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Development of an E-Module for Additive and Addictive Substances Based on Ethnoscience to Increase the Scientific Creativity of Middle School Students

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Abstract: This research aims to produce an ethnoscience-based e-module that is feasible and effective for increasing junior high school students' scientific creativity. This research method is development research or R&D (Research and Development) with the ADDIE model. The product trial design consists of a small-scale trial on 9 students and a large-scale trial by carrying out experimental research on 29 students. The data collection instruments used were an e-module feasibility analysis scale by experts and a scientific creativity essay test. The data analysis techniques used are percentage of feasibility, N-Gain test, and t test with a significance of <0.05. Based on the research, the results obtained show that the ethnoscience-based e-module on additives and addictive substances is feasible and effective for use and is able to increase students' scientific creativity in the high improvement category. There were differences between trials in class groups that used ethnoscience-based e-modules and class groups without treatment. The conclusion of this research is that the results of the development of an ethnoscience-based e-module regarding additives and addictive substances are able to increase the scientific creativity of junior high school students.

Keywords: Addictive Substances; Additives; E-Module; Ethnoscience; Scientific Creativity

Introduction

The era of technological disruption supports the development of educational goals to emphasize students to have 21st century abilities (Novitra, 2021). One of the 21st century skills that is important to have is creativity. In the domain of science education, creativity is known as scientific creativity (Wiyanto & Hidayah, 2021). It is important to train scientific creativity so that students can solve problems well because solving problems in science requires exploring one's own skills, imagination to explore new directions and development of new combinations of information or methods to achieve problem resolution (Hu et al., 2013).

Scientific creativity is also in accordance with the independent curriculum learning framework. Based on the Decree of the Head of BSKAP Number 008/KR/2022 concerning the Independent Curriculum, it is stated that students are expected to be able to explore the potential of the Indonesian state and identify contextual problems from a global perspective in learning science. Freedom to learn focuses on the freedom to learn independently and creatively. Science teachers are given the freedom to carry out learning in accordance with student characteristics and adapt to local context and content.

The facts on the ground are that the scientific creativity of Indonesian students is still not as expected. Based on the trend of PISA results from 2006 to 2018, the

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scientific literacy scores of Indonesian students were respectively 393,383,382,403,396, which is still below the OECD average. Indonesian students occupy 69th position out of 78 countries (Schleicher, 2018). On average, Indonesian students have skills up to level 2, while level 5 and 6 skills are skills that can creatively and independently implement scientific knowledge into real life, including unusual phenomena (OECD, 2019). The low level of scientific creativity is related to the learning process used, namely the lack of supporting learning facilities (Harjono et al., 2022; Jatmiko et al., 2016; Prahani et al., 2021).

Other research states that science learning resources specifically designed to facilitate creative learning are still limited (Astutik & Prahani, 2018). Learning carried out in schools so far has not been able to develop students' creative abilities (Khuziakhmetov & Gorev, 2017). Students' creative ideas can be developed through science learning which is integrated with local wisdom and phenomena from the surrounding environment. Apart from being able to foster creative ideas, students can preserve regional culture and obtain information regarding the potential of their region. However, there has not been much integration of ethnoscience into teaching materials (Khoiri et al., 2019; Rusilowati & Marwoto, 2021). Learning activities that support scientific creativity require ICT-based learning media (Suyidno et al., 2018).

One type of ICT-based learning media is E-Module. Development research related to E-Modules has been carried out to facilitate creative learning, including E-Modules based on creative problem solving and integrated 21st century skills, guided inquiry integrated with ethnoscience, and using the kvisoft-flipbook maker application on physics and chemistry material (Fitri et al., 2023; Haspen, 2020; Romayanti et al., 2020). However, the indicators used to develop are indicators of creative thinking, namely fluency, flexibility, elaboration and originality, while this research refers to indicators of scientific creativity according to Hu & Adey (2002) which were prepared specifically for junior high school students. The e-Module was developed using a flipbook maker application and allows for large storage space if used on a cellphone, so in this research it was developed with the help of HTML so as not to burden the storage space on students' devices.

