# DEVELOPMENT OF P5-BASED MODULE AND SUPPLEMENT INTEGRATING ETHNOSCIENCE IN THE TRADITIONAL MUSICAL INSTRUMENT KELINTANG PERUNGGU OF JAMBI

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## ABSTRACT

This research aims to develop ethnoscience-based P5 modules and supplements on traditional Jambi bronze kelintang musical instruments in junior high schools. This research employs a *research and development* (R&D) approach using the 4D model, which consists of four main stages: Define, Design, Develop, and Disseminate. The developed products are in both hardcopy and softcopy formats. The research subjects included 28 students of class 8E and 2 teachers from SMP Negeri 22 Kota Jambi. Data collection techniques involved interviews, documentation, and questionnaires on initial needs and perceptions. The data were analyzed using descriptive quantitative and qualitative methods. The results of expert validation showed scores of 91.17% for media and 89.96% for content, indicating that the product is highly feasible. Student perception results reached 80.81%, while teacher perception was 96.42%, further supporting the high feasibility of the P5 module and supplement as a learning medium. It is hoped that through this research, this P5 module & supplement can become an innovative learning medium, support P5 activities, and encourage students' knowledge of ethnoscience on bronze kelintang musical instruments.

**Keywords :** *Module, Supplement, P5, Ethnoscience, Bronze Xylophone (Kelintang Perunggu)*

## INTRODUCTION

The Pancasila Student Profile Strengthening Project (P5) is an implementation of the Independent Curriculum which aims to shape the character of the younger generation in accordance with Pancasila values (Uswan et al., 2025). P5 is directed as learning that provides space for students to observe and analyze various problems in the surrounding environment (Irawati et al., 2022). Through P5 activities, students are given the opportunity to learn in informal, flexible, interactive situations and directly involved with the surrounding environment to strengthen competence in the Pancasila student profile (Widana et al., 2022).

The implementation of P5 makes students actively contribute and can explore knowledge as character strengthening (Rahmawati et al., 2019). To carry out P5 activities, it is necessary to design activities systematically and be outlined in modules as a guide. Module P5 contains the main provisions for the implementation of P5 activities at the school level prepared by the Education unit in the form of documents (guides).

One of the themes raised in the P5 activity is local wisdom, this theme allows students to explore regional culture as a source of learning. Module P5 is adjusted to the characteristics of each educational unit and is able to be meaningful for students (Rizal et al., 2022). In this context, the ethnoscience approach can be used to integrate natural science with local cultural values and encourage students to study the natural sciences (Novia et al., 2015). Ethnoscience teaches science concepts through cultural, environmental, and community phenomena that are inherited from generation to generation (Novitasari et al., 2017).

One form of local wisdom in Jambi Province that has the potential to be used as an object of ethnoscience-based learning is the bronze traditional musical instrument. This traditional musical instrument is usually used as an accompaniment to traditional music, accompaniment to regional dance art and accompaniment to certain rituals in religious ceremonies (Ginting et al., 2018). The bronze kelintang of the traditional musical instrument of the Malay community of East Tanjung Jabung Regency is a musical ensemble that produces distinctive sounds and can be studied scientifically (Hedri et al., 2024). In addition to its cultural value, this traditional musical instrument has educational potential and can enhance students' learning interest (Astria & Kusno, 2023).

The results of initial observations at SMP Negeri 22 Jambi City show that P5 has been implemented, but teachers face obstacles in designing activities that suit the needs and interests of students. Most of the students showed a high interest in practical activities with local cultural nuances, but the school did not have a P5 project module that was appropriate to the local context. Teachers only use modules from online sources that are less relevant to Jambi culture. Based on the questionnaire, 70.53% of students also admitted to experiencing challenges in understanding the P5 activities with the theme of local wisdom that were previously carried out.

To answer these problems, an innovation is needed in the form of the development of an attractive, relevant, and contextual P5 module. This module was developed with an ethnoscience approach, so that it is able to integrate science with local culture through practice-based learning. To support the science content to be conveyed properly, it is also necessary to supplement the module as a complement, which contains additional information to increase students' insight or knowledge (Hapsari et al., 2018). Conform to the instructions Kemendikbudristek (2024), Education units can develop modules independently according to the learning needs of students and the characteristics of the education unit region.

