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## Harmonizing Nature and Knowledge: Crafting Engaging Thematic Teaching Tools for Expedition on Environmental Preservation

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### Abstract

The purpose of this research consists of : 1) presenting about teaching materials compiled in detail in accordance with the environmental theme which will be presented, in the thematic teaching process in the first semester for third grade of elementary school; 2) produce a thematic textbook in the first semester for third grade of elementary school with the environmental theme which used by teachers and students. Method of this research is research and development. The sample used in this research was grade 3 elementary school students. The analysis technique used was qualitative data in the form of responses, consultation results and suggestions for improvements from design experts and material experts. The novelty of this research is that this innovative study pioneered the creation of thematic teaching materials tailored for Class III students, revolutionizing environmental education through interactive and immersive learning experiences. Additionally By integrating cutting-edge pedagogical approaches with the importance of environmental conservation, this research uncovers a transformative framework for encouraging ecological awareness among young students.

Keywords: Development; Maintaining Environmental Conservation; Teaching materials; Thematic

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## INTRODUCTION

The new 2013 curriculum policy brings three major changes. These changes are implemented at all levels of education from elementary school, middle school, to high school/vocational school. The first change is in the curriculum concept itself. The concept is a combination of hard skills and soft skills (Hakim, 2017; Purwadhi, 2019). This means that it not only provides students with knowledge but also skills (Jumriani et al., 2021), the second emphasizes the learning and assessment process (Gunawan, 2017; Wulandari, 2020). The 2013 curriculum learning uses a scientific or observational approach (Hikmatusholikhah et al., 2022; Zannah & Setiawan, 2022). The three changes to the books used. The book is based on integrated thematic activities.

Thematic learning is a learning approach that integrates various competencies from various subjects (Erita et al., 2020; Muhammad et al., 2021). This integration is carried out in two things, namely the integration of attitudes, abilities/skills and knowledge in the learning process as well as the integration of various related basic concepts (Akib et al., 2020; Samri et al., 2020). The themes chosen relate to nature and human life. Both provide substantial meaning to language, Civics, mathematics and

arts and culture because they preserve the real environment in which students and society live. This is where the basic abilities of science and social studies are organized into other subjects which have an important role as binding and developing basic competencies for other subjects.

Based on a psychological point of view, the level of development of students is not abstract enough to understand subject content separately. Developmental psychology and Gestalt views provide a strong basis for the integration of basic competencies organized in thematic learning. States that thematic is an approach that is oriented towards children's development needs (Alatalo & Westlund, 2021; Sibagariang & Pandia, 2021). This approach departs from learning theory which rejects the process of practice/memorization (drill) as the basis for forming children's knowledge and intellectual structures. All activities in this thematic learning involve direct experience (hands on experience) for children and provide various understandings so as to enable children to combine their knowledge and skills from one experience to another (Puspita et al., 2020).

All activities in thematic learning involve direct experience (hands on experience) for children and provide various understandings about preserving the environment around children. The activities carried out also enable children to combine their knowledge and skills from one experience to another. The focus of attention in thematic learning lies in the process that children go through when trying to understand the content and learning activities in line with the forms of skills that they must develop (Behnamnia et al., 2020).

When compared to conventional activities, thematic learning seems to place more emphasis on children's involvement in the learning process or actively directing children to be involved in the learning process and decision making. This thematic learning approach places greater emphasis on applying the concept of learning while doing something (learning by doing) (Nursima et al., 2022).

From the results of observations carried out at the Muaro Jambi district elementary school, problems with learning activities carried out separately have been identified in a series of initial observations, including, because of limited textbooks, some teachers still have difficulty finding books to use in the 2013 curriculum. only relying on the syllabus provided by the government and the unavailability of thematic teaching materials which are arranged in detail according to the themes that will be presented and this will cause a lack of student motivation in learning, teaching and learning interactions in the classroom are not optimal, the delivery of the material is not good, students become passive.

