



Analysis of the Implementation of Ethnoscience-Oriented IPAS Modules on the Creativity of Elementary Students in the Independent Curriculum

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Abstract

This study aims to examine the implementation of ethnoscience-oriented IPAS modules on Learner creativity. This research is a pseudo-experimental research with one group pretest post test design. The population in this study were all fourth grade students of SDN Plangkongan totaling 29 students. The instrument used in this study is a student creativity test sheet consisting of 4 aspects of creative thinking, namely originality (the ability of students to create something new and unique), flexibility (the ability of students to produce ideas that are varied, logical and relevant from different points of view), fluency (the ability of students to create many ideas) and elaboration (the ability to add, elaborate, and expand opinions or ideas). Then the data obtained was analyzed with the one sample T test, with the help of SPSS 24. the results of the research and data analysis that have been carried out, it can be concluded that the implementation of the ethnoscience-oriented IPAS module has an effect on the creativity of elementary school students in the independent curriculum. This is in accordance with the results of data calculation, it is known that the Sig. (2-tailed) is $0.000 < 0.05$, it can be concluded that there are differences in the creativity of elementary school students in the independent curriculum after using the Ethnoscience-Oriented IPAS Module.

Keywords: *IPAS Module; Ethnoscience; Creativity*

Introduction

The IPAS subject is a combination of Natural Science (IPA) and Social Science (IPS) subjects at the elementary school level. This subject is one of the subjects that can be developed for the application of life skills learning which is in accordance with the characteristics of science learning, namely studying the universe and the symptoms that occur in it. According to Sujana in (Budiwati: 2023) science should emphasize the provision of direct knowledge to students to assist in building skills and exploration. So that it is not only oriented towards academic competence but can also be designed in such a way that students are able to understand nature and apply what they have learned in real life. The combination is with the consideration that elementary school students tend to see things as a whole and integrated (Marwa: 2023). The purpose of IPAS in the independent curriculum is to develop interest, curiosity, play

an active role, and be able to develop knowledge and skills. So that students can manage the environment both natural and social in one unit.

However, in its implementation, the learning objectives of IPAS are not always achieved, there are times when it experiences obstacles. Basically, whether or not a curriculum runs depends on the ability and proficiency of the teacher in understanding the curriculum (Anwar: 2020). Based on the results of observations made in class IV SDN Plangkongan 1, students' creativity and cultural preservation of traditions in the community as a learning resource are still weak. This can be seen from the low initiative of students before learning, the absence of student preparation before learning results in the learning process students tend to be passive. Another problem that is currently developing is that the values of local wisdom or local cultural traditions are currently being forgotten by children, especially students. Students are now more proud of outside cultures and there is a slight shift in cultural values adopted. Whereas local cultural values need to be preserved because local culture characterizes a local community group.

Communities that have diverse cultures, so that culture in the form of wisdom towards nature does not become extinct, noble values need to be instilled and socialized to students through the learning process. According to Wahyu in (Rahmawati: 2023) ethnosience as a system of knowledge and understanding typical of a particular culture. Ethnosience itself is original knowledge obtained by language and culture obtained by a person that can be tested and this can be innovated in science-based learning in the classroom. IPAS learning with an ethnosience approach can increase love for local culture, create contextual and meaningful learning. This is in accordance with the opinion expressed by Atmojo (2012) that learning IPAS with an ethnosience approach that links learning with community culture will increase students' appreciation of the culture of the community.

According to Astutik (2018) things that support the learning process include a learning environment that supports the learning process including planning all aspects of learning such as the teacher's ability to teach, appropriate media, and clear learning objectives, adequate learning resources and allocating time properly. One way that can be done is by making teaching materials as a supporting component in learning according to student needs. This is explained by Mazidah (2023) that students' cognitive development can influence teachers in choosing an approach or learning model as well as teaching materials as a supporting component. One of the teaching materials that can support the science process in learning is teaching materials in the form of teaching modules. The teaching module itself is a curriculum-based learning tool whose application aims to achieve predetermined competency standards (Maulida, 2022) The results of Ruwaida's research (2022) show that the use of modules can help students learn abstract concepts. Salah satu modul yang dapat membantu siswa belajar konsep yang abstrak yaitu dengan menggunakan modul berbasis etnosains.

