Science Literacy-Based E-Module Development in Elementary Students

Lala Jelita Ananda[1], Imelda Free Unita Manurung[2], Lidia Simanihuruk[3], Suyit Ratno[4], Erika Amalia[5], Nurwahyuni[6]
{jananda.84@gmail.com}

Faculty of Education, Universitas Negeri Medan-Indonesia[123456]

Abstract. In this study, the development of an E-Module based on science literacy was carried out on the ecosystem theme which was used to improve science literacy for fifth grade elementary school students. The results showed that the validation process by the media expert validator obtained an average of 4.76 with the "Very Good" category, the percentage of eligibility was 95% which was categorized as "Very Eligible", the validation process by the material expert validator obtained an average value of 4.71 "Very Good" categories with a percentage of 94% categorized as "Very Eligible". Practicality tests by education practitioners obtained a practicality percentage 95% and were included in the "Very Practical" category. The results of student responses obtained a percentage 96% and were included in the "Very Practical" category. Based on the results of the effectiveness test of the E-Module, it can be seen that after using the E-Module, the average score of students increased from the initial average before using it, namely 61.25 with the "Enough" category and the completeness criteria "Not Complete" to 87.18 with "Very Good" category and completeness criteria "Complete".

Keywords : Science Literacy-Based E-Module, Ecosystem Theme, Grade V Elementary School.

1 Introduction

Ilmu Pengetahuan Alam (Sicience) is a science that learns about all events that are around. Science as a subject is given starting from the elementary school level to the high school level. In the 2013 curriculum at the elementary school grades I, II, and III, science content is integrated into the basic competencies of Indonesian subjects in the form of reading materials. Meanwhile, the science content in grades IV, V and VI, is no longer integrated with the basic competencies of other subjects, but the learning continues through integrated thematic learning.

Science in the 2013 curriculum aims to develop scientific thinking in elementary school students. Science learning in elementary schools has the aim of preparing students to study science at a higher level of education, preparing students to enter the challenges of the world of work or carrying out tasks in their field of work and preparing students to become members of a science literate society.

Indonesian is also a subject that is learned in elementary schools from grade 1 to grade 6. Learning in this elementary school can be divided into low-grade and high-grade learning. Learning Indonesian in lower grades uses a thematic approach or is integrated into the basic competencies of other subjects. Indonesian language learning is directed at improving students'

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ability to communicate using Indonesian properly and correctly which includes four aspects of skills, namely listening, speaking, reading, and writing skills. These four aspects of skills are part of literacy. Literacy is one of the language skills, namely the ability to read and write. Literacy is a person's language ability which includes listening skills, speaking skills, reading skills and writing skills and it can be said that literacy is language literacy.

In carrying out learning, learning tools are needed. Learning tools are a form of preparation made by a teacher before carrying out learning activities. Learning tools are also defined as a number of materials, tools, media, instructions, and guidelines that will be used during teaching and learning activities. It is very important to prepare for learning through the development of learning tools.

The purpose of preparing learning tools is so that everything that has been planned together can be achieved. Learning tools are needed as a guide or guide when carrying out learning. Learning tools will provide direction for a teacher. This is important considering the learning process is something that is systematic and patterned. Learning tools are useful as a guide for teachers on what teachers should do in the classroom. Learning tools also greatly facilitate a teacher in helping the learning facilitation process. With learning tools, a teacher can easily deliver material only with the help of learning tools that have been prepared in advance.

The Covid-19 pandemic that has hit most parts of the world, including Indonesia, is currently affecting several sectors, one of which is education. The world of education is currently feeling the impact of this pandemic so that current learning cannot be carried out directly or face to face.

However, learning must continue. So educators must ensure that teaching and learning activities continue, even though they are carried out remotely or from home. As a result of distance learning activities, teachers are required to design various learning tools as innovations by utilizing online media. With learning carried out like this, learning tools are also needed that support online learning. Learning tools needed such as teaching materials and technology-based learning media.

