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Comparison of the use of Tarompa E-Modules on Students' Environmental Care Characters

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ABSTRAK

Karakter peduli lingkungan merupakan perwujudan sikap manusia terhadap lingkungan berupa tindakan dalam kehidupan sehari-hari yang merupakan upaya untuk mencegah kerusakan lingkungan alam sekitar. Tujuan dari penelitian ini adalah untuk menganalisis penggunaan e-module Tarompa terhadap karakter siswa peduli lingkungan dan untuk mengetahui apakah sekolah memiliki perbedaan yang signifikan dengan sekolah lain. Jenis penelitian ini adalah penelitian kuantitatif dengan membandingkan 4 sekolah dengan 17 siswa perkelas. Jumlah keseluruhan siswa adalah 68 siswa. Teknik analisis data adalah uji statistik deskriptif dan uji inferensial. Instrumen dalam penelitian menggunakan angket. Hasil dari penelitian ini adalah terdapat perbedaan yang signifikan penggunaan e-modul tarompa terhadap karakter peduli lingkungan. Dapat disimpulkan bahwa penggunaan e-modul terpompa sangat bermanfaat bagi siswa karena dapat meningkatkan karakter peduli lingkungan siswa dan terdapat perbandingan penggunaan e-modul tarompa terhadap karakter peduli lingkungan siswa yang signifikan di 4 sekolah dasar. Implikasi dalam penelitian ini adalah dengan menggunakan e-modul tarompa dapat menjadi media pembelajaran di sekolah dan memudahkan guru dalam memilih media pembelajaran yang baik.

ABSTRACT

Caring for the environment is a manifestation of human attitudes towards the environment in the form of everyday actions that attempt to prevent damage to the surrounding natural environment. This study aimed to analyze the use of the Tarompa e-module on the character of students who care about the environment and to find out whether the school has a significant difference from other schools. This type of quantitative research compares 4 schools with 17 students per class. The total number of students is 68 students. Data analysis techniques are descriptive statistical tests and inferential tests. The instrument in the study used a questionnaire. The results of this study show a significant difference in the use of the tarompa e-module on the character of caring for the environment. It can be concluded that the use of the pumped e-module is very beneficial for students because it can increase the students' environmental care character, and there is a significant comparison of the use of the tarompa e-module to the students' environmental care character in 4 elementary schools. This study implies that using the tarompa e-module can become a learning medium in schools, making it easier for teachers to choose good learning media.

1. INTRODUCTION

The learning process is a step/sequence of implementation in which there are interaction activities between teacher-students and reciprocal communication that takes place in educational situations to achieve learning goals (Lubis et al., 2020; Ridzqo, 2023; Utami & Zailani, 2022). Learning must involve all psychological aspects of students, both physical and spiritual and in line with the concept of the effects of approach instruction on student's reading performance so that accelerated changes in student behavior can occur quickly, easily and correctly related to cognitive, affective and psychomotor aspects (Amin et al., 2021; Binali et al., 2021; Suherti & Tsuroya, 2019). Learning objectives are descriptions of the achievement of three aspects of competence, namely knowledge, skills and attitudes,

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which are acquired by students in one or more learning activities (Amali et al., 2019; Guo et al., 2020; Roca et al., 2016). The success of the learning process is inseparable from the learning environment at school.

The goal of basic education in general is to lay the foundation for intelligence, knowledge, personality, noble character, and skills to live independently and take part in further education (Fatma & Budhi, 2018; Hotimah, 2020; Ichsan, 2021; Mansir et al., 2020). Basic education can provide the basics to be able to take part in education at the next level (Arikunto, 2021; Setiowati & Dwiningrum, 2022). Because in essence the success of participating in education in high schools and tertiary institutions is much influenced by success in learning basic education. One of the teacher characters that students like is a patient teacher. Students usually feel safe and are not afraid to express their opinions when inside or outside of learning.

