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Audio Visual Poster Media Based on Scientific Approach to Water Cycle Material in Fifth Grade Elementary School

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ABSTRAK

Saat ini pembelajaran lebih berpusat pada aktivitas guru. Hal ini dikarenakan belum adanya sebuah media pembelajaran secara kreatif dan inovatif sehingga terkesan monoton serta dapat mempengaruhi hasil belajar siswa menjadi menurun. Tujuan penelitian ini adalah menghasilkan media poster audio visual berbasis pendekatan saintifik materi siklus air pada pembelajaran IPA kelas V sekolah dasar untuk meningkatkan minat dan hasil belajar siswa. Adapun model pengembangan yang digunakan pada penelitian ini yaitu model ADDIE. Subjek uji coba produk dalam penelitian pengembangan ini adalah subjek pada tahap review para ahli dilakukan oleh dua orang ahli materi, Jenis data yang digunakan pada penelitian ini adalah data kualitatif dan data kuantitatif. Hasil dari penelitian berupa (1) media poster audio visual berbasis pendekatan saintifik. (2) validitas media poster audio visual berbasis pendekatan saintifik dengan memperoleh skor rata-rata dari ahli materi, ahli media pembelajaran, dan ahli desain pembelajaran sebesar 4,50 dengan kategori sangat valid. (3) analisis kepraktisan yang diisi oleh guru memperoleh skor rata-rata sebesar 4,81 dengan kategori sangat valid. (4) analisis kepraktisan yang diisi oleh siswa secara perorangan dan kelompok kecil mendapatkan skor rata-rata sebesar 4,59 dan 4,56 dengan kategori sangat valid. Berdasarkan hal tersebut, dapat disimpulkan bahwa media poster audio visual berbasis pendekatan saintifik pada materi siklus air di kelas V sekolah dasar dinyatakan valid dengan kualifikasi sangat baik.

ABSTRACT

Currently, learning is more centered on teacher activities. This is because there is no creative and innovative learning media so that can affect student learning outcomes to decline. The purpose of this study is to produce audio-visual poster media based on a scientific approach to water cycle material in elementary school grade V science learning to improve student interest and learning outcomes. The development model used in this study is the ADDIE. The subject of the product trial in this development research is the subject at the expert review stage carried out by two material experts. The types of data used in this study are qualitative data and quantitative data. The results of the study are (1) audio-visual poster media based on a scientific approach. (2) the validity of audio-visual poster media based on a scientific approach by obtaining an average score from material experts, learning media experts, and learning design experts of 4.50 with a very valid category. (3) the practicality analysis filled in by the teacher obtained an average score of 4.81 with a very valid category. (4) the practicality analysis filled in by students individually and in small groups obtained an average score of 4.59 and 4.56 with a very valid category. Based on this, it can be concluded that the audio-visual poster media based on a scientific approach to the water cycle material in grade V of elementary school is declared valid with a very good qualification.

1. INTRODUCTION

Good learning outcomes can be achieved through a quality learning process. To achieve this, there is a close relationship with student interests (Azhar & Iqbal, 2018; Sulfemi, 2019). This means that if students have high interest, the learning process will be active and able to get maximum results. Currently, many problems arise, namely due to the decline in student interest which causes students to be less enthusiastic in the learning process so that it seems one-way and the material delivered by the teacher is

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not well received and is ignored. Thus, there are three key components that can support the success of learning, namely students, teachers, and learning media (Habibah & Trisnawati, 2022; Simaremare, 2018).

Science learning is in line with current curriculum developments, namely the 2013 curriculum, which emphasizes that learning is based on a scientific approach that aims to make students active, creative, and think critically in solving problems that exist around them (Citrawathi et al., 2016; Narut & Supradi, 2019). According to the Minister of Education and Culture Regulation Number 103 of 2014, the scientific approach is operationalized through the activities of observing, asking, collecting information (trying), reasoning (associating), and communicating (Neldawati & Yaswinda, 2022; Suryaman, 2020). Through a scientific approach, students will be encouraged to be active in building attitudes, knowledge, and behavior to bring students to obtain their own learning outcomes and meanings. Expository learning emphasizes teachers as the center of delivering material to students, which can be called teacher center. This results in students becoming passive without any interaction between teachers and students. One of the learning methods that requires learning media is elementary school thematic learning, especially in the Natural Sciences (IPA) content because it can help students understand learning concepts faster (ImanuelImanuel, 2015; Narut & Supradi, 2019). Moreover, science learning is filled with theories and memorization materials regarding natural phenomena that need to be visualized to students.

