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DEVELOPMENT OF LOCAL WISDOM-BASED MODULES FOR BANCARAN MANGROVE ECOTOURISM TO TEACH CLASS X HIGH SCHOOL STUDENTS CRITICAL THINKING ON ECOSYSTEM MATERIAL

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ABSTRACT

In an information age like today, where all information from all corners of the world can be received quickly, even in a matter of seconds, the ability to think critically is unquestionably required so that we can filter all of the information we receive and decide whether we trust it. and then either accept or reject the information. To find out and solve complex problems, a critical thinker will ask important questions and formulate problems clearly and precisely, collect and assess relevant information, use abstract ideas, think openly to recognize and assess, make assumptions about implications and practical consequences, and be able to communicate effectively with others.

One of the issues confronting the world of education in Indonesia today is the inadequacy of the learning process, which results in poor educational quality. This is because of the kids' critical thinking abilities. The module is one type of learning resource. Modules are instructional resources that are methodically produced based on a specific curriculum and packed in the smallest learning units to allow them to be studied independently in specific units. The goal of this research was to create a module based on local data.

Mangrove ecotourism wisdom Bancaran will conduct critical thinking exercises on ecosystem materials for class X pupils that are both valid and effective based on the results of student response questionnaires. This form of research is known as R&D with the ADDIE Branch Theoretical model. Theoretical feasibility is evaluated in light of expert validation results. The gathered data were examined using descriptive qualitative methods. With a score of 3.76 and a percentage of 94%, the findings obtained are modules based on local wisdom of mangrove ecotourism as ecosystem material to educate the critical thinking abilities of class X high school students, and the category is extremely valid. The curriculum has the potential to be utilized to train students' critical thinking skills in ecotourism ecosystem-based learning.

International Journal of Education and Social Science Research

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KEYWORDS: modules, critical thinking, validity, student responses.

1. INTRODUCTION

Learning in the twenty-first century differs from learning in the past. Previously, learning was done without regard for standards, but now standards are required as a reference to achieve learning objectives. In the twenty-first century, teachers and students, lecturers and students, educators and students must have teaching and learning skills. Students and teachers must face a number of challenges and opportunities in order to survive in this information age's knowledge era [1]. One of the goals of 21st century education is to help students develop critical thinking skills. [2] defines "critical thinking" as a reflective thinking ability that focuses on patterns of decision-making about what to believe, do, and hold accountable. In an information age like today, where all information from all corners of the world can be obtained quickly, even in a matter of seconds, the ability to think critically is unquestionably required so that we can filter all of the information we receive and decide whether we believe it. and then either accept or reject the information. A critical thinker will ask important questions and formulate problems in a clear and precise manner, collect and assess relevant information, use abstract ideas, think openly to recognize and assess, make assumptions about implications and practical consequences, and be able to communicate effectively with people in order to seek knowledge and solve complex problems [3].

One of the issues confronting Indonesian education today is the resulting weak learning process and low-quality education [4]. This is because of the students' critical thinking abilities. Students are less encouraged to develop their thinking skills in the classroom. Students are smart in theory but poor in practice because learning is focused on memorizing and hoarding information. As a result, critical thinking becomes frozen and even difficult to develop. Students must be encouraged to develop their own knowledge and take responsibility for their learning outcomes during the learning process [5].

One of the goals of 21st century education is to help students develop critical thinking skills. According to Ennis, the goal of 21st century education is to help students develop critical thinking skills. Ennis (2011) defines "critical thinking" as a reflective thinking ability that focuses on patterns of decision-making about what to believe, do, and hold accountable. [6] summarize various definitions of critical thinking and propose that it refers to an individual's ability to do some or all of the following: identify central issues and assumptions in arguments; recognize important relationships; draw correct conclusions from data; infer from information or data provided; interpret whether conclusions are justified based on the data provided; evaluate evidence or authority; make decisions; and make decisions.

Learning resources are required to encourage students to expand their knowledge. The module is one type of learning resource. Teachers must be more creative in designing learning innovations that are appealing to students during the learning process in order to develop teaching materials in the form

of modules. According to [3], this module is one of the textbooks that is as interesting as possible based on indicators and learning objectives, uses simple language, and is used independently by students. Module-based learning can boost student motivation and learning outcomes. Modules based on local wisdom can occupy a strategic position in learning to train students' critical thinking skills, so they should be considered in the development of modules associated with existing ecotourism local wisdom. Relevant research _ with wisdom local, conducted by [2], revealed that material science-based learning wisdom local could improve conceptual understanding and scientific student performance.