Thus, thematic learning certainly requires effective and efficient teaching materials which are prepared systematically according to the themes that will be presented in class III, semester I, which consists of 6 themes, namely: love the animals and plants around you, impressive experiences, knowing the weather and seasons, lightness. the same weight when carried, the same weight when carried, let's play and exercise, let's save energy for the future, behave well in life and maintain sustainability, preserve the environment and researchers focus on developing thematic teaching materials on the theme of preserving the environment

Starting from these problems, an alternative was obtained to design and develop teaching materials in the form of thematic learning books which are arranged in detail according to the theme that will be presented, using the principles of the elaboration model in all subjects, in line with current advances in information and technology. Teaching materials are also developing, one of which is the existence of thematic learning teaching materials for elementary school class 3 semester 1 with the theme of preserving the environment.

Previous research conducted by Desyandri et al., (2019) which discusses the development of integrated thematic teaching materials using the discovery learning model. The results of this research show that integrated thematic teaching materials using the discovery learning model in elementary schools are very valid, practical and effective. There are differences in research conducted by Desyandri et al., (2019), the research that the researcher will carry out depends on the material and class. The novelty of this research is through the implementation of innovative teaching methodologies and curriculum design, this research introduces a fresh approach to primary education, enriching students' understanding of environmental stewardship while fostering their active engagement in conservation

efforts."

The urgency of this research lies in equipping young people with the knowledge and skills necessary to become proactive agents of change in safeguarding our fragile ecosystem. In addition, amidst increasing concerns about ecological degradation, the aim of this research lies in empowering primary school educators with effective tools to instill in children a deep sense of responsibility towards environmental conservation from an early age, thereby cultivating a generation of environmentally conscious citizens. Carrying out this research has the potential to create a younger generation who is more environmentally aware, ready to act, and actively involved in preserving nature through innovative thematic education.

Based on the explanation above, the aim of this research is to present teaching materials which are arranged in detail according to the environmental theme that will be presented, in the first semester thematic learning process for class III elementary school and produce the first semester thematic textbook for class III elementary school with an environmental theme. life used by teachers and students

## **RESEARCH METHODS**

### ***Research Type***

The development model used in this research is the Dick and Carey (2005) learning design model in accordance with the objects and characteristics of the product that will be developed. The use of this model is adapted according to the needs of this research. The choice of the Dick and Carey model in this development was based on several considerations, including 1) The fulfillment of the four basic components that need to be developed in a learning program, namely objectives, strategy, material selection and evaluation (Saputra, 2020), 2) The accuracy of the model in determining a number of procedural components, 3) The theoretical basis prescriptive in nature, goal oriented (goal oriented) (Hamid & Fatimah, 2020), 4) Fulfillment of the 3 main components in learning theory, namely methods, conditions and results, 5) Can be used to design learning both classically and individually, 6) Can be used to develop learning packages in the cognitive, attitude, psychomotor and form, verbal and 7) Can be used to develop learning with teaching materials.

The development procedure is carried out by including nine of the ten learning steps in the Dick and Carey design. According to Khoiron et al (2020), the development steps are as follows: 1) Setting general objectives for learning 2) Carrying out learning analysis 3) Identifying initial abilities and learning characteristics 4) Formulating specific objectives 5) Developing details tests whose criteria have been determined 6) Developing learning strategies 7) Developing and selecting learning materials 8) Carrying out formative evaluations; and 9) Revise learning.

### ***Data Collection Technique***

At the stage of developing methods, media and materials before the product is used by users, it is first validated by design experts and material experts in the form of a questionnaire. The results of the questionnaire in the form of comments and suggestions from the two experts aim to improve and perfect the product being developed. After the two experts stated that the product was suitable for use, the product was tested on users, namely grade 3 students at SD 211/IX Muaro Jambi.

