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Enhancing Elementary Science Learning: Development of Animated Video Media for Water Cycle Education

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ABSTRACT

Technological advancements significantly impact the learning process, requiring teachers to develop interactive and engaging educational media. This study aims to create an animated video about the water cycle to enhance students' understanding and make learning more appealing. The research employed the ADDIE development model, which consisted of the analysis, design, development, implementation, and evaluation phases. Validation of the media and material was conducted using a Likert scale instrument through feedback from a teacher at SDN 226 Palembang. The assessment scaled from 2.0 (not feasible) to 3.5 (very feasible). The animated video received a media validation score of 3.6 and a material validation score of 3.7, both categorized as feasible for educational use. The findings indicate that the animated water cycle video is highly suitable for elementary school applications. It effectively supports teachers by visually presenting the water cycle process, enhances student comprehension, and contributes to a more dynamic and engaging learning environment.

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1. INTRODUCTION

In the current era of globalization, teachers are expected to develop creative and innovative approaches to learning (Arni et al., 2024). To achieve this, educators must be capable of designing and developing learning media that not only engage students but also enhance their learning outcomes. Educational technology serves as a crucial system that supports the learning process to achieve desired educational goals (Lestari, 2018). In particular, natural science, defined as the study of nature and its extensive connection to human life (Unique, 2016), plays a vital role in helping students understand the natural phenomena around them. One key topic introduced at the elementary level is the water cycle, which is essential for building students' foundational knowledge

of environmental processes.

Interviews and observations conducted with the fifth-grade teacher of SDN 226 Palembang revealed that many students struggled to understand the concept of the water cycle. This difficulty was attributed to the limited and incomplete learning media utilized during instruction, where examples were primarily sourced from static textbook images or drawings on the board. As a result, the learning experience became monotonous, hindering students' initial comprehension of the material. Without effective learning media, teachers often face challenges in conveying complex concepts (Khasanah et al., 2023). Additionally, teachers at SDN 226 Palembang have rarely incorporated technology-based resources, such as animated videos, into their teaching practices, relying predominantly on traditional textbooks and blackboard explanations.

The abstract nature of the water cycle, which involves continuous transformations of water on Earth, presents significant challenges for young learners when taught without dynamic visual support. According to Priyanto (2009), the use of creative and systematic learning media is essential in facilitating student understanding. Animated videos emerge as a promising solution, providing a more engaging and comprehensible representation of complex processes.

Teachers are increasingly expected to innovate in their instructional methods to better support student learning, particularly when teaching abstract concepts (Lady Alfie et al., 2023). Static two-dimensional images often fail to captivate students' attention or adequately illustrate dynamic processes, resulting in decreased motivation and difficulty relating the material to real-world phenomena. Innovation, defined as the introduction of new ideas, practices, or tools (Nilam et al., 2022), is therefore critical in improving classroom learning.

To address these challenges, the development of animated video-based learning media offers an innovative solution. Animation presents dynamic and interactive visualizations of the water cycle, allowing students to observe key stages such as evaporation, condensation, and precipitation (Nuraeni et al., 2023). Such media make learning more engaging, accessible, and relevant to students' experiences. This approach aligns with Hisbullah (2018), who emphasized the importance of direct experience in developing scientific competencies at the elementary level.

The animated video on the water cycle not only aids teachers in delivering content more effectively but also enhances students' understanding by providing a clear, visual representation of the process. Furthermore, the integration of technology through animated videos encourages students to become more active participants in learning and fosters familiarity with digital tools, enabling learning to extend beyond the classroom through mobile devices.

Based on these considerations, this study seeks to explore how animated video-based learning media can enhance students' understanding of the water cycle material. The research is guided by the following questions: (1) How is the process of developing animated video media for teaching the water cycle in elementary schools? and (2) How feasible is the animated video as a learning medium based on expert validation? Accordingly, the primary aim of this research is to develop an animated video learning medium that is valid and feasible for use in supporting the teaching of the water cycle to fifth-grade students. It also aims to offer an innovative, technology-based alternative to traditional learning methods in order to improve student engagement and learning outcomes.

