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Development Of Picture Storybooks Based On Scientific Approaches In Science Lessons Class V Sdn 36 Mataram Academic Year 2023

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Abstract
The main target of education is to improve quality human resources. Quality human resources will be achieved if they have the ability, namely broad knowledge, mastery of knowledge involved and a professional mental attitude and have the spirit or motivation to achieve. This research is a type of development research (Research and Development). What was developed in this study is a scientifically-based picture story book in grade V elementary school science lessons. This research is a research on the development of picture storybooks based on a scientific approach for grade V elementary school. The process of developing picture storybooks based on a scientific approach for grade V elementary school includes the type of Research and Development (R&D) development with a 4D model, namely: (1) Define which consists of (a) conducting a needs analysis, (b) determining learning objectives, and (c) determining the learning content and sequence of storybook stories

Keywords: management, community, village

INTRODUCTION

The main target of education is to improve quality human resources (Savoia, Stefanovic, & Fragassa, 2016). Quality human resources will be achieved if they have the ability, namely broad knowledge, mastery of knowledge involved and a professional mental attitude and have the spirit or motivation to achieve (Wahyudi, 2022). Every human being in his life must learn, be it in formal, non-formal or informal educational institutions (Tudor, 2013). In accordance with the Law on the National Education System Article 1 paragraphs 11 – 13 concerning pathways, levels and types of education, namely: Formal education which is also called school consists of three levels, namely basic education, secondary education and higher education (Hadi, 2019). Non-formal education is an educational institution that complements formal education such as course institutions, training institutions, study groups and other similar educational units (Alif, Irwan, & Elihami, 2019). The three institutions are commonly called tricenters of education which have their respective roles and functions (Law of the Republic of Indonesia No.20 of 2003).

Good communication between the three education centers will have a good impact on the process of fostering children's education. Education pursued in basic education will be the foundation for the further educational process. This is reinforced by Prastowo (Mahanani, Akbar, Kamaruddin, & Hussin, 2022) who explained that basic education has two main functions, namely 1) providing basiceducation related to the ability to think critically, reading, writing, arithmetic, mastery of the basics tolearn science, and communication skills, and 2) basic education provides the basics for following the next level of education. One of the supports of basic education to run optimally is to instill the habit of reading from an early age. The habit of reading is one of the keys to a person's success in achieving science and technology (Rahim: 130).

Science is a human effort in understanding the universe through precise observation on target, and using procedures, and explained by reasoning so as to get a conclusion. The nature of science, which is defined as the science of nature, which in Indonesian is called natural science, can be classified into three parts, namely: science as products, processes, and attitudes. Science is also a procedure and science as technology (Sutrisno et al., 2018).

In order for science learning to be maximized and liked by students, the implementation of learning must be fun and challenging. For this reason, the role of teachers is very dominant in implementing learning scenarios. Teachers must be able to raise the enthusiasm of students and make students feel experienced for themselves what is conveyed by the teacher, so that students feel challenged to explore the experiences they feel. Thus, children will experience a high sense of curiosity so that they are able to explore experiences in learning. So, it is hoped that students will feel happy to follow the learning. After students feel happy with learning, of course, students will optimize learning happily.

One approach to learning that is assumed to meet the needs of student growth and development is the scientific approach. The scientific approach is learning that encourages children to perform scientific skills as stated in Government Regulation No. 65 of 2013 concerning 5M, namely: observing, questioning, reasoning, trying and communicating. The scientific approach is also called the scientific approach. The scientific approach is one of the latest approaches in the 2013 curriculum that is still being socialized and has not been widely applied in elementary school learning.

To support the results of science learning, one of the efforts made is by using learning media. In conveying information to students, teachers need learning media or material so that the information conveyed is easily understood by students. Based on observations at SDN 36 Mataram, it was found that there were several weaknesses in the learning process, including the learning process focused on

completing the subject matter alone not on forming understanding and meaning of the subject matter to students, there were still many students who played when learning was in progress, speakingeven most students rarely expressed their opinions because they did not have the courage to expressan opinion. Another problem is also that teachers and students only use learning resources providedby the government, namely teacher books and student books even though the 2013 curriculum learning requires the use of various resources, media, and teaching materials that vary to support thelearning process. This has an impact on the science learning outcomes of students, as evidenced by the low test scores of students, so that the scores obtained by students are still below the Minimum Completeness Criteria (KKM), where the science subjects at SDN 36 Mataram are 75.

