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## MEDIA DEVELOPMENT OF LIFE CYCLE DIAGRAMS OF LIVING THINGS FOR CLASS IV PRIMARY SCHOOL STUDENTS

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### **Abstract**

In science learning material on animal life cycles in class IV SDN Tarokan 3, the teacher has not used learning media. In the learning process the teacher uses the lecture method which causes students to be less active. This has an impact on students' lack of understanding of animal life cycle material which results in more than 50% of students getting learning outcomes below the KKM. This research aims to (1) determine the validity of life cycle material diagram media products for living creatures for fourth grade elementary school students, (2) determine the effectiveness of living creature life cycle material diagram media products for fourth grade elementary school students, and (3) determine the practicality media product diagram material on the life cycle of living things for fourth grade elementary school students. The research model used is research and development (R&D). Based on this research, the results were: (1) the life cycle diagram media for living creatures was declared very valid with a percentage of 92.05%; (2) the life cycle diagram media for living creatures was declared very effective with a classical completion percentage of 90% in limited trials and 95% in extensive trials; and (3) the media for life cycle diagrams of living things is stated to be very practical with a teacher response percentage of 98.6%, student percentage gains in limited trials of 99.5% and student responses in extensive trials of 99.5%, so that the media can be said to be valid, effective, complete, and influential in improving student learning outcomes. Based on the results of this research, it was concluded that the media for life cycle diagrams of living creatures is valid and suitable for use as learning media for fourth grade elementary school students.

### **Abstrak**

Pada pembelajaran IPA materi siklus hidup hewan kelas IV SDN Tarokan 3 guru belum menggunakan media pembelajaran. Dalam proses pembelajaran guru menggunakan metode ceramah yang menyebabkan siswa kurang aktif. Hal ini berdampak pada pemahaman siswa kurang terhadap materi siklus hidup hewan yang mengakibatkan lebih dari 50% siswa mendapatkan hasil belajar di bawah KKM. Penelitian ini bertujuan untuk (1) mengetahui kevalidan produk media diagram materi siklus hidup makhluk hidup untuk siswa kelas IV Sekolah Dasar, (2) mengetahui keefektifan produk media diagram materi siklus hidup makhluk hidup untuk siswa kelas IV Sekolah Dasar, dan (3) mengetahui kepraktisan produk media diagram materi siklus hidup makhluk hidup untuk siswa kelas IV Sekolah Dasar. Model penelitian yang digunakan yaitu penelitian pengembangan atau *Research and Development (R&D)*. Berdasarkan penelitian ini mendapatkan hasil (1) media diagram siklus hidup makhluk hidup dinyatakan sangat valid dengan presentase 92,05%; (2) media diagram siklus hidup makhluk hidup dinyatakan sangat efektif dengan presentase ketuntasan klasikal 90% pada uji coba terbatas dan 95%



pada uji coba luas; dan (3) media diagram siklus hidup makhluk hidup dinyatakan sangat praktis dengan presentase respon guru 98,6%, perolehan presentase siswa pada uji coba terbatas 99,5% dan respon siswa pada uji coba luas 99,5%, sehingga media dapat dikatakan valid, efektif, tuntas, dan berpengaruh dalam meningkatkan hasil belajar siswa. Berdasarkan hasil penelitian tersebut disimpulkan bahwa media diagram siklus hidup makhluk hidup valid dan layak digunakan sebagai media pembelajaran untuk siswa kelas IV sekolah dasar.

**Kata kunci:** Pengembangan, Media Diagram Siklus Hidup Makhluk Hidup, Pembelajaran IPA

## INTRODUCTION

Science learning is one of the lessons taught in elementary schools. Science learning in elementary schools is systematic learning. According to Wahyana in Trianto (2010: 136), "science is a collection of knowledge arranged systematically, and its use is generally limited to natural phenomena". It can be seen that the scope of science includes the universe, objects on earth, both those that can be observed and those that cannot be observed by the senses. Thus, it is said that the science learning process emphasizes process skills which aim to enable students to discover facts, build concepts, theories and scientific attitudes of the students themselves.