The development of ethnoscience-based P5 modules and supplements on the Jambi bronze kelintang musical instrument is a step in strengthening the values of Pancasila student profiles through the local context. By combining the local cultural context with learning, learners can gain cognitive knowledge and develop characters that reflect national values. The product is designed to provide a holistic learning experience, which blends cognitive and affective (Brahmandika & Sutama, 2024).

Therefore, this research aims to develop ethnoscience-based P5 modules and supplements on traditional Jambi bronze kelintang musical instruments in junior high schools, which are expected to be able to answer the needs of contextual learning and support the achievement of Pancasila student profiles through practical and reflective activities.

## METHOD

The research carried out is research and development (*research* & *development*). In this study, a 4-D development model developed by Thiagarajan was used with four main stages, namely: *Define*, *Design*, *Develop*, and *Disseminate*.

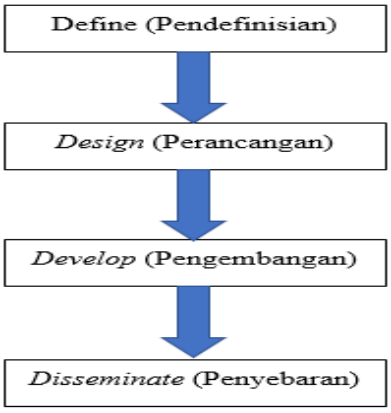


**Figure 1. 4D Development Model Stage**
Source. (Thiagarajan, 1974).

The developed product is the P5 module and supplement based on ethnoscience, focused on the traditional musical instrument kelintang perunggu from Jambi. This research aims to produce a learning product that not only introduces local wisdom but also integrates cultural and scientific values within the context of education. The 4D development model also has specific objectives and procedures to ensure the production of a valid and effective product.

The subjects of this study consisted of 28 students of class 8E at SMP Negeri 22 Jambi City. The students were selected based on their involvement in the P5 program that is being implemented at the school. In addition, two teachers of SMP Negeri 22 Jambi City who are in charge of teaching science lessons and coordinators of P5 activities were also involved as research subjects to provide an evaluation of the suitability of the modules with the needs of learning in the classroom. The selection of this subject was carried out taking into account the representation of the group that will use the developed modules and supplements, as well as the relevance between the subjects taught and the content of the ethnoscience-based modules. All subjects of this study were involved in a limited product trial, which aimed to measure the effectiveness and feasibility of modules and supplements in supporting the achievement of the P5 goal in schools.

The types of data used in this study are qualitative and quantitative data. Qualitative data was obtained through interviews with teachers and experts of traditional bronze instruments.

Quantitative data was obtained through a questionnaire of students' initial needs, product feasibility validation assessment sheets, student perception questionnaires, and teacher perception questionnaires. The data sources in this study include teachers, students, and bronze experts who provide information through interview sheets and questionnaires that have been compiled by researchers.

The data collection techniques in this study were carried out through interviews, questionnaires, and documentation. The interview was used to dig up information from teachers and experts of traditional musical instruments related to the needs, context, and validation of product content. The questionnaire was used to obtain data on students' initial needs, assessment of product feasibility validation by experts, and teachers' and students' perceptions of the developed product. Documentation is used to support data obtained during the development process, including photos of activities, field notes, and product test results.

The instruments used in this study were adjusted to the data collection technique. The interview instrument is in the form of an open interview guideline for teachers and experts, which is designed to obtain qualitative information related to the needs and feasibility of the product's content. Questionnaire instruments consist of several types, namely student needs questionnaires, product validation questionnaires by experts (materials & media), and teacher and student perception questionnaires on the practicality and application of products. All instruments are compiled based on indicators relevant to the development objectives and have gone through a content validity test by experts before being used in data collection.

## RESULTS AND DISCUSSIONS

The development products produced in this study are in the form of ethnoscience-based P5 modules and supplements on bronze kelint musical instruments. This development is carried out using a 4D development model consisting of define, design, develop, and disseminate stages.