Learning media such as picture story books at SDN 36 Mataram, especially class V, do not yet exist. This is what makes researchers want to try to conduct research by developing scientifically-based picture story books so that the learning delivered is better understood. Fitra Farendi (2018: 6) emphasized that picture story books are very suitable if applied in the learning process, because picture story books will be able to stimulate students' understanding of the meaning / intent of the stories that have been read. Through picture story books, children also find it helpful to be able to understand the content of reading by seeing pictures that support the story, besides that pictures can also provide relationships with the content of learning materials. However, the story book used in learning is not a story book sold in the market, but the story book in question is a picture story book that has been developed based on learning materials that are adjusted to basic competencies in class V. (Irawan, Dwisona, & Lestari, 2020) Process activities in reading are needed so that students do not just read, but can foster a love of reading. This certainly will not contradict the learning approach in the 2013 curriculum, namely the scientific approach, reading activities can strengthen learning because if students like to read it makes it easier for them to learn other knowledge.

Mitchell (Irwansyah & Nurgiyantoro, 2019) picture story books are books that feature images and text and both intertwine, both images and text alone are not enough to express the story impressively, and both need each other to complement and complement each other. Picture storybooks can also help learners in reading and increase their vocabulary. Picture storybooks align with improving learners' reading skills. It is realized that reading is very important, but what is more important is how they are able to choose the right reading book for students according to their development period.

According to Piaget (Trianto & Purwanto, 2020) mentions, elementary school age children 7 to 11 years fall into the category of concrete operational phases. In this phase students begin to think logically about concrete events, students can already sort and classify certain objects and situations. The ability to remember and think logically students can also understand the concept of cause and effect rationally and systematically. Therefore, creative teachers will design learning activities that can meet developmental needs at that age.

The development of storybooks is expected to be one of the learning media that can increase the interest and learning outcomes of science students. This is an important goal so that students have a reading culture, can broaden their horizons and support the quality of students in the world of Education. Fitra Farenda (2018: 6) believes that picture storybooks have an important role in the world of education, especially at the elementary school level. Because picture story books are a familiar thing in children's lives. Picture story books are books that convey messages in two ways, namely writing that is clarified by illustrations, be it folklore, sagas or animal tales (fables). The images contained in the book serve as support as well as convey the content of the story.

Based on the background description above, the author conducted a research entitled "Development of Scientifically-Based Picture Storybooks in Class V Science Lessons at SDN 36 Mataram for the 2023 Academic Year"

METHODS

Place and Time of Research

This research was carried out at SDN 36 Mataram in class V. The time of this research will be carried out is in the first semester of the 2023 academic year.

3.2 Types of Research

This research is a type of development research (Research and Development). What was developed in this study is a scientifically-based picture story book in grade V elementary school science lessons.

3.3 Population and Research Sample

The population in this study was all students of grade V SDN 36 Mataram, while the sample in this study was 6 students from grade V SDN 36 Mataram taken randomly.

3.4 Research Design

This study uses a 4D model (define, design, development, and dissesmination) which is only limited to the development stage with a sample of 6 people (limited trial), the reason for choosing 6 students is because according to Widodo (2015: 12) the stage of taking subjects per aspect in each group in development research is based on the heterogeneity of intelligence or learning outcomes of students. Small-scale trials of 6-12 subjects in each school because this study had limited research in one school only, 6 students from different levels of intelligence were taken. In order for research to run well and regularly, a research framework is needed which contains a description and steps that must be carried out in research, starting from the initial stage to the end.