Science learning in elementary schools includes several materials. The material taught in grade 4 elementary school includes the form and function of body parts in animals and plants; life cycles of living creatures and efforts to preserve them; various forces (muscle force, electric force, magnetic force, gravitational force, and friction force); the relationship between force and motion in events in the surrounding environment; energy sources, changes in energy forms, and alternative energy sources (wind, water, solar, geothermal, organic fuels, and nuclear); the properties of sound and its relation to the sense of hearing; the properties of light and its relation to the sense of sight; and efforts to balance and preserve natural resources.

Based on observations and interviews conducted on March 8 2022 in class IV at SDN Tarokan 3, there were problems that occurred in the learning outcomes of class IV students at SDN Tarokan 3 on the life cycle of living things. Based on the performance analysis known from the results of observations and interviews conducted on March 8 2022 at SDN Tarokan 3, the learning process regarding the life cycle of living things is still monotonous. In the process of learning material about the life cycle of living things, the teacher has not used learning media. In science subjects on animal life cycles (metamorphosis) the teacher only uses thematic books in the learning process. In learning activities, teachers still use the Teacher Center learning model or teacher-centered learning using the lecture method without using learning media. This has an impact on students, students become inactive in learning material about the life cycles of living things because the process of learning material about the life cycles of living things is boring and uninteresting. Apart from that, students' interest in learning is



also low regarding the material on the life cycles of living things being taught. As a result, students' abilities are less complete. The proof can be seen from student learning outcomes in learning material about the life cycles of living things. The learning outcomes of class IV students are still low with the average score obtained on the material on the life cycle of living things being below 75. This can be seen that the learning process carried out by teachers without using learning media on the material on the life cycle of living things is not yet effective, resulting in students lacking understand the material and have an impact on student learning outcomes.

From the problems that have been described, the solution is to develop learning media in the form of life cycle diagrams of living things for class IV students. According to Sudjana and Rivai (2019:33), "A diagram is a simple picture designed to show 4 reciprocal relationships, especially with lines". The advantage of this media is that teachers can explain the material using visual aids/media, making it easier to convey the material to students. Apart from being useful for teachers, this media is also very useful for students. Apart from that, the learning media developed must have good quality. Nieveen (2010:93) explains that the quality of results in development research is determined by several criteria, namely validity, practicality and effectiveness. With the media of life cycle diagrams of living creatures, it is easier for students to remember the material presented, opens students' minds and imaginations to the material presented, and also increases students' activeness and curiosity in deepening the material presented.

The application of life cycle diagram media for living creatures in learning in class IV at SDN Tarokan 3 will use the inquiry learning model. The use of the inquiry learning model is based on problems with the previous teacher's use of the learning model which has not been able to activate learning activities in the classroom. Apart from that, the use of the inquiry learning model is based on how to use the learning media of life cycle diagrams of living things and the aim of having life cycle diagram media of living things in learning so that in the learning process students can more easily remember the material presented, open students' minds and imaginations to the material presented, also increases students' activeness and curiosity in deepening the material presented.

## RESEARCH METHODS

This research is a type of development research or Research and Development (R&D). The development design used to develop diagram media refers to Branch's (2009) design in Suryani, Achmad, and Putria (2018:125) in the form of the ADDIE design. The development procedure in this research consists of several steps, namely; The first is Analyze, the analysis stage is divided into two stages, the first is performance analysis which aims to find out and clarify the problems faced in learning material

about the life cycle of living things and needs analysis aims to find out what is needed to improve learning so that students can achieve competency. base. Second, Design, before making the actual product, first design a media design so that the media created can be designed in a planned and detailed manner and with the design, the media that will be created will be more focused and easier to work on. Third, Development, at this stage includes the activity of creating media products that have been previously designed, namely diagram media products. Fourth, implementation, this stage is the stage of limited-scale and wide-scale trial activities carried out in class IV at SDN Tarokan 3 using the inquiry learning model. Fifth, Evaluation, this stage is carried out throughout the development procedure process. The subjects of the limited scale trial in this research were 10 students of class IV SDN Tarokan 3. Meanwhile, the wide scale trial consisted of 20 students of class IVSDN Tarokan 3. The sampling technique for limited scale and wide scale product trials used a saturated sampling technique which is included in non probability sampling, where all members of the population are used as samples. The reason for using saturated sampling techniques is due to the limited population size.