2. METHODS

This research involved interviews and validation activities with Riska Damayanti, S.Pd., SD, a fifth-grade teacher at SDN 226 Palembang. The interview was conducted on September 9, 2024, followed by the initial media validation on October 2, 2024. Subsequently, both media and material validations were carried out simultaneously on October 9, 2024. The validation process took place at SDN 226 Palembang, located on Jl. Tegal Binangun, Plaju District, Palembang City. SDN 226 Palembang was selected as the research site because the school possesses the necessary facilities, including projectors and sound systems, to support the development and testing of the animated

video learning media.

According to Sudaryono (2016), development research is a method used to produce specific products and to assess their effectiveness. For this study, the ADDIE model was employed, as it offers an effective and efficient system-based approach that fosters interactive processes between students, teachers, and the environment (Hidayat & Nizar, 2021). The ADDIE model was chosen because it provides a systematic and structured framework, ensuring that the development of the animated water cycle video is based on empirical data and designed to produce high-quality, relevant media capable of enhancing student understanding.

In applying the ADDIE model, researchers collected data at various stages to evaluate the feasibility of the developed animated video. The ADDIE model, known for its accessibility and practicality in developing educational products such as modules, textbooks, and multimedia (Putri et al., 2020), consists of five key phases: Analysis, Design, Development, Implementation, and Evaluation (Audia et al., 2021).

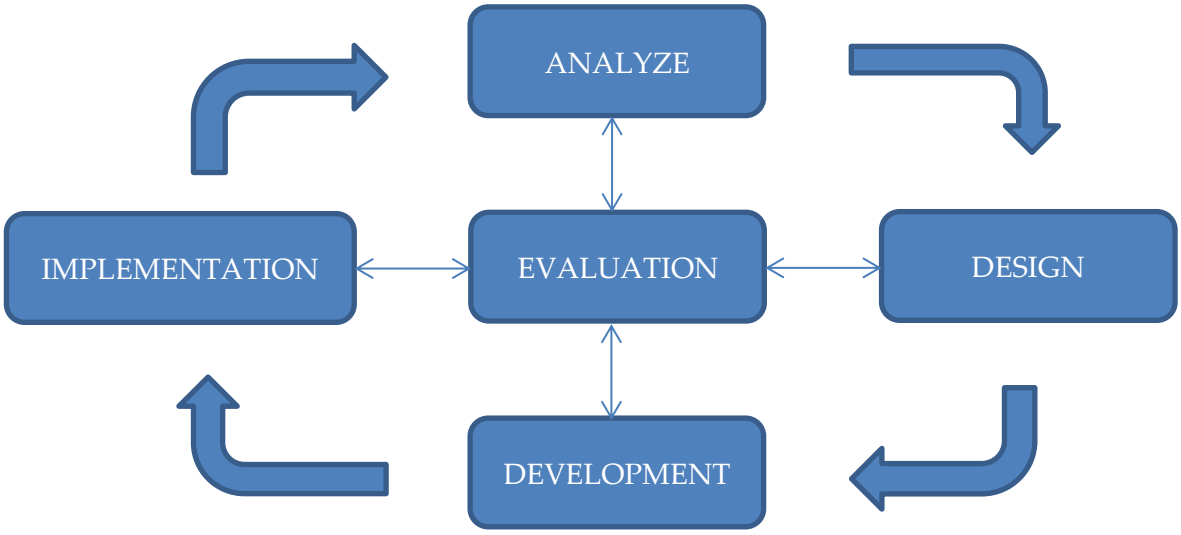


Figure 1. Stages of ADDIE model (Tegeh & Kirna, 2013)

This study employed the ADDIE development model, consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation.

At the Analysis stage, the researchers identified the causes of learning difficulties by conducting interviews with Riska Damayanti, S.Pd., SD, a fifth-grade teacher at SDN 226 Palembang. These interviews helped collect preliminary data and determine the specific learning needs related to the water cycle material at the school.

During the Design stage, the researchers established the intended learning outcomes and selected the strategies and materials necessary for developing the animated video. This included outlining the instructional objectives and selecting content appropriate for the fifth-grade curriculum.

The Development stage focused on creating and validating the learning media. Researchers began designing the animated video using the Kinemaster application and also drafted research instruments, including a questionnaire based on a 4-point Likert scale, to assess the feasibility and quality of the developed media.

At the Implementation stage, the researchers conducted media and material validation trials with Riska Damayanti, the fifth-grade teacher at SDN 226 Palembang. These trials involved testing the developed animated video to evaluate its effectiveness and feasibility as a teaching tool.