We hope that in the world of education there must be innovation and transformation in learning in accordance with the 21st century era so that students can have a pleasant learning experience and do not feel bored when learning, such as learning media (Maksum, A., & Fitria, 2021; Wijaya et al., 2016). Moreover, current learning media prioritizes technological advances to support efforts to update information technology, one of which is audio-visual learning media (Khairini & Yogica, 2021; AK Putri et al., 2023). Learning that requires media is elementary school thematic learning, especially in the Natural Sciences (IPA) content because it can help students to understand learning concepts more quickly (Imaduddin & Khafidin, 2018; AK Putri et al., 2023). Moreover, science learning is filled with theories and memorization materials regarding natural phenomena that need to be visualized to students.

Based on the observation results, it is known that learning is more centered on teacher activities. This is because there is no creative and innovative learning media so that it seems monotonous and can affect student learning outcomes to decline. This can be proven based on data obtained from class V teachers of SD Negeri 1 Medahan, there are 57.41% or it is said that 12 out of 21 students who get mid-semester scores below the KKM (Minimum Requirement Criteria) set by the school, namely the Science KKM is 76. So that some students get below the KKM. During an interview with class V teachers conducted at SD Negeri 1 Medahan, the results showed that during the learning process related to science, 1) students do not focus on following the learning, this is because students are less enthusiastic in listening to the teacher's explanation regarding the learning material. In general, students who have good concentration or focus on following the learning will easily understand the material given and easily apply various information obtained (Sujana & Rachmatin, 2019; Wisada et al., 2019); 2) Students' interest in learning is lacking in participating in learning because they are more focused on teacher explanations, especially when faced with abstract material; 3) Lack of innovative strategies in delivering material because teachers only refer to existing guidebooks.

In optimizing the learning process related to science in elementary schools, the role of teachers is very important in creating an interesting learning atmosphere and in accordance with student characteristics. Learning that can be said to be interesting and in accordance with student characteristics is effective learning through student participation. Efforts that teachers can make in creating interesting and interactive learning to support the above problems through the use of learning media (Nur Jannah, 2020; AS Putri & Aznam, 2020). So interested in conducting research that concentrates on the development of learning media in the form of audio-visual poster media based on a scientific approach to water cycle material. Usually posters are a type of visual media, but they are developed into audio-visual poster media based on a scientific approach.This audio visual poster media is a combination of3 types of media in the form of text, images, and audio can be applied simultaneously in a poster media without reducing the characteristics of the poster media only adding audio to it. Audio visual posters have advantages and high appeal because they highlight the power of messages, audio visuals and colors so that they are able to capture students' attention by providing an instillation of the concept that the maker of the audio visual poster wants to convey according to its purpose (Pernanda & Astuti, 2021; Sholehah et al., 2020).

Based on the problems encountered, the solution offered is to develop audio-visual poster media based on a scientific approach to facilitate the concept of continuous water circulation processes, namely from abstract to concrete, entitled Development of Audio-Visual Poster Media Based on a Scientific Approach to Water Cycle Material in Grade V Elementary Schools. The novelty of this research introduces a unique combination of poster media with audio-visual elements that are designed interactively, which were previously rarely used together in science learning at the elementary school level. This innovation creates

a multimodal learning experience that can stimulate students' various senses, so that it is expected to increase students' understanding and involvement in abstract concepts such as the water cycle.

2. METHOD

This research is a type of research and development that aims to produce media, measure the validity and practicality of a learning product. The learning product is in the form of Audio Visual Poster media Based on Scientific Approach to Water Cycle Material in Grade V Elementary School using the ADDIE development model consisting of the analysis stage, design stage, development stage, implementation stage, and evaluation stage (Idayatun et al., 2022).

The first stage of analysis consists of three parts, namely needs analysis, characteristics analysis and curriculum analysis. The second stage of design is divided into three activities, namely determining the application, making a flowchart and storyboard of the media to be developed, and consulting the media design with the supervising lecturer. The third stage of development begins to produce audio-visual poster media based on a scientific approach based on the media design that has been determined and the final results of the product will be subjected to product validation analysis by experts. The fourth stage of implementation is carried out by disseminating audio-visual poster products based on a scientific approach to the science content of the water cycle material in class V at SD Negeri 1 Medahan to test the practicality of the product by teachers and students, so that later it can be used as a supporting learning tool. The fifth stage of evaluation is where at this stage an evaluation or revision of the audio-visual poster media product based on a scientific approach is carried out to improve the resulting product. The subjects of this study were 3 experts consisting of material experts, learning design, and learning media, 1 practitioner, namely a grade V teacher at SD Negeri 1 Medahan, 12 students divided into 3 people as individual test subjects and 9 people as small group test subjects.