### Define Stage

This stage begins with an initial analysis to identify the needs and characteristics of students in P5 activities. The researcher conducted interviews with teachers and distributed questionnaires to students of grade VIII E at SMP Negeri 22 Jambi City. The results of the questionnaire show that there is a need for contextual and local culture-based materials, especially in the implementation of P5.

The next stage is task analysis to determine the main content of the material. In this process, the researcher maps the material to be taught, paying attention to the relationship between the concepts of science contained in the bronze cross-section musical instrument. The results of this assignment analysis are the basis for the preparation of material that is structured and easy to understand by students.

Concept analysis to identify the relevant science of the bronze traditional percussion instrument. This local wisdom is reconstructed into a form of scientific knowledge that is in accordance with the junior high school science level (phase D). The identified science concepts include sound, vibration, speed of sound, resonance, frequency, classification of wood, and metal composition.

The analysis of learning objectives was carried out by referring to the dimensions, elements, and sub-elements of P5. This analysis aims to ensure that the learning objectives

formulated are aligned with the competencies that must be achieved by students. From the results of the analysis, the learning objectives were then translated into more specific and measurable achievement targets. The formulation of these learning objectives is clearly outlined in the module, so that students and teachers can easily understand what is expected and must be achieved during the learning process.

**Design Stage**

The design begins with the preparation of a benchmark reference test, which serves to measure the achievement of students' competencies after learning. Then it was followed by the selection of learning media that was in accordance with the school context. The results of the observation show that SMP Negeri 22 Jambi City has a fairly complete traditional musical instrument, which can be used directly in the learning process, so that the media strongly supports the development of modules and supplements.

The next stage is the selection of formats. Modules are designed in A4 landscape paper format, while supplements are made in A4 portrait format. Modules and supplements are compiled using Microsoft Word and Canva. This format adjustment is carried out with the aim that the material can be presented in a visually attractive manner and in accordance with the characteristics of the students, so that the learning process becomes more effective and fun.

Based on the results of various analyses that have been carried out, such as student needs analysis, assignment analysis, concept analysis, and learning objective analysis, all of this information is used as the basis for designing the initial design of the product. The design structure of this product is divided into three main parts that are systematically designed to facilitate understanding and learning flow. The first section is the initial section, which includes elements such as the cover, the introduction, and the table of contents. The second part is the content section, which contains ethnoscience-based learning materials, especially those that integrate science concepts from the bronze plate, such as sound, vibration, and resonance, with local wisdom. The third section is the final section, which includes exercises, and assessments, as a means to measure learners' understanding and deepen their knowledge. This structure is applied to modules and supplements to support the completeness of the P5 learning materials, ensuring that all aspects required in learning are well achieved. The following are the results of the design of ethnoscience-based P5 modules and supplements on the Jambi bronze kelintang musical instrument that has been developed are presented in figure 2 and figure 3


**Figure 2. Ethnoscience-Based P5 Module On Jambi Bronze Kelintang Musical Instrument**

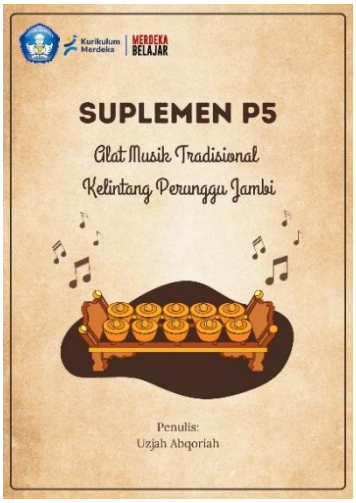


**Figure 3. Ethnoscience-Based P5 Supplement On The Jambi Bronze Kelintang Musical Instrument**

**Develop Stage**

The development stage begins with a validation process, where the P5 modules and supplements that have been compiled and developed are first validated by subject matter experts and media experts. The purpose of this stage is to find out the extent of the feasibility of the product that has been developed before being used in the learning process. Validation is carried out by two expert validators, namely one material expert validator and one media expert validator.

Each validator judges the product based on certain aspects. Subject matter experts evaluate modules and supplements based on the feasibility of content/material and material presentation. Meanwhile, media experts assessed from the aspects of ease of use, communicative, and visual quality of the products developed. Validation is carried out twice in order to ensure that improvements have been made in accordance with the input provided. In addition to providing assessments, the validators also submitted suggestions and constructive inputs to improve the content and appearance of the P5 modules and supplements before entering the further trial stage. The results of the validation of the products that have been developed are presented in Table 1 below.

