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DEVELOPMENT OF CONTEXTUAL MEDIA DIORAMA OF WATER CYCLE IN SCIENCE SUBJECT IN ELEMENTARY SCHOOL

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Abstract
This research is motivated by the fact that there are still many students who do not understand the water cycle material in science lessons because teachers do not use learning media in the learning process, this causes a lack of student understanding of the water cycle material in science lessons. The purpose of this study is to develop water cycle diorama media so that it meets the eligibility criteria to be implemented in science lesson content. This research uses the Research and Development (R&D) method or commonly referred to as development, with a 4D model. In the 4D model, there are several stages such as, define, design, develop, and disseminate. The data collection process uses descriptive data results through questionnaires. The descriptive data was obtained from responses and suggestions by experts and respondents of grade V students. The subject of this study was grade V students of SDN Ciracas 11 Pagi. The study was conducted in small groups and large groups. A small group consists of 5 students of Class V, while for large group consists of 32 students of Class V. Based on the results of validation by media experts and material experts, it shows that water cycle diorama media is very suitable to be used as a learning medium on water cycle material and the results of research to small groups with 5 students and large groups with 32 students, It was concluded that this water cycle diorama media is also very suitable to be used as a learning medium for water cycle material in science lesson content in grade V elementary school. The results of validation by media experts got a very valid category, for the results of validation by material experts got a very valid category, and the responses obtained by 5 students in this study got a very decent category, and responses to 32 students got a very decent category. Based on the results of the acquisition, it was concluded that the water cycle diorama media in the content of science lessons for grade V elementary school was said to be very feasible to use.
Keywords: *learning media; contextual; diorama; water cycle; IPA*

Abstrak
Penelitian ini dilatarbelakangi oleh masih banyak siswa yang belum memahami materi siklus air pada pelajaran IPA, dikarenakan guru tidak menggunakan media pembelajaran dalam proses pembelajaran, hal ini menyebabkan kurangnya pemahaman siswa terhadap materi siklus air muatan pelajaran IPA. Tujuan penelitian ini adalah untuk mengembangkan media diorama siklus air sehingga memenuhi kriteria kelayakan untuk dapat diimplementasikan pada muatan pelajaran IPA. Penelitian ini menggunakan metode *Research and Development* (R&D) atau biasa disebut dengan pengembangan, dengan model 4D. Pada model 4D terdapat beberapa tahapan seperti, *define* (pendefinisian), *design* (perancangan), *develop* (pengembangan), *disseminate* (penyebarluasan). Proses pengumpulan data menggunakan hasil data deskriptif melalui angket. Data deskriptif tersebut didapatkan dari tanggapan dan saran oleh para ahli dan responden siswa kelas V. Subjek penelitian ini adalah siswa kelas V SDN Ciracas 11 Pagi. Penelitian ini dilakukan dalam kelompok kecil dan kelompok besar. kelompok kecil terdiri dari 5 siswa Kelas V, sedangkan untuk kelompok besar terdiri dari 32 siswa kelas V. Berdasarkan hasil validasi oleh ahli media dan ahli materi menunjukan bahwa media diorama siklus air sangat layak digunakan sebagai media pembelajaran pada materi siklus air pada muatan pelajaran IPA di kelas V SD. Hasil validasi oleh ahli media mendapat kategori sangat valid, untuk hasil validasi oleh ahli materi mendapat kategori sangat valid, dan respon yang didapatkan pada 5 siswa dalam penelitian ini mendapat kategori sangat layak, serta respon kepada 32 siswa memperoleh kategori sangat layak. Berdasarkan hasil perolehan disimpulkan bahwa media diorama siklus air pada muatan pelajaran IPA untuk kelas V SD dikatakan sangat layak digunakan.
Kata Kunci: media pembelajaran; kontekstual; diorama; siklus air; IPA

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Introduction

Education is a need that must be obtained by every human being. Basic education is the main thing before stepping into the next level of education (Wahyu et al., 2019). Education has components that are interrelated with each other such as goals, content, media, methods, techniques, approaches, environments, and learners (Rahmaniyah et al., 2023). These components are interconnected with each other, such as the components of learning media. In elementary school education, media is needed to support the success of the teaching and learning process (Fitria et al., 2021). According to Wahyu et al., (2019) in the implementation of learning in elementary schools, learning must prioritize personal experience to get to know the surrounding environment, such as in the learning process that uses contextual media.