The Evaluation stage involved analyzing the validation results. If media and material validation indicated deficiencies, necessary revisions were made. Data collection was based on assessments using a Likert scale, where 1 indicated "strongly disagree," 2 "disagree," 3 "agree," and 4 "strongly agree." Feasibility was determined by the average score: a score of 2.0 indicated "very unfit," 2.5 "not

feasible," 3.0 "feasible," and 3.5–4.0 "very feasible" for elementary school use.

The learning media developed in this study was an animated video focused on the water cycle for fifth-grade students, created using the Kinemaster application, which is accessible via mobile devices. After the product was completed, it was presented to the teacher for validation, and the data obtained were analyzed using qualitative descriptive analysis techniques, following the approach of Fitria et al. (2024). According to Ruhansih (2017), qualitative descriptive research involves explaining processes or events that can eventually lead to generalizations or conclusions. In this study, the product validity data obtained from a single respondent—teacher Riska Damayanti—served as the basis for evaluating the feasibility of the animated video for classroom application.

3. FINDINGS AND DISCUSSION

3.1 Needs Analysis and Development of Water Cycle Animated Video

The needs analysis was conducted through observations and interviews with teachers at SDN 226 Palembang. The results indicated that students faced difficulties in understanding the water cycle due to the lack of learning media capable of illustrating the process dynamically. Teachers predominantly relied on textbooks and blackboard drawings, which led to monotonous lessons and reduced student engagement. Consequently, students exhibited limited understanding of the water cycle material. Furthermore, although the school had technological resources such as projectors and audio systems, teachers seldom utilized them, largely due to the lack of accessible, appropriate teaching materials.

To address these challenges, it became clear that innovative learning media were needed to support teachers in delivering consistent and engaging instruction (MZ et al., 2021). Effective learning media should be designed to meet the needs of fifth-grade students, taking into account their developmental characteristics. In this stage, the researchers compiled and reviewed the specific learning challenges faced by the students. Curriculum analysis was also conducted by examining the school's curriculum framework. SDN 226 Palembang implements the Merdeka Curriculum, which emphasizes student independence and active participation. The animated video developed in this study was aligned with the objectives of the Merdeka Curriculum to ensure its relevance to the school's educational goals.

Based on the identified needs and challenges, the researchers proceeded to develop an animated video focusing on the water cycle to assist fifth-grade students in understanding the material more effectively. The initial development involved designing a storyline that adhered to the learning objectives outlined in the Merdeka Curriculum. Researchers carefully selected and designed the supporting elements, including backgrounds, images, audio, and visual effects. The Kinemaster and PicsArt applications were used to create and edit the animation and backgrounds, while the Audio Remover tool was employed to enhance the sound quality by eliminating background noise.

The animated video was structured to present the water cycle material in a clear, visually appealing, and engaging format. The integration of dynamic images and interesting audio was intended to improve students' attention and learning outcomes. Through this media, students could better visualize the stages of the water cycle—evaporation, condensation, and precipitation—thus making the learning process more effective and enjoyable.

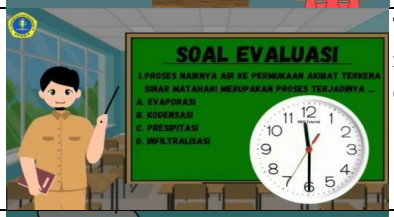
Figure 2. Application used to create animated videos

3.2 Animated Video Development for Water Cycle Instruction

After finalizing the material selection and designing the storyline, the researchers proceeded to develop the animated video based on the prepared script and the collected content. The resulting learning media product is an animated video created using the Kinemaster and PicsArt applications. According to Muryaningsih (2021), the use of learning media in the classroom can significantly enhance the clarity of the material delivered by the teacher. The presence of a pre-written script and material tailored to the characteristics of the target students ensured that the video production process was organized and efficient. The animated video produced includes several key components: (1) a brief explanation of the water cycle, including evaporation, condensation, precipitation, infiltration, and transpiration; (2) a detailed presentation of the water cycle process; (3) an overview of the importance of water for life on Earth, highlighting its role for humans, animals, and plants; and (4) a set of learning evaluation questions. To capture and maintain students' attention, the video was designed with visually appealing text, vibrant color visuals, engaging sound, and dynamic animations, all integrated into a cohesive unit. Students can access the animated video via the YouTube platform through the following link:https://youtu.be/NTYJnBGzY-g?si=K7ck5Co-d9wKjqJN. A detailed product description is presented in Table 1 (Figure 1) below.

