



## **Eligibility of Thematic Student Worksheets Based Ethnoscience on Single Substance and Mixed Substance Materials for Elementary School**

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### **ABSTRACT**

The rapid flow of globalization has resulted in the erosion of local cultural values in Indonesia. This has resulted in a shift in content and neglected local wisdom. This study aims to produce and find the quality of thematic student worksheet-based ethnoscience on Single Substance and Mixed Substance Materials for Elementary Schools. This research is research and development (R&D), with the development of the Nieveen model with preliminary stages, prototyping stages, summative evaluation, and systematic reflection and documentation. The subjects of this research are media expert validators and material expert validators, one elementary school teacher, and 10 students. The quality of the learning tools developed is measured through the analysis of validity and practicality. The product validity assessment uses a validation questionnaire distributed to experts, and the data obtained is analyzed using the feasibility percentage formula. The practicality of using a response questionnaire assessed by the teacher and students was analyzed using the percentage of practicality. This study resulted in average feasibility of 88.21% categorized as very feasible. The percentage of the practicality of each aspect is 94.33% and 93.33%, categorized as very practical. It was concluded that the LKPD developed met the criteria for developing quality products that were valid and practical. Based on this, it can be concluded that the product developed is feasible and practical to be applied in learning.

**Keywords:** Development, Student Worksheets, Ethnoscience, Thematic Learning, Elementary School

### **INTRODUCTION**

Bima, West Nusa Tenggara province, is blessed with a wealth of culture and local wisdom that is very diverse and fascinating. However, the rapid flow of globalization has resulted in the erosion of local cultural values in Indonesia, especially in the Bima area and its surroundings. The presence of globalization also accompanies the development of education, so the world of education must present itself as a challenge to globalization itself. One of the efforts to answer the challenges of globalization in the world of education is by optimizing contextual integrated learning and strengthening the environment as a learning resource (Puspasari, et al. 2019).

Ethnoscience is meaningful learning that allows students to learn while doing which allows students to be able to connect the learning materials studied with the context of everyday life and be able to apply science wisely to preserve sustainability (Atmojo, 2012;

Damayanti, et al, 2017). This is in line with the opinion that the scientific approach recommended in education in Indonesia today is Ethnoscience, namely original knowledge in the form of language, customs, and culture, morals; as well as technology created by certain people or people that contain scientific knowledge (Rahayu & Sudarmin, 2015). This is following the resulting research of Haryati (2016) which states that learning using the concept of environment and culture as a source of learning makes learning outcomes more meaningful. Besides that Damayanti (2017), that students' science learning achievement achieved by using a culture-based learning model is higher than that of students who learn using the regular learning model.

### **Problem of Research**

Science learning in elementary schools does not train students' science process skills. Science process skills can be helped by applying experience-oriented learning relevant to everyday life. The lack of basic values about habits, customs, and culture can be used as an opportunity to cultivate these values through learning to improve process skills and students' cultural character. Learning in schools has not been supported by teaching materials that are following the needs and character of students and the teachers themselves have difficulty in making appropriate teaching materials to facilitate this. Based on this, it is necessary to develop teaching material in the form of a thematic student worksheet based on ethnoscience so that students can carry out a systematic and directed learning process and get direct experience from the material being studied.

### **Research Focus**

The focus of this research is to produce products in the form of thematic student worksheet-based ethnoscience that is feasible and practical. This feasibility study was conducted to obtain information related to the extent to which the ethnoscience-based thematic worksheets that have been developed are feasible and practical. Science learning with an ethnoscience approach is believed to be able to change learning from *Teacher Centered Learning* to *Student-Centered Learning*, creating contextual and meaningful learning. Science learning with an ethnoscience approach that links learning with community culture will increase students' appreciation of the community's culture. This is following (Nailiyah et al., 2016; Nuralita, 2020; Tandililing, 2014) which revealed that learning that combines indigenous community science and scientific science can improve students' understanding of process skills towards scientific science concepts and make learning more meaningful.