E-Modules based on ethnoscience can be an alternative solution that can be offered to overcome problems related to students' scientific creativity. The e-Module in this research was developed specifically to facilitate students' scientific creativity and was integrated with Javanese cultural ethnoscience according to students' conditions. This is supported by previous research, namely that ethnoscience-based learning provides opportunities for students to develop their ideas and creativity (Amelia et al., 2021). Ethnoscience-based learning, apart from being a means of preserving and developing local regional wisdom, is also able to improve students' creative thinking abilities (R. Rahayu & Indriyanti, 2023).

Ethnoscience-based e-Modules will provide students with a technology-rich learning environment. Technology-rich environments offer opportunities for educators to use technology and digital tools to encourage creative thinking in students. This is because information technology can invite activity, participation, involvement and interpretation, all of these elements are key to creativity. The integration of learning with technology can make the learning atmosphere more interesting so that students are more creative in learning.

Thus, this research aims to determine the feasibility of the ethnoscience-based e-module produced and determine the effectiveness of the ethnoscience-based e-module on students' scientific creativity regarding additives and addictive substances in junior high school students. The benefit of this research is that ethnoscience-based e-module products can be used to train students' scientific creativity in science learning.

Method

This research uses the R&D (Research and Development) research method. The research design used is by adapting the ADDIE model which consists of 5 stages, namely needs analysis, design, development and implementation (Branch, 2009). The design stage of ADDIE development can be seen in Figure 1. small and large scale trials were carried out at Tanwirul Afkar Islamic Middle School, Sidoarjo, the small scale trial involved 9 students with high, low and medium abilities. A wide-scale trial was carried out by implementing experiments using e-modules in 2 classes with a total of 29 students in each class.

Figure 1. ADDIE Model Development Stage

This research uses validation sheets, practicality questionnaires and 5 scientific creativity essay test items as research instruments. Validation was carried out by 3

experts, namely media experts, material experts and users. The indicators used as a reference for compiling scientific creativity tests are shown in Table 1.

Table 1. Indicators of Scientific Creativity

Indicator	Description	Dimensions
Unusual use	Using objects for scientific purposes	Originality
Ability to increase product usability and value	Technical improvements to the product to make it more useful	Elaboration
Scientific imagination	Describe certain events that will occur	Fluency
	Providing alternative solutions to scientific problems creatively	Flexibility
Solve problems creatively	Designing a scientific product with an explanation	Originality

The data analysis techniques used in this research are the percentage of validation questionnaire scores, the N-Gain test to determine effectiveness and the t test to determine differences in the use of e-modules between the experimental class and the control class.

Table 2. E-Module Eligibility Percentage Categories

Percentage (%)	Criteria
85.01 - 100	Very Worth It
70.01 - 85.00	Worthy
50.01 - 70.00	Decent Enough
01.00 - 50.00	Not feasible

(Akbar, 2017)

$$Appropriateness = \frac{total\ score}{total\ score} x100\% \quad (1)$$

Table 3. Criteria for Increasing Scientific Creativity

Percentage	Criteria
g ≥ 0.70	Tall
0,7 > g ≥ 0.30	Currently
g < 0.30	Low

(Hake, 1998)

$$< g >= \frac{<S_f> - <S_i>}{100 - <S_i>} \quad (2)$$

Information:
<g> : factor N-gain
$<S_f>$: Scientific creativity pretest mean score
$<S_i>$: Scientific creativity posttest mean score

The independent sample t-test was carried out using the SPSS version 22 application which aims to determine the significance of differences in the use of E-Module additives and addictive substances in the experimental class and control class on students' scientific creativity. Students' initial scientific creativity data was obtained from the pretest results and students' final scientific creativity data was obtained from the students' posttest results in the experimental class and control class. If the calculated value (p) <0.05 then the comparison value can be declared significant.

