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**DEVELOPMENT OF GEOGRAPHIC BOOKLETS LEARNING MEDIA BASED ON ENVIRONMENTAL CARE ON NATURAL RESOURCES MATERIALS IN SENIOR HIGH SCHOOL**

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**ABSTRACT**

*The character of caring for the environment is essential for students to be wise in protecting natural resources in Indonesia. The planting of environmental care character values can be inserted into the media used in the learning process. This study aims to develop a geography booklet based on environmental concerns related to students' daily experiences. The development model in this study uses the Borg & Gall stage, which consists of ten development steps. This research was conducted in three senior high schools in Pangkalpinang, Indonesia. There were (100) respondents, all of whom came from eleventh-grade students. The results of the feasibility test of geographic booklet media products based on environmental care characters obtained an average of 93.33% at the validation stage by a team of experts with very valid criteria. The feasibility of small-scale trials is 83.30%, and large-scale trials are 85.07%. It is known that the results of the analysis of environmental care attitudes obtained before using the product are 63.4%, and after use of 83.8%. It can be indicated that the geography booklet learning media based on environmental care is very feasible to be applied in the classroom and used as a learning resource.*

**Keywords:** *Environmental Care Character; Geography Booklet; Learning Media.*

**A. INTRODUCTION**

Geography learning is one of the essential sciences contained in the curriculum in various countries (Arrasyid et al., 2019). The discipline of geography in schools generally teaches spatial-based interactions between humans or between humans and their environment (McPhee, 2021). The world faces environmental degradation problems, including deforestation, biodiversity loss, ocean acidification, ozone depletion, dan water scarcity. Humans are very dependent on their environment, and if damaged, they can no longer support life. Problem solving environmental requires human

resources with thoughts, abilities, and skills related to the environment (Rafiei & Davari, 2015).

The environmental damage that is often reported today is related to geography learning. Studying geography, especially natural resource material, should encourage students to care about their environment. Building the character of a community that cares about the environment allows it to be effective through education in schools (Desfandi, 2015). Caring for the environment is one of the 18 principles to strengthen the implementation of character education

(Kemdiknas, 2011). It has ingrained character education in students, either directly or indirectly (Jaya et al., 2014). On the other hand, individuality increases among students who do not care about environmental problems. Schools have a special role in helping students understand the impact of human behaviour on the earth where life is sustainable (Ozsoy et al., 2012).

Education is viewed as a lifelong process that civilizes and empowers students. Teachers can provide encouragement in the form of “call to action”, thus encouraging students to be aware to be involved in their learning (McPhee, 2021). Teachers can set an example, encourage pupils to participate, and develop their potential and creativity are needed to accomplish this method. Various tactics, such as competency-based education and training approaches, improve schools’ quality of learning performance.

Digital pedagogic development in schools is important to pay attention to the complex configuration of storage space, software, algorithms and patterns, standards, protocols, and negotiations (Alirezabeigi et al., 2020). Strategies, facilities, materials, and rationality significantly affect the process of producing learning products (Mangal & Mangal, 2008). Accessibility and

availability of electronic media devices influence teachers in determining their use in learning geography for local studies (Hussaini et al., 2021). A learning media development does not have to follow the latest technological developments, but it is important to emphasize the availability of capital related to technological devices and student characteristics.

Research and development in the use of natural resources that contain the context of local wisdom has been proven to improve students’ critical thinking (Gayatri et al., 2018). Learning products that present environmental contexts in concrete forms such as pictures, photos, data, and maps are very meaningful to students (Fatchan et al., 2012). Students consider learning media with real geographic objects to provide benefits when learning.

Purwanto found errors in the organization of the textbooks used by the geography teacher. These errors range from overriding the purpose, inappropriate examples, inappropriate explanations, inadequate explanations, and media content standard errors (Purwanto et al., 2015). Students do not enjoy reading textbooks because the teaching elements are not related to actual events known to students. Products that are not well developed will affect the function of their use so that it allows implementation in

learning that is also not optimal and even fails. However, it has not been studied further how the development and benefits of textbook media have gone through improvements.