## **METHODOLOGY OF RESEARCH**

### **General Background of Research**

This research is a research and development (R&D), with the Nieveen development model of Nieveen, N., McKenney, S, & Van den Akker, J. The following are the stages of developing Nieveen's model, namely *preliminary research*, *prototyping stage*, *summative*

evaluation, and *systematic reflection and documentation*. This research was conducted at SDN 03 Jatiwangi, Bima city, on single substance and mixed substances fifth grade of the second semester, but was carried out with an enrichment model in the sixth of the first semester. This was because the research material was in an even semester so the research was conducted on students who had to learn about the material beforehand.

### Subject of Research

To determine the feasibility of the developed product, the right subjects were determined, namely media expert validators and material expert validators. Expert validators are determined based on certain criteria where media validators are subjects who are experts in the field of media and learning resources, while material expert validators are subjects who are experts in the field of ethnoscience and thematic lessons. The practicality of the product developed was tested by practitioners, namely one elementary school teacher and 10 students.

### Instrument and Procedures

Instruments used in the research to determine the feasibility of the developed product are the media expert validator questionnaire and the material expert validator questionnaire. Meanwhile, to determine the practicality of the instrument product used, namely student response questionnaires and teacher responses. The questionnaire was made with a Likert scale of 1-5, and then analyzed and concluded based on the category of assessment obtained.

### Data Analysis

In the process of analyzing the validity and practicality of ethnoscience-based LKPD data, the following formula is used.

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

Information :

P: Percentage of scoring results

$\sum x$  : Total number of scores obtained

$\sum xi$  : Total maximum score

The level of validity and practicality is described by confirming the percentage of scoring results achieved with the criteria as presented in the following Table 1.

**Table 1.** Criteria Product Validity and Practicality

Percentage of Scoring	Results Feasibility Level
80% - 100%	Very good
66% - 79 %	Good
56% - 65%	Fairly Good
40% - 55%	Poor
30% - 39%	Not good

(Source: Daryanto, 2016)

## RESULTS AND DISCUSSION

The validity aspect according to Nieveen (2015) relates to two things, namely: (1) learning tools are developed based on strong theoretical rationality, and (2) there is internal consistency. According to Nieveen, the practical aspect is fulfilled if experts and practitioners state that what is developed can be applied, and what is developed can be applied. The results of the study can be seen at every stage of development. The preliminary research stage shows that the implementation of learning media is less effective in learning such as learning steps that tend to be non-operational so no learning specification is following the character and development of students. The second stage, the prototyping stage, is the product design and development stage which is based on an ethnoscience approach and thematic learning characteristics. The third stage, is summative evaluation where the resulting product is then validated by experts. The results of the validation carried out by the two experts can be seen in Table 2 below.

**Table 2.** Expert Validation Results

No	Aspects Assessment	Percentage	Level Validity
1.	Motivation	100%	Very good
2.	Construct and Content	86.25%	Very good
3.	Learning	86.6%	Very good
4.	Ethnoscience concept	80%	Very good
<b>Overall percentage</b>		<b>88,21%</b>	<b>Very Eligible</b>

Based on the table above, it can be seen that the highest percentage gain is in the motivational aspect, which is 100% very good, and the lowest percentage is in the Entoscience aspect, which is 80% with a very good category so that the average from the assessment aspect is 88.23 % with very decent category.

**Table 3.** Results of Teacher Responses to Products

No	Aspect	Percentage	Level Validity
1.	Motivation	100%	Very good
2.	Construct and Content	96.25%	Very good
3.	Learning	91.1%	Very good
4.	Ethnoscience concept	90%	Very good
Percentage Overall		94.33%	Very Practical

Based on the table above, it can be seen that the highest percentage gain is in the motivational aspect, which is 100% very good, and the lowest percentage is in the Entoscience aspect, which is 90% in the very good category so that the average from the assessment aspect is 94,33% with very decent category.