Table 1. Initial product display

No.	Products produced	Information
1		The opening display of the animated video starts from greeting students, self-introduction and explanation of what will be discussed.
2		The first video shows an explanation of the water cycle and the processes of evaporation, condensation, precipitation, infiltration, and transpiration.

3		The second video display, an animated video of the water cycling process designed with moving animations and stories written in such a way as to make students better understand the process of water cycling on earth.
4		The third video shows an explanation of the benefits that water provides for life on earth, including the benefits of water for humans, animals and plants.
5		The third video display, the learning evaluation stage, invites students to answer the questions given. The questions are multiple-choice.
6		Display the closing video, greeting students to continue to be enthusiastic in learning and motivating students so that the explanation given can be understood.

3.3 Feasibility Testing and Validation of the Animated Video

After completing the development of the animated video, the researchers proceeded to test its feasibility for use in elementary school learning environments. The feasibility assessment involved a validation process conducted with a teacher respondent, Riska Damayanti, S.Pd., SD, from SDN 226 Palembang. This validation focused on both the media and the material content presented in the animated video. To carry out the evaluation, a 4-point Likert scale assessment instrument was employed, where the respondents rated various aspects of the media and material.

The media validation aimed to assess the overall feasibility, clarity, attractiveness, and appropriateness of the animated video for supporting the learning process. In particular, it evaluated the visual and audio quality, the relevance of the content to the curriculum, and the media's potential to enhance student engagement and understanding. According to educational research, validation from subject-matter experts or practitioners is essential to ensure that the developed learning media meets pedagogical standards and aligns with student needs (Arsyad, 2015).

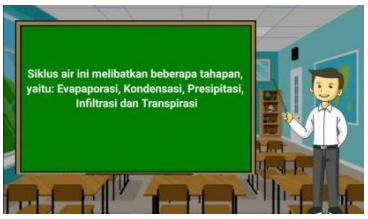
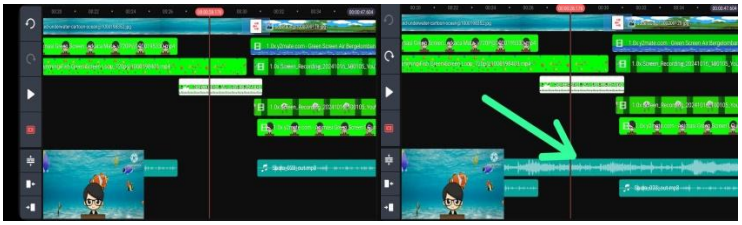
The results of the media validation process provided critical insights into the strengths and areas for improvement of the animated video before its broader application in classroom settings. The detailed outcomes of the media validation can be seen in Table 2 below.

Table 2. Media Validator

No.	Assessment Element	Assessment score
1	Background display matches the theme	1
2	Beautiful color scheme	4
3	Balance between music and story	3
4	The sound produced can be heard clearly	1
5	Sound and animation are in line with the explanation	1
6	Image settings and animations in line	1
7	The material discussed is in accordance with the animated images presented	3
8	Animated images and written text are attractive and clear	2
9	The finished picture is interesting and can be applied to everyday situations.	1
10	The videos are clear and of decent quality.	3
11	The video content is consistent with the subject matter.	4
	amount	26
	Average number of validation result scores	2.3

The results of the validation of animated video media show an indicator of 2.3, meaning that the learning media is not very feasible to be applied in elementary schools. So it is necessary to repair the animated video learning media. At this stage, the improvement of animated video learning media and media feasibility tests are carried out again. The animated video was validated by teachers to ensure the accuracy of content, learning design, and learning media aspects (Ponza et al., 2018). The following are areas that need to be improved based on the results of media validation, namely 1) Adding a video story in the second part about the process of the water cycle, 2) The explanation of the benefits of water is too monotonous so it needs to be improved into an interesting animated video again, 3) There is no accompanying music so that accompanying music is added so that the audio in the video is more pleasant to hear. After that, researchers made improvements to the product based on the validator's recommendations and the literature that had been found. Table 3 below shows the improvements made.