Result and Discussion

Ethnoscience-based E-Module development research uses the ADDIE model research design with this research being research into the development of the ADDIE model (Analyze, Define, Development, Implementation, AMD Evaluation) which aims to determine the validity, practicality and effectiveness of ethnoscience-based E-Modules on substance material. additives and addictive substances to improve junior high school students' creative thinking abilities. This research was carried out at Tanwirul Afkar Islamic Middle School in the even semester of the 2022/2023 academic year which was carried out offline. The sample for this research was students in classes 8C and 8D, each totaling 29 students. The product developed in this research is the development of an ethnoscience-based E-Module in science learning regarding additives and addictive substances to increase the scientific creativity of junior high school students.

The Analyze stage is used to find out problems, needs and user profiles. This stage is important to carry out so that the product is developed according to the characteristics and needs of students. If this stage is ignored, the learning process will not achieve maximum results (Janawi, 2019). Based on the results of the needs analysis, the ethnoscience-based E-Module can be an alternative solution to the problems and needs of students and teachers at Tanwirul Afkar Islamic Middle School. The development of an ethnoscience-based E-Module focuses on training students' scientific creativity and the content presented is integrated with the culture that students carry out in everyday life.

The material presented in the ethnoscience-based E-Module is additives and addictive substances with the following topics: The concept of additives in food and beverage ingredients, The impact of using additives on health, Prevention of the negative impacts of artificial additives, The concept of addictive substances, The impact of using addictive substances for health, efforts to prevent the negative impacts of addictive substances.

The Design stage consists of adjusting KI & KD to produce learning indicators that are integrated with ethnoscience and scientific creativity as learning resources. The ethnoscience concept integrated in this E-Module is tumpengan culture, traditional food in the form of cenilan, getuk lindri, ice lolly, klepon for the topic of additives. Meanwhile, the subject of addictive substances is the coffee culture which is very strong in the East Java area (Irawan et al., 2020; Kiranantika &

Haryuni, 2020; Lestari & Indriastuti, 2022; L. M. Rahayu et al., 2019). Then proceed to design the E-Module draft using HTML, CSS and Java Script tags with the help of the Visual Studio Code application. The ethnoscience-based e-module integrates cultural concepts experienced and seen by students in everyday life. The series of learning activities are guided by a scientific approach in accordance with the 2013 Curriculum. The concept of ethnoscience in the E-Module is presented at the beginning of each subject, then continued with an explanation of scientific science and its relation to the concepts of additives and addictive substances.

Ethnoscience content in the E-Module is presented in the material description menu in the form of images, long videos via YouTube video embeds and short videos inserted from TikTok. The material description menu presents original science and scientific science related to the tumpengan tradition. Learning activities from the first to the fourth meeting can be accessed by students via the drop button on the menu button. The learning activities in the E-Module are designed to train scientific creativity in each of the trigger questions given. At the end of the concept explanation, there is a question box that trains students' scientific creativity and is equipped with pictures and integration of ethnoscience.

The learning activity at the first meeting was identifying additives and addictive substances in food and beverage ingredients. At the second meeting, students identified the additives contained in the food and drinks that student consume every day and their impact on health. At the third meeting, students carried out a simple practicum to find out natural and artificial additives in food and drinks using detergent. At the fourth meeting, students analyzed the concept of addictive substances encountered in everyday life and their impact on health. In all learning activities, students are trained to think creatively through the trigger questions in the ethnoscience-based E-Module.

The novelty of the ethnoscience-based E-Module in this research is the presentation of concepts that train students' scientific creativity. In previous research, an inquiry lesson-based module was developed and was able to have a positive impact on scientific creativity (Zulaichah et al., 2021). However, this research used 3 indicators of creative thinking. Meanwhile, in this research, the module is presented in electronic form and integrated with the concept of ethnoscience and uses complete indicators of creative thinking, namely fluency, flexibility, originality and elaboration. Other research is also the same, E-Modul is developed based on Android by integrating creative problem solving models, however the Android smartphone version must meet the minimum requirements for installing the E-Modul application (Cahyani et al., 2020). In this research, the E-Module is presented in HTML form and website URL.

