illustration	5	1
Presentation	Language	6, 7, 8, 9	4
	Illustration	10, 11	2
Effectiveness	Ease of understanding	12, 13	2
	Image suitability	14	1
	about evaluation	15	1

The implementation of Power Director-based video media was carried out on 23 class V students with the Water Cycle subtheme. The effectiveness test was carried out using the t-test using SPSS 16.0 software. From the test results, conclusions will be drawn about the effectiveness of the Science-V product.

## RESULTS AND DISCUSSION

This research began with a needs analysis using the interview method to determine field conditions in Madrasahs. Based on the results of the interview, the school uses facilities in the form of Student Worksheets (LKS) and handbooks. Therefore, another medium is needed that is different from the two. Science-V learning media in the form of videos helps visualize the Water Cycle learning material (Annetta et al., 2009). Apart from that, the teacher said that so far students felt bored with the existing system.

In this research, video learning media was created using Power Director software (download access: <https://bit.ly/science-V>). This software has the advantage that the finished video can be opened offline, so it doesn't require an internet quota after downloading it first. The Science-V created for the Water Cycle theme was made with its own creation. Therefore, this research uses a research and development (R & D) model.

The development of learning media in this research uses the research and development (RnD) type, namely the development of video learning media for class V MI with water cycle material assisted by Power Director. The steps in this research using the ADDIE technique include analysis, design, development, implementation and evaluation.

#### ***Analysis(analyze)***

Analyze the need for developing video learning media assisted by Power Director on the Water Cycle sub-theme material that will be used including literature analysis with several previous studies and analysis of existing needs in schools;

#### ***Design(design)***

Carry out initial design of the Scince-V media on the Water Cycle sub-theme material that will be developed, namely creating material that is in accordance with basic competencies and learning objectives, creating a cover design, creating a storyboard, creating learning materials, making sound recordings, and creating practice questions. Storyboarding is an important stage in developing video learning media. In this research, the learning objectives have been clearly explained, there is a correlation between media and Water Cycle material, and the development has a flow of instructions(Imbar et al., 2021).

#### ***Development(development)***

Create Scince-V products, then provide guidance to material expert validators and media experts. Media is repaired according to directions and suggestions. So, the media can be validated by media experts and material experts so that it can be used for implementation trials. Based on the validation results from media experts, there are several aspects of the assessment that are declared very good with a score of 5, namely including accuracy of color selection and composition, attractiveness of images and illustrations, accuracy of text and material, illustrations in accordance with the title, content of the material in accordance with learning objectives, and images. presented in accordance with the material. Meanwhile, other aspects of the assessment are in the good category. Thus, it can be concluded that the development of Scince-V learning media on the Water Cycle sub-theme was declared valid by the media validator with a percentage of 86.67%.

Apart from validation from media experts, the development of Scince-V learning media on the Water Cycle sub-theme was also validated by material experts. The results of the validation were 4 assessment aspects with very good scores. This includes the usefulness of the material, the attractiveness of the media, the completeness of the material related to the title, and attractive images for students' level of understanding. Thus, the validation results from material experts were declared effective with a percentage of 85.34% with a total score of 64 and no notes for improvement. The next stage is product development implementation.

#### ***Implementation(application)***

Application of Scince-V learning media to the Water Cycle sub-theme material to research objects, namely class V students at MI Ma'arif Watuagung, this aims to test the effectiveness of media use;

### **Evaluation(evaluation)**

Evaluating the Scince-V learning media on the Water Cycle sub-theme material which has been applied to 23 MI Ma'arif Watuagung students, for further improvements to be made before finally mass production is carried out. The weakness of this product is that the evaluation questions can only be done offline. The results of using Scince-V media in the Water Cycle sub-theme can be seen in the increase in pre-test and post-test evaluation results, namely an increase of 30.43%, namely from 56.52% to 86.95%, students who experienced complete learning outcomes of the KKM which has been determined to be 70. Based on this increase, the Scince-V learning media on the Water Cycle sub-theme is effective in improving student learning outcomes.



Figure 1. Water cycle display page

Media products have the advantage of having videos, for example the water cycle, this will make it easier for students to see more clearly what is shown in Figure 1. The effectiveness test of video media was carried out on a number of 23 class V students at MI Ma'arif Watuagung with the aim of seeing the effectiveness of the media. Comparison of students' pre-test and post-test results, that after learning was carried out using learning Media Science-V the Water Cycle sub-theme, 20 students experienced an increase in learning outcomes, namely 86.95%, an increase in completeness of 30.43% from pre-test to post-test results. In the pre-test there were 10 students who had not completed it or 43.47%, with an average of 64.78. The post-test results showed that 3 students had not completed it or 13.05%. After receiving treatment using media the average became 76.95. Effectiveness test results using learning Media Science-V on the post-test was higher compared to the pre-test results. This shows a significant increase in the results of using learning Media Science-V on the Water Cycle sub-theme on the learning outcomes of class V MI Ma'arif Watuagung students.

Media Science-V proven effective in improving student learning outcomes, especially in the Water Cycle sub-theme. This is also in line with other research that uses video-based media(Cahyono & Rozikan, 2022; Sunami & Aslam, 2021; Wulandari et al., 2020). Basically, video-based media will help visualize the Water Cycle material so that it looks real. So, students can easily understand the flow of thought from the material and understand it. Synchronization of material and media needs to be taken into



consideration in order to help provide clear and easy to understand presentations (Maryanti & Kurniawan, 2018; Shin, 2020). Apart from that, evaluation will also help prove the effectiveness of the media being developed.

## CONCLUSION

Based on the results of research and development in the discussion above, the following conclusions can be drawn. 1) Development of learning media Science-Vaims to produce new products, using the ADDIE model, namely Analysis, Design, Development, Implementation, and Evaluation; 2) Validation in this research was carried out by two experts, namely a media expert and a material expert. The results of stage 2 media expert validation with a percentage of 86.67% total score of 65 and no notes for improvement. Meanwhile, the results of stage 2 material expert validation with a percentage of 85.34% total score of 64 and no notes for improvement; and 3) Based on the results of field implementation with 23 students, there was an increase of 30.43%, namely from 56.52% to 86.95%, students who experienced complete learning outcomes from the KKM that had been determined were 70.

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