From the results of initial observations at SD Negeri 101777 Saentis, it is known that the types of learning resources available at this school are still limited. The learning resources available at this school are only learning resources provided by the government, namely teacher books and student books. The teacher has never innovated the development of teaching materials as a companion to the available thematic books. In learning, teachers only use learning resources provided by the government. Learning resources currently available only emphasize students' understanding of the concept.

Therefore, the mastery of students in the context of students' scientific literacy which includes aspects of science application, aspects of scientific knowledge, aspects of scientific processes, aspects of scientific attitudes of science are still lacking. This is evident from the lack of students' ability to draw conclusions, ask questions, in written and oral form and in making decisions. Teachers in learning need other learning resources in addition to the available thematic books. Teachers need teaching materials with different types from those currently available, which can train students to learn independently.

So far, in the implementation of learning, students tend to depend on information from the teacher. Therefore, it is necessary to innovate teaching materials that help teachers and students carry out learning. Innovation in the development of teaching materials is needed to facilitate learning activities so that learning is not only centered on the teacher because students can learn independently through teaching materials that have been made previously.

Based on previous research, it is known that the effectiveness of scientific literacy-oriented teaching materials is to improve student learning outcomes. Scientific literacy that appears

during learning is that students and teachers ask questions during learning. Students answer questions by giving examples of events they experience in everyday life.

Therefore, it is necessary to develop non-printed teaching materials (E-Modules) which will be presented in an attractive manner with science literacy-based materials and examples that are familiar with the daily lives of students and are equipped with video explanations of material that are easy for students to understand. . With the development of this E-Module, it can help students be more interested in learning and make it easier for students to learn science lessons so that it helps students to explore their ideas so that they are able to acquire new knowledge by themselves.

2 Research Methods

This research is a Development Research (R&D). Sugiyono (2017) suggests that research and development methods are research methods used to produce certain products and test their effectiveness. The development model used in the development of this teaching material is the ADDIE model. According to Sugiyono (2019: 38) this ADDIE model consists of 5 stages, namely Analyze, Design, Development, Implementation, and Evaluation. The development design that will be used in this research is ADDIE.

3 Result and Discussion

E-Module Development Process

The development of the E-Module will greatly assist teachers in carrying out learning in schools, therefore the result of the development of this E-Module is an E-Module Based on Science Literacy on the theme of ecosystems in class V SD Negeri 101777 Saentis. The development of this E-Module was developed using the ADDIE development model which consists of five steps, namely analysis, design, development, implementation and evaluation.

The Analyze stage is carried out to determine the needs of students and teachers in the learning process as well as the problems encountered when carrying out the learning process. At the analysis stage, the researcher conducted an analysis of teacher needs, analysis of student needs, analysis of curriculum and learning tools, analysis of basic competencies and indicators, analysis of student characteristics. From the research results, the researchers obtained data regarding the analysis of teacher needs through interviews with fifth grade teachers at SD Negeri 101777 Saentis.

Based on the analysis, teachers really need learning resources other than thematic handbooks as learning resources. then based on the analysis of students, it is known that students have not been able to explore independently the material being studied and it is known that students need more interesting learning resources and can learn independently. Therefore, it can be concluded that the research subjects need learning resources that are in accordance with their needs.

The second stage is Design. At the design stage, the researcher prepared an initial plan for making an E-Module based on science literacy. The activities carried out at this stage are compiling materials in accordance with the 2013 curriculum, namely thematic learning on the ecosystem theme sub-theme 1 learning 1 and 2 by collecting materials as material from several sources and then systematically arranged according to the learning implementation plan. which has been made. Furthermore, the researchers also designed an assessment instrument in the form

of a questionnaire and questions to get an assessment of the feasibility, practicality and effectiveness of the E-Module made.