The ethnoscience-based E-Module Development Stage goes through a validation process of feasibility and effectiveness before it can finally be used by the general public. In this research, three expert validators were used, namely media experts, material experts and users. A good development product to use is a product that has good category validity (Pribowo, 2018). In this research, at least the final validation results must be in the feasible category for the feasibility aspect. The results of the ethnoscience-based E-Module validation can be seen in Table 4.

Table 4. Ethnoscience-based E-Module Validation Results

Validator	Score Percentage (%)	Information
Materials Expert	92.30	Very worthy
Media Expert	86.50	Very worthy
User	92.50	Very worthy
Average	89.20	Very Worth It

Based on the results of the product feasibility analysis which has been validated by 3 experts, the ethnoscience-based E-Module product was declared suitable for use after being repaired in accordance with the suggestions given by the validator. The opening page of the ethnoscience-based E-Module can be seen in Figure 2. This initial page has a resolution of 1920 x 1080 pixels and is equipped with meeting buttons, formative tests, summaries and product information to make it easier for students to use the ethnoscience-based E-Module. Product revisions can be seen in Figures 3 to Figure 6.

Product revisions are carried out based on suggestions from validators. The first suggestion in Figure 3 and Figure 4 comes from a media validator directed at providing a back button with the aim of making it easier for novice users who have never used E-Module at all. The impact is that it is easier for students to operate ethnoscience-based E-Modules in the learning process.

Figure 2. E-Module opening page based on ethnoscience

Figure 3. Button before revision

Figure 4. Button after revision

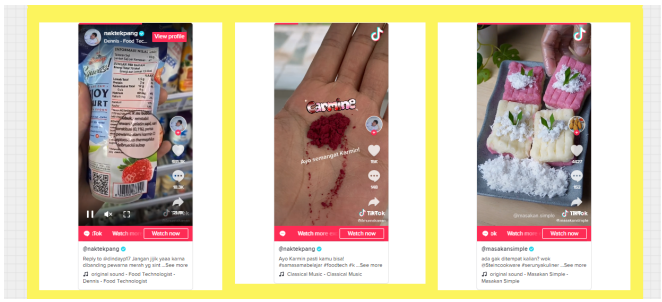

Figure 5. Ethnoscience video before revision

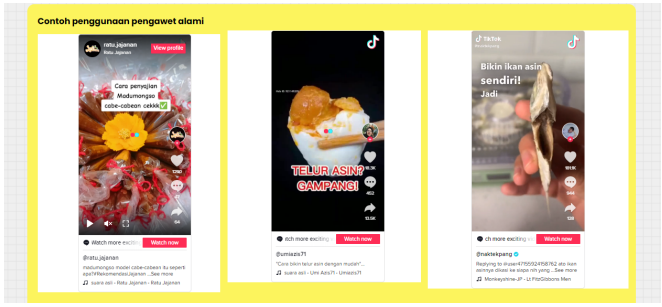

Figure 6. Ethnoscience video after revision

The second suggestion in Figure 5 and Figure 6 comes from the material expert validator, namely directing to add short ethnoscience video content in the material description section which was originally only inserted in the natural dyes section. In Figure 5, an explanation is provided regarding carmine dye and the manufacture of gethuk lindri. Information related to carmine dye is presented in the ethnoscience-based E-Module because it is a unique fact that is rarely known by students, that the dye in milk is a natural dye. Meanwhile, the video makes colored gethuk lindri, which is a traditional Javanese food that is often encountered by students.

Figure 6 is an additional ethnoscience-based revision of the E-Module based on suggestions from validators. The additional videos presented include the use of natural preservatives from sugar for madumongso which is a traditional East Javanese food, making salted eggs which is a typical Central Javanese souvenir and how to make salted fish. This is because salt and sugar can function as natural preservatives (Sjarif, 2020). The impact is that during the learning process students are more interested in learning concepts and can spark creative ideas from the video examples that have been presented.

