

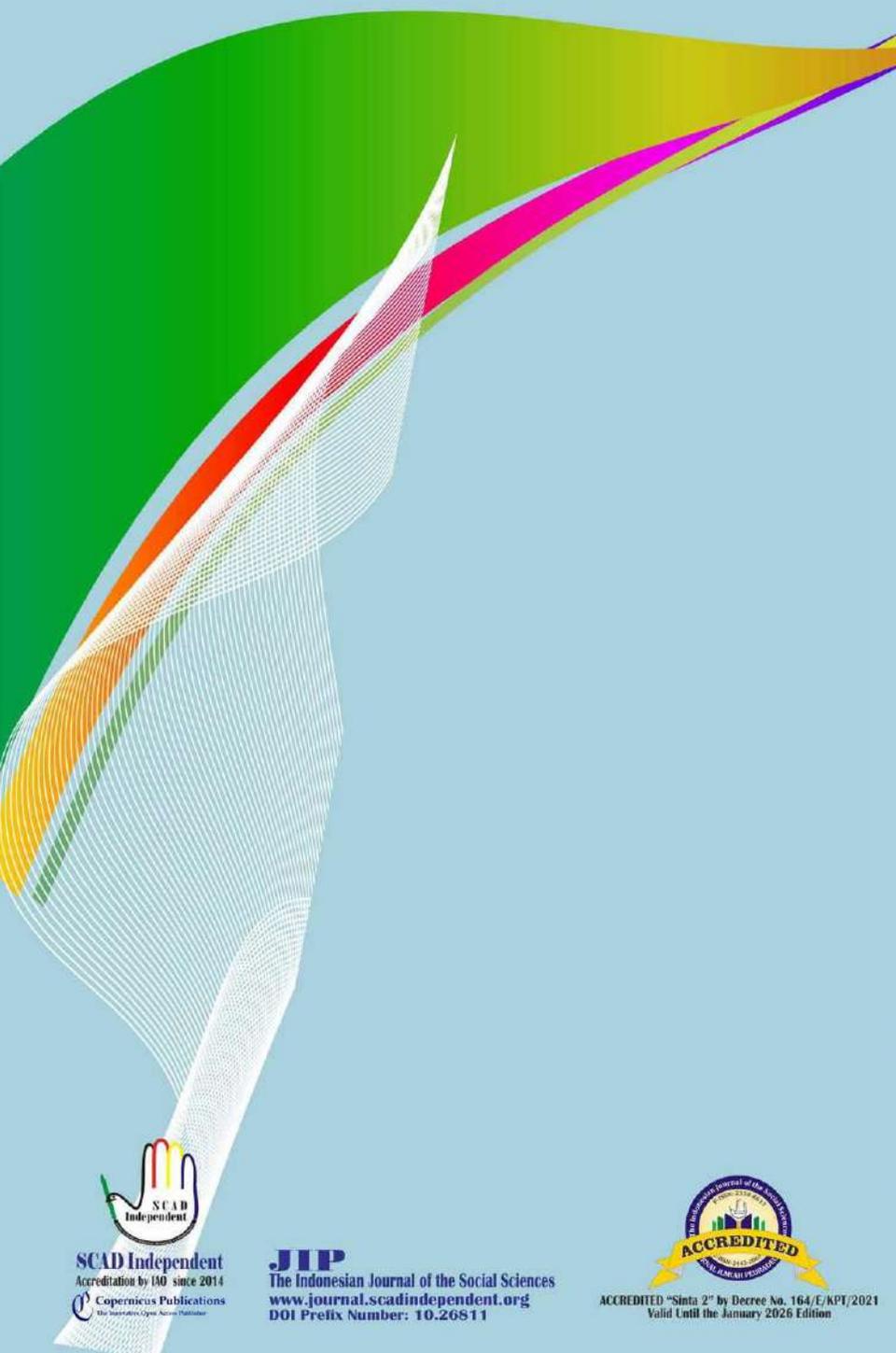
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**E-Module Mangrove Ecotourism: Difference and Relationship Perception,
Interest, and Environment Character Care Elementary Students**

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E-MODULE MANGROVE ECOTOURISM: DIFFERENCE AND RELATIONSHIP PERCEPTION, INTEREST, AND ENVIRONMENT CHARACTER CARE ELEMENTARY STUDENTS