Learning modules are learning media that are arranged systematically and interestingly which include material content, methods and evaluations that can be used independently to achieve the expected competencies (Gufran & Mataya, 2020; Manurung, 2020). E-Modules are modifications of conventional modules by integrating the use of information technology, so that existing modules can be more interesting and interactive (Darmaji et al., 2020, 2023; Rahayu & Sukardi, 2020). Because with e-Modules we can add multimedia facilities (images, animation, audio and video) in it (Handayani et al., 2021; Syafa et al., 2022). Based on its understanding, the learning module functions so that students can learn independently.

The character of caring for the environment is the embodiment of human attitudes towards the environment in the form of actions in daily life which are an attempt to prevent damage to the surrounding natural environment, as well as trying to repair all the damage to nature that has occurred, don't let the environment be left alone (Gusmadi & Samsuri, 2020; Mustain, 2023). Meanwhile, the character of caring for the natural environment is the attitude shown by protecting the surrounding natural environment (Aryanti, 2020; M. J. Ismail, 2021; Nurjannah et al., 2022). This attitude is shown by taking action to repair environmental damage that has occurred. This character can also make the continuity of nature awake.

This research is in line with research, which discusses the character of caring for the environment towards learning (Gusmadi & Samsuri, 2020; Jen Ismail, 2021). The character of caring for the environment is very important for students to have to prevent damage to the surrounding natural environment, and also to try to repair the natural damage that has occurred. However, they did not compare four schools, where comparing schools is very important (Gusmadi & Samsuri, 2020). Conducted to find out in detail the character of caring for the environment in the first, second, third and fourth schools (Gusmadi & Samsuri, 2020). In our research, we compared four schools with two variables, namely attitudes and interests to find out the comparison more clearly.

In other research also no link between local wisdom and the character of caring for the environment. So this needs to be studied more deeply (Gusmadi & Samsuri, 2020). The importance of developing e-modules that are integrated with local wisdom towards the character of caring for the environment so that teachers can increase the character of caring for the environment for students. Given the gap in the research by (Gusmadi & Samsuri, 2020), the researchers studied the development of the tarompa e-module to increase the character of caring for the environment at the elementary school level.

The position of this research is very important, namely by knowing the comparison of the use of Tarompa e-modules on the character of caring for the environment of students and by knowing whether a school has significant differences from other schools so that it can be used as a good source of research in the future. In this study, the variable used is the character of caring for the environment. However, this study has weaknesses, namely only conducting tests at the level not at the gender level to find out more specifically attitudes, and literacy based on gender, namely female students and male students. This study aims to answer the research question, namely how the results of student descriptive statistics on the use of Tarompa e-modules to the character of students caring for the environment. Is there a significant difference between schools with the use of Tarompa e-modules on the character of caring for the environment..

2. METHOD

This type of research approach is quantitative research by way of comparison 4 schools with 17 students per class. So the total number of students is 68 students. Quantitative method is a research method that uses a lot of numbers. Starting from the data collection process to its discovery (Kamid et al., 2021; Putri et al., 2022). While the research method is an in-depth and careful study of all facts. The approach in this study was the instrument in this study used a type of questionnaire instrument. Where

the questionnaire used consists of a questionnaire using e-modules Tarompa towards the character of caring for the environment. There are 17 valid statement items on this instrument using a Likert scale. The scale consists of 5 points with a very suitable value of 5, appropriate is 4, sufficient is 3, less suitable is 2, and not suitable is 1. Each network is a representative of each environmental character indicator. The focus of this research is on 2 indicators of the character of caring for the environment, namely energy utilization and waste management. The lattice of the instrument for using e-modules inflated to the character of caring for the environment showed in Table 1.