RESULTS AND DISCUSSION

This research is a research on the development of picture storybooks based on a scientific approach for grade V elementary school. A scientifically-based picture storybook developed using 4D development design with stages of define, design, develop, and dissemination. The results of development at each stage in this research are as follows:

4.1 Description of the Define Stage

At the define stage, several stages are carried out, namely (a) conducting a needs analysis, (b) determining learning objectives, and (c) determining the learning content and sequence of storybook stories. In the early stages, researchers conduct needs analysis by conducting unstructured interviews, unstructured observations, and documentation. The interview was conducted with a grade V teacher of SDN 36 Mataram. The observation was conducted in class V of SDN 36 Mataram.

The results of interviews that have been conducted are known that teachers have never used picture book media in the learning process. Teachers usually use teacher and student books in the learning process. The teaching method used by the teacher is the lecture method by explaining the material in front of the class then students listen to the material delivered by the teacher. After finishing explaining the material, then the teacher will ask students to do the questions in the student book. This results in no two-way interaction between students and students, students with teachers, causing students to be less active in learning. This is irrelevant to the 2013 curriculum which emphasizes the activeness of students in the learning process. The 2013 curriculum also emphasizes the ability to search and discover for themselves the concept of the material they are learning.

4.2 Design Stage Description

This stage is the stage or process of designing a picture storybook based on a scientific approach, the working technique in making this scientific-based picture storybook uses 2 techniques. The first

technique is manually and the second technique uses computer techniques. Sketches are drawn manually by hand then the sketches are scanned and colored on a computer using Adobe Photoshop CS6. The type of design on this stage is to compile the initial design of the product. In this study, the design stage in question is:

a. Initial Product Design

The initial design in question is a picture story book design made before the trial. Picture storybook designs include:

a) Picture storybook cover

The cover consists of three parts, namely the front cover of the picture storybook, the cover of series 1 of the picture storybook and the back cover of the picture storybook. The front cover of the picture storybook contains the title of the picture storybook, subjects, intended for grade V elementary school, themes and subthemes in the student book, and the author's name. While the cover of series 1 contains the title of the series 1 picture storybook, theme, subtheme, and identity column for the picture story. As for the back cover of the picture story book, it contains a brief summary of the picture storybook, the front cover and cover of series 1 of the picture storybook based on a scientific approach

b) The content of the picture storybook

Researchers design and design picture story books in the hope of attracting students' willingness to learn related to science learning. The contents of this picture storybook contain an introduction (preface, offerings, about the book, characters, table of contents, and learning objectives), the content of the story in the storybook as many as 18 sheets, the content of the story series 1 in the storybook as many as 12 sheets, bibliography, glossary 2 sheets, let's be creative 3 sheets, author biodata and scientific approach. So many scientifically based picture storybooks are 47 pages long.

4.2.1 Picture Book Display Based on Scientific Approach

The picture storybook display consists of writing, pictures, and colors detailed as follows:

a. Writing

The type of font used for writing in picture storybooks based on a scientific approach is sans comic. The font size ranges from 12-18 pt.

b. Picture

Images in picture storybooks based on scientific approaches are not blurry and colorful so that they are clearer when seen by students.

c. Color

a) The cover of the picture book based on a scientific approach is dominated by turquoise green with a combination of black writing.

b) Each page of the picture book based on a scientific approach is dominated by blue in combination with white

c) Picture storybooks based on the scientific approach developed attract the attention of students by presenting colorful storybook images or illustrations.

d) So that picture story books do not cause a boring impression to see, picture story books based on scientific approaches are made in color with many pictures and illustrations along with writing.

e) The color of the writing is adjusted to the background color. For example, in a picture book based on a scientific approach, if the background color is light yellow, then the color of the writing is dark like black.

4.3 Description of the Develop stage

4.3.1 Product Manufacturing

The next stage after designing a picture book based on a scientific approach is to make a picture book product based on a scientific approach. The product specifications of picture storybooks based on scientific approaches that have been made are as follows:

Picture storybook size	: A4 (210 mm x 297 mm)
Paper Type	: Ivory (cover) and art paper
Page Thickness	: 47 pages
Picture storybook form	: Bound by book

4.3.2 Product Validation

Product validation aims to test the feasibility of picture storybooks based on scientific approaches that have been developed. Validation of picture book products based on a scientific approach through two stages, namely as follows:

a. Material Expert Validation

Material expert validation aims to test the feasibility of the material in picture storybooks based on scientific approaches that have been developed. Material expert validation was carried out by grade V teachers of SDN 36 Mataram. The material expert in the research was Mrs. Evi Yanti Sulfana, S.Pd, a grade V teacher at SDN 36 Mataram. Material expert validation by filling out questionnaires on a scale of 1-4 related to several aspects of assessment, namely format, material / book content, story Recapitulation of assessment results from validators can be seen in the following table.