Table 3. Product display before and after validator revision

No.	Before revisions	After the revision	Information
1			The first video only has an explanation video, which makes the video less interesting. The addition of this story will make the animation video more interesting and make the animation video less monotonous, making it easier for students to understand the water cycle material because they will be able to see firsthand the process of the water cycle, not just an explanation.
2			The video on the benefits of water is too monotonous for elementary school children. So revisions need to be made, by making videos not only contain explanations but stories related to students' daily lives. making video stories related to students' daily lives can foster students' enthusiasm in learning, so that students will be more active in the learning process.
3			The first video in the animation video did not have accompanying music, which made the audio in the animation video too empty and made the explanation audio less interesting. The researcher added accompanying music to the animation video to fill the void in the explanation audio. The addition of accompanying music will be able to help clarify the audio sounds in the animation video and make the explanation audio more pleasant to hear.

After the revision, the animated video underwent a second round of media validation to assess its feasibility and effectiveness for application in elementary school settings. This stage aimed to ensure that the content, visual design, and instructional delivery aligned with educational standards and the cognitive level of the target audience. Feedback from media experts and educators was taken into account to refine the final version. The results of the second validation are presented in Table 4 below.

Table 4. Media validator evaluation

No.	Assessment Element	Assessment score
1	Background display matches the theme	4
2	Beautiful color scheme	3
3	The balance between music and story	3
4	The sound produced can be heard clearly	3
5	Sound and animation are in line with the explanation	4
6	Image settings and animations in line	4
7	The material discussed is in accordance with the animated images presented	4
8	Animated images and written text are attractive and clear	4
9	The finished picture is interesting and can be applied to everyday situations.	4
10	The videos are clear and of decent quality.	3
11	The video content is consistent with the subject matter.	4
	amount	40
	Average number of validation result scores	3.6

Based on the second media validation, the value obtained is 3.6, so the researcher decided that the media was suitable for application in elementary schools because the value obtained showed "very feasible" and did not need to be revised again. After conducting the media feasibility test, the researcher will test the feasibility of the material on the animated video. The material validation test was carried out by SDN 226 teacher Riska Damayannti S.Pd., SD. Palembang using the same Likert scale as the media validation test. The material validation test was conducted to determine the accuracy and suitability of the learning material contained in the learning media with the curriculum and learning objectives at SDN 226 Palembang. The results of material validation can be seen in Table 5 below.

Table 5. Findings from the material validator evaluation

No.	Assessment Element	Assessment score
1	The information displayed is comprehensive and relevant to students' daily lives.	4
2	The material presented is in accordance with the Basic Competencies (KD) to be achieved	3
3	The accuracy of the sequence of information presentation in the animated video is in line with IPAS learning in elementary school	4
4	Appropriateness of the method used in IPAS learning	4
5	Accuracy of examples and illustrations that are related to the students' surrounding environment	4
6	Suitability of learning media with students' developmental stages	4

7	Suitability of materials to the latest developments	4
8	Sequence and incorporation of processes in the animation video according to the flow of thought	3
9	Motivate students to seek further knowledge	3
10	The material presented in the animated video has an appeal to students	4
11	Animated videos are appropriate for students' intellectual abilities	4
12	The animated videos are based on the social and emotional development of the students.	4
13	The material can be conveyed well in animated videos	3
	amount	48
	Average number of validation result scores	3,7

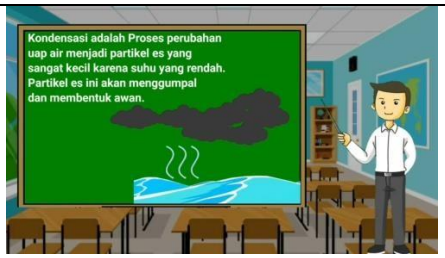
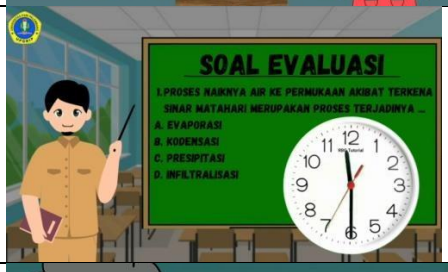
Based on the validation of the material, the value obtained is 3.7, so the researcher decided that the material was suitable for application in elementary schools because the value obtained showed "very feasible" and did not need to be revised again. After conducting media and material feasibility tests, results of 3.6 for material validation and 3.7 for material validation were obtained. Researchers concluded that the learning media of the water cycle animation video is very feasible to be applied in elementary schools because the results in both validation tests show "very feasible".