The ethnosience-based IPAS module is able to increase student creativity because the module discussion can make it easier to find information and translate the original science of the community with ethnosience, so that students can achieve the competencies set and can gain a meaningful learning experience. Puspasari's research in (Nurlita: 2020) states that the implementation of ethnosience-based IPAS learning is an integration of material with the environment, culture, social and environment. Thus students are not only the object of learning but also the subject of learning (Agustina: 2022). The ethnosience-based IPAS module developed by researchers emphasizes more on increasing student creativity adapted to existing local cultures. This aims to overcome the problems that occur in grade IV students of SDN Plangkongan 1, namely weak student creativity. Based on this description, it will examine the implementation of ethnosience-oriented IPAS modules on student creativity.

Method

This research is a pseudo-experimental research with one group pretest post test design. The pretest was conducted before treatment, while the posttest was given after treatment. The results of the treatment can be known more accurately because it can be compared with the situation before treatment. This design can be described as follows:

Pretest	treatment	Posttest
T1	X	T2

Gambar 1. Desain Penelitian

Information:

T1 : Student Creativity before being given Ethnoscience Oriented IPAS Module

X : Treatment with the use of Ethnoscience Oriented IPAS Module

T2: Student Creativity before given the Ethnoscience-Oriented IPAS Module

The population in this study were all fourth grade students of SDN Plangkrongan totaling 29 students. According to Suripah and Stephanie in (Putri: 2022) the instrument used in this study is a student creativity test sheet consisting of 4 aspects of creative thinking, namely originality (the ability of students to create something new and unique), flexibility (the ability of students to generate varied, logical and relevant ideas from different points of view), fluency (the ability of students to create many ideas) and elaboration (the ability to add, elaborate, and expand opinions or ideas). Then the data obtained was analyzed by one sample T test, with the help of SPSS 24. The implementation of the research is illustrated in the following figure:

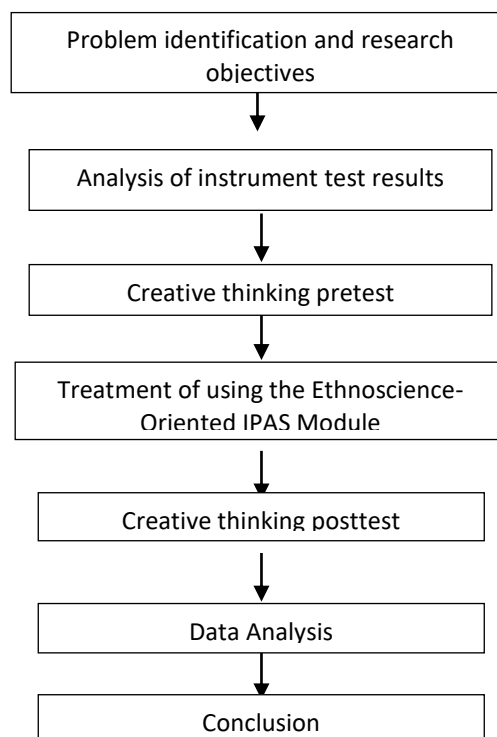


Figure 2: Research flow chart

Results and Discussion

This research data is in the form of student creativity data obtained from student creativity tests before and after being given treatment in the form of Ethnoscience-Oriented IPAS modules.

a. Description of Pretest and Posttest Data

Based on the data collected, the average score (M), percentage standard deviation (SD), maximum value, and minimum value of the pretest and posttest scores are presented in Table 1.

Table 1. Description of Pretest and Posttest Results

Statistic	Pretes	Postes
Mean	12.97	15.90
N	29	29
Std. Deviation	2.337	2.320
Minimum	8	10
Maximum	17	19