Local wisdom is the result of a specific community's or tribe's experience and is not necessarily shared by other communities. Local wisdom is inextricably linked to something special in a community or tribe because the value of local wisdom is tested and undergoes a lengthy process in order to resemble that which exists within a specific public or ethnic group [7].

Local wisdom is one of the cultures owned by certain ethnic groups and is derived from this ethnic group's struggle with their environment [8]. With see wisdom existing locality _ particularly in the area banran, madura. Rokat tase' is a Madurese cultural tradition that applies their views on the relationship with nature. The term "rokat tase" is often associated with "rokat pasar" or "salamedhan tase," which is commonly found along the coast, both on the south and north coasts. Rokat in Madurese means "ruatan" or "ruwatan," "tase" means sea or coast, "base" means the location from which fishermen's boats depart, and "salamedhan" means salvation. Rokat tase, rokat base, or salamedhan tase literally means "a ceremony to maintain peace and safety in relation to boat docks and the intricacies of life at sea" [9].

Rokat tase' is a fishing community ceremony that can save fishermen from disasters and other obstacles while at sea and can provide a large catch of fish. There are many symbols and procedures in the rokat tase' tradition that ordinary people cannot understand just by looking at them, especially people from different cultures than the rokat tase' performers [2]. Rokat Tase is a form of culture and belief practice carried out by the community that has become a kind of way of life, so that it is passed down from generation to generation. successor. As a result, the process of the Rokat Tase' event must also be prepared by the original descendants of the elders (ancestors), who are also the Rokat Tase' event's caretakers. The term "rokat" is derived from the Javanese word "ruwat." Because the Madurese language does not want to be difficult to pronounce, the word ruwat has been replaced with the word rokat. Ruwat means to melt or throw away, whereas ruwatan is a method of escaping the dominance of negative energy. So, Rokat Tase' is a traditional ceremony performed to ensure that the sea and fishermen are free of all misfortunes and can live a safe and prosperous life in the future. This tradition is followed not only by village elders, but also by the local kyai and the entire community [10].

International Journal of Education and Social Science Research

ISSN 2581-5148

Vol. 6, Issue.6, Nov-Dec 2023, p no. 82-92

Every year on the 11th of Suro, Rokat Tase' is held. According to the key teacher's story, and this has become a community belief, if the sea is not held for salvation, or rokat, the sea will gape and the river hole will close. This statement means that a gaping sea hole necessitates sacrifice, and there will frequently be accidents and sinking ships. The river hole will be closed, indicating that it is a fish hole, and there will be few fish, preventing the fishermen from catching fish. So the rakat program must be continued so that people are not restless when going to sea and playing in the sea, and so that people can live in prosperity with abundant marine products. The goal of "rokat tase" is to protect the safety of all its citizens, so that the fish in the sea do not run out, and to strengthen the bonds of brotherhood among members of the community. As a result, every year, local residents hold a marine rescue event called "Rokat Tase" [10].

However, there is still a lack of public awareness about the importance of keeping the environment clean, particularly in coastal areas. This is due to the public's lack of complete information about the area's coast or mangroves [3]. Based on the issues raised above, I created a study titled Module Based Development Wisdom Local Bancaran Mangrove Ecotourism for Practice. To solve this problem, consider a Critical Theory Ecosystem for Class X high school students.

2. METHOD

This study is a development study that employs the ADDIE learning model's branch theory (Analyze, Design, Development, Implementation, and Evaluation). The goal of this study was to create a theoretically feasible Bancaran Mangrove Ecotourism Module Based on Local Wisdom to Train Critical Thinking About Ecosystem Material for Grade X Students. A student response questionnaire will also be administered to determine the effectiveness of this tool. This module's development will take place in the Postgraduate Building in 2022.

A validation sheet is used in the theoretical feasibility data collection technique. Validation was performed using three validators: two lecturers and one subject teacher. The validation worksheet is based on the BSNP from 2014. The assessment points are divided into three categories: content feasibility, language feasibility, and presentation feasibility. Students must fill out student response questionnaires from 30 people in one class using the Guttman scale, i.e. "yes" or "no." After filling out the scale, it is rated using the modified Riduwan rating scale (2013).