Table 1. Inflated e-Module use Instrument Grid for Environmental Care Characters

Variable	Indicator	Number Statement Item
Environmental Care Characters	Energy Utilization	1, 2, 3, 4, 5, 6, 7, 8, 9
	Waste Management	10, 11, 12, 13, 14, 15, 16, 17
Number of Statements		**17**

Because the environmental care character questionnaire uses a likert scale which consists of 5 categories, there are intervals in each category, and the intervals in each category can be seen in the table below. The description of the category of using e-modules inflated to the environmental care character of students using showed in Table 2.

Table 2. The Categories of the use of e-Modules are Inflated to the Character of Students Caring for the Environment

Category	Interval Variable/Indicator	
	Environmental Care Characters	
	Waste Management Energy Utilization	Waste Management Energy Utilization
Very not Good	9.0-16.2	8.0-14.4
Not Good	16.3-23.4	14.5-20.8
Enough	23.5-30.6	20.9-27.2
Good	30.7-37.8	27.3-33.6
Very Good	37.9-45.0	33.7-40.0

The research sample population is the research subject whose characteristics will be examined and other things that will be needed in a study. The population of this study was 68 students consisting of 17 students at SD 34 BTH, 17 students at SDN 64 Muara Bulian, 17 students at SD 14 Sungai Baung, and 17 students at SD 80 Muara Bulian. The sampling technique is total sampling. The reason for taking research subjects from SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian is because these schools have done a lot of learning so that you can see the use of Tarompa e-modules on the character of caring for the environment in the elementary school range.

The data analysis technique is descriptive statistical tests and inferential tests were carried out in the form of assumptions and hypothesis tests. In the assumption test, three tests were carried out, namely the normality test, linearity test, and homogeneity test. The normality test serves to find out whether the data is normally distributed (Putri et al., 2022; Ramli et al., 2022). The linearity test serves to find out whether the two variables have a linear relationship or not significantly (Ernawati et al., 2021; Mulyati et al., 2023). The homogeneous test serves to find out whether several groups of research data have the same variance or not. Then test the hypothesis in the form of a t test and posthoc tukey further test. The t test serves to determine the comparison of environmental care character variables in each school. Tukey's posthoc test is used to determine whether a school has a significant difference from other schools. after the analysis of variance test was carried out. These tests were then tested using SPSS 26 to obtain accurate results. The research procedure showed in Figure 1.

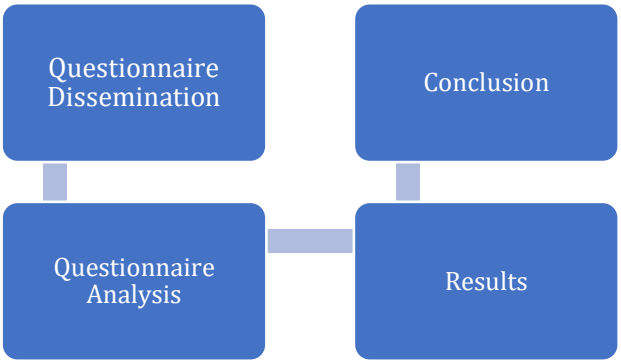

Figure 1. Research Procedure

3. RESULT AND DISCUSSION

Result

The following describes the results of the environmental care character variable, the energy utilization indicator. On environmental care character variables: energy utilization and waste management. Where are the results obtained from distributing questionnaires at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian. The description of the environmental care character variable, the energy use indicator is shown in Table 3, and Table 4.

Table 3. Description of the use of the Tarompa e-Module on the Character of Caring for the Environment as an Indicator of Energy Utilization