A small-scale trial was carried out using a sample of 9 students with high, low and medium ability categories from class 8 of Tanwirul Afkar Islamic Middle School. Based on the results of small-scale trials, ethnoscience-based E-Modules are suitable for implementation in science learning. Based on small-scale trials, an average pretest score of 32 and posttest score was 78. This score is classified as good and exceeds the school's KKM limit.

The ethnoscience-based e-Module which was declared suitable for use after a small scale trial was then tested on a large scale for the Implementation stage with 29 students in class 8C and 8D of Tanwirul Afkar Islamic Middle School. The ethnoscience-based e-module was tested directly during 4 meetings using a scientific approach. Each learning activity is carried out in groups consisting of 4-5 students. The data results from this stage will be used to answer the effectiveness of the ethnoscience-based E-Module. The data used in the final data analysis are data from the initial test results (pretest) and data from the final test results (posttest) which were carried out in both classes.

This research uses a normality test to determine whether the data is normally distributed or not and as a prerequisite for the next test, it uses parametric statistics. Data is said to be normally distributed if the significance of the Test of Normality is greater than 0.05. The results of the pre-test and post-test normality tests can be seen in Table 4. The normality test in this study was assisted by the IBM SPSS Statistics 22 program and the Shapiro-Wilk test because the number of classes was less than 50.

Table 4. Normality Test Results

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pretest	Experiment	0.92	29	0.20
	Control	0.92	29	0.20
Posttest	Experiment	0.94	29	0.10
	Control	0.95	29	0.22

Based on the results of the normality test using the Shapiro-Wilk Test of Normality, the pretest data for the experimental class was 0.204 > 0.05 and the control class 0.200 > 0.05. In the experimental class posttest, the resulting significance was 0.105 > 0.05 and in the control

class it was 0.222 > 0.05. Thus, all data, both pretest and posttest in the experimental class and control class, are normally distributed so that further parametric tests can be carried out, namely N-Gain and independent sample t-test.

The increase in students' scientific creativity after using the ethnoscience-based E-Module can be evaluated through scientific creativity tests given during the pretest and posttest which are designed using creativity assessment indicators and rubrics. Based on the normality test, all data is normally distributed. Then the next test can be carried out, namely the N-Gain test. The N-Gain test in this research was used to see the increase in students' scientific creativity. The results of the N-Gain test for each indicator of scientific creativity can be seen in Table 5.

Table 5. N-Gain Test of Students' Scientific Creativity

Class	Pretest	Posttest	Skor N-Gain	Criteria
Experiment	31.50	80.36	0.71	Tall
Control	31.90	71.14	0.57	Currently

Data analysis in Table 5 shows an increase in the average N-Gain value in the pretest and posttest with high criteria. This means that students' scientific creativity increases after using the ethnoscience-based E-Module. However, the significance of this increase must be tested again to determine the differences in the use of ethnoscience-based E-Modules in science learning using the independent sample t-test which comes from posttest data from students in the experimental class and the control class. The results of the independent sample t-test can be seen in Table 6.

Table 6. Independent sample t test of Student Scientific Creativity

		t-test for Equality of Means		
		t	df	Sig. (2-tailed)
Posttest	Equal variances assumed	3.51	56	0.001

Obtained sig value. (2-tailed) from the results of the independent t-test is 0.001. Sig value. (2-tailed) 0.001 < 0.05. Based on the hypothesis testing criteria, if the sig value is <0.05 then Ho is rejected and Ha is accepted. This means that there is a significant difference between the average scientific creativity scores of experimental class and control class students. So, it can be said that there is a significantly better difference through the use of ethnoscience-based E-Modules in science learning regarding additives and addictive substances towards students' scientific creativity.

The increase in scientific creativity in the experimental class and control class experienced differences because the ethnoscience-based E-Module contained content that could train scientific creativity. Adapting the material presented to students' characteristics and needs can increase students' scientific creativity (Sari et al., 2023). In the material description section, creative content is presented for making additives naturally with the help of technology or simply. This section helps students to come up with creative ideas by observing and then modifying. This is stated in the answers of students who modified the production of natural dyes using surrounding materials using a dryer. Apart from that, if you look at the entire series of learning activities, all students appear active and interested in learning.