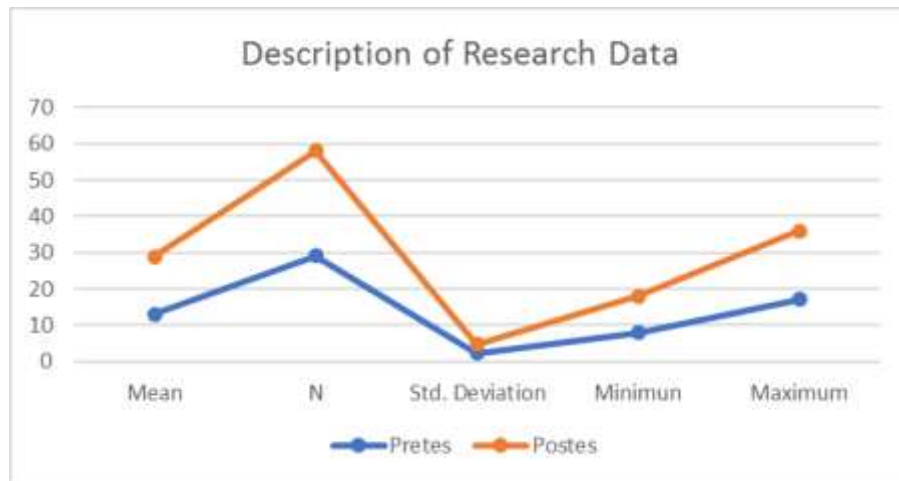


Figure 3. Description of Research Data

Based on the table above, it can be seen that there is a difference or average difference from pretest to posttest, which is 2.93.

The following is a form of pretest assessment category of creativity of fourth grade students of SDN Plangkrongan 1 before being given treatment.

Table 2: Student Creativity Pretest Assessment Category

Category	Frequencies	Percentage
Very High	1	3%
High	9	31%
Medium	15	52%
Less	4	14%
Very Less	0	0%

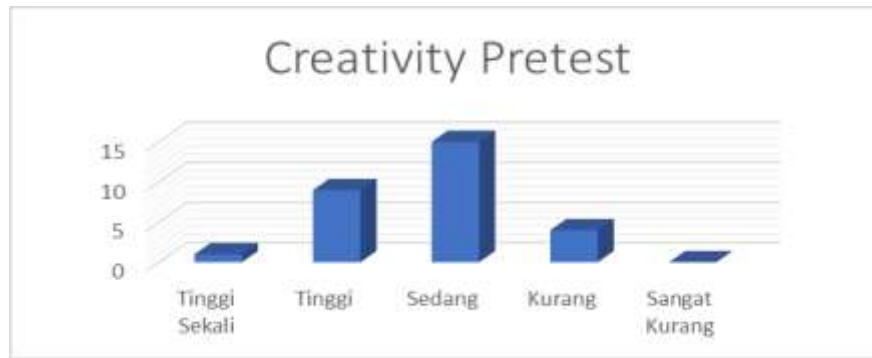


Figure 4: Pretest of student creativity

The figure above shows the pretest results of student creativity before being given treatment, for the category of very high 3% (1 student), high 31% (9 students), moderate 52% (15), less 14% (4 students) and very less 0% (0 students).

The following is the form of the posttest assessment category of creativity of fourth grade students of SDN Plangkronan after being given treatment.

Table 3. Categories of Creativity Posttest Assessment

Category	Frequencies	Percentage
Very High	8	28%
High	16	55%
Medium	5	17%
Less	0	0%
Very Less	0	0%

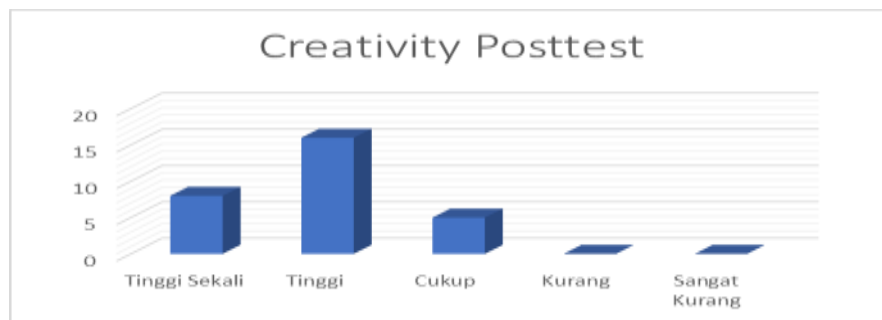


Figure 5. Post-test description of student creativity

The figure above shows the results of the posttest of student creativity after being given treatment, for the category of very high 28% (8 students), high 55% (16 students), moderate 17% (5), less 0% (0 students) and very less 0% (0 students).