The subjects in this research were 30 class IV students at SDN Tarokan 3. The data collection techniques used were observation, interviews, questionnaires and tests. Observations were carried out by directly observing the implementation of learning in the science learning process on the life cycle of living things in the classroom with the aim of providing consideration for the media development process. Interviews were conducted with the fourth grade teacher at SDN Tarokan 3 to identify several problems in the class as material for media development. Questionnaires are used to obtain data on the validity and practicality of the media. Media validity is obtained from media expert validators and material experts, while practicality is obtained from teacher and student responses. Tests are used to determine the effectiveness of the media using objective questions given to students.

Data analysis techniques use qualitative and quantitative analysis techniques. Qualitative data analysis is used to describe the results obtained from interviews and observations, while quantitative data analysis techniques are used to analyze data obtained through questionnaires and tests. The data is in the form of feasibility and assessment of learning media in each aspect which is then converted into interval data as follows.

**Tabel 1. Kriteria Kevalidan Media dan Materi Dalam Media**

Presentase	Kategori validitas	Keterangan
86% - 100%	Sangat valid	Sangat baik digunakan tanpa revisi
71% - 85%	Valid	Boleh digunakan setelah

		revisi kecil
56% - 70%	Cukup valid	Boleh digunakan setelah revisi besar
41% - 55%	Kurang valid	Tidak boleh digunakan
25% - 40%	Tidak valid	Tidak boleh digunakan

Sumber : (Sa'dun Akbar, 2015:78)

**Tabel 2. Kriteria Pencapaian Nilai Siswa**

Kriteria pencapaian nilai (keefektifan)	Tingkat efektifitas
81% - 100%	Sangat efektif, dapat digunakan tanpa perbaikan
61% - 80%	Cukup efektif, dapat digunakan namun perlu perbaikan kecil
41% - 60%	Kurang efektif, perlu perbaikan besar, disarankan tidak dipergunakan
21% - 40%	Tidak efektif, tidak bisa digunakan
0% - 20%	Sangat tidak efektif, tidak bisa digunakan

Sumber : (Sa'dun Akbar, 2015:32)

**Tabel 3. Kriteria Kepraktisan Media**

Kriteria	Kategori	Keterangan
75,01% - 100%	Sangat Praktis	Dapat digunakan tanpa revisi
50,01% - 75,00%	Praktis	Dapat digunakan dengan revisi kecil
25,01% - 50,00%	Kurang Praktis	Disarankan untuk tidak dipergunakan
00,00% - 25,00%	Tidak Praktis	Tidak dapat digunakan

Sumber : (Sa'dun Akbar, 2015:78)

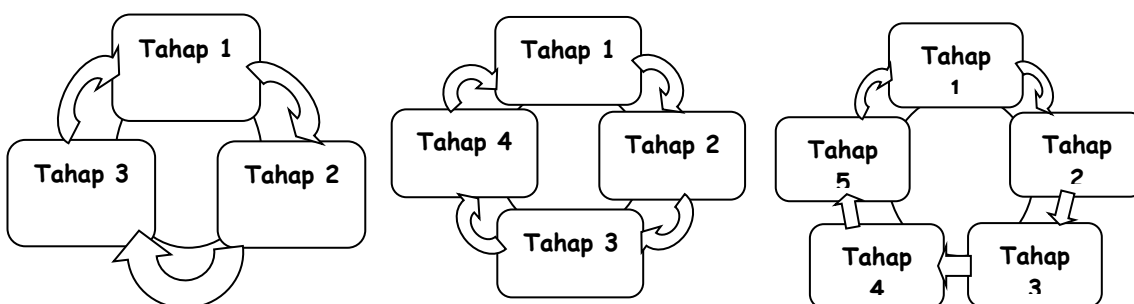
## RESULT AND DISCUSSION

Based on the results of field studies conducted through observations and interviews, it can be concluded that the problem in learning animal life cycle material for class IV students at SDN Tarokan 3 is the absence of learning media to increase students' understanding of animal life cycles. From the observations made at the school, it can be used as a basis for developing learning media for life cycle diagrams of living creatures. From this field study, learning media for animal life cycle diagrams was developed.