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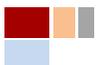
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Abstract

This research aimed at seeing how the level of perception, interest in learning, and the character of students' environmental care; this study also sees the difference after using the mangrove ecotourism e-module. This quantitative research used the variables of students' perceptions, interests, and environmental care. The sample used was 120 students in 3 different elementary schools, the sampling technique used was simple random sampling. Data analysis used descriptive statistics, ANOVA test, and correlation test. From the results obtained, it can be seen that the students of Islamic boarding schools have the lowest perceptions and interest in learning, namely 46.65 and 32.92. However, to protect the environment, the number of students in Islamic boarding schools is higher than in other students. In the Anova test, elementary school children had different perceptions and interests in learning, while for the character of caring for the environment between Madrasah and Islamic Boarding School children. Other results also showed that perception had a relationship of 20.6% with student interest in learning and 66% with concern for the student's environment. This study's conclusion showed that the e-module can increase the interest and character of students' environmental care.

Keywords: E-Module; Mangrove Ecotourism; Perception; Interest; Environment Care Character.



A. Introduction

Elementary education in Indonesia plays a vital role in improving the quality of education in Indonesia. In Indonesia, there are at least 162,4417 elementary schools with children ranging in age from 7 to 15 years, with the overall average being around nine years (Seyle et al., 2013; Shodiq et al., 2019). Primary education is different from a secondary and higher education; primary education has unique and sensitive characteristics because if there is a mistake in guiding, it will affect the emotional condition of children in the future (Jufrida et al., 2016; Tjabolo & Herwin, 2020). In addition to emotional conditions, primary education plays a vital role in providing basic skills that are useful in future students' further education (Bai, 2019; Kosasih et al., 2021; Muslim et al., 2021). Based on this, teachers as educators and supervisors should be able to implement exciting learning, one of which can be done using electronic modules.

An electronic module or e-module is a learning media using a computer or smartphone to access material or issues (Tanti et al., 2021; Gavrilenko, 2018; Pratono et al., 2018). The presentation of the material is not just done, but it must be systematic and depend on the student's abilities (Afriyanti et al., 2021). Using the e-module itself can increase the absorption and effectiveness of students in learning (Sitorus et al., 2019). The effectiveness of learning, in this case, is strongly influenced by students' independence in finding learning resources. The use of e-modules is often integrated with various materials according to the needs, especially for the Indonesian state; it is not always about science but also about local Wisdom, which varies compared to other countries.

Local Wisdom is a real work of human thought that uses the surrounding nature to make it happen (Sofyan et al., 2019; Astalini et al., 2021). Local Wisdom has values that are passed down from generation to generation by having the appropriateness of the context in an area to produce cultured humans (Uge et al., 2019; Laksono et al., 2020). These values can be integrated into learning as a form of innovation in learning



materials. Teachers often carry out innovations by combining technology with local Wisdom, one of which is based on mangrove e-modules. Mangroves are tropical plants that live in coastal areas with sufficient temperature, inundation, and salinity (Chan et al., 2017; Walker et al., 2018). Mangrove ecotourism has a biological and socio-economic function, one of which is tourism in coastal areas (Massiseng et al., 2020; Sari et al., 2020; Kamid et al., 2021). In education, mangrove ecotourism can protect mangrove plants by making an educational tour focusing on human behavior (Hesley et al., 2017). The Mangrove ecotourism e-module was created based on a mangrove forest in Tungkal Ilir, West Tanjung Jabung Regency, Jambi Province, which has an area of about 200 hectares. The e-module was used to measure elementary students' perceptions, interests, and environmental care characteristics in the Batanghari district.

Students must learn to develop their interests, potential, and affective abilities. Interest in learning is defined as the feeling of interest that students have in a subject and science, where exploring interest in learning can affect student learning outcomes (Taştan et al., 2018; Ong et al., 2020; Santyasa et al., 2020). Students with a high interest in learning will usually be more enthusiastic and get better learning outcomes (Kang et al., 2019; Permatasari et al., 2019; Maison et al., 2020). In addition to interest, environmental care characteristics can be used to see students' character in learning activities. Caring for the environment is one of the 18 national characteristics, which is also an indicator of the success of Indonesian character education (Hidayati et al., 2020; Astalini et al., 2021).

