



# Teaching Materials Based on Ethnomathematics of Muaro Jambi Temple

Maryono<sup>1</sup>, Eka Sastrawati<sup>2\*</sup>, Hendra Budiono<sup>3</sup>, Destrinelli<sup>4</sup> 

<sup>1,2,3,4</sup> FKIP, Universitas Jambi, Jambi, Indonesia

## ARTICLE INFO

### Article history:

Received October 29, 2023

Accepted February 10, 2024

Available online February 25, 2024

### Kata Kunci:

Bahan Ajar, Etnomatematika, Candi Muaro Jambi

### Keywords:

Teaching Materials, Ethnomathematics, Muaro Jambi Temple



This is an open access article under the [CC BY SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Copyright © 2024 by Author. Published by Universitas Pendidikan Ganesha.

## ABSTRAK

Bahan ajar matematika yang digunakan guru sulit dipahami siswa dan Belum terdapat unsur muatan budaya. Berdasarkan hal tersebut, tujuan penelitian ini yaitu untuk mengembangkan bahan ajar bangun datar berbasis etnomatematika Candi Muaro Jambi. Jenis penelitian ini yaitu penelitian pengembangan dengan menggunakan model ADDIE (Analysis, Design, Development, Implementation, Evaluation). Metode yang digunakan untuk mengumpulkan data yaitu observasi, wawancara, kuesioner, dan tes. Instrumen yang digunakan dalam mengumpulkan data yaitu lembar kuesioner dan soal tes. Pada tahap validasi dibagi menjadi dua tahapan yaitu validasi 1 oleh tiga ahli (materi, desain dan bahasa) dan validasi ke 2 oleh guru untuk melihat kepraktikalitas bahan ajar. Teknik analisis data menggunakan analisis deskriptif kualitatif dan kuantitatif. Hasil penelitian menunjukkan bahwa validasi ahli materi dengan presentasi 83,5%, ahli desain 86,7% dan ahli bahasa 85,2%. Uji praktikalitas yang dilakukan oleh guru diperoleh 77% dan respon siswa terhadap bahan ajar diperoleh presentasi 90%. Berdasarkan hasil validasi tersebut menunjukkan bahwa bahan ajar yang dikembangkan sangat praktis digunakan dalam proses pembelajaran matematika yang memenuhi kriteria valid dan praktis. Disimpulkan bahwa bahan ajar bangun datar berbasis etnomatematika Candi Muaro Jambi layak digunakan dalam pembelajaran.

## ABSTRACT

The mathematics teaching materials teachers use are complex for students to understand, and there needs to be elements of cultural content. Based on this, this research aims to develop flat-building teaching materials based on the ethnomathematics of Muaro Jambi Temple. This type of research is development research using the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The methods used to collect data are observation, interviews, questionnaires, and tests. The instruments used to collect data were questionnaire sheets and test questions. The validation stage is divided into two stages: validation 1 by three experts (material, design, and language) and validation 2 by the teacher to see the practicality of the teaching materials. The data analysis technique uses qualitative and quantitative descriptive analysis. The research results showed that the validation of material experts with presentations was 83.5%, design experts 86.7%, and language experts 85.2%. The teacher's practicality test obtained 77%, and the student's response to the teaching materials obtained a presentation of 90%. The validation results show that the teaching materials developed are efficient in the mathematics learning process and meet valid and practical criteria. It was concluded that the Muaro Jambi Temple ethnomathematics-based flat building teaching materials were suitable for learning.

## 1. INTRODUCTION

Primary school education is a formal institution that aims to develop essential intelligence, knowledge, personality, noble character, and skills independently. The elementary school also aims to prepare students for further education (junior secondary school) (Nawafilah & Masruroh, 2020; Puriasih & Trisna, 2022; Sulaksana et al., 2021). However, actual learning occurs not only at school but outside school. Therefore, elementary school teachers are essential in forming character and developing students' potential (Andarwulan et al., 2021; Toma et al., 2019). Apart from that, teachers are also obliged to guide students so that they get exemplary achievements. In learning, elementary school teachers must be able to develop effective learning plans, teach classes effectively, and evaluate student learning outcomes (Jampel et al., 2018; Lee & Huh, 2014; Sidiq et al., 2021). It is essential to do to achieve educational goals optimally. An elementary school teacher must adapt to different situations and conditions in the classroom so that teachers are required to carry out learning activities based on current developments (Saleh et al., 2018; Zaenuri et al., 2017). A teacher must have the ability to ask questions, focus students' attention, regulate the class atmosphere, and manage the class well (Dudung, 2018; Faizatun & Mufid, 2020; Gultom, 2020). In

\*Corresponding author.