**Table 4.** Results of Student Responses to Products

No	Aspect	Percentage	Level Validity
1	Motivation	96.28%	Very good
2	Construct and Content	94.70%	Very good
3	Learning	90.70%	Very good
4	Ethnoscience concept	88.70%	Very good
5	Language	96.28	Very good
	<b>Percentage Overall</b>	<b>93.33%</b>	Very practical

Based on the table above it can be seen that the highest percentage gain is in the motivational and language aspects, which is 96.28% very good, and the lowest percentage is in the Entoscience aspect, which is 88, 7% in the very good category so that the average from the assessment aspect is 93.33% with a very decent category. At the summative evaluation stage, suggestions and comments were also obtained from experts, teachers, and students. These suggestions can be seen in Table 4 below.

**Table 5.** Validator and Practitioner Suggestions

<b>Validator</b>	The format and design of writing modules must be consistent The cover must clearly describe the characteristics of the research
<b>Teacher</b>	Time allocation in learning using the student worksheet must be determined Thematic learning materials need to be added
<b>Students</b>	Difficulty answering questions on the LKPD because it requires a long explanation

Based on the suggestions contained in Table 4, the LKPD developed has been revised. The following is the LKPD cover display before and after validation which is shown in Figure 1 below.

**Figure 1:** Cover view before Validation Cover display after Validation

In the fourth stage, namely systematic reflection, and documentation, the overall results of research studies have been written in the form of scientific papers. Based on all the stages of developing the thematic student worksheet based on ethnoscience on Single Substance and Mixed Substance Materials for Elementary School, it is said to be very eligible to use in

learning. This is in accordance with the opinion of Trisnawati, et al (2017) which states that media and teaching materials with appropriate categories can be used in research according to expert advice. Learning needs to be included in the student worksheets. This causes optimal and efficient communication between teachers and students in the teaching and learning process takes place. This statement was reaffirmed by the results of research by Situmorang (2013) which revealed that learning innovations in the form of student worksheets produce better learning outcomes, familiarize students with developing higher-order thinking abilities and skills, and increase learning effectiveness.

Ethnoscience-based learning that does not separate cultural science and local wisdom as well as the community can be used as a learning approach to increase students' interest and motivation and skills toward science. Learning with an ethnoscience approach is a form of expression and communication of an idea and the development of knowledge that encourages students to acquire scientific knowledge based on culture, local wisdom, and problems that exist in society so that students can understand and apply the science they learn in class can be used to solve problems they encounter in everyday life, thus making science learning in the classroom more meaningful (Atmojo, 2018). The Ethnoscience activity contained in this thematic student worksheet is to explore the concept of Ethnoscience in the Bima culture, especially in the *Peta Kapanca* which is following the concept of Single Substance and Mixed Substance. Ethnoscience learning activities help students to be able to make observations, discussions, presentations, and practicums. The existence of student worksheets is very helpful for students in understanding various basic concepts of the material by further developing problem-solving skills. This is supported by the statement put forward by Suryawati (2017) and Isrok'atun (2018) that the complex problems that exist in student worksheets have the potential to train students' abilities to solve authentic problems and find alternative solutions. The learning integrated ethnoscience provides an experience directly that can be applied by students in daily life. Knowledge understanding scientific knowledge can be explored through life experience and day-to-day activities involving public science, inquiry, and scientific work in the laboratory (Syaharuddin, 2020). Student activities and learning outcomes have increased after receiving learning using the ethnoscience-integrated science learning model. In addition, ethnoscience-based learning can improve process skills, think creatively, critically and foster the cultural character of science (Dewi, et al, 2019; Damayanti, et al, 2017).

The phenomena presented are simple and are phenomena that often occur in everyday life and are very easy to understand by students. This is done so that students do not need a lot of time to understand the phenomena presented. Ningsyih (2018) revealed that good and quality learning tools are considered a factor that increases learning success, and a quality learning process.

## CONCLUSION

This study resulted in average product feasibility of 88.21% which was categorized as very feasible. The percentage of the practicality of the product from teachers and students is 94.33% and 93.33%, respectively, categorized as very practical. It was

concluded that the thematic student worksheet based on ethnoscience on Single Substance and Mixed Substances for SD/MI that was developed met the criteria for developing quality products that were valid and practical. Based on this, it can be concluded that the product developed is feasible and practical to be applied in learning.

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