Positive environmental care characteristics play a crucial role in environmental relationships or interactions with students, while a hostile environment encourages the emergence of negative perceptions of one's self (Reaves & Cozzens, 2018; Ekamilasari et al., 2021). Perception is obtaining information through the senses, such as knowledge, courage, honesty, hard work, and others (Qiong, 2017; Rusydiyah et al., 2020). Each individual's perception is usually different because it can be influenced by the immediate environment, family, and educational institutions such as schools (Ayvaz-



tuncel & Tuncel, 2019; Chaaban et al., 2021). Measurement of interest, perception, and environmental care character is critical in influencing students' basic abilities, which will be helpful for students in the future.

This research is vital for students, especially elementary school students. Elementary school students, in general, are still looking for what they like, and using technology in the learning process will make them understand how to use technology (Sofyan et al., 2019; Weatherby-Fell et al., 2019). This will make them have no difficulty adapting to the use of technology that is very often found in middle or high school. On the other hand, nature-based e-modules can be easier for the teachers to deliver the material. For example, the teacher will show mangrove plants to students from videos so that students cannot only imagine but also see the plants clearly through the e-modules made (Susilana et al., 2020).

Previous research mainly studied the use of e-modules on cultural materials and rarely found research on the use of nature-based e-modules, namely mangroves. Even if there is a use of e-module mangrove ecotourism, most of it is only limited to college students, whose material is arguably more complicated. The variables used are also mostly limited to one variable and only one hypothesis test; based on this, a gap is obtained from the research. Then the research questions can be formulated as follows:

1. What is the level of perception, interest, and character of students' environmental care after using the mangrove ecotourism e-module?
2. What are the differences in the level of perception, interest, and character of caring for the environment in each class after using the mangrove ecotourism e-module?
3. What is the relationship between students' perceptions of interest in learning and students' environmental care character after using the mangrove ecotourism e-module?

The essence of this research can be seen from the use of learning media that is less than the teacher; they tend to use printed books more and do not make creative innovations by utilizing technology. With this research, it is hoped that it can become a reference for teachers that e-

modules are very suitable for the formation of character and attitudes of elementary school students.

B. Method

The type of research used is quantitative research. Quantitative research collects data which results are numbers (Boeren, 2018). The study was conducted using 120 samples from different schools with the equivalent level of elementary schools in Batanghari Regency. The sample schools used were SDN 111/I Muaro Bulian, MIN 1 Batanghari, and Pondok Pesantren Darusy Syafi'iyah. The researcher used a simple random sampling method. Simple random sampling is the simplest and most commonly used method in which each member of the population has an equal chance of being selected as a subject and producing optimal data (Sharma, 2017; Pal et al., 2018). The use of simple random sampling is because researchers expect samples taken at random from each school to be able to represent all students in the school.

The instruments used in this study were perception questionnaires, interest questionnaires, and student environmental care character questionnaires. For the perception variable, adopting a questionnaire from Astalini's research in 2021 with three indicators are taken, namely the appearance of the e-module, the presentation of the material in the e-module, and the usefulness of the e-module with a total of 15 statements (Astalini et al., 2021). The Likert scale used is 1 to 5 with details: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). From the number of statements and the Likert scale used, the level of perception can be determined as follows.

Table 1: Interval of Student Perceptions

Score Interval	Student Perception Level
63,01 - 75,00	Very good
51,01 - 63,00	Good
39,01 - 51,00	Enough
27,01 - 39,00	Bad
15,00 - 27,00	Very Bad

(Source: Astalini et al., 2021)



Then the interest variable was measured by ten statements adopted from research by Rohani and Zulfah with four indicators: feelings of pleasure, student interest, student attention, and student involvement (Rohani & Zulfah, 2021). The Likert scale used is 1 to 5 with details such as perception variables, the number of statements, and the Likert scale used can be determined by the interval table, which can be seen in table 2.