In this study, the booklet learning media was developed by perfecting the concept that contains the context of local wisdom and the context of the surrounding environment. This study aims to develop booklet learning media according to the characteristics of local school students with concepts that touch everyday life. This research is expected to find effective and efficient learning media solutions to build a more active environmental care character and provide something new.

## B. MATERIALS AND METHODS

This study is development research, which develops and validates a product to better suit students' needs. Sugiyono defines development as a process of

analysis utilized to create and evaluate certain items (Sugiyono, 2016). Books, modules, and learning tools are examples of products that have been developed, but software such as learning media and learning models can also be used.

This study uses the Borg and Gall stages, which have ten steps that aim to produce a product and test its effectiveness (Gall et al., 2007). This stage is suitable because the stages are more coherent and comprehensive to do. Researchers implemented ten steps consisting of (1) Exploring potential problems, (2) Gathering information, (3) Product design development, (4) Design validation, (5) Design improvement, (6) Product testing, (7) Revise the test results, (8) Use trials, (9) Revise the final product, (10) Production and distribution of the product. In detail, the stages carried out by the researcher are presented in figure 1.

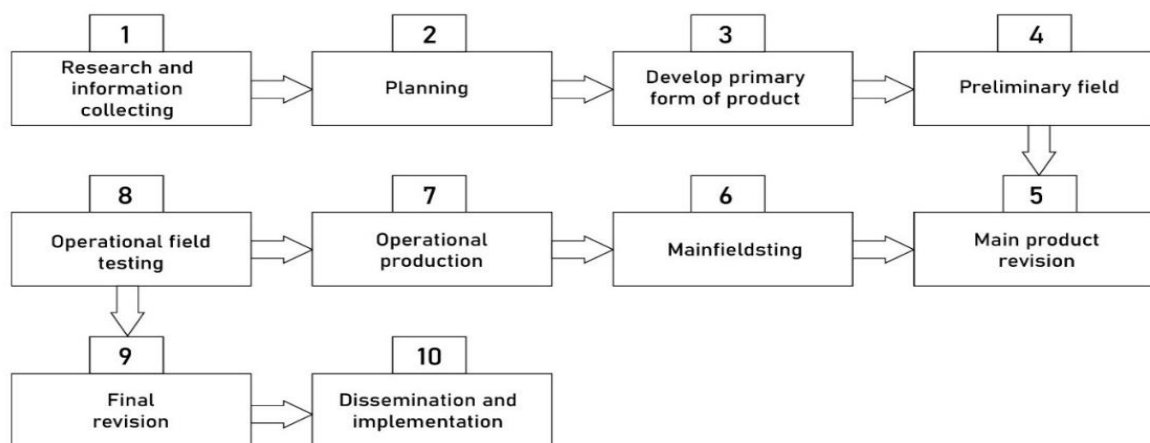


Figure 1. Borg and Gall Development Flow

This research includes qualitative and quantitative data. The data obtained were in the form of a questionnaire from the research subject, which was then analyzed and calculated to obtain the percentage in this study. Qualitative data was to see the advantages and disadvantages of developing booklet learning media products based on environmental care attitudes.

Data was collected through interviews, questionnaires, observation, and documentation. Interviews were conducted with geography teachers at Pangkalpinang State Senior High School to obtain information about the geography learning process and input related to developing environment-based learning media plans. Questionnaires were given to validators in media, materials, language to assess the product and students to assess the product being tested. Observations were made to determine the current state of the learning process. The documentation used was the school's research profile, a list of student names, syllabus, lesson plans, photos of research activities, and others.

The analytical method used to support the achievement of the objectives of research activities, the methods used were as follows:

1) Research Preparation and Need Analysis Data

This analysis was seen from the needs analysis with interviews with geography teachers and several students

to be used to collect information with qualitative descriptive techniques. Needs analysis is used as a basis for the product development of geography booklet media based on environmental care attitude on natural resources materials.

2) Product Development Design

Media design uses flowchart and storyboard basis. Flowcharts show the sequence and relationships between processes, while storyboards show a sketch of each sequence in more detail. The two main foundations in product development are useful for facilitating development from start to finish.