**Table 1. Results of subject matter expert validation on P5 modules and supplements**

| Validation Results | Percentage | Category |
|---|---|---|
| Media | 91.17 % | Highly valid |
| Material | 89.96 % | Highly valid |

After going through the validation stage, the product was further developed and a limited trial was carried out to 28 students of class VIII E SMP Negeri 22 Jambi City. This trial aims to find out the students' perception of the ethnoscience-based P5 modules and supplements that have been developed, especially in understanding the material about traditional bronze instruments. The results of the limited trial showed that students were more interested and easier to understand the material because it was delivered through a contextual approach that linked local culture to science concepts. In addition to the perception from students, this product also received responses from two science teachers and the coordinator of P5 activities. In general, the response from students and teachers was very positive. They assessed that these modules and supplements not only

enriched the understanding of science, but also fostered an appreciation of the local culture. The data from the limited trial results and user perception of the developed product are presented in Table 2 below.

**Table 2. Results of teacher and student perception**

| Perception Results | Percentage | Category |
|---|---|---|
| Teacher | 96.42 % | Highly valid |
| Student | 81.80 % | Highly valid |

Based on the results of the initial needs analysis conducted through interviews with teachers and questionnaires to students, it shows that there is a desire to learn material that is relevant to the local culture and their daily lives. The resulting product, namely ethnoscience-based P5 modules and supplements on bronze kelintang musical instruments, successfully answered this need. The integration of science materials (such as sound, vibration, and resonance) with local contexts (traditional musical instruments) provides a more meaningful learning experience for learners.

The validation results show that these P5 modules and supplements are very valid and suitable for use for learning activities. Validation by material, media, and language experts shows that the content presented is relevant to the curriculum, the language used is according to the student's level of understanding, and the media design is quite engaging and easy to understand. This indicates that this product can be accepted by various related parties (teachers, students, and experts).

The results of the limited trials show that this product can be applied well in learning activities. The students' responses showed an increase in interest in the science material taught, especially those related to bronze crossing. The perception questionnaire also revealed that teachers felt that this module made it easier for them to teach science concepts that might have been difficult for students to understand before. Although the results of the trial showed positive results, it should be remembered that the success of this product is determined not only by the suitability of the material, but also by the readiness of the teacher to apply ethnoscience-based methods. Therefore, there needs to be further training for teachers so that they can optimize the use of these modules in learning.

This study shows results that are in line with several previous studies that developed ethnoscience-based modules. As research Julaidar et al (2024), which conducted research entitled Development of the E-Module of the Pancasila Student Profile Strengthening Project (P5) based on Local Wisdom in Phase E, has a very high level of effectiveness and a very high level of practicality. The product developed by the researcher integrates local culture (bronze cross) with science, which not only introduces science materials, but also preserves local wisdom. Although the results of this study are quite positive, there are several limitations, including time and space limitations that cause limited trials to be carried out in only one class. Further research with wider trials and on different classes will be very useful to see the extent to which the effectiveness of these products is applied more widely. In addition, the success of the product also depends heavily on the teacher's skill in using these modules and supplements, so further training is urgently needed.

## CONCLUSIONS

This research produced ethnoscience-based P5 modules and supplements that raised the traditional musical instrument of the Jambi bronze cross as a learning context. Product development is carried out using a 4D model (Define, Design, Develop, Disseminate), but only up to the Develop stage due to time constraints. The Define stage includes student needs analysis, task analysis, concept analysis, and learning objective analysis. The Design stage includes the preparation of benchmark reference tests, media selection, format selection, and initial product design. The Develop stage was carried out through validation by material experts and media experts, as well as a limited trial with two science teachers and 28 students of class VIII E SMP Negeri 22 Jambi City. The validation results showed that the module obtained a feasibility score of 96.42% and the supplement of 81.80%, both of which were included in the "Very Feasible" category. These findings suggest that the developed ethnoscience-based P5 modules and supplements can be used effectively in P5 activities to improve students' understanding of science concepts through a local wisdom-based approach.

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