- **Material expert validation (before revision)**

Material expert validation was carried out to see the feasibility of picture story books based on scientific approaches carried out by grade V teachers of SDN 36 Mataram, namely Mrs. Evi Yanti Sulfana, S.Pd. Material experts gave an assessment of picture story books based on scientific approaches.

b. Media expert validation

Media expert validation aims to test the feasibility of picture storybook learning media based on scientific approaches that have been developed. Media expert validation was conducted by Mrs. Evi Yanti Sulfana, S.Pd. Validation of media experts by filling out questionnaires on a scale of 1-4 related to several aspects of assessment, namely book cover, book content, images, book anatomy. A recapitulation of the assessment results from validators can be seen in the following table.

- **Media expert validation (before revision)**

Media expert validation was carried out to see the feasibility of picture storybook learning media based on a scientific approach. Media experts provide an assessment of picture storybooks based on a scientific approach.

Developing products in a broad sense can be in the form of updating existing products, so that they become more practical, effective, and efficient or creating new products (which have never existed before) (Sugiyono, 2017). The research conducted by the researcher is a research on the development of a learning media in the form of picture story books based on a scientific approach for grade V elementary school which has never existed before at SDN 36 Mataram. This research was conducted to produce picture storybooks based on a scientific approach through feasibility tests with

4D development medel (Define, Design, Development, and Dissemination).

5.1 Picture Book Development Process Based on Scientific Approach

5.1.1 Define Stage

Define is the earliest stage in this research. At this stage, several stages are carried out, namely conducting needs analysis, determining learning objectives, and determining learning content and the order of storybook stories. The initial stage in the definition process is to conduct a needs analysis at SDN 36 Mataram. This is intended to find out what students need in learning, especially in science learning. Needs analysis is carried out through unstructured interviews with class V teachers to find out what learning activities are carried out in schools and what learning media are used in carrying out learning activities. Learning will be more enjoyable if a teacher is able to use media that is interesting, varied, innovative, contextual, and that can be adjusted to the needs and conditions at school (Maunah, Siti: 2019).

From the results of interviews that have been conducted, it is known that teachers have never used picture book media in the learning process. Teachers usually use teacher and student books in the learning process. The teaching method used by the teacher is the lecture method by explaining the material in front of the class then students listen to the material delivered by the teacher. After finishing explaining the material, then the teacher will ask students to do the questions in the student book. This results in no two-way interaction between students and students, students with teachers, causing students to be less active in learning. This is irrelevant to the 2013 curriculum which emphasizes the activeness of students in the learning process. The 2013 curriculum also emphasizes the ability to search and discover for themselves the concept of the material they are learning.

The need for students for more innovative learning media in order to improve the quality of learning and student learning outcomes. The benefits of learning media are that it can foster student learning motivation because teaching will attract their attention more, the meaning of teaching materials will become clearer so that it can be understood and allow mastery and achievement of teaching objectives, teaching methods will be more varied, not solely based on verbal communication through words, students do more activities during learning activities, not only listening but also observing, demonstrating, performing directly, and acting out (Abdullah, 2012).

Based on this presentation, researchers developed learning media in the form of picture story books based on scientific approaches that will make students better understand learning, especially in science lessons to achieve learning goals to be achieved.

5.1.2 Design Phase

The design of picture storybooks based on a scientific approach uses working techniques in making this scientifically-based picture storybook using 2 techniques. The first technique is manually and the second technique uses computer techniques. Sketches are drawn manually by hand then the sketches are scanned and colored on a computer using Adobe Photoshop CS6.