### ***Data Analysis Technique***

At the testing stage, the product first asked for responses from colleagues, after that it was tested on grade 3 students at SD 211/IX Muaro Jambi. The trial was carried out in three stages, namely individual trials, small group trials and large group or field trials. The analysis technique used is qualitative data in the form of responses, consultation results and suggestions for improvements from design experts and material experts. Input and comments are grouped and then analyzed qualitatively for product revision purposes. Quantitative data is in the form of numerical data obtained from questionnaires

given to students and colleagues. Field trial data in the form of questionnaires were analyzed in the form of qualitative analysis by changing the assessment results from students into score intervals with a Likert scale Sugiyono (2009) as follows:

Table 1. Scoring criteria for items in the questionnaire

Criteria	Score
Very little	Weight 1
Not enough	Weight 2
Currently	Weight 3
Good	Weight 4
Very good	Weight 5

Numerical data is analyzed using percentages with the following formula:

$$\frac{\text{Answer weight for each assessment}}{N \times \text{highest weight}} \times 100\%$$

N is the Respondent

For the purposes of making decisions regarding whether or not a development product is appropriate, the following decision-making criteria are used:

Table 2. Decision Making Criteria

Achievement Level	Qualification	Decision
80% - 100%	Very worthy	No need to revise
66% - 79%	Worthy	Needs minor revision
56% - 65%	Not worth it	Needs quite a major revision
0% - 55%	Not really worth it	Needs revision and rewrite

## RESULTS AND DISCUSSION

The development procedure is carried out by including nine of the ten learning steps in the Dick and Carey design. The development steps are as follows:

1) Set general goals for learning

In implementing thematic learning, several things need to be done which include the planning stage which includes basic competency mapping activities, developing a theme network, developing a syllabus and preparing a learning implementation plan. Identification of the general objectives for developing thematic teaching materials for primary schools is carried out by reviewing the syllabus that has been prepared in the 2013 curriculum document for Primary Schools/Madrasah Ibtidaiyah,

2) Conduct learning analysis

At this stage of analysis, it is known that there is a gap between the existing conditions and the actual conditions. The 2013 curriculum learning uses books based on integrated thematic activities. is a learning approach that integrates various competencies from various subjects

3) Identify initial abilities and learning characteristics

Analysis of students' initial abilities is carried out by giving pre-test questions and interviews. This is useful for finding out students' initial knowledge about the theme of preserving the environment. The results of the pre-test can be seen in Appendix 1. From the results of the pre-test scores, only then can a determination be made about methods, media and materials that must be included in teaching materials that will be used in thematic learning on the theme of preserving the environment,

4) Formulate specific goals

At this stage, formulating specific goals includes what the learner wants to achieve, and what abilities will be obtained after learning activities. Therefore, these objectives must be detailed as specifically as possible using the ABCD method.

The learning objectives that must be achieved in this teaching material are 1) carry out cooperation at home and at school 2) like to explore information through reading and listening from other sources based on curiosity, 3) demonstrate confident and courageous cooperation in carrying out various physical activities in a fun form of play 4) making construction works using materials from the environment. 5) perform addition and subtraction of three numbers, perform multiplication which results in three-digit numbers and divide three-digit numbers, perform mixed arithmetic operations, and solve calculation problems including those related to money.

After studying the material, students are expected to be able to 1) identify natural and artificial natural features in the surrounding environment and their benefits for life and how to preserve them, 2) recognize the rules and regulations that apply in the family, at school and in the community 3) implement the rules and regulations. the rules that apply in the family, at school and in the community, 5) know the consequences of violating the rules of correctly describing sources of environmental pollution. 6) explain the difference between a healthy environment and an unhealthy environment, 7) describe environmental conditions that can affect human life and how to maintain environmental health, 8) add and subtract three numbers, 9) do multiplication which results in three-digit numbers and divide numbers three numbers, 10) perform mixed arithmetic operations, give feedback and suggestions, read intensively text and complete poetry based on pictures, 11) solve calculation problems including those related to money, 12) give feedback and suggestions, read intensively text and complete poetry based on pictures.

5) Developing test details whose criteria have been determined

Develop test details whose criteria are in accordance with the core competencies and basic competencies contained in the syllabus and RPP, covering what students have achieved and what abilities they have acquired after learning activities. Therefore, the test grains must develop parallel

6) Develop learning strategies

This step begins with drafting teaching materials that refer to the 2013 curriculum and syllabus for SD/MI. The product to be developed is designed for thematic learning for elementary school class 3 semester 1, namely the theme of preserving the environment.