School	Category	Range	F	%	Mean	Median	Min	Max
SD 34 BTH	Not Very Good	9.0-16.2	0	0	3.3	3.1	2	5
	Not Good	16.3-23.4	4	23.30				
	Enough	23.5-30.6	4	23.30				
	Good	30.7-37.8	4	23.30				
	Very Good	37.9-45.0	5	30.10				
SDN 64 Muara Bulian	Not Very Good	9.0-16.2	0	0	3.5	3.3	2	5
	Not Good	16.3-23.4	3	17.55				
	Enough	23.5-30.6	9	52.20				
	Good	30.7-37.8	3	17.55				
	Very Good	37.9-45.0	2	12.70				
SD 14 Sungai Baung	Not Very Good	9.0-16.2	0	0	3.4	3.1	2	5
	Not Good	16.3-23.4	3	17.55				
	Enough	23.5-30.6	8	47.15				
	Good	30.7-37.8	4	23.30				
	Very Good	37.9-45.0	2	12.00				
SD 80 Muara Bulian	Not Very Good	9.0-16.2	0	0	3.2	3.2	2	5
	Not Good	16.3-23.4	4	23.30				
	Enough	23.5-30.6	4	23.30				
	Good	30.7-37.8	4	23.30				
	Very Good	37.9-45.0	5	30.10				

Table4. Description of the use of the Tarompa e-Module on the Character of Caring for the Environment as an Indicator of Waste Management

School	Category	Range	F	%	Mean	Median	Min	Max
SD 34 BTH	Not Very Good	8.0-14.4	0	0	3.0	3.1	3	5
	Not Good	14.5-20.8	0	0				
	Enough	20.9-27.2	8	47.15				
	Good	27.3-33.6	6	35.30				
	Very Good	33.7-40.0	3	17.55				
SDN 64 Muara Bulian	Not Very Good	8.0-14.4	0	0	3.4	3.2	3	5
	Not Good	14.5-20.8	0	0				
	Enough	20.9-27.2	9	52.40				
	Good	27.3-33.6	5	29.10				

SD 14 Sungai Baung	Very Good	33.7-40.0	3	17.55	3.3	3.0	2	5
	Not Very Good	8.0-14.4	0	0				
	Not Good	14.5-20.8	4	23.30				
	Enough	20.9-27.2	4	23.30				
	Good	27.3-33.6	4	23.30				
	Very Good	33.7-40.0	5	30.10				
SD 80 Muara Bulian	Not Very Good	8.0-14.4	0	0	3.1	3.1	2	5
	Not Good	14.5-20.8	3	17.55				
	Enough	20.9-27.2	6	35.85				
	Good	27.3-33.6	4	23.30				
	Very Good	33.7-40.0	4	23.30				

The resulting data is processed using several tests, one of which is descriptive statistics. Descriptive statistics are used to see the mean, median, frequency, proportion by analyzing the results based on the existing categories (Budiarti et al., 2022). Descriptive statistical test results obtained. Based on Table 3, the average number of students chose the sufficient category with the proportion for SD 34 BTH 23.30%, SDN 64 Muara Bulian 52.20%, SD 14 Sungai Baung 47.15%, SD 80 Muara Bulian 23.30%. So it can be interpreted that SDN 64 Muara Bulian superior to SD 34 BTH, SD 14 Sungai Baung, SD 80 Muara Bulian in the use of e-modules that are Tarompa towards the character of caring for the environment as an indicator of energy utilization. Based on Table 4, the average number of students chose the sufficient category with the proportion for SD 34 BTH 47.15%, SDN 64 Muara Bulian 52.40%, SD 14 Sungai Baung 23.30%, SD 80 Muara Bulian 35.85%. So it can be interpreted that SDN 64 Muara Bulian superior to SD 34 BTH, SD 14 Sungai Baung, SD 80 Muara Bulian in the use of e-modules that are Tarompa towards the character of caring for environmental indicators of waste management. Test the normality of the use of Tarompa e-modules on the character of caring for the environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian. explained in Table 5.