3) Feasibility Data Analysis

The feasibility of learning media for geography booklets based on the attitude of caring for the environment was seen from the content, language, and product appearance by media experts, materials, language, and several students. This assessment was carried out in several stages as follows:

a) Test the validity of the expert team

The formula used for the validity of the expert team is:

$$NP = \frac{R}{SM} \times 100$$

Information:

NP = percent value sought or expected

R = raw score of the assessment validator

SM = ideal maximum score of statement

100 = Fixed number

**Table 1.** Conversion of Achievement Rate with Scale on Expert Validation Test

Percentage	Information
0% < P ≤ 25%	Very unvalid
25% < P ≤ 50%	Unvalid
50% < P ≤ 75%	Valid
75% < P ≤ 100 %	Very valid

If the result score was ≥ 50%, it was concluded that the product was feasible to use and produced an effective product.

b) Student Assessment Questionnaire Analysis

The test was continued by analysing student assessment questionnaires to see the attractiveness of the booklet with the criteria in table 2.

**Table 2.** Conversion of Achievement Rate with Scale

Criteria	Information
Very interesting (SM)	Score 5
Interesting (M)	Score 4
Quite interesting (CM)	Score 3
Less interesting (KM)	Score 2
Very uninteresting (KM)	Score 1

4) Environmental Care Attitude Analysis

To find out the attitude of caring for the environment, it was done by

distributing a questionnaire on caring for the environment. This analysis showed whether or not there was an attitude of caring for the environment in class XI IPS students in 3 Senior High Schools in Pangkalpinang by using the percentage formula as follows:

$$NP = \frac{n}{s m} \times 100 \%$$

Information :

NP = Percentage value

n = Research result/observation

sm = Maximum score that can be achieved

**Table 3.** Benchmarks of Percentage Category

Score	Percentage	Information
106-140	76% - 100%	High/good
78 - 105	56% - 75%	Moderate/good enough
56 - 77	40% - 55%	Low/not good

This data was analyzed descriptively quantitatively in the form of a frequency table, the target on the aspect of students' environmental care was > 76.00%.

## C. RESULTS AND DISCUSSION

### 1. Potential Problems and Needs

#### Analysis

This stage was obtained through data collection to explore potentials and problems directly or indirectly by using needs questionnaire analysis and direct interview guidelines to teachers

and students at Pangkalpinang State High School. According to the findings of the interviews, many students dislike reading textbooks as a critical source of information in class. The teaching elements offered in the textbook were never related to actual objects or events in the real world that students were familiar with, according to the textbook utilized by the teacher in geography learning activities in the classroom. Only a definition of a concept and practice questions were included in the instructional materials. The challenges in the textbook were intellectual in nature as well. The problems presented contain objects and events that were not related to the reality of students. It was the opportunity for researchers to create a media booklet based on caring for the environment. The solution to this problem was to create a booklet based on caring for the environment. Researchers collected relevant information from various sources. The booklet will contain material information about natural resources related to problems in students' daily lives. Learning that emphasizes the context of the environmental crisis encourages the assumption of the importance of preserving the environment by minimizing the consumption of natural resources

(Wibowo et al., 2021). The development step was continued by compiling a booklet design based on environmental care for class XI IPS students at three public high schools in Pangkalpinang.

## **2. Development of Geography Booklet Media based on Environmental Care Attitude on Natural Resources Materials**

The design developed, compiled as a geography booklet media based on an attitude of caring for the environment, has its charm, which was packaged in the form of the required booklet media. The attractiveness of the booklet media based on the attitude of caring for the environment was as follows:

- a) The beginning and cover of the booklet were designed from a cover, introduction, table of contents, and a sheet that contained various characters, especially the character of caring for the environment accompanied by combining colors, images (illustrations), shapes, and font sizes attract students' attention.
- b) The chapter contains learning objectives, concept maps, descriptions of summary material, and formative tests with the

- context of problems in the surrounding environment.
- c) The contents contained pictures or illustrations, bold, italics, or colors not found in ordinary books.
  - d) There was up-to-date information in geography booklet media based on environmental care attitudes linked to character education.
  - e) Ideal size and easy to carry, good use of paper
  - f) Assignments and exercises were well packaged to be attractive.
  - g) The final section is equipped with a glossary, bibliography, and

author biodata that allows students to explore other literacy about natural resources and environmental care attitudes.