The validation results were analyzed quantitatively and descriptively using the formula:

$$\textit{Skor Validitas (\%)} = \frac{\sum \textit{skor total yang diperoleh}}{\sum \textit{skor maksimal}} \times 100\%$$

The percentage of validation results obtained is then interpreted using the following criteria:

International Journal of Education and Social Science Research

ISSN 2581-5148

Vol. 6, Issue.6, Nov-Dec 2023, p no. 82-92

TABLE 1. Interpretation Criteria Score Validity

Scale	Validation Level
85.01% - 100%	Very Valid
70.01% - 85%	Valid Enough
50.01% - 70%	Invalid
1% - 50%	Invalid

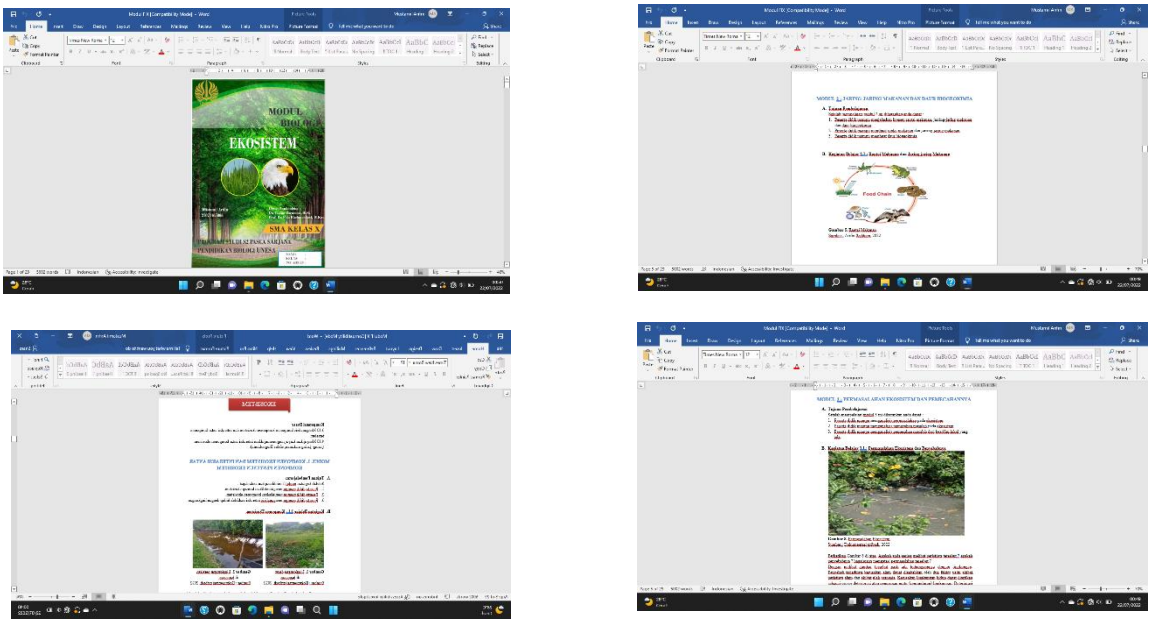
3. RESULTS AND DISCUSSION

3.1 Results

The research has resulted in a mangrove ecotourism module based on local wisdom to train high school students' critical thinking skills. This module's ecosystem content is divided into three sections: ecosystem components and interactions among ecosystem components, food webs and biogeochemical cycles, and ecosystem problems and solutions. The following are the theoretical feasibility results. This is the module's first appearance.

Figure 1. (a) An Initial Overview of the Module, (b) The Topic of Ecosystem Components and Interactions Between Ecosystem Components, (c) The Topic of Food Webs and Biogeochemical Cycles, (d) The Topic of Ecosystem Problems and Their Solutions

Figure 1. (a) An Initial Overview of the Module, (b) The Topic of Ecosystem Components and Interactions Between Ecosystem Components, (c) The Topic of Food Webs and Biogeochemical Cycles, (d) The Topic of Ecosystem Problems and Their Solutions



International Journal of Education and Social Science Research

ISSN 2581-5148

Vol. 6, Issue.6, Nov-Dec 2023, p no. 82-92

The module includes features that support student activities to make it easier for students to explore local wisdom and practice critical thinking. Table 2 provides an overview of the features included in the module below.

Table 2. Features contained in the module

Activities to Practice Critical Thinking Skills	Feature	Information
Learning Activities 1.1	Bio-Chalk	This feature allows students to write down what is requested in the problem.
Learning Activities 1.2	Bio-Chalk	This feature assists students in doing what is required in the problem correctly.
Learning Activities 2.1	Bio-Zone	This feature assists students in writing problem-solving essays.
Learning Activities 2.2	Bio-Zone	This feature assists students in reaching conclusions.
Learning Activities 3.1	Bio-Magazine	This feature encourages students to think critically about local wisdom.
Learning Activities 3.2	Bio-Magazine	This feature encourages students to think critically while applying local knowledge to solve a problem.

3.2 Discussion

Theoretical feasibility is the feasibility obtained from the validation results of media experts and material experts as well as biology teachers. The components in the validation sheet are content feasibility, language feasibility, and presentation feasibility.