Table 2: Interval of Student Interest

Score Interval	Student Interest Level
42,01 - 50,00	Very good
34,01 - 42,00	Good
26,01 - 34,00	Enough
18,01 - 26,00	Bad
10,00 - 18,00	Very Bad

(Source: Rohani & Zulfah, 2021)

The last variable, namely, the character of students' environmental care, uses five indicators: cleaning the school environment, beautifying classrooms and schools, maintaining plants, participating in activities, and cleaning toilets and bathrooms (Pramana et al., 2022). The Likert scale used is also the same, so the table of students' environmental awareness levels can be seen in table 3.

Table 3. Interval of Student Interest

Score Interval	Student Environment Care Character Level
42,01 - 50,00	Very good
34,01 - 42,00	Good
26,01 - 34,00	Enough
18,01 - 26,00	Bad
10,00 - 18,00	Very Bad

(Source: Pramana et al., 2022)

Data were analyzed using descriptive statistics on each variable. The hypothesis test used is the ANOVA test and the correlation test to test the assumptions using the normality test and the homogeneity test. The ANOVA test was carried out on the three variables in 3 different classes of schools. In the last stage, to see the relationship between variables, the researchers conducted a correlation test to determine the relationship



between students' perceptions after using e-modules on learning interests and the environmental care character of elementary school students.

The first research procedure was to provide the Mangrove Ecotourism e-module. The data was collected by distributing questionnaires of perceptions and student learning outcomes. After the data was collected, the researcher analyzed the data using descriptive statistics and inferential statistics. The data that has been analyzed is then viewed, and conclusions are drawn to answer the formulated research objectives.

C. Result and Discussion

1. Result

Quantitative data obtained in the study were then analyzed using descriptive analysis. The data from the descriptive statistical test of student perceptions of elementary schools in the Batanghari district can be seen in table 4.

Table 4: Descriptive Test Results of Student Perceptions at Schools in Batanghari on e-Module

School	Category	F	Mean	Median	Mode	Min	Max
Public Elementary School (SDN)	Very good	0	47.24	48.00	45.00	28.00	58.00
	Good	11					
	Enough	20					
	Bad	6					
Madrasah Ibtidaiyah (MIN)	Very Bad	0	50.97	52.00	54.00	40.00	62.00
	Very good	0					
	Good	20					
	Enough	17					
Pondok Pesantren	Bad	0	46.65	48.00	48.00	24.00	55.00
	Very Bad						
	Very good	0					
	Good	10					
	Enough	23					
	Bad	1					
	Very Bad	3					



Table 4 provides descriptive information from students' perceptions of e-modules based on local Wisdom of mangrove ecotourism. The perception results in the dominant elementary school stated that it was sufficient with the number of students 20 people (54.1%) with an average value of 47.24, a minimum score of 28, and a maximum value of 58. As for the MIN, the dominant students gave a perception in the excellent category as many as 20 students. People (54.1%) with an average score of 50.97, a minimum score of 40, and a maximum score of 55. While at Islamic Boarding Schools (Pondok Pesantren), students are more dominant in stating enough with the number of students as many as 23 people (62.2%) where the average score is 46.65, the minimum value is 24, and the maximum value is 55. Then the results of descriptive statistics of student interest in learning can be seen in the table below:

Table 5: Descriptive test results of student interest at schools in batanghari on e-module

School	Category	F	Mean	Median	Mode	Min	Max
Public Elementary School (SDN)	Very good	2	33.32	33.00	32.00	20.00	43.00
	Good	12					
	Enough	20					
	Bad	3					
	Very Bad	0					
Madrasah Ibtidaiyah (MIN)	Very good	3	35.54	35.00	34.00	26.00	45.00
	Good	17					
	Enough	16					
	Bad	1					
	Very Bad	0					
Pondok Pesantren	Very good	0	32.92	33.00	32.00	22.00	39.00
	Good	13					
	Enough	22					
	Bad	2					
	Very Bad	0					



Table 5 provides information on the descriptive results of students' interest in e-modules based on local Wisdom of mangrove ecotourism. Based on the table, it can be seen that the percentage of SDN students' interest in the dominant e-module is categorized as sufficient or good enough with a total of 20 students (54.1%) where the average score is 33.32, the minimum score is 20, and the maximum score is 43. Then for MIN students, the percentage of MIN students' interest in the dominant e-module is in the excellent category with a total of 17 students (44.7%), where the average score is 35.54. The minimum score is 26, and the maximum score is 45. Then the results of descriptive statistics of Students' Environmental Care Characters in learning can be seen in the table below:

Table 6: Descriptive Test Results of Student Environment Care Character at Schools in Batanghari on e-Module

School	Category	F	Mean	Median	Mode	Min	Max
Public Elementary School (SDN)	Very good	0	31.78	33.00	35.00	18.00	41.00
	Good	14					
	Enough	18					
	Bad	4					
Madrasah Ibtidaiyah (MIN)	Very Bad	1	34.67	35.00	36.00	27.00	44.00
	Very good	1					
	Good	19					
	Enough	17					
Pondok Pesantren	Bad	0	33.84	34.00	33.00	26.00	44.00
	Very Bad	0					
	Very good	2					
	Good	12					
	Enough	21					
	Bad	2					
	Very Bad	0					

Table 6 provides information on the descriptive results of the students' environmental care character. Based on the table, it can be seen that the percentage of environmental care characters of the dominant SDN students is categorized as sufficient or good enough, with the number of students stating



it as many as 18 people (48.6%), where the average score is 31.78, the minimum score is 18, and the maximum score is 41. Then for MIN students, the percentage of students' environmental care character is dominant with a total of 19 students (51.4%), where the average score is 34.67, the minimum score is 27, and the maximum score is 44. Meanwhile, for Pondok Pesantren students, The percentage of the dominant student'.

After seeing the descriptive statistics, the next researcher conducted the ANOVA test. However, before doing so, the researcher first tested the assumptions, including the normality and homogeneity tests. The results of the normality and homogeneity test can be seen in the table below:

Table 7: Normality and homogeneity test result

Variable	School	Normality (Sig)	Homogeneity (Sig)
Perception	SDN	0.053	0.626
	MIN	0.200	
	Pondok Pesantren	0.072	
Interest	SDN	0.200	0.129
	MIN	0.200	
	Pondok Pesantren	0.200	
Environmental Care Character	SDN	0.200	0.161
	MIN	0.200	
	Pondok Pesantren	0.151	

Table 7 shows the distribution of data on each variable for each class. The data is said to be typically and homogeneously distributed if the sig value > 0.05 . Based on the table, all data are typically distributed because the significance value is more significant than 0.05. After the data is declared to be normally distributed, the homogeneity test is carried out as the second assumption test. The results of the homogeneity test can be seen in the following table.

After the data is declared regular and homogeneous, the hypothesis can be tested using the ANOVA test. The results of the ANOVA test can be seen in the following table.



Table 8: Anova Test Results of Students' Perceptions, Interests, and Environmental Care Characters

Variable	ANOVA			Sig
		Mean Square	F	
Perception	Between Groups	203.279	3.980	0.021
	Within Groups	51.076		
	Total			
Interest	Between Groups	73.685	3.361	0.038
	Within Groups	21,926		
	Total			
Environmental Care Character	Between Groups	81,919	4.394	0.015
	Within Groups	18,643		
	Total			

Table 8 shows the output results for the ANOVA test. In the ANOVA test, if the value of sig < 0.05, it can be said there is a difference between one variable and another. The significant value for the perception variable is 0.021, the significance for the interest variable is 0.038, and the significance for the environmental care character variable is 0.015. This shows that all the significance value is less than 0.05, which means that there are differences in students' perceptions, interests, and environmental care characters. The researchers conducted a follow-up test by comparing class data to find out the differences. The further test used by the researchers was the LSD follow-up test. The results of the further LSD test can be seen in the following table.

Table 9: The results of the lsd follow-up test of students' perceptions, interests, and environmental care character

Variable	Class (I)	Class (J)	Mean Difference (IJ)	Sig
Perception	SDN	MIN	-3,729*	0.027
		Pondok Pesantren	0.594	0.721
	MIN	SDN	3,729*	0.027
		Pondok Pesantren	4.324*	0.011
	Pondok Pesantren	SDN	-0.594	0.721
		MIN	-4324*	0.011
Interest	SDN	MIN	-2,216*	0.044
		Pondok Pesantren	0.405	0.710
	MIN	SDN	2,216*	0.044
		Pondok Pesantren	2,622*	0.018