Table 5. Normality test of the use of Tarompa e-Modules on environmental care Characters at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian

Variable	School	Kolmogorov-Smirnov		
		Statistic	Df	Sig.
Environmental Care Characters	SD 34 BTH	0.086	17	0.200*
	SDN 64 Muara Bulian	0.082	17	0.200
	SD 14 Sungai Baung	0.085	17	0.200
	SD 80 Muara Bulian	0.087	17	0.200*

The test of the use of Tarompa e-modules on the character of caring for the environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian. Test the homogeneity of the use of Tarompa e-modules on the character of caring for the environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian showed in Table 6. Linearity Test of the Use of the Tarompa e-module on the Character of Caring for the Environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian showed in Table 7. T test of the use of Tarompa e-modules on the character of caring for the environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian showed in Table 8.

Table 6. Test the Homogeneity of the use of Tarompa e-Modules on the Character of Caring for the Environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian

Variable	School	N	Sig. (2-tailed)
Environmental Care Characters	SD 34 BTH	17	0.028
	SDN 64 Muara Bulian	17	0.024
	SD 14 Sungai Baung	17	0.026
	SD 80 Muara Bulian	17	0.027

The next test is the assumption test which consists of the normality test, linearity test and homogeneity. Test the first assumption analysis about the normality test. The purpose of testing this assumption is to provide certainty that the test results obtained have accuracy in estimation, are not biased and are consistent (Knief & Forstmeier, 2021; Schielzeth et al., 2020). Based on Table 5, normality test results. normally distributed data. Test the second assumption analysis about the linearity test. Based

on Table 6, the results of the linearity test using Tarompa e-modules on environmental care characters at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian are 0.028, 0.024, 0.026 and 0.027. it can be concluded that the results obtained are <0.05 so that it can be said that the data has a linear pattern. Test the third assumption analysis about the homogeneity test. Based on Table 7, the results of the linearity test using Tarompa e-modules on environmental care characters at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian, namely 0.034, 0.030, 0.033, 0.031, it can be concluded that the results obtained were < 0.05 so that it can be said that the data is homogeneous.

Then the hypothesis test was carried out, namely the t test and the posthoc tukey further test. The first hypothesis test, namely the t test, was carried out with the aim of knowing the comparison between two or more schools by comparing two variables (Theis et al., 2022; Zulkhi & Jannah, 2021). Based on Table 8, the results of the t-test using Tarompa e-modules on environmental care characters at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian are 0.024, 0.021, 0.028, 0.029 so it can be concluded that there is a comparison between SMPN 7 Muaro Jambi and SMPN 17 Muaro Jambi. It is proven by the results of sig. (2-tailed) smaller than 0.05. In the second hypothesis test, namely about the posthoc tukey advanced test, it is used to determine whether a school has a significant difference from other schools. Based on Table 9, the results of the poshoc tukey test using Tarompa e-modules on environmental care characters at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian that there is a significant difference in group averages between the fourth ranks schools namely SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian.

Related to the difference in the average of the four schools for interpreting the use of Tarompa e-modules on the character of caring for the environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian, to see significant differences in the average success of interpreting the use of Tarompa e-module on the character of caring for the environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian which was carried out by participants subject to the Tukey post hoc test. Based on the results of the analysis that has been carried out, the results are obtained in Table 10.

Tabel 7. Linearity Test of the Use of the Tarompa e-module on the Character of Caring for the Environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian

Variable	School	N	Sig. (2-tailed)
Environmental care characters	SD 34 BTH	17	0.034
	SDN 64 Muara Bulian	17	0.030
	SD 14 Sungai Baung	17	0.033
	SD 80 Muara Bulian	17	0.031

Table 8. T test of the use of Tarompa e-Modules on the Character of Caring for the Environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian

School	Variable	T	Df	Sig. (2-tailed)	Mean Difference
SD 34 BTH	Environmental care characters	16.143	17	0.024	65.55554
SDN 64 Muara Bulian	Environmental care characters	15.815	17	0.021	65.55554
SD 14 Sungai Baung	Environmental care characters	60.353	17	0.028	80.83332
SD 80 Muara Bulian	Environmental care characters	68.326	17	0.029	95.66666

Table 9. Interpretation of the use of Tarompa e-Modules on The character of Caring for the Environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian

School	Value	F	Hypotesis df	Error df	Sig.
SD 34 BTH	0.0223	352.811	3.000	17.000	0.000
SDN 64 Muara Bulian	0.0134	352.811	3.000	17.000	0.000
SD 14 Sungai Baung	0.0345	352.811	3.000	17.000	0.000
SD 80 Muara Bulian	0.0235	352.811	3.000	17.000	0.000

Table 10. Post hoc test using Tukey in Interpreting the use of Tarompa e-Modules on the Character of Caring for the Environment in Schools

Interpretation the use of Tarompa e-Modules Towards the Character of Caring for the Environment			
Tukey HSD[a,b]			
School	N	Subset for alpha = 0.025	
		1	2

SD 34 BTH	17	26.5365	
SDN 64 Muara Bulian	17		28.0875
SD 14 Sungai Baung	17		28.1085
SD 80 Muara Bulian	17		28.3093
Sig.		**1000**	**0.997**

Discussion

This research is also in line with previous research which examined the character of caring for the environment (Aryanti, 2020; Halek & Utomo, 2021). In the research showed that the character cares for the environment, so an action is needed to improve the character of caring for the environment for students (Aryanti, 2020; Halek & Utomo, 2021). However, this research did not carry out some of the tests carried out by this study, namely the assumption test. One of the assumption tests is the normality test, where the normality test is important to do to find out whether the data we are going to test is normal or not. In our research we tested the assumption test in full, namely the normality test, homogeneity test, and linearity test. So that our research is precise and accurate.

The generalization and updating of this study is to find out a significant comparison of the use of Tarompa e-modules on the character of caring for the environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian. Where there is rarely research that examines the use of Tarompa e-modules on the character of caring for the environment at the elementary school level. So that with this research it can be known in more detail and accurately based on the tests that have been carried out by this study. The character of caring for the environment is very important for students because it can repair environmental damage that occurs at school (Ismail, 2021; Santika et al., 2022).

In the implementation of this research it can be seen that there is a comparison of the use of Tarompa e-modules on the character of caring for the environment at SD 34 BTH, SDN 64 Muara Bulian, SD 14 Sungai Baung, SD 80 Muara Bulian. The use of e-modules is to provide solutions for students to be able to use information and communication technology wisely (Dewi et al., 2022; Lestari et al., 2020). Giving choices to teachers to answer the challenges of advances in technology and information, whether they like it or not, will have an impact on the world of education and learning. The limitations of this study are only comparing schools. However, there has not been a test with a gender comparison between female and male students so that the environmental care character variables in elementary schools can be identified specifically. The researcher suggests conducting further research to compare environmental care character variables based on gender and the researcher suggests conducting research at the elementary school level.

The novelty in this study is the variable under study, namely the indicator of the environmental care character. These indicators are seen after the application of different electronic modules in this study to see the comparison and influence of the e-module on the environmental care character. Meanwhile, in previous research, much research has been done on the relationship between environmental care character and not on the character indicators. The results of this study can be used as teaching resources to help students learn about the variety of Tarompa local wisdom. Additionally to being instructional tools that meet students' needs, they also serve as a resource for independent study. Through electronic modules and interaction with the culture around them, students are impacted in the development of a environmental care character. The research recommendation is to use an electronic module based on Tarompa local wisdom which can be used to teach other characters.

4. CONCLUSION

The function of the e-module is to provide solutions for students so they can use information and communication technology wisely and. Giving choices to teachers to answer the challenges of advances in technology and information, whether they like it or not, will have an impact on the world of education and learning. The tarompa emodule aims to increase the character of caring for the environment because the character of caring for the environment is very important for students because it can repair environmental damage that occurs at school. So it can be concluded that the use of the Tarompa e-module is very beneficial for students because it can improve students' environmental care character. This research can also be useful for future researchers who want to see the effectiveness of using e-modules for students.

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