The method and instrument used to collect data in this study is the questionnaire method. The questionnaire instrument is needed to determine the validity and practicality of the media developed. In this study, the instrument used to collect data is a rating scale with a scale of 1-5 (Purwani et al., 2019). The questionnaire instrument grid can be seen in Table 1, Table 2, Table 3, and Table 4.

Table 1. The Material Expert Questionnaire Instrument Grid

No	Aspect	Indicator	Item Number	Number of Items
1	Curriculum	Suitability of material with KD.	1	
		Suitability of materials with learning indicators.	2	3
		Suitability of the material to learning objectives.	3	
2	Material	Coverage of material.	4	
		Attractive material display.	5	
		Provides critical thinking experiences.	6	
		Accuracy of presentation of material based on existing facts.	7	7
		The material is supported by appropriate media.	8	
		The concepts presented can be clearly explained logically.	9	
		The initial material is able to relate to students' prior knowledge.	10	
3	Grammar	Use of appropriate and consistent language.	11	
		The language used is appropriate to the characteristics of the students.	12	2
Amount				**12**

Table 2. The Grid of the Learning Media Expert Questionnaire Instrument

No	Aspect	Indicator	Item Number	Number of Items
1	Visual	Image clarity.	1	
		Suitability of shooting.	2	
		The attractiveness of colors, backgrounds, images, and animations.	3	6
		Image movement speed.	4	
		Use the right typeface and font size.	5	

No	Aspect	Indicator	Item Number	Number of Items
		The screen layout display is harmonious and balanced		
2	Audio	Clarity of the narrator's voice.	6	
		Sound rhythm.	7	3
		The suitability of music to the material.	8	
3	Eligibility	Suitability of media to purpose.	9	2
		Suitability of media to student characteristics.	10	
4	Operation	Ease and smoothness in operation.	11	1
		Amount		**12**

Table 3. The Learning Design Expert Questionnaire Instrument Grid

No	Aspect	Indicator	Item Number	Number of Items
1	Objective	Clarity of learning objectives.	1, 2, 3	3
2	Strategy	The delivery of the material contains logical steps.	4	
		Provide examples in the presentation.	5	
		Helps to remember previous skills and knowledge.	6	5
		Provide students with opportunities for independent learning.	7	
		Able to motivate students	8	
3	Evaluation	Provides practice questions for conceptual understanding.	9	2
		Clarity of instructions for completing the questions.	10	
		Amount		**10**

Table 4. The Practitioner and Student Questionnaire Instrument Grid

No	Aspect	Indicator	Item Number	Number of Items
1	Appearance	Attraction.	1	5
		Text readability.	2	
		Image clarity.	3	
		The narrative is clear.	4	
		The appeal of color.	5	
2	Material	The material is easy to understand.	6	2
		Clarity of material description.	7	
3	Motivation	Audio visual posters can activate learning.	8	2
		Audio visual posters according to student characteristics.	9	
4	Operation	Ease of use	10	2
		Can be used repeatedly.	11	
		Amount		**11**

The data analysis technique of this development research uses qualitative descriptive analysis techniques and quantitative descriptive analysis techniques. Qualitative descriptive analysis techniques are used to process data from reviews from material experts, learning media experts, learning design experts and practitioners. This analysis technique is used ingrouping all qualitative data in the form of input and suggestions from experts for the results of a product made. Quantitative descriptive analysis techniques can be used to collect data using research instruments throughexamine and explain the researched matter with data in the form of numbers. The scores obtained are then calculated as an average to determine the validity that will be developed. The average score obtained is then converted using a five-scale conversion guideline to determine the validity of each media component that is developed as a whole. In order to be able to follow up and provide meaning and make a decision, the provisions can be used on Table 5.