Variable	Class (I)	Class (J)	Mean Difference (IJ)	Sig
Environmental Care Character	Pondok Pesantren	SDN	-0.405	0.710
		MIN	-2,622*	0.018
	SDN	MIN	-2,892*	0.005
		Pondok Pesantren	-2,054*	0.043
	MIN	SDN	2,892*	0.005
		Pondok Pesantren	0.838	0.406
	Pondok Pesantren	SDN	2,054*	0.043
		MIN	-0.838	0.406

Table 9 shows that almost every school significantly differs in each variable. In the perception variable, schools that meet the requirements with a sig < 0.05 are SDN with MIN and Islamic Boarding School (Pondok Pesantren) with MIN, where the significance is 0.027 and 0.011, respectively. Then for the variable of interest, the schools with different interests are SDN with MIN and Pondok Pesantren with MIN, where the significance is 0.044 and 0.018, respectively. As for the environmental care character variable, the schools with differences are SDN with MIN and SDN with Pondok Pesantren, with significance values of 0.005 and 0.043, respectively. This means that there is a significant difference in schools whose significance is less than 0.05, while other schools do not.

In addition to seeing the difference between one variable and another variable in each school, the correlation or relationship between one variable and another variable can also be seen. This is done by doing a correlation test.

Table 10: Results of the correlation test of interests and characters on students' perceptions of e-modules based on local wisdom mangrove ecotourism

		Student Perception
Student Interest	Pearson Correlation	0.206*
	Sig. (2-tailed)	0.030
	N	111
Characters Care for the Environment of Students	Pearson Correlation	0.660**
	Sig. (2-tailed)	0.000
	N	111



Table 10 provides information on whether or not there is a relationship between one variable and another. There is a correlation between the variables of interest and student perceptions because $\text{sig} < 0.05$ and the Pearson Correlation value is 0.206^* , where the $*$ sign indicates a correlation between variables. Furthermore, for the environmental care character variable with student perceptions, a significance value of 0.000 is obtained and a Pearson correlation value of 0.660^{**} , indicating a correlation between environmental care characters and students' perceptions.

2. Discussion

The weakness of this research can be viewed from various aspects. From the perception variable, children tend to have a similar perception in elementary school. Friends influence this, and their minds are still simple, making the data biased. From the interest variable, it is almost the same as perception, but the researchers found that interest in learning is strongly influenced by the teacher who teaches. Then in terms of environmental awareness, the primary difference is the school location of different students. Pondok Pesantren children interact with the environment more often, causing most students to have a severe concerns. The boarding system at Pondok Pesantren also makes the formation of caring attitudes more controlled than in state elementary schools and madrasas.

The advantages of the research conducted are using four variables: perceptions, interests, environmental care characters, and teacher responses. Using these four variables aims to measure the extent to which the use of e-modules for students and teachers. This research complements previous research from Wibowo et al. (2019), which examines how e-modules can increase students' interest in learning. The use of e-modules not only increases student interest, such as the results of research (Serevina et al., 2018). Using e-modules in learning can also improve science process skills so that learning is more effective. Therefore, the use of e-modules can affect many variables for research. In addition, the use of varied samples from 3 different educational institutions can make it easier to analyze the data. This study also uses



interactive and exciting media, namely e-modules, where the use of e-modules for elementary schools in the Batanghari Regency is relatively minimal.

Previous research conducted by Aprilia & Suryadarma (2020) takes the same theme: mangrove plants. However, this research is in the form of development, so there are no supporting variables such as the research that researchers are doing now for other research from Sigit et al. (2020), only taking the mangrove theme as research by linking students' attitudes and knowledge and not making a product such as a mangrove ecotourism e-module. In addition, Kigpiboon (2013) developed an environmental education model to manage sustainable mangrove forests in Eastern Thailand. However, there is no development of teaching materials, especially e-modules, to learn about mangroves as local Wisdom. The display of the mangroves ecotourism e-module can be seen in Figure 2.