Integration of ethnoscience content can make it easier for students to understand science concepts in real terms. Students can understand scientific concepts through the context in their daily lives. A culture that is starting to be foreign to students makes them interested in studying science in a different way than usual. Students learn to observe various natural phenomena in everyday life so that they can formulate life problems and are also able to provide solutions to various problems that occur (Pakaya et al., 2023). Students are encouraged to explore and appreciate their own cultural heritage, as well as the cultural diversity around them (Siami et al., 2023). This has an impact on the learning process, students are active in asking questions regarding traditional food served in the E-Module and its relation to science.

Ethnoscience content integrated in the E-Module is not only presented in the form of pictures and writing, but there are trigger questions, long videos and short videos that direct students to think creatively. This trigger question serves to sharpen students' creative thinking. In line with previous research, the solution to hone students' creative thinking is to prepare trigger questions and provide motivation for students to be able to submit answers in the form of ideas or ideas confidently (Aziza, 2021). Students' creative thinking abilities can be developed through habituation and practice of students finding answers to problems and phenomena in learning materials. Students will try to know and remember and look for creative solutions when studying (Tarihoran & Anas, 2023).

The ethnoscience-based short video feature presented in the E-Module has a positive impact on students' scientific creativity as well as being a superior feature in this E-Module. During the learning process, students become enthusiastic, show cheerful expressions and show more interest in learning science concepts. Apart from keeping students from getting bored, these short ethnoscience-based videos also help students understand concepts and find creative ideas. With short videos, students do not feel bored and learning time becomes more effective and efficient.

Students are not reluctant to re-study the information presented in the E-Module to better understand the concepts.

This is in accordance with previous research that the integration of communication and technology in short TikTok videos makes learning effective and makes it easier for students to understand concepts (Erniasih et al., 2018; Syah et al., 2020). Short educational videos on TikTok designed for teaching can be adapted to meet learning objectives and facilitate student learning, this approach can help students understand complex concepts and gain new creative skills and knowledge (Khlaif & Salha, 2021). Moreover, short videos are integrated with ethnoscience so that they can help improve learning outcomes and can hone creative ideas and curiosity (Amila et al., 2018; Walidah et al., 2023). Thus, it can be seen that there is an increase in students' scientific creativity results by utilizing ethnoscience-based E-Modules which are classified in the high improvement category. These results are strengthened by the increase in scientific creativity shown in Table 7.

Table 7. Increase in Scientific Creativity for each Indicator

Indicator	Pretest	Posttest	N Gain	Category
Creative product design	37.93	75.86	0.61	Currently
Creative problem solving	31.89	85.34	0.78	Tall
Scientific imagination	29.31	87.06	0.81	Tall
Unusual use	31.89	84.48	0.77	Tall
Ability to increase product usability and value	28.44	66.37	0.53	Currently
Average	31.57	80.36	0.71	Tall

Table 7 shows that most of the scientific creativity indicators of students in the experimental class are in the high category. The increase in scores on scientific creativity indicators shows that ethnoscience-based E-Modules can help students increase scientific creativity.

The highest increase in scientific creativity is in the first indicator, namely scientific imagination in the fluency dimension. The indicator of scientific imagination in this research means students' ability to describe certain events that will occur. The dimension of creativity assessed is fluency or fluency. Fluency is a student's ability to present many predictions of events scientifically. Students are able to predict the possibility of events that will occur according to the problems shown in the test questions. This capability is supported by the ethnoscience-based E-Module feature in the material description menu, for each sub-type of additive a detailed explanation is given regarding the maximum threshold for use according to the Ministry of Health and its impact on health if consumed excessively. This feature helps students reflect on the events proposed in the questions. In line with previous research, to spark creative learning, learning materials are needed that stimulate students to think creatively (Nurhaisa et al., 2023).