Research that is relevant to this research is research by Setyawan (2011) entitled "Efforts to Improve Physics Learning Outcomes Through the Use of Heat Diagram Media for Tenth Grade One Students of SMA 4 Tegal 1 City". The diagram media used is suitable for use in the learning process. This is proven by the use of heat diagram media, there is an increase in learning outcomes. This can be seen by the increase in the average value of learning outcomes from the initial condition to the final condition of 55.75%, namely from 51.76 to 62. The lowest value increase was 70%, namely from 4 to 32. There was also an increase in the highest value of 20 %, namely from 80 to 100.

From research that has been carried out previously, this research develops life cycle diagram media for living things for fourth grade elementary school students. The diagram media developed is new and different from previous diagram media developments. This life cycle diagram media is concrete, the materials used are durable so they can be used for a long period of time. The life cycle diagram media for living creatures is also designed attractively so that students are more interested in learning. The use of this media can also increase interaction between teachers and students.

Before making the actual product, first design a media design so that the media created can be designed in a planned and detailed manner. According to (Perbadi et al., 2009) With a design, the media that will be created will be more focused and easier to work on. The media that will be developed is concrete media in the form of diagrams. Animal life cycle diagram consisting of three designs.

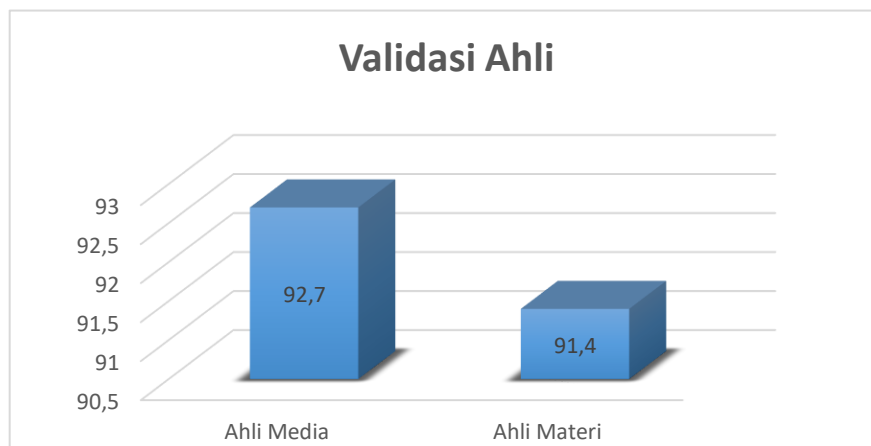


## Gambar 1.1 Desain Diagram Siklus Hidup Hewan Yang Mengalami Tiga Fase, Empat Fase, Lima Fase

After designing the media, the design is then developed into a finished product. The initial design in making animal life cycle diagram media that is developed and finished is a form of media product before being validated by experts for media revision improvements. Learning media that has been validated through a validator will provide comments and suggestions that can be used to improve the media. The media's comments and suggestions are "diagram media is valid, but tidy up the shape and neatness of the media." Meanwhile, the material validator received advice, namely "complete the instructions for using the media". The following is the media diagram after the revision.

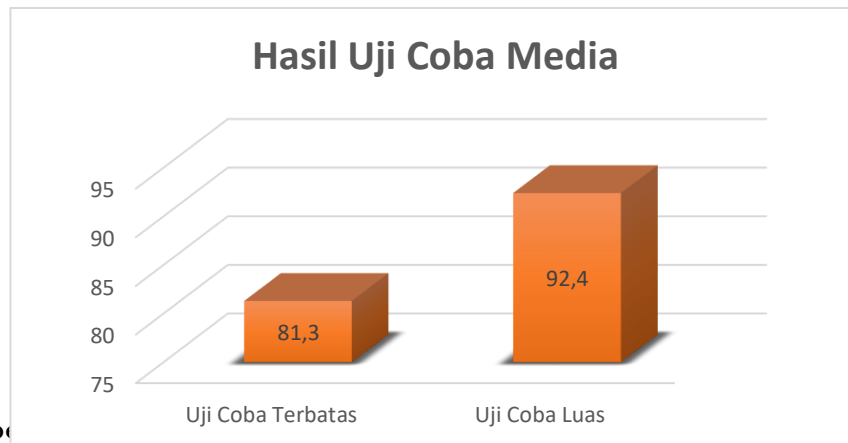


Gambar 1.2 Diagram siklus hidup hewan yang mengalami tiga fase, empat fase dan lima fase