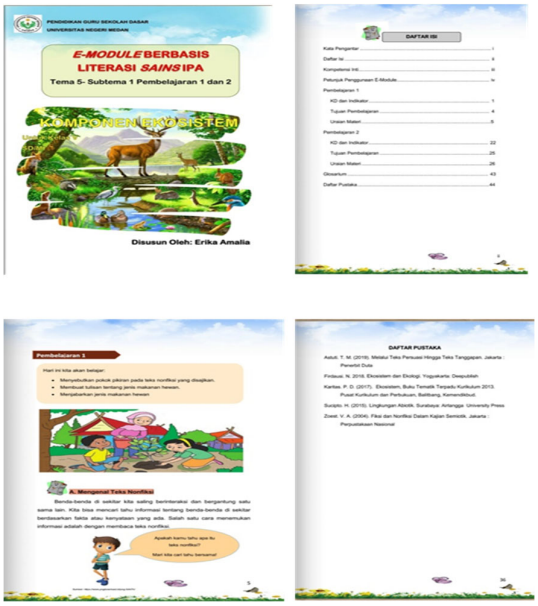
Based on the results of the practicality test of the E-Module by looking at the recapitulation of the students' response results, it can be seen that the average practicality percentage is 96% and in the "Very Practical" category and the recapitulation through the responses of education practitioners (teachers) it is known that the average practicality percentage is 95% and in the “Very Practical” category.

Based on the results of the implementation, the effectiveness of the E-Module test can be seen from the increase in student learning outcomes and achievement of the minimum completeness criteria. It can be seen that student learning outcomes increased before using the E-Module, obtaining an average of 61.25 and included in the "Enough" category and the completeness criteria "Not Complete" but after using the E-Module, the average score of students increased to 87.18 with the "Very Good" category and the completeness criteria "Complete".

The last stage is Evaluation where the researcher improves the E-Module based on the small notes given by the validator and teacher. Even though it is valid, there are still a few things that need to be improved on the science literacy-based E-Module in order to produce the best results.

Media Development Results

After going through the design and development stages, the resulting E-Module also has several changes, the following are the results of the E-Module that has been developed:



4 Conclusion

Research and development of an E-Module based on science literacy on the theme of ecosystems in class V of SD Negeri 101777 Saentis, Percut sei Tuan District has been completed in accordance with the steps and stages of development research. Based on the research and development carried out by the researchers, several conclusions were obtained, namely:

An e-Module based on science literacy on an ecosystem theme that has been developed and validated by media expert validator Mrs. Masta Marselina Sembiring, S.Pd., M.Pd with an average score of 4.76 and a total score of 95% with the category “Very Worthy". Then material validation by material expert validator Mr. Faisal, S.Pd., M.Pd with an average value of 4.71 and a total score of 94% in the "Very Eligible" category. Based on the validation carried out by media expert validators and material expert validators, the E-Module based on science literacy on the ecosystem theme is suitable for use in the learning process.

The e-Module based on science literacy on the ecosystem theme that has been developed is then tested for practicality through validation of educational practitioners and student responses. Validation by education practitioners was carried out by Mrs. Misngatun, S.Pd as a fifth grade teacher at SD Negeri 101777 Saentis. Based on the results of the data obtained a percentage of 95% with the category "Very Practical". Furthermore, through the results of the students' responses, they obtained a percentage of 96% of the data in the "Very Practical" category. Based on the results of the practicality assessment by education practitioners and student responses, the E-Module based on science literacy on the theme of a practical ecosystem is to be used.

The e-Module based on science literacy on the ecosystem theme that was developed has been tested classically to see an increase in student learning outcomes. Based on the results of the trial, it was seen that the learning outcomes of each student before and after using the E-Module based on science literacy were seen. Before using the E-Module based on science literacy, the average score of students was 61.25 and after using the E-Module based on science literacy on the ecosystem theme, the average score of students increased to 87.18 with the category "Very Good" and finished. Based on these results, it is known that the E-Module based on science literacy on the ecosystem theme is effective to use.

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