1. Data Normality Test Result

Table 4. Data Normality Test

Data	Shapiro-Wilk	
	Sig	Description
Creativity Pretes	0.082	Normal
Creativity Posttest	0.063	Normal

Based on the sig results it can be seen that the data is normally distributed. Because the sig value of creativity pretest is $0.082 > 0.05$, and Sig. Posttest creativity $0.063 > 0.05$.

a. Pretest and Posttest Test Results

Table 5. T-test results of pretest and posttest

Data	T Hitung	Sig.	Conclusion
Creativity Pretest-Creativity Posttest	11.175	0.000	Differences

Based on the results of the paired sample test output above, it is known that the Sig. (2-tailed) is $0.000 < 0.05$, so it can be said that H_0 is rejected and H_a is accepted. So it can be concluded that there are differences in the creativity of elementary school students in the independent curriculum after using the Ethnoscience-Oriented IPAS Module.

The results showed that the creativity of students who studied after using the Ethnoscience-Oriented IPAS module was better than before. This is because the module not only contains material but also students are given stimulation, problem orientation, and ways to solve problems, so that students' ideas do not suddenly appear but through certain phases. In addition, the description questions are integrated with ethnoscience, so that students can answer questions based on the experience gained during the learning process. The material in the ethnoscience-integrated IPAS learning module provides direct experience that students can apply in everyday life, so that students easily remember and understand the material. Creativity has a positive effect on the ability to generate a greater number of ideas as well as improving the quality of creative thinking (M. Şenel and B. Bağçeci: 2019). On the other hand, according to Yazar (2015) creative thinking is described by several characteristics such as flexibility, originality, multiple thinking, quick thinking, independence and openness in formulating new strategies in problem solving. A component of creativity that is often poorly understood is originality/novelty (Liu: 2015). The component is aimed at the cognitive activities of students who formulate new ideas for themselves and their peers, not ideas that have never been thought of by others (Sternberg, 1985: 607). Creative thinking as a skill is different from analytical and practical thinking but is more about integrating creative processes in analytical and practical thinking (Robson: 2014).

The creative thinking process goes through several phases. The first is the preparation phase, in this individual phase the individual focuses on the problem, namely the problem of making written batik with the theme of plant structure. After the student's attention is focused, the student's curiosity also increases. Second, the incubation phase, in this phase individuals build on the knowledge they have to test hypotheses. At this stage students are really involved and experience the problem at hand. The third phase is illumination, in this phase individuals gain inspiration or ideas about themes and relationships between various components of the problem at hand. The fourth phase is revision, at this stage the individual thinks about and evaluates, changes and fixes the problem and develops a hypothesis again. Students' critical and creative thinking skills can be seen from their ability to understand problems and find solutions (Kardoyo: 2020).

Kasmaienezhadfad (2015) also explains that there are 2 factors that encourage the realization of individual creativity, among others, factors of encouragement from within oneself (intrinsic motivation) and encouragement from the environment (extrinsic motivation). Through local culture students can learn directly with the environment and ease of understanding the concept of IPAS contained in the cultural values of written batik. Agung (2015) states that local wisdom-based learning models can increase students' creativity and hard work to learn. Students direct learning directly with local culture to gain new experiences and are given the widest possible opportunity to express their ideas, so that students can explore their creative thinking skills. In order to choose local wisdom that is in accordance with the subject matter and the student's environment, the teacher needs to do the appropriate local wisdom

assistance. Therefore, the selection of cultures and themes in ethnoscience integrated learning is very important. The results of Rusilowati's research (2019) say that one of the efforts to preserve local wisdom is maintained and can be passed on to the next generation is to develop local wisdom-oriented teaching materials. Local culture can be seen as an accumulation of collective experiences from generation to generation that always changes continuously following the times.

Conclusions

Based on the results of the research and data analysis that has been carried out, it can be concluded that the implementation of the ethnoscience-oriented IPAS module affects the creativity of elementary school students in the independent curriculum. This is in accordance with the results of data calculation, it is known that the Sig. (2-tailed) is $0.000 < 0.05$, it can be concluded that there are differences in the creativity of elementary school students in the independent curriculum after using the Ethnoscience-Oriented IPAS Module. The limitation of this study is the absence of a control group so that there is no comparison group to determine differences in the use of the Ethnoscience-oriented IPAS module. The number of samples used on a small scale and the need for further studies on other variables such as teacher teaching styles, methods or learning models carried out with a larger sample size.

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