Adobe Photoshop CS6 application can help adjust the grammar, type of writing, choose the appropriate shape and color to create picture storybook learning media based on a scientific approach. Picture illustration and writing are two different media, but in picture storybooks they together form a blend. These images will make verbal writing more visible, concrete, and at the same time enrich the meaning of the text. So close is the relationship between writing and images complementing and complementing each other (Lammert et al., 2018).

Some of the characteristics contained in picture story books include (a) picture story books are concise and direct, (b) picture story books contain serialized concepts, (c) the concepts written can be understood by children, (d) the writing style is simple, (e) there are illustrations that complement the

text (Farenda, 2018).

According to the Big Dictionary Indonesian (2005) images are imitations of goods, animals, plants, and so on. Meanwhile, according to (Hamalik, 2003), images are everything that is manifested visually in two-dimensional form as an outpouring of feelings or thoughts.

5.1.3 Development

At the development stage, picture storybooks based on scientific approaches begin to be developed according to predetermined designs, after which picture storybooks based on scientific approaches that have been made will be validated by material experts and media experts. If picture storybooks based on scientific approaches are not as desired, then researchers need to revise according to what media experts and material experts respond. Based on the assessment of material experts as a whole, a percentage of 97.22% was declared "very valid" and an assessment from media experts obtained a percentage of 98% stated that "very valid". Data obtained in the form of quantitative data and qualitative data. Quantitative assessment data from questionnaires and qualitative data in the form of criticism and suggestions for revising picture book learning media based on scientific approaches.

Criticism and suggestions from experts, namely media experts, are consistent in writing the use of EYD and improve picture storybooks according to suggestions such as enlarging the writing on each picture, adding images so that they are not too plain on each blank picture. Material experts suggest that by marking where scientific learning lies, pay attention to the writing of EYD and the presentation of material is good, it is necessary to innovate more creatively.

Furthermore, the trial carried out was a small-scale trial, which was only on six grade V students of SDN 36 Mataram. At this stage, trials are carried out to obtain students' responses to picture storybooks based on scientific approaches that have been developed. The student response questionnaire consists of 14 statements.

After validation and limited trials of picture storybooks based on scientific approaches, based on the results of validation and questionnaires of student responses, it was concluded that picture storybooks based on scientific approaches for grade V elementary school were valid (feasible) to be used in the learning process.

a. Eligibility of Picture Storybooks

Based on the results of the analysis that has been presented in Chapter IV, it is found that picture storybooks based on scientific approaches that have been developed based on graphics, presentation, and feasibility of content in the feasible category. Validation was carried out by 1 class teacher of SDN 36 Mataram. The feasibility graph of picture storybooks based on scientific approaches for grade V elementary school can be seen in Figure 5.1

Figure 5.1 Picture Storybook Eligibility Graph

Based on the graph above, the feasibility of picture storybooks based on scientific approaches for grade V elementary school that have been developed is included in the category worthy of trial.

b. Research Limitations

Based on the description in ataas, this study has some limitations. With these limitations, it is expected to be used as learning and improvement to further research. The limitations include the following:

The implementation of research only reaches the limited trial stage. Meanwhile, to see the effectiveness of learning using picture storybooks based on scientific approaches that are

developed cannot be implemented.

CONCLUSION

Based on the results of research on the development of picture storybooks based on a scientific approach, it can be concluded that:

The process of developing picture storybooks based on a scientific approach for grade V elementary school includes the type of Research and Development (R&D) development with a 4D model, namely: (1) Define which consists of (a) conducting a needs analysis, (b) determining learning objectives, and (c) determining the learning content and sequence of storybook stories. (2) Design which consists of designing picture storybooks based on scientific approaches (3) Development, and (4) Dissemination.

The results of the analysis of picture book validation sheets based on a scientific approach for grade V elementary school were assessed by material expert validators with a percentage of 97.22% and media experts with a percentage of 97.9%

The results of the analysis of student responses using student response questionnaires in all aspects were obtained on average students responded well to picture storybooks based on scientific approaches for grade V elementary school developed at SDN 36 Mataram with a percentage of 85.11%.

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