Table 5. Five-point Scale Conversion Guidelines

Score Range	Clarification/Predicate
4, 22 – 5	Very Valid
3.41 – 4.21	Valid
2.61 – 3.40	Quite Valid
1.80 – 2.60	Invalid
1 – 1.79	Totally Invalid

(Mukholifah, et al., 2020)

3. RESULTS AND DISCUSSION

Results

The product produced in this study is an audio-visual poster learning media based on a scientific approach to the water cycle material for fifth grade elementary school students. The product that was made has gone through the stages of the ADDIE model. The analysis stage consists of three parts, namely needs analysis, characteristics analysis, and curriculum analysis. The results of the needs analysis carried out through observation and interviews indicate that an effective media is needed to attract students' attention in the learning process in the classroom. The results of the characteristic analysis show that fifth grade students need audio-visual media according to student characteristics to make it easier for students to analyze the material in building their concepts and knowledge independently. The results of the curriculum analysis show that the material in the media can really cover the complete contents of the water cycle material and still adjust to the teacher's book. Therefore, it is necessary to develop more varied and effective learning media. Based on the analysis of the learning curriculum, the Basic Competencies (BC) and Learning Indicators needed to be better understood by students in learning are selected. The Basic Competencies (BC) and Learning Indicators are presented in Table 6.

Table 6. The Basic Competencies (BC) and Learning Indicators

Basic Competencies (BC)	Indicators of Competence Achievement
3.8 Analyzing the water cycle and its impact on events on earth and the survival of living things.	3.8.1 Analyze the stages in the water cycle. 3.8.2 Correlating the impacts of the water cycle on events on earth. 3.8.3 Summarizing the impact of the water cycle on events on earth.

At the design stage, the stage of designing the design concept of the media is presented in the form of a flowchart for the arrangement of the media content flow and a storyboard for the sketch of the media being developed. Next, determine the application to be used, namelyThe Canva application is used to produce poster designs. The Adobe Premiere After Effect application is used to add animation to the poster so that the writing when it appears can be zoomed as the main feature. Furthermore, the Adobe Premiere Pro application is used to add audio to clarify the contents of the material contained in the media. Continued to consult on the design of audio-visual poster media based on a scientific approach with the supervising lecturer,

At the development stage, the implementation of the development stage includesactivities for making audio-visual poster media based on a scientific approach according to a previously determined design into a real product.In making media, what is done is making a poster using the Canva application. After the poster is finished, each part of the poster is cut/separated in a transparent image format so that it can be given an animation effect. The cut parts are then animated using the Adobe After Effect application. The format produced after using this application is in the form of a video, these video pieces are then combined into one using the Adobe Premiere Pro application according to the order in the poster. In addition, sound effects and background music are added to the video to increase the audience's appeal to the audio-visual poster that is made.The following audio-visual poster media based on a scientific approach have been created, which are grouped into opening, core and closing, which can be seen at Figure 1.

Figure 1. Media View

After that, a media validity test was conducted by material experts, learning media experts and design experts. The results of the media validity test are presented in Table 7.

Table 7. Results Media Validity Test

No	Test Subject	Score/Value (Average)	Information
1	Material expert test	4.41	Very Valid
2	Learning media expert test	4.50	Very Valid
3	Learning design expert test	4.60	Very Valid

Based on Table 7, shows the results of the validity test of audio-visual poster media based on a scientific approach as a whole has an average score/value of very valid. So that the media can be used in the learning process. After the validity test, a product revision was carried out based on suggestions and comments that had been given by material experts, learning media experts, and learning design media in order to improve and perfect the media that was developed.

In the implementation stage, it is carried out through the distribution of audio-visual poster products based on a scientific approach to the science content of the water cycle material in class V at SD Negeri 1 Medahan to conduct a practicality test. The results of the media practicality test are measured through the response of teachers as practitioners and the responses of students individually and in small groups. The results of the media practicality test by teachers and student responses are presented in Table 8.

Table 8. The Media Practicality Test Results

No	Test Subject	Score/Value (Average)	Information
1	Practitioner/teacher test	4.81	Very Valid
2	Individual trial	4.59	Very valid
3	Small group trials	4.56	Very Valid

Thus, audio-visual poster media based on a scientific approach gets a score of being qualified as very practical.The results of the study indicate that audio-visual poster media based on a scientific approach to the water cycle material in grade V of elementary school is feasible and valid for use in a learning process.

The five stages of evaluation are carried outby analyzing the media at the implementation stage, whether there are still deficiencies in the product or not. If the product is no longer improved, it is worthy of being distributed as a media in the learning process, especially in the water cycle material.