The design that had been developed was obtained in the form of a booklet learning media based on an attitude of caring for the environment with natural resource materials for students of class XI IPS High School. The following were sections of the geography booklet learning media that have been compiled:

- 1) Cover: included the title "GEOGRAPHY For High Schools."



**Figure 2.** Revised geography booklet media cover



- 2) Foreword, compiled containing thanksgiving and a brief description of the geography booklet media, as well as the author's hopes:



Figure 3. Preface after revision

- 3) Table of Contents, including outline (outline)

Figure 4. Table of contents after revision

- 4) The media content section of the booklet included learning objectives, sub materials, concept maps, material descriptions, summaries, per-activity exercises, formative tests.



Figure 5. Example of the contents of a booklet showing the damage to the surrounding environment

- 5) The final part of the media booklet included a bibliography, glossary, and author's bio.



**3. Feasibility of Media Booklet Based on Environmental Care Attitude Material Natural Resources**

**a) Description of Expert Team Validation**

Product validation was carried out using a questionnaire given to validators, media experts, material

experts, and linguists to assess the validator. The results of the validation obtained data analysis based on data analysis techniques that had been formulated. The summary of the data from the validation aspects was described as follows:

**Table 4.** Recapitulation of the Validation Results of Geography Booklet Media Assessment

No.	Assessment Aspect	Percentage (%)	Category
1	Material Presentation	88.33%	Very Valid
2	Curriculum	90.00%	Very Valid
3	Learning Evaluation	93.33%	Very Valid
4	Execution	93.33%	Very Valid
5	language	86.67%	Very Valid
6	Sentence Clarity	93,33%	Very Valid
7	Print Quality	100.00%	Very Valid
8	Design Quality	100.00%	Valid
9	Display Quality	93.33%	Valid
Average Percentage		<b>93,66%</b>	Very Valid

Source: Primary Data Year 2021

The table above showed the assessment results of the assessment booklet by the assessment team regarding the aspect of presenting the material, obtaining a total of 88.33%, which can be categorized as very valid. The results of the booklet assessment on curriculum specs obtained a percentage of 90.00%, which can be classified as very valid. The results of the booklet assessment on the aspects of evaluation and

implementation of learning obtained a percentage of 93.33%.

The results of the booklet assessment on the linguistic aspect obtained a percentage of 86.67%, categorized as very valid. In this aspect, it included the choice of words and language according to the EYD. For sentence clarity in this booklet, the percentage obtained was 93.33%, with a very valid category.

The results of the booklet assessment on aspects of print quality and design obtained a percentage of 100.00%, which included clarity of writing, attractive colors, and provides comfort for readers so that it was categorized as very valid. While the last aspect, namely the aspect of display quality,

was obtained as much as 93.33% with a very valid category.

From the results of the analysis of the validator's assessment, it could be concluded that this geography booklet had been made and requires a minor revision. The criticisms and suggestions from expert validators were as follows:

**Table 5.** Advice from experts

No	Suggestions/ Comments	Repair
1	The picture needs to be clarified again because some pictures cannot be seen.	Review images and improve image quality for more precise viewing.
2	Correct spelling and sentences with many letter errors.	Fixed according to validator's suggestion
3	Add material in subchapter two regarding tourism potential	Fix according to validator's suggestion
4	Refine the questions to an adjusted level of difficulty	Questions are made based on facts in everyday life by relating to the concept of natural resources.

After getting the percentage results and suggestions from the validator, the next stage was the revision or improvement stage, according to the recommendations from the validator, so that it could become a perfect product that was ready to be tested.

**b) Trial Results of Geography Booklet Media by Students**

The geography booklet media trial was conducted to determine the suitability of the developed booklet media. Through this trial, a media booklet based on an attitude of

caring for the environment was produced. Students were given a questionnaire to assess the feasibility of the booklet containing questions about the suitability of the material, design, writing, and student motivation.