The next step is to compile a theme network (attachment), in compiling the theme network according to the Core Competencies and Basic Competencies that have been formulated. Then consult with learning design experts.

Before testing the product on users in the field, the product must first be validated by a competent expert in the field. The experts who validate the teaching material products being developed are teaching material design experts and thematic learning material experts.

7) Develop and select learning materials

Before testing the product on users in the field, the product must first be validated by a competent expert in the field. The experts who validate the teaching material products being developed are teaching material design experts and thematic learning material experts

8) Conduct formative evaluation; And Following the completion of the instructional design a series of evaluations are conducted to collect data that is used to identify ways to improve teaching, the three types of formative evaluation are referred to as single evaluation, small group evaluation, and field trials

9) Revise learning.

Revisions are made based on comments and suggestions from design experts and material experts, as well as error findings from peer trials, individual trials, small group trials, large group trials. After studying the comments and suggestions, the developer makes revisions for the perfection of the teaching materials, then the teaching materials are ready to be tested on users, namely grade 3 elementary school students.

The results of data analysis are used to revise the development product in the form of thematic teaching materials for elementary school class 3 semester 1. Based on the assessment/response from learning design experts, revisions or improvements are made to the development product in the form of teaching materials

After the experts' criticism and suggestions were revised, the developer handed back the thematic teaching material product for elementary school class 3 semester 1 on the theme of environmental preservation to the validator or material expert. Overall comments on the thematic teaching material for elementary school class 3 semester 1, the theme of environmental conservation, the second validation is: One of the existing images is replaced with an image that is more relevant to the theme of environmental conservation, the images displayed in teaching materials are better to use images from developer documents rather than from the internet and typing in sentences must be more attention

The discussion of development data that will be presented consists of two activities, namely: 1) discussion of data and responses to development products, including: (a) discussion of data on responses from learning design experts and (b) discussion of data on responses from experts on thematic learning materials; 2) discussion of product development data resulting from field trials, including: (a) discussion of individual trial data; (b) discussion of small group trial data; (c) discussion of large group trial data; and (d) discussion of test data for grade 3 elementary school teachers (Ebiati, 2021; Gunawardana et al., 2020).

Meanwhile, the model used to develop this product is the Dick and Carey design model which requires research process steps that begin with a need, a problem that requires solving using a particular product, the next step is to determine the characteristics or specifications of the product, after that it is created draft and then the product is tested in the field. During the trial activities, observations and evaluations were carried out. Based on the results of these observations and evaluations, revisions are made for the perfection of the product to be developed.

Analyzing general learning objectives is the main requirement in the development process because students are the core subject in the learning process. Identification of the general objectives for developing thematic teaching materials for elementary schools is carried out by reviewing the syllabus that has been prepared in the 2013 curriculum document for Elementary Schools/Madrasah Ibtidaiyah. Students who want to use the teaching material products that will be developed are grade III elementary school students aged between 9-10 years, they come from different backgrounds and abilities and have never previously received material on the theme of preserving the environment.

The ability of students who do not understand about preserving the environment. It is very necessary to provide material so that we can understand how to preserve the environment. So teaching materials must be developed according to student characteristics. This is to increase students' knowledge and skills about preserving the environment. Before developing a product, the first step that the developer must take is to analyze needs which will later be useful as a basis for determining the product to be produced, in this case thematic teaching materials for elementary school class 3 semester 1 with the theme of preserving the environment. According to Ananda (2023); Hasibuan & Nugraha (2023) That the steps in making teaching materials are as follows: 1) analyzing the needs for teaching materials, 2) compiling a network of teaching themes, 3) understanding the structure of teaching materials.