The second indicator is creative problem solving with the flexibility dimension. The indicator of creative problem solving in this research means students' ability to solve scientific problems creatively. Flexibility is the student's ability to provide suggestions on problems by considering various possibilities. Students are not fixated on the description of the material in the E-Module but can provide solutions according to the correct concept of additives and addictive substances. The use of ethnoscience-based E-Modules helps students in providing suggestions because the integration of ethnoscience in E-Modules is very close to students' lives.

Supported by previous research, to support students' achievement of creative thinking, the learning process can be done by involving students in compiling and presenting ideas based on daily experiences with support from teachers and students who creatively provide solutions to these problems (Agustin et al., 2023; Gumilar & Marwoto, 2023). In the ethnoscience-based E-Module, the coffee culture of East Java provides an appropriate illustration for studying what addictive substances are found in cigarettes, coffee and tea and their impact on health. In this way, students can provide logical suggestions according to what they have experienced.

The third indicator is the unusual use of the originality dimension. Unusual use in this research means that students are able to write down as many uses as possible for a particular object. Originality is the student's ability to express unusual ideas. Students can answer questions about unusual uses of surrounding materials that can be used for natural additives. Students' answers are quite varied and logical in accordance with science. This is because during the learning process students are directed to see several innovations in natural additives in ethnoscience-based E-Modules which are packaged in informative short videos. Not only is it related to ethnoscience, but the technology used to produce natural additives is also sophisticated. This can spark students' creative ideas to think about natural additives that can be used not only with simple methods but also with more sophisticated methods.

The fourth indicator and the lowest increase is the indicator of the ability to increase the usability and value of the product in the elaboration dimension. The ability to increase the usability and value of products in this research means students' ability to improve product

technicalities for better use. Elaboration is students' ability to develop ideas. This low increase is due to the fact that learning using the ethnoscience-based E-Module was only carried out in a few meetings so that learning using the module still needs to be carried out continuously to familiarize students. Apart from that, the elaboration aspect is the highest indicator of creative thinking ability, where students are asked to develop or expand an idea (Qonitah et al., 2022).

The fifth indicator is creative product design with the dimension of originality. Creative product design in this research means the student's ability to design a scientific product accompanied by a brief or detailed explanation. In this research, indicators of creative product design are included in the skills assessment, namely creating written work in the form of posters about the impact of addictive substance abuse in everyday life. This indicator is the second lowest indicator after the ability to increase the usability and value of the product. This is because each individual is created with all his uniqueness and with his own characteristics. Not all students have the same learning styles and abilities (Zagoto et al., 2019). Students who have talent and interest in art tend to produce work that is unique and considered good, while students who lack talent in art will produce work that is less unique.

Based on several studies that support the results of this research, it can be seen that ethnoscience-based E-Modules that are designed specifically by taking into account students' characteristics and needs can increase students' scientific creativity. The integration of ethnoscience content which is very close to students' experiences in everyday life can make it easier for students to understand concepts and help students find creative ideas. E-Module provides a technology space that is currently booming, namely TikTok videos which have a positive impact on science learning, namely fostering creative thinking, interest in learning and curiosity.

Conclusion

E-Modules based on ethnoscience are very suitable to be implemented in science learning, especially material on additives and addictive substances to increase students' scientific creativity. E-Modules based on ethnoscience are effective and significantly better at increasing the scientific creativity of junior high school students in the high category. The highest increase in scientific creativity is found in the scientific imagination indicator. Meanwhile, the lowest increase was found in the indicator of the ability to increase usability and product value in the elaboration dimension.

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Author Contribution
Conceptualization, A. A., B. S., A.W.; methodology, A. A., B. S, A. W.; software, A. A.; validation, B. S., A. W.; formal analysis, A. A.; investigation, B. S.; resources, A. A.; data curation, B. S., A. W.; writing-original draft preparation, A. A., B. S., A. W.; writing-review and editing, B. S. and A. W.

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Conflicts of Interest
The authors declare no conflict of interest. This research was conducted as an effort to improve students' scientific creativity.

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