E-mail addresses: [ekasastrawati@unja.ac.id](mailto:ekasastrawati@unja.ac.id) (Eka Sastrawati)

learning activities, media or teaching materials are very necessary because they can increase the effectiveness of learning and make students more active.

However, the current problem is the need for more learning materials or media. It is reinforced by previous research findings, which state that many teachers still have difficulty developing teaching materials (Dewantara & Sulistyarini, 2020; Gustiawati et al., 2020). Teachers need more time to develop learning materials/media to facilitate students' learning (Riwu et al., 2018; Tinja et al., 2017). The results of interviews with school teachers revealed two interrelated problems: teaching materials and the mathematics learning process. The teaching materials used by mathematics teachers so far depend on book packages and worksheets sourced from Gramedia. It causes the teaching materials teachers use to be less varied, not interesting, and not contextual, and their implementation is not to students' needs, characteristics, and learning environment. It has an impact on the mathematics learning process. Many students do not like mathematics and are lazy about doing the assignments given by the teacher.

The observations also found that the mathematics teaching materials used by teachers contained material, for example, questions and practice questions. The language used in the teaching materials was complex for students to understand, and there were no elements of cultural content. In the technological era, students' love for local culture has faded. If they are not introduced to local culture, they are worried that many students will not know the culture of their respective regions (Aisara et al., 2020; Tinja et al., 2017). Culture is an essential aspect of knowing the identity of an individual or region (Hartoyo, 2012; Sutrimo et al., 2019). This era of globalization has had a negative influence on local culture in Indonesia. Cultural diversity of Indonesian society. Diversity is wealth. Many things can be explored and used as developments in the learning process carried out in schools.

Therefore, innovation is needed that prioritizes learning cultural aspects in Indonesia, especially in Jambi, which can support mathematics learning activities. The teaching materials that will be developed are adapted to theories, student characteristics, and learning needs and highlight local culture to foster a sense of love for culture (Dahlan & Permatasari, 2018; Indrawini et al., 2017; Tinja et al., 2017). One of the innovations developed is developing Jambi cultural teaching materials based on ethnomathematics. Mathematics teaching materials based on Jambi ethnomathematics can foster the character of loving local culture and critical thinking. After studying teaching materials, students can master the targeted abilities without leaving traces of their culture (Baka et al., 2018; Kurnita et al., 2022; Wijiningsih et al., 2017). In this way, students can find out how their culture uses mathematics.

Ethnomathematics is a knowledge used to understand how mathematics is adapted from culture and its function to reveal the relationship between culture and mathematics. Ethnomathematics also refers to any form of cultural knowledge, social activity, or characteristics of a social and cultural group that can be carried out by other groups (Astuti & Supriyono, 2020; Irawan & Kencanawaty, 2017). Ethnomathematics is a research program on how cultural groups understand, articulate, and use concepts and practices described as mathematics, whether the cultural group has mathematical concepts (Dahlan & Permatasari, 2018; Tandililing, 2013). Ethnomathematics encourages mathematics educators to understand how mathematics continues to be part of culture and is used by everyone in real life. Ethnomathematics aims to draw on cultural experiences and train students individually and in society (Mahendra, 2017; Suhartini & Martyanti, 2017). To make mathematics learning meaningful and provide students with the view that mathematical knowledge is embedded or inherent in the social and cultural environment. Ethnomathematics-based mathematics learning can foster a sense of love for local culture in students.

Many Jambi cultures can be ethnomathematical, such as the Muaro Jambi Temple, which can be used as a plan for flat shapes: rectangular, rectangular, semi-circular, blocks, cubes, and a combination of several flat shapes. This teaching material can act as a facilitator and equip students to learn independently (Gustiawati et al., 2020; Mulyati et al., 2018; Wibowo et al., 2017). Besides teaching materials, students can build their understanding quickly (Tanjung & Fahmi, 2015; Tinja et al., 2017). The importance of developing this teaching material for students is as a trigger in increasing students' understanding of design so that they can learn independently. Apart from that, increasing student understanding can also have an impact on improving student learning outcomes. This certainly has an impact on learning objectives that are achieved optimally. Previous research findings also state that teaching materials are essential for students (Agphin et al., 2020; Riwu et al., 2018). Other findings also confirm that suitable teaching materials can help students learn so that they can improve student learning outcomes (Indrawini et al., 2017; Latifah & Utami, 2019). Based on this, this research aims to develop teaching materials for flat buildings based on the ethnomathematics of Muaro Jambi Temple, this teaching material helps educators carry out learning and guides students in building their' knowledge and understanding. This teaching material also functions as a more enjoyable approach to learning mathematics.