According to Fadillah &; Ninawati, (2020) media is a way that students to make it easier for students to understand the material in the learning process. Meanwhile, according to Nurrita, (2018) learning media is very important, namely as a means of delivering information to be clearer and more efficient. According to Fajri et al., (2020) to achieve learning goals, innovative and creative media are needed. Learning media makes it easier for teachers to deliver material more efficiently, besides that choosing the right media can make students better understand the material they want to deliver (Doyan et al., 2020). According to (Palupi &; Ninawati, 2022), learning media plays a very important role in the learning process because it functions as a messenger in the form of material effectively. In addition, according to Ridho et al., (2021), the use of learning media can build psychological influences on students, increasing learning motivation.

Science discusses events that are around us, including living and non-living things (Doyan et al., 2020). According to Ninawati et al., (2021) science itself is a study of the universe. The content of science lessons is focused on observation, experimentation, data collection, and inference of results. From some of these opinions, it can be concluded that science or science is a subject that discusses the air on earth is not exhausted and with human life, and studies the universe. According to Zulherman* et al., (2021) the nature of the science learning process emphasizes observation, experimentation, data collection, and inference of results. At the elementary school level, science is very important to learn because students can get to know and learn about nature and the surrounding environment (Triyanti et al., 2021). In science lessons, students are required to be able to develop their abilities and improve direct experience so that students understand the surrounding natural environment, such as in the water cycle material (Kristyowati &; Purwanto, 2019).

Water cycle material explains that water on earth does not run out, this happens because of the rotation process or commonly called the water cycle and human activities that can affect the water cycle (Mufidah et al., 2020). By studying this material, students can understand and care about activities or activities around them, such as water cycle material. In this material, contextual or real media is needed so that students better understand how the process of water circulation on earth (Firda &; Istianah, 2022). Several previous studies have examined the development of diorama media in the learning process such as: (1) Prabowo, (2019), (2) Suhana et al., (2022), and (3) Firda &; Istianah, (2022), the results of the development of previous studies showed changes in the learning process for the better, and the diorama media developed was very worthy of being a medium in the learning process, but in previous studies, the development

of dioramas carried out was only three-dimensional without audiovisual and differences in the material presented. Therefore, it is necessary to develop innovative media in the learning process, so that students can gain direct experience. According to Fajrina et al., (2018), contextual-based media is a solution as a support in the learning process in elementary schools, with contextual media or real media students can directly connect the learning process with daily life that students often see in the surrounding environment. Contextual media that are in accordance with the water cycle material in science learning content are diorama media (Palupi &; Ninawati, 2022).

Diorama media according to Hasanah & Muryanti, (2019) is one of the 3-dimensional media as a duplicate that represents its appearance. Meanwhile, according to Evitasari &; Aulia, (2022) diorama is an activity depicted in a three-dimensional media in small size. In this case, the diorama is a 3-dimensional media that explains an activity in a state according to the results of research conducted by Prabowo, (2019). With concrete media, this diorama is expected to improve students' learning experience directly in understanding the material of the water cycle. In this diorama will be made like an illustration of the ocean that undergoes evaporation, then the process of cloud formation or condensation, then the process of precipitation or the descent of rainwater to the earth. Diorama media itself can be called visual and audio-visual media, depending on how it is used. Diorama media that has been made is included in the audio-visual diorama media. It is said to be an audio-visual medium because it not only relies on the sense of sight in seeing the process of the water cycle but also relies on the sense of hearing because of the addition of sound in the process of explaining water cycle activities.

Several previous studies that have examined the development of diorama media such as: (1) Prabowo, (2019), namely the development of 3-dimensional diorama media in science learning class V ecosystem material obtained 94% with criteria suitable for use as learning media. (2) Suhana et al., (2022), namely the development of audio-visual based diorama media to increase the dimension of mutual cooperation in grade V social studies learning in elementary schools by obtaining 81% of very feasible and valid criteria. (3) Firda &; Istianah, (2022), namely the development of water cycle diorama learning media (RASI) obtained 89% with very feasible and valid criteria.

The novelty of this study is different from previous research, namely this research develops water cycle diorama media using audio-visual media in it, and also diorama media added lighting to give an interesting impression on the water cycle diorama media. So that the media looks real. This water cycle diorama media is used in grade V elementary school science subjects.