Gambar 1.3 Hasil Validasi Ahli

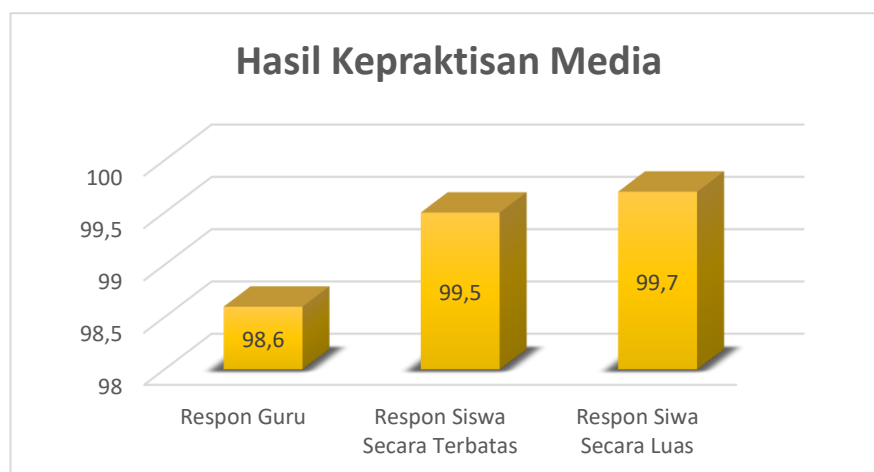
The media validation results of animal life cycle diagrams from media experts show results with a percentage of 92.7%, while those from material experts show a percentage of 91.4% with an average validation result of 92.05%, so this learning media is declared very valid with category is very good to use without revision. These results are converted according to the validity criteria according to (Sa'dun Akbar, 2015) which if the presentation is 86% - 100% then it can be said to be very valid.



It can be

3. This average

value shows that students were able to obtain a score above the predetermined KKM, namely 75 with classical completeness of 90%. Meanwhile, the students' average score was 92.4, this average score shows that students were able to obtain a score above the predetermined KKM, namely 75 with classical completeness of 95%. Thus, the animal life cycle material diagram media is stated to be very effective for use in limited scale learning processes.



**Gambar 1.5 Hasil Kepraktisan Media**

After the teacher observed the animal life cycle diagram media trial on June 9 2023, the teacher provided his response to the diagram media using a teacher response questionnaire. The teacher response questionnaire was given to the class IV teacher, namely Wahyu Setyawan, S.Pd. The teacher's response was carried out to determine the practicality of the media developed for learning. From the results of the





teacher's response, a percentage of 98.6% was obtained, which means that the animal life cycle diagram media is very practical to use.

After conducting a limited trial on June 9 2023 on class IV students at SDN Tarokan 3, students gave their responses to the animal life cycle diagram media in the student response questionnaire. Student responses are used to determine the practicality of the animal life cycle diagram media that has been used. From the student response data, a total score of 219 was obtained, so the percentage result was 99.5%. Referring to the practicality criteria, the percentage of 99.5% is included in the very practical category. The animal life cycle diagram media is said to be very practical from the results of student responses.

After conducting extensive trials on June 10 2023 on class IV students at SDN Tarokan 3, students gave their responses to the animal life cycle diagram media in the student response questionnaire. Student responses are used to determine the level of practicality of the animal life cycle diagram media that has been used. From the student response data, a total score of 439 was obtained, so the percentage result was 99.7%. Referring to the practicality criteria, the percentage result of 99.7% is included in the very practical category. Animal life cycle diagram media is said to be very practical.

Based on research on the development of media for life cycle diagrams of living creatures which has been carried out at SDN Tarokan 3, the data shows that with the media of life cycle diagrams of living creatures students can better understand the material that has been presented. And student learning outcomes increased after using the learning media of life cycle diagrams of living creatures.

## **CONCLUSION**

Based on the results of research and development of life cycle diagram media for living creatures for fourth grade elementary school students carried out at SDN Tarokan 3, it can be concluded that the life cycle diagram media for living creatures for fourth grade elementary school students is declared very valid, effective and practical. This shows that the media for life cycle diagrams of living things for class IV students is suitable for use as learning media for class IV elementary school students. For future researchers who want to conduct similar research, to increase the creativity and attractiveness of the media and adapt the media to the needs of students and current education. So the research produced is more than previous research.

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