International Journal of Education and Social Science Research

ISSN 2581-5148

Vol. 6, Issue.6, Nov-Dec 2023, p no. 82-92

Table 3. Content Eligibility Components Summary

Assessment Aspects	Average score	Percentage	Interpretation
Topic Appropriateness	3.67	91%	Very Valid
Suitability of Learning Objectives	3.89	97%	Very Valid
Activity Components	3.44	86%	Very Valid
Average	3.66	91%	Very Valid

Based on Table 3, The average percentage of eligibility for the obtained content is 91%, which is classified as "very valid." This is due to the fact that the preparation of each module topic is based on a material analysis that adapts to the material at school so that the components are in accordance with the learning aspects. This could lead to improved conceptual and critical thinking skills in students [2].

Table 4. Recapitulation of Language Feasibility Components

Assessment Aspects	Average score	Percentage	Interpretation
Easy to Understand Language	3.89	97%	Very Valid
Writing Rules According to EYD	3.89	97%	Very Valid
Average	3.89	97%	Very Valid

Based on Table 4, The average percentage of the language obtained is 97%, indicating that the language is "very valid." The module's use of language employs simple and easy-to-understand sentences. To encourage students to develop knowledge, simple and easy-to-understand language is required [6].

International Journal of Education and Social Science Research

ISSN 2581-5148

Vol. 6, Issue.6, Nov-Dec 2023, p no. 82-92

Table 5. Recapitulation of the Feasibility of Presentation Components

Assessment Aspects	Average score	Percentage	Interpretation
Image and Color Presentation	3.55	88%	Very Valid
Correct Fonts	3.89	97%	Very Valid
Bibliography	3.77	94%	Very Valid
Average	3.66	93%	Very Valid

Based on Table 5, The average presentation feasibility percentage obtained is 93%, indicating that the presentation is "very valid." This is due to the module's high display quality in terms of both images and colors. The arrangement of the letters and bibliography is neat. It is associated with existing local wisdom in ecotourism in the development of modules because modules based on local wisdom can occupy a strategic position in learning to train students' critical thinking skills [2].

3.3 Student Response Questionnaire Results

After using teaching modules based on locally developed mangrove wisdom, students filled out questionnaires, which were then analyzed using a qualitative descriptive method that refers to the Guttman scale. The Guttman scale has only two answer options, such as yes/no, good/bad, never/never, and so on [11]. The rating scale is based on criteria for "yes" answers, which are given a score of one (1), and criteria for "no" answers, which are given a score of zero (0).

Table 6: Results of the Student Response Questionnaire

Number.	Question	Student Response Percentage (%)		Category
		Yes	No	
1.	Does this Module interest you enough to study it?	90	10	Very good
2.	Is the presentation of this Module interesting?	96.67	3.33	Very good

International Journal of Education and Social Science Research

ISSN 2581-5148

Vol. 6, Issue.6, Nov-Dec 2023, p no. 82-92

3.	Is the language used in this worksheet easy to understand?	96.67	3.33	Very good
4.	Are the questions in this worksheet easy to understand?	90	10	Very good
5.	Are the steps of the activities in this Module easy to implement?	86.67	13.33	Very good
6.	Did this worksheet help you find material concepts?	100	0	Very good
7.	Does this Module help you be more active in participating in learning?	90	10	Very good
8.	Is the time allocated to Module sufficient to complete all tasks in Module?	90	10	Very good
9.	Does this worksheet help you understand the learning material?	100	0	Very good
10.	Does the problem orientation listed in the Module help you find problems or questions?	96.67	3.33	Very good
11.	Does the Module train you in interpreting activities?	90	10	Very good
12.	Does this Module train you in problem formulation activities?	96.67	3.33	Very good
13.	Does this worksheet train you to formulate hypotheses?	100	0	Very good
14.	Does this Module train you in analytical activities?	90	1 0	Very good
15.	Does the Module train you to do explanation activities?	90	1 0	Very good
16.	Does this Module train you in closing activities?	100	0	Very good
17	Does this Module train you in evaluating activities?	90	0	Very good

18.	Does this worksheet train you to connect the concepts you are learning with broader concepts?	80	20	Good
Average student response		**92.96**	**7.03**	**Very good**

Based on Table 6, Based on these findings, student responses to learning activities using the developed modules receive an average of 92.96 percent, placing it in the "very good" category. As a result, the developed module is said to be effective in teaching students' scientific literacy.

4. CONCLUSION

Based on the research, a mangrove ecotourism module based on local wisdom is produced, which is theoretically feasible and achieves very good results from the student response questionnaire, making it suitable for use as an alternative teaching material in training. For class X SMA, students' critical thinking on ecosystem material. Theoretical feasibility in terms of percentage validation scores and very valid categories They receive positive responses from students because they fall into the category of very good.

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