After analyzing the curriculum, the next step is analyzing learning resources. The learning resources available at SD 211/IX Muaro Jambi so far are in the form of Civics, Indonesian, Mathematics, Science and social sciences package books from the Muaro Jambi Education Department, these books are still very limited in number, this is what students at SD 211/ IX Muaro Jambi, so the developer took the initiative to add learning resources by creating thematic teaching materials for elementary school class 3 semester 1 with environmental themes. thematic based. This teaching material was created to meet the criteria for interesting teaching materials so that the thematic basis is considered to be able to educate students to be more independent, creative and innovative and can form children's knowledge and intellectual structure from an early age, as well as providing knowledge and skills about preserving the environment that are useful in life. the student himself (Apriyani, 2022; Sakinah et al., 2022).

Develop test details whose criteria are in accordance with the core competencies and basic competencies contained in the syllabus and RPP, covering what students have achieved and what abilities they have acquired after learning activities. Therefore, the test grains must develop parallel.

After setting a test with predetermined criteria that students must achieve after learning, the next step is to choose methods and strategies. This step begins with drafting teaching materials that refer to the curriculum and syllabus at SD 211/IX MendaloDarat. The product to be developed is designed for one-theme learning and is intended for students at SD 211/IX Mendalo Darat. The next step is to compile a theme network (attachment), in creating a theme network tailored to the Core Competencies and Basic Competencies that have been formulated. Then consult with design experts and material experts.

To realize learning using teaching materials, the method used is a learner-oriented approach (student-centered approach) in addition to a learner-oriented approach (teacher-centered approach). Through a learner-oriented approach, learning activities will be more active and not monotonous. In the preparation and guidance phase generally uses strategies with a teacher-centered approach and methods such as; lectures, and questions and answers. Meanwhile, the accessing and practicing phases generally use strategies with a student-centered approach and methods such as; demonstration, collaboration, and so on.

The first step in product development, before the product is tested on users, is that the product is first validated by a design expert, namely Dr. Hary Soedarto Harjono, M.Pd and thematic learning materials expert, namely Dr. rer. nat. Rayandra Ashyar and responses from colleagues. Namely Chusnul Chasanah, S.Pd, he is a class 3 teacher at SD 211/IX Muaro Jambi

The validation results are in the form of comments and suggestions aimed at correcting errors in the teaching materials both in terms of design and material. Then the comments and suggestions given are studied in order to revise the product. After the product has been revised by the developer according to comments and suggestions, the product is returned for validation again until the expert team declares that the product in the form of teaching materials to be developed is considered suitable or valid to be tested on users. After being declared worthy or valid, the teaching materials are assessed by peers, after receiving good responses from peers, the teaching materials are ready to be tested.

Teaching materials are a series of materials that contain or carry educational messages to students. Teaching materials should be interesting. The attractiveness of teaching materials to grow and increase students' interest in learning who use these teaching materials. The lack of attractiveness of teaching materials as stated by design experts will cause learning using produced teaching materials to be less meaningful. Furthermore, expert advice regarding improving the supporting capacity of teaching materials for student-centered learning is based on the learning paradigm that must be student-centered. Students are subjects who learn, not objects of learning. Therefore, the supporting capacity of teaching materials for learning must be explained in detail, so that what students must do in learning becomes clear. The paradigm of students as learning subjects refers to constructivist understanding.

Constructivists argue that students place learning experiences to create situations so that students can interpret information for their own understanding. Constructivists also argue that learning occurs most effectively when students are engaged in authentic tasks that are connected to meaningful contexts. The first measure of learning is based on the student's ability to use knowledge to facilitate thinking in real life

To calculate what criteria the validation results obtained from the design results fall within, this is done by calculating the percentage. To calculate eligibility, it is then confirmed using the eligibility criteria table. The figure of 88.0%, the result of this percentage processing, illustrates that the teaching material development product validated by learning design experts is at a value of 88.0%. This figure, if confirmed with the eligibility criteria table, is in the range of 80%-100%. Numbers within this range are categorized as very good/very appropriate/very clear. Thus, the development product teaching materials are suitable for testing and use by end users. The product teaching materials have met the criteria, principles and indicators required in the teaching material design process.