3.4 Features and Content of the Water Cycle Animated Learning Media

Yaumi (2021) defines learning media as any form of physical equipment purposefully designed to deliver information and foster interaction. In this study, the researchers developed an educational animated video specifically for teaching Natural Science (IPA) material to fifth-grade elementary school students. The animated video illustrates the water cycle process with clear, engaging visuals, helping to make lessons less monotonous and easier for students to understand. The media product was created using the Kinemaster and PicsArt applications. According to Andrasari (2022), animation is a technology-based learning medium that can enhance the quality of learning and help students solve problems related to the material. Thanks to a pre-prepared script and materials tailored to the characteristics of the students, the production of the animated video proceeded smoothly and systematically. The content of the video includes an introduction to key concepts such as the water cycle, evaporation, condensation, precipitation, infiltration, and transpiration, as well as an explanation of the water cycle process, the benefits of water for humans, animals, and plants, and a set of evaluation questions. To capture students' interest, the animated video integrates text, colorful visuals, sound, and animation into a single, engaging unit. The video is characterized by a safe viewing duration of around 10 minutes, formatted in MP4 with HD resolution, presented in Indonesian language, and includes features such as explanations of the water cycle, visualizations of rain formation, benefits of water, and embedded quizzes. The characters used in the animation are also designed to match the preferences of elementary school students, making the learning experience more relatable and enjoyable.

Here is a link to view the developed water cycle animation video:
https://youtu.be/NTYJnBGzY-g?si=K7ck5Co-d9wKjqJN

Table 6. Information of Product

No.	Products produced	Information
1		The opening display of the animated video starts from greeting students, self-introduction and an explanation of what will be discussed.
2		The first video shows an explanation of the water cycle and the processes of evaporation, condensation, precipitation, infiltration, and transpiration.
3		The second video display, an animated video of the water cycling process designed with moving animations and stories written in such a way as to make students better understand the process of water cycling on earth.
4		The third video shows an explanation of the benefits that water provides for life on earth, including the benefits of water for humans, animals and plants.
5		The third video display, the learning evaluation stage, invites students to answer the questions given. The questions are multiple choice.
6		Display the closing video, greeting students to continue to be enthusiastic in learning and motivating students so that the explanation given can be understood.

The animated video-based learning media developed in this study offers several advantages. It is able to visualize abstract processes such as evaporation, condensation, and precipitation, making complex concepts easier for students to understand. The use of engaging animations and storytelling helps students

more easily remember the stages of the water cycle on Earth. Additionally, by incorporating both visual and auditory elements, the media caters to diverse learning styles, and because it is available online, students can access and learn from it anytime and anywhere.

The water cycle animation video was validated using a 4-point Likert scale by Riska Damayanti, S.Pd., SD, a teacher at SDN 226 Palembang. The validation process involved two stages: a media validation test and a material validation test. According to Velda and Mustika (2022), the purpose of validation testing is to achieve a high level of product validity. In the first round of media validation, the video received a score of 2.3, along with feedback for improvements. The teacher suggested several enhancements, including the addition of a story segment explaining the water cycle process to make the video more dynamic and engaging. It was also recommended to improve the explanation of the benefits of water by linking it to students' daily experiences, in order to foster greater enthusiasm for learning. Furthermore, the teacher advised adding background music to make the audio more pleasant and clear. After implementing these revisions, the second media validation was conducted, resulting in an improved score of 3.6, categorizing the media as "very feasible." The media validation focused on the appropriateness of the images, animation characters, design, and audio in relation to the characteristics of elementary school students.

The material validation test yielded a score of 3.7, also placing the product in the "very feasible" category. This test ensured that the content of the animated video was aligned with the elementary school curriculum and competencies, specifically those outlined in the Merdeka Curriculum.

Based on the results of the two validation processes—3.6 for media validation and 3.7 for material validation—it can be concluded that the water cycle animated video is highly feasible for use in elementary school science learning.

The development of this animated video aligns with Utami's (2020) view that technology-based learning media, such as animated videos, significantly enhance the quality of learning and help students overcome difficulties in understanding complex material. The combination of audio and visual media supports better comprehension among students. Previous research by Lukman et al. (2019) also demonstrated that animated videos are highly effective and appealing in fifth-grade science learning, achieving attractiveness and practicality scores of 4.65 and 4.6, respectively, on a 5-point Likert scale. This suggests that animated videos are a valuable tool for facilitating students' understanding of scientific concepts, particularly the water cycle, in elementary education.