Based on the background that has been described, there are problems in the science learning process, especially in the water cycle material, such as the unavailability of learning media, learning activities that often use books as the only learning resource, limited time in the learning process, and teacher-centered learning process activities. Therefore, innovative contextual media is needed in the learning process, so that students get a direct learning experience and can easily understand the material presented. With the result that, researchers aim to develop a contextual media in the form of a water cycle diorama that meets the feasibility criteria so that it can be implemented in class V science lesson content, especially at SDN Ciracas 11 Pagi.

Research Methods

This research was carried out at SDN Ciracas 11 Pagi, Ciracas, East Jakarta which was carried out from May 22-30, 2021. The subjects in this study were grade V students at SDN Ciracas 11 Pagi totaling 22 students. The research method used is the Research and Development (R & D) model. According to Maydiantoro, 2019) research and development methods or commonly referred to as Research and Development (R&D) are research methods that develop and test a product that will be developed in the world of education. In this study, researchers chose to use a 4D model. According to Trianto (in Arywiantari et al., 2015) the 4D model is a composed model. According to Thiagarajanan (in Husein Batubara &; Noor Ariani, 2019) there are four stages, namely, define, design, develop, and disseminate.

According to Tegeh et al., (2019) this model is highly recommended for researchers because using the model in its presentation is done simply. In this model, there are several stages. The first stage is define, which is the activity of analyzing and collecting information to find out the problems that occur in the learning process. The next stage is design, which is the selection of media to be developed by material to be explained. The third stage of develop is the development process of developing a water cycle diorama media. The fourth stage is dissemination, the dissemination stage is carried out to promote media to students.

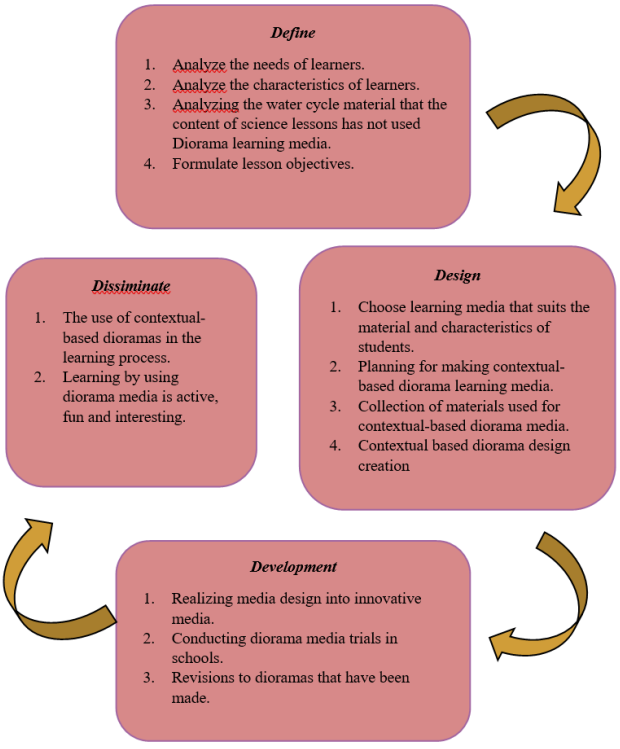

Figure 1. Stages of a 4D Model

In this study, data was obtained from the distribution of questionnaires, ranging from media experts, material experts, and student respondents. According to Sugiyono (in Fadillah &; Ninawati, 2020), data collection is obtained from the dissemination of instruments that will be answered by experts and respondents. There are 2 experts in validating this media, material experts and also media experts. The material expert in this study was the homeroom teacher of SDN Ciracas 11 Pagi. As for media experts, they are media expert lecturers. The sample in this study amounted to 32 grade V students of SDN Ciracas 11 Pagi. The study was conducted in

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large and small groups. The large group consists of 32 students, while the small group consists of 5 students.

In the assessment of this questionnaire, the Likert scale is used. The data collection process uses descriptive data results through questionnaires. The descriptive data was obtained from responses and suggestions by experts and respondents of grade V students.

After the media assessment process by material experts and media experts as well as student respondents, an analysis was carried out to measure media validation using percentage descriptive techniques with the formula:

$$P = \frac{f}{n} x\ 100\ \%$$

Notes:
f = The frequency for which the percentage is being sought.
n = Number of students
P = Percentage

The data obtained from the validation results are calculated using the Likert scale, the following score assessment is used:

Table 1. Percentage Range and Media Feasibility Criteria

Percentage Range	Criteria
76% - 100%	Very Feasible
51% - 75%	Feasible
26% - 50%	Less Feasible
0% - 25%	Not Feasible

Table 1 explains the media eligibility criteria from the percentage results obtained from the process of analyzing data.