Based on the comments and suggestions given, the developer revised according to comments from design experts, namely that the size of the images/illustrations/examples in the teaching materials had been enlarged proportionally and each image was given a detailed explanation, the title of the

illustration was written in one line and the distance from image to The explanation uses 1 space, the placement of the text explaining the image is consistent and not within the image. The next revision is a matter of typing, use of punctuation, and paragraph writing. The developer has revised it according to the thesis writing instructions. The last thing that was revised was that language issues in each paragraph had been revised taking into account the rules of good Indonesian writing

The material developed is said to meet the requirements if: (1) it is interesting enough, (2) the content is appropriate, (3) the sequence is correct, (4) the required information is there, (5) there are practice questions, (6) practice answers are provided, (7) there are appropriate tests, (8) there are clear follow-up instructions for improvements, remedial efforts, further training or student progress in general, (9) there are instructions for students that direct them from one activity to another (Munandir, 1987 :199).

The trials carried out by the 3rd grade teacher at SD 211/IX MendaloDarat were carried out simultaneously with trials on students, namely individual trials. Testing on fellow teachers is important to filter all data related to the development of teaching materials. Data from peer testing results is not only important for improving teaching materials, but is also needed to know under what conditions the teaching materials developed can be used or used.

Based on the percentage calculation of the data obtained according to the formula used, the percentage of responses from class 3 teachers at SD 211/IX MendaloDarat to the teaching materials used reached 92.5%. Quality Percentage 92.5% of the results of this trial if confirmed by the eligibility criteria table, which is in the range of 80%-100%. This means that the quality of the test results in this range is in the very decent category. The suitability of instructions, individual assignments and group assignments as in the teaching materials helps teachers carry out the learning process.

Step 8 of the Dick and Carey model is the involvement of learners or students to actively respond. The response in question is feedback that can possibly measure how far students are able to process the material being taught. Therefore, this model suggests the existence of various strategies and methods combined in learning activities such as; simulation, problem analysis, as an effort to get that response. To get a response from eating users at this stage a trial phase was held. Implementation is carried out within a limited period of time, namely only by carrying out trials. The trial was carried out in 2 stages, namely small group trials and large group trials. When the implementation is carried out, students are asked to fill out a questionnaire containing several questions about the teaching materials. The questions are intended to find out the extent of the attractiveness, effectiveness and benefits of the products that have been made.

The product revision stage is the stage of improving the product based on suggestions, comments, criticism and instructions that have been submitted by the expert who carried out the validation. Product revisions are not only based on the results of expert validation, but also pay attention to the results of field trials, both those given by grade 3 teachers and by students. Product revisions can be carried out continuously in line with the development process. Continuous revisions will make the product better and can reduce errors that occur in product development

From this presentation it can be concluded that the preparation of teaching materials and the organization of teaching materials are in accordance with the principles of good module preparation, criteria for preparing good teaching materials are: 1) Self Instructional; namely being able to teach students independently. 2) Self Contained; that is, all subject matter from one competency unit or sub-competency studied is contained in one complete module. 3) Stand Alone; that is, the module developed does not depend on other media or does not have to be used together with other media. 4) Adaptive; namely having high adaptability to science and technology. 5) User Friendly; Teaching materials should be friendly to the user or in other words easy to use. On the basis of fulfilling these criteria, the entrepreneurship-based environmental education teaching materials for grade 3 students at SD 211/IX Muaro Jambi were declared valid by material experts as valid and good and suitable for use.

## CONCLUSION

The conclusion of this research is that the Thematic Teaching Materials for Class III Semester I Schools with the theme of preserving the environment were declared effective after being used in



learning. The effectiveness of these teaching materials can be seen from the average score obtained by class 3 learning results before using thematic teaching materials with an average score of 56. And after using the teaching materials students obtained an average score of 93.33. Thus, the use of school thematic teaching materials for class 3 semester 1 with the theme of preserving the environment in learning can improve student learning outcomes. recommendations for further research to develop teaching materials for other themes that are more creative and innovative

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