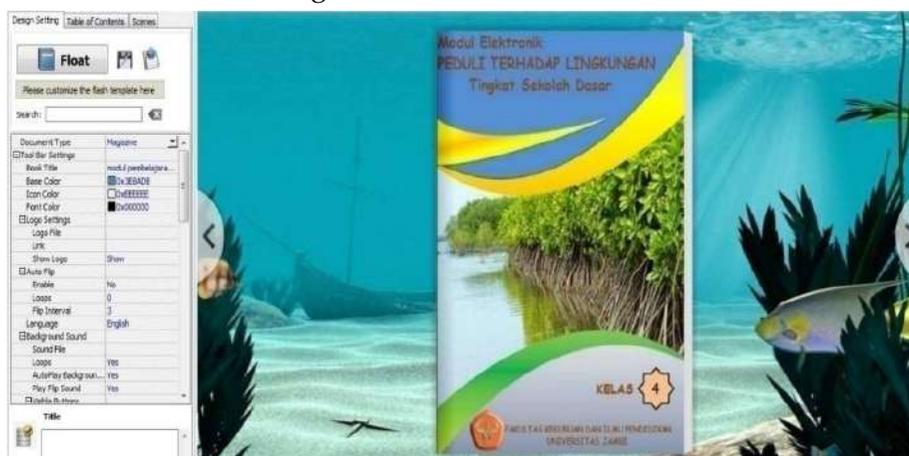


Figure 1: Cover e-modul mangroves ecotourism for elementary school education

The e-module created is intended for 4th-grade elementary school children whose material is adjusted to the theme of the elementary school education curriculum. To view the contents of this e-module can be seen in the image below.



Figure 2: Contents view of the mangrove ecotourism e-module

E-modules that have been made are given to students whose perceptions will be measured later. The level of perception obtained for the three schools ranges from sufficient and suitable levels. These results indicate that the e-module is feasible to practice in the field. According to some experts (Asrial et al., 2020), The perception obtained by the researcher is included in the positive perception, which will affect the interest in learning and the character of students' environmental care. A positive perception shows the expression of students' comfort in using media which in this case is an e-module (Smith et al., 2021). Based on this, it can be concluded that students are comfortable learning using nature-based e-modules.

After seeing the level of perception of the students of the three sample schools, the next researcher measured how the effect was after using the e-module. According to previous research experts (Stiller & Bachmaier, 2017; Sofyan et al., 2019; Rasmawan, 2020), e-modules can be integrated and increase students' interest in learning in class. Interest in learning itself can arise by fostering positive emotions in each student, especially elementary students. Positive emotions can be formed from how teachers teach in the classroom. Family-friendly e-modules are also very helpful in managing students' emotions. In addition, with interactive pictures and videos, students can form a sense of



environmental awareness about natural conditions, which are now slowly being eroded by age.

Learning, in general, is an interaction between humans and the environment. The environment is a provider of stimulus and interaction for students. Using the mangrove ecotourism e-module makes learning comfortable and forms the curiosity of students who generally do not know what mangroves are. Mangrove plants themselves are found in tropical areas with stagnant water. Based on this, it is challenging to invite students to their habitat directly (Phong, 2018; Pickens et al., 2019; Astalini et al., 2021). This ignorance is an opportunity for teachers to direct and grow students' awareness of nature, especially mangrove plants.

This study is limited to the differences and the influence of variables in the 3 sample schools and does not tell how the development of the e-module. Previous research from (Fisnani et al., 2020) explains how the stages of making e-modules with different themes are made. The area where the research is located is also only in one place, namely Batanghari, by taking one class at three different educational institutions, where the data is not too much. So, in this case, the researcher recommends that further research be done by adding the media used, and the themes taken can be changed according to the Wisdom and needs of other writers. In addition, more than one place or area can be selected to obtain more varied data.

D. Conclusion

The perception and learning interest level of Pondok Pesantren students is lower than the other two elementary schools. However, for the character of caring for the environment, the boarding school children are higher than in the other two schools. This perception is used to assess e-modules in students' eyes, while for learning interest, it is used to measure how interested students are in using e-modules. In addition, the character of caring for the environment is essential in developing students' attitudes toward protecting the environment around them. In addition, the level of student perception also has a strong relationship with students' interest in



learning and the character of caring for the environment. With the results and interviews obtained.

The researcher recommends that further research be conducted in more than one place or area to obtain more varied data. In addition, researchers are expected to add the media used, and the themes taken can be changed according to the Wisdom and needs of other writers. Researchers can also develop other local Wisdom in the local environment to increase students' interests, perceptions, and character. So that learning becomes more focused, both online and offline.

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