The results of the limited trial were carried out through several revision stages from the experts, who were then tested in small classes to find out input and suggestions from 10 students randomly to represent the target media for the booklet made. The results of the

limited trial obtained to obtain the product broadly could be seen in the following table:

**Table 6.** Percentage of Limited Trial Results on Geography Booklet Media Based on Environmental Care Attitude

No	Assessment Aspect	Percentage (%)	Criteria
1	Material presentation	85,33	very feasible
2	Study evaluation	79,00	very feasible
3	language	92,67	very feasible
4	Sentence clarity	81,33	very feasible
5	Time Allocation	86,40	very feasible
6	Cover Design Quality	90,90	very feasible
7	Display Quality	90,90	very feasible

The results obtained were 85.33% in presenting the material, which was included in the very feasible criteria. This aspect had been fulfilled because the material presented was following facts, theories and did not give rise to new interpretations.

In the aspect of learning evaluation, the percentage of results obtained was 79.00% in very decent criteria, including learning activities containing material to help students achieve learning objectives following the competencies presented.

The linguistic aspect obtained results of 92.67% with very feasible criteria, including the language used according to the high school level and using the language according to

the EYD. At the same time, the aspect of sentence clarity was obtained at 81.33%, which was very feasible. It was said that the geography booklet media fulfilled every presentation of the material and could balance the learning speed of high school students.

Aspects of time allocation obtained an assessment of 86.40% "very feasible." Good response to design and display quality was 90.90% with very decent criteria, design and display presentation with attractive and easy-to-understand images through language and pictures that directed students to understand the material presented. It had received a positive response in terms of design and appearance. The following response was an

evaluation of the questionnaire from the students, and then from the limited-scale trial, a revision was made to apply it to students. The questionnaire evaluation from the limited-scale trial was used to make revisions before being applied to the next trial.

Furthermore, external scale trials were carried out on students of class XI IPS in 3 Senior High Schools in Pangkalpinang with 100 students. All students were given a revised draft of the geography booklet based on the validation and limited trial results. In the large-scale trial, students were given a

different questionnaire from the small-scale trial stage. The questionnaire was used to determine the attitude of environmental stewardship by delivering an environmental stewardship questionnaire.

#### **4. The results of the Environmental Care Attitude Questionnaire for Class XI Social Sciences SMA Negeri Pangkalpinang.**

From the results of the questionnaire analysis of environmental care attitudes, it could be seen in the table below:

**Table 7.** Results of the Environmental Care Attitude Questionnaire Recapitulation Learning Media Booklet Based on Environmental Care Attitude

No	Score	Frequency	Information
1	106-140	80 students 80%	High/good
2	78 – 105	15 students 15%	Moderate/enough
3	56 – 77	5 students 5%	Low/less
4	Amount	5 students 100%	

From the results of the environmental care attitude questionnaire analysis, it was found that there were still five students who were in the score range of 56-77. It meant that they were in the low/less category with a percentage of 5%. Fifteen students were

in the range of 78-105 with a percentage of 15%, and 80 students were in the score range of 106-104. It is in the high/good category with a percentage of 80%. It meant that the geography booklet media based on caring for the environment is said to be high/good at

caring for the environment. The attitude of caring for the environment is considered to have been embedded in each student's character. This good character is expected to encourage students to preserve their environment.

#### **D. CONCLUSIONS**

It is known that previously students were not interested in reading booklets as the primary material because they contained objects and events that were not related to students' reality. Researchers developed a geography booklet by making improvements based on known deficiencies. Geography booklets learning media are developed systematically according to the stages in the development model. The media went through a validation test phase from media, material, and language experts, which showed that the media was very valid. Tests conducted on students showed the results of the criteria were very feasible. The analysis results of students' environmental care attitudes have increased with the acquisition of a high/good category. Students are interested in studying the material in the booklet that was developed during the learning process because it contains the context of environmental problems around them. Students consider through the concept of learning with the help of this media it can make it easier for

them to understand the learning material. Giving examples of actual concepts and practices in the surrounding environment by adjusting the characteristics of students is proven to make the material easier for students to understand (Kamil et al., 2020; Rickles et al., 2017). Teachers can increase students' environmental awareness by setting an example to students through good deeds towards the environment in their daily routines (Norsidi & Sariani, 2021). In addition to the context of learning, the attitude of caring for the environment that grows in students has begun to appear to be implemented in everyday life towards the surrounding environment.

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