3.5 Effectiveness of animated video learning videos

According to Maryanti and Kurniawan (2018), media that combine visual and audio elements can help students overcome boredom and increase their interest in participating in learning activities. The use of animated videos in the classroom has shown a significant positive effect on student understanding, particularly in science lessons about the water cycle. The animated video developed in this study presents clear visualizations and a structured storyline, making it easier for students to grasp abstract scientific concepts such as evaporation, condensation, precipitation, infiltration, and transpiration. Through this media, students become more engaged and better able to comprehend the material delivered by the teacher. Farida et al. (2022) further define animated video as an innovative form of learning media that utilizes multimedia technology to enhance education.

This study demonstrated that the animated video learning media for the water cycle is highly feasible for application in elementary schools. Media and material validation tests yielded scores of 3.6 and 3.7, respectively, both falling into the "very feasible" category. The high feasibility is attributed to several factors, including the alignment of images, backgrounds, colors, and animated characters with the developmental characteristics of elementary students, the high quality and clarity of the audio-visual components, the relevance of the information to students' daily lives, and the compliance of the material with the required Basic Competencies (KD). Additionally, the animated video is designed considering the social and emotional development of students, and the sequence of information presentation is consistent with the objectives of IPAS (Integrated Natural and Social Sciences) learning in elementary schools.

Despite the effectiveness of the animated video, some challenges may arise when implementing it in classrooms. One major obstacle is the need for technological devices such as computers, tablets, or

projectors, which may not be available in all schools. To address this, teachers can print selected frames from the video or share the YouTube link so that students can access the material outside of school hours. Another issue is the passive nature of animated videos, as students primarily watch without direct interaction. Teachers can overcome this by combining the video with interactive activities like posing questions during the video or facilitating group discussions. Additionally, the potential for distraction from overly flashy visuals or unsuitable sound effects must be managed. Teachers should provide clear instructions beforehand, highlighting important aspects students should focus on. Lastly, since animations cannot respond to students' questions in real time, teachers should be prepared to clarify sections of the video and encourage students to ask questions after viewing.

The use of this animated video in the classroom shows a significant positive impact compared to traditional lecture-based teaching methods. Students exhibit greater interest and engagement, and abstract concepts become much easier for them to understand through visual representation. The illustration of the water cycle process notably improves students' comprehension of the material being taught.

Gandamana and Marisa (2022) emphasize that teachers must possess skills in using information and communication technology, especially ICT-based learning media, to effectively integrate resources like animated videos into the classroom. To maximize the effectiveness of animated video learning media on the water cycle, teachers should ensure that the necessary facilities, such as projectors and speakers, are available. They should align learning objectives with the content of the animated video, carefully observe students' responses during its use, and integrate the video with complementary activities such as simple experiments or group discussions to reinforce student engagement and understanding.

5. CONCLUSION

Based on the results of this study, animated video-based teaching materials for the water cycle topic were successfully developed using the ADDIE model, which consists of the stages of analysis, design, development, implementation, and evaluation. The animated video created for the IPAS subject in Grade V at SDN 226 Palembang achieved a validity score of 3.6 for media validation and 3.7 for material validation, both falling into the "very feasible" category. These findings indicate that the animated video is highly suitable for classroom use, offering various advantages such as visualizing abstract processes like evaporation, condensation, and precipitation, presenting engaging stories that aid memory retention, catering to diverse learning styles, and allowing students to learn flexibly anytime and anywhere. However, the research encountered challenges, particularly in ensuring the alignment of video content with specific learning objectives, which was addressed by conducting a careful needs analysis. Another limitation faced was the potential difficulty in accessing the animated video due to internet constraints, for which a solution was provided by offering offline MP4 video files. This study was limited to the development stage only, without full implementation in a classroom setting. Therefore, future research is recommended to focus on classroom application to evaluate the effectiveness of animated videos in improving students' learning interest and understanding of water cycle concepts. It is also suggested that elementary school teachers integrate water cycle animated videos into their lessons to create more interactive and meaningful learning experiences, helping students better visualize and comprehend the complete process of the water cycle, from evaporation to transpiration.

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