Table 2. Questionnaire Scoring Criteria

Criteria	Skor
Strongly Agree	5
Agree	4
Fair	3
Disagree	2
Strongly Disagree	1

Results and Discussion

This research is in the form of developing contextual media for water cycle dioramas in science subject matter on water cycle material intended for grade V students. This media is a 3-dimensional media that describes an activity in a situation that is made as real in the form of imitation that resembles the original. In this media it is explained how the process of rain starts from the process of evaporation or evaporation of seawater, then it will enter into the process of condensation or cloud formation, then advection and precipitation which is the process of falling rainwater to the earth, followed by the process of infiltration and run off, which is the process of releasing water from the earth's surface to the land surface and will return to the sea.

What distinguishes this diorama from others is the addition of lighting from lights and back sound sounds and dubbing explanations, with the presence of this element making the diorama more real according to the original.

This research was conducted to develop water cycle diorama media that meets the eligibility criteria to be implemented in science learning water cycle material for class V. In diorama media research that has been carried out by Prabowo, (2019), Suhana et al., (2022), and Firda &; Istianah, (2022) concluded that diorama media is said to be feasible as a learning medium in the science learning process of water cycle material. The novelty of this study is different from previous research, namely this study developed a water cycle diorama media using audio-visual media in it, and also this diorama media added lighting so that it looks attractive and looks real. This water cycle diorama media is used in grade V elementary school science subjects.

The media development process goes through several stages, such as validation by experts and conducting research in small groups and large groups. After that, it can be seen whether the media that has been developed is feasible or not. The media validation process is carried out by two experts, namely material experts and media experts along with responses from students. The development of this water cycle diorama media uses a 4D model. 4 stages must be done, namely define, design, develop, then the last stage of disseminate (Tegeh et al., 2019).

The first stage is defining, the analysis stage why the development of water cycle diorama media is needed at SDN Ciracas 11 Pagi. To analyze the needs of students, researchers conducted interviews with class V at SDN Ciracas 11 Pagi, based on the results of the interviews it was found that in the water cycle material in science subject matter, grade V students of SDN Ciracas 11 Pagi did not understand the material. Based on the results of an interview with a grade V teacher of SDN Ciracas 11 Pagi, it was stated that the lack of student concentration on water cycle material and the absence of contextual or real media as a tool in the learning process on water cycle material.

The second stage of design, after analyzing the problems that occurred in class V of SDN Ciracas 11 Pagi, researchers looked for what learning media was appropriate and appropriate for water cycle material, namely water cycle diorama media. The diorama was chosen as the medium in the water cycle material because it includes contextual media and activities in it as the original situation. After that, researchers will design the manufacture of diorama media. The design concept of the water cycle diorama is different from other dioramas, because this diorama will be an audio-visual medium, not only can be seen but also there are sound elements for students to better understand the explanation of the water cycle on earth.

The third stage of development, there are several stages, namely the production stage, the implementation stage, and evaluation. At the production stage, the collection of materials, tools and teaching materials is carried out in accordance with the Theme 8 book for class V, then the assembly of materials will be designed as the original form. After that, the process of dubbing an explanation of the diorama material will be packaged with the diorama media.

The next stage is socialization or implementation. This stage is a product implementation activity for research subjects to find out whether the media is suitable for use or not. In media assessment, product validation was carried out by media experts, material experts, and research to small groups with 5 students as respondents, and to large groups carried out by class V at SDN Ciracas 11 Pagi with 32 students as respondents. The water cycle diorama media that has been developed is as follows:

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Figure 2. Water Cycle Diorama Media

Figure 3. Evaporation and Condensation Stages

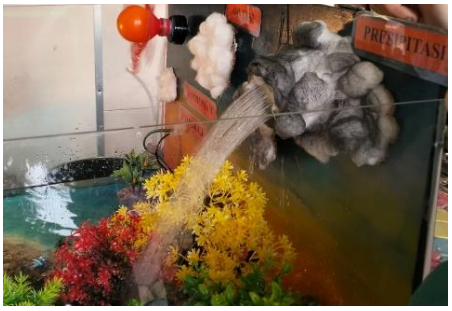

Figure 4. Precipitation or Rain Process

Figure 5. Water Cycle Stages (Infiltration and Run Off)

This diorama media contains content such as three-dimensional miniatures with additional explanations in the form of sound. According to Janah and Basit (Afifah et al., 2022) as follows: (1) Describe the actual situation or in an imitation form that resembles the original. (2) Make a meaningful impression. (3) Improve student learning outcomes. (4) Increase students' interest in learning. (5) Provide hands-on experience to students. (6) The media is presented in concrete or tangible form. (7) Can show the storyline or material clearly.