Discussion

This research produces a product in the form of Audio Visual Poster media Based on Scientific Approach for fifth grade students of SD Negeri 1 Medahan. This media discusses the material, especially the science content, namely the water cycle. Of course, this audio visual poster media based on a scientific

approach is different from the usual poster media, but this poster media has visuals and audio and no one has developed similar media on the material on the science content about the water cycle. The media developed is based on needs analysis and characteristic analysis found in the target school. So that through this media, students can be helped to visualize the material to improve understanding of the material and student interest in following the learning process in order to be able to get maximum learning outcomes. Audio visual poster media based on a scientific approach is suitable for use because, first, when viewed from the material aspect, the audio visual poster media based on a scientific approach is in accordance with the scope of the material contained in the K13 curriculum book, namely based on basic competencies, indicators, and learning objectives to avoid the material being given is not too much or not too little or can be adjusted to the sources used by other schools so that the scope of the material is the same (Fatimah & Santiana, 2017; Pernanda & Astuti, 2021).

The material contained in the audio-visual poster media has been arranged in an interesting way with interesting images that can clarify the relationship between the content of the material and real-world learning, so that students are more interested in knowing and deepening the material that will be explained (Kusumawardani et al., 2018; Sholehah et al., 2020). Selection of appropriate text by meeting the criteria of adequacy, meaning that the text containing the material does not fill the display of the media so as not to blur the reader's focus to find the material points so that it can be clearly logical. The use of language style in audio-visual poster media based on a scientific approach is flexible and not rigid with the language used, namely Indonesian and communicative, so that it has an impact on creative thinking, proactivity and communicativeness in accordance with the K13 curriculum (Cholimah et al., 2020; Hanum & Annas, 2019).

Second, if viewed from the aspect of learning media that audio-visual poster media based on scientific approach has been made interestingly where a poster that is generally only through visuals, but this time accompanied by its audio appearance because it is seen based on the different learning methods of students. Some students learn faster through visuals, some students through audio and some through audio visuals so that the concept of using audio-visual poster learning media based on scientific approaches was born. Likewise, the most important thing is that the choice of colors used can affect student psychology in attracting attention to create a pleasant atmosphere (Fiteriani et al., 2021), where the dominant color used is green which gives the impression of balance and harmony to arouse calm, blue can provide self-confidence or optimism, and white gives the impression of cleanliness and precision.(Listya, 2018). The use of letters that are not complicated and clarify the narrative in it with a combination of water music that can be adjusted to the concept of the material, namely the water cycle material, in order to create a relaxed atmosphere and focus on the material in the learning media (Wisada et al., 2019). In addition, do not forget the feasibility of an audio-visual poster media based on a scientific approach that has been packaged so that it can be adjusted to the differences in student characteristics to achieve the desired goals, such as the use of a scientific approach method.

Third, when viewed from the aspect of learning design, audio-visual poster media based on scientific approaches have been created based on learning objectives and methods that have been formulated. Because adjusting the media to the flow of learning objectives will certainly produce a quality and effective learning process (Nurrita, 2018). The content of the material in the audio-visual poster media based on the scientific approach contains various question and answer activities as one of the syntaxes of the results of observing and asking, so that it can raise students' enthusiasm and can make students solve their own problems to obtain knowledge directly which can help remember long-term learning in accordance with the objectives of the scientific approach contained in K13 (Fitrah et al., 2022; Maulidina et al., 2018).

Fourth, through the practical aspect, audio-visual poster media has been designed with water cycle material where the description of the material is clear and complete, so that it helps teachers or practitioners in the learning process because it can make it easier for teachers or practitioners in the learning process (Fatimah & Santiana, 2017; Wulandari et al., 2023). In addition, it can provide a new place for students to learn or raise students' psychology by being given media assistance by teachers. In the concept of its use, of course, it can be used easily and practically, such as being used repeatedly, interesting and easy to obtain clarity of material. The statement is supported that good media is media that can be used easily and enjoyably for students and teachers (Audhiha et al., 2022; Nasution & Siregar, 2019).

Based on the discussion above, the implications of audio-visual poster media based on a scientific approach are:learning media to get interesting and meaningful learning activities, students can play an active role during the learning process, besides that it can also ease teachers in the process of delivering materials and provide motivation for teachers to develop their creativity. However, this study has not yet tested the effectiveness of the media. Therefore, it is recommended that teachers and further research apply audio-visual poster media based on a scientific approach to learning activities in order to determine the effectiveness of the media properly.

4. CONCLUSION

Audio-visual poster media based on a scientific approach to the water cycle material in grade V of elementary school received assessment and analysis results that showed that the media was feasible to be applied based on assessments of the material, learning media, learning design, and practicality aspects. So it is recommended for teachers to use audio-visual poster media based on a scientific approach to the science content of the water cycle material because it can attract students' interest and motivation to be active in the learning process, this can indirectly improve learning outcomes, especially science content.

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