The results it can be concluded by using diorama media because the water cycle material can provide experience to students directly by seeing. After the creation of the media, the next stage is the validity test stage. At this stage it is carried out to assess the level of feasibility of the developed media. This stage is assessed by material experts, media experts and student responses.

Table 3. Media Expert Validation

Aspect	Score	Criteria
Physical Display of Media	96%	Very Feasible
Media Supporting Components	92%	Very Feasible

Based on table 3, the results of media expert validation include two aspects, in the aspect of physical appearance of the media get a percentage of 96%, and in the aspect of media supporting components get a percentage of 92%. So that it can be concluded that the results of validation by media experts on water cycle diorama media get the category "very feasible".

Table 4. Material Expert Validation

Aspect	Score	Criteria
Suitability of Media Content with Material	96%	Very Feasible
Language and Sound on Media	96%	Very Feasible

Based on table 4 the results of material expert validation include 2 aspects, in the aspect of suitability of media content with the material gets a percentage of 96%, the aspect of language and sound in the media gets a percentage of 96%. So that the results of validation by the material against the water cycle diorama media get the category "very feasible". From the results of material and media expert validation, it can be concluded that the water cycle diorama media can be said to be "very feasible" to be used in the learning process of water cycle material in science learning content.

The study was conducted in small groups and large groups at SDN Ciracas 11 Pagi. In the small group of respondents there were 5 students, while for the large group of respondents there were 32 students. The purpose of this study is to determine the feasibility of media that has been developed in the form of water cycle dioramas. The instrument is in the form of 10 questionnaires that include the use of media and also aspects of student responses to the media.

Table 5. Small Group Student Response

Aspect	Score	Criteria
Media Usage	95%	Very Feasible
Student Response to Media	96%	Very Feasible

Table 5 is the result of the response of small group students totaling 5 students with 95% results for aspects of media use, and for aspects of student responses to media get 96% results.

Table 6. Large Group Student Response

Aspect	Score	Criteria
Media Usage	96%	Very Feasible
Student Response to Media	97%	Very Feasible

While in table 6 is the result of the response of large group students totaling 32 students, for aspects of media use gets a percentage of 96%. And for the aspect of student response to the media got a percentage of 97%.

It can be concluded that the response of students from small groups and large groups that the water cycle diorama media can be said to be "very feasible" to be used in the learning process of water cycle material in science learning because this media is contextual or real so that

students can observe how the water cycle on earth with an artificial form that resembles the original.

Conclusion

Based on the results of the research that has been described, the development of water cycle diorama media in science learning content subjects has been carried out in small groups with 5 students and large groups with 32 students in grade V SDN Ciracas 11 Pagi and has been validated by material experts and media experts. The final result of this study is that diorama media is said to be very feasible to be used in the learning process in science learning content. From this study, it was obtained that the water cycle diorama media that had been validated by media experts got a percentage of 95% with a very valid category, while material validation carried out by material experts got a percentage of 96% with a very valid category. Research conducted in small groups with 5 student respondents got a percentage of 95% with a very decent category. Furthermore, research to a large group with 32 respondents in class V SDN Ciracas 11 Pagi got a percentage of 96% with a very decent category. Based on the results of validation by material experts and media experts as well as research conducted on small and large groups, it was concluded that this water cycle diorama media is very feasible to be used as a learning medium for water cycle material in science subject matter in grade V elementary school. This study shows that the water cycle diorama media has been developed and by the feasibility criteria, by the results of the data that have been obtained, that the diorama media is suitable for use or implementation in science subjects of water cycle material. For the next step, researchers will conduct a study using water cycle diorama media with the help of audio-visual media to improve science learning outcomes of grade V students of water cycle material and prove the effectiveness of the media.

Here are some suggestions conveyed by researchers, (1) For students, it is recommended to use and utilize learning media well. (2) For teachers in science subjects, especially water cycle material, the learning process should use media, especially contextual media so that students can understand the material well. (3) For school principals, it is advisable to motivate teachers to create innovative media and realize it in the form of infrastructure in the school environment so that the learning process is more effective.

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