## 2. METHOD

Research methods in study is Research and Development. Method study development is a structured study in a systematic way regarding the process of purposeful design, development, and assessment build base empirical For creating something product instructional and non-instructional models as well as A new tool (Richey & Klein, 2014). Study This aims to obtain something product from mathematics teaching materials based on ethnomathematics. In its implementation, research Uses ADDIE design (Analysis, Design, Development, Implementation, and Evaluation) (Branch, 2009). The stages of activity development in research are as follows: stage analysis is activities carried out, analysis of needs, analysis of characteristics participants educate, and analysis of ethnomathematics. Second design Stage. These are designing teaching materials and preparing design instruments. Third is the Development Stage. Activities at stage development this realizes the product. Product draft development ethnomathematics teaching materials that contain page title, foreword, table of contents, instructions use teaching materials, core competencies, competencies basis, goal learning, map concept, activity study, summary material, tests formative, summary, key answers, and bibliography. Fourth, Stage Implementation. On-stage implementation is the step to applying results products that have been formed (trial product). Subject-group trials are currently done on 10 elementary school students. Fifth, Stage Evaluation. Evaluation is a repair process for mathematics teaching materials based on developed ethnomathematics after a series of processes in stages previously finished. If these developed products still need to be improved, the product will be revised. Data obtained during the evaluation will be used to revise and analyze developed products already considered valid, practical, and effective.

Development of mathematics teaching materials based on ethnomathematics at Muaro Jambi Temple material gets flat after validation expert is done and revised. Then stages furthermore that is trials product. Trials are one step important in the development process of a product Because trials aim To know how much the product produces quality. Existing products \_ revised tried out to 10 participants students at SD Negeri 197/IX Pematang Gajah, Jambi Luar Kota District, Regency Muaro Jambi directly selected based on level mark score exam mathematics last time at school them, four people with mark top, three people with mark medium and three people with mark low. It is intended To maximize testing teaching materials, and then the product being tested is evaluated For known validity product the, after That done revision. Product results from revision Then tried out in scale big that is all over participant educate Class IV of State Elementary School 197/IX Pematang Gajah.

Data obtained from research and development These are qualitative data and quantitative data. Qualitative data served as descriptive during the development process of mathematics teaching materials. Descriptive data in the form of suggestions used For repair developed mathematics teaching materials. Quantitative data This describes the a) validity of teaching materials, data obtained from expert material, expert language, and expert design. b) practicality teaching materials, data obtained from results charging questionnaire respond participant educate and questionnaire teacher's response to use mathematics teaching materials make up ethnomathematics. c). Effectiveness teaching materials, data obtained from results tests obtained \_ from trials group medium and group grew up at SDN 197/IX Pematang Gajah.

Instrument data collection in research There are three, namely 1) sheet evaluation teaching materials to know validity mathematics teaching materials based ethnomathematics use scale Likert, 2) sheet validation Post-test questionnaires and questions were used as a media tool measuring before questionnaire response student and teacher responses are given. Apart from that, its function is post-test questions given Already in accordance or darling need repair; 3) questionnaire response participant education and the teacher's response are purposeful to know response student and teacher response. Apart from that questionnaire, this aims to know the practicality of mathematics teaching materials based on ethnomathematics. Technique data collection is carried out through observations (observations) and questionnaires. Observation is used to know existing facilities at school, learning processes, and characteristics of students. The questionnaire is a data collection technique used to give a set of questions or statements written to respondents for answers (Sugiyono, 2013). An instrument is used to collect labor data. Students will use teaching materials, so the subject filler questionnaire is included in the sample research. Research sample: SDN 197/IX Pematang Gajah students spread a questionnaire. Questionnaire there are also forms sheet validation. Validation sheet expert material used for knowing the suitability and accuracy of teaching materials and their relevance to the expected competencies of students. At the same time, sheet validation media experts' function to know the appropriateness and quality of the teaching materials used in classroom learning. Data analysis was carried out with descriptive qualitative. Data analysis techniques are steps to analyze criteria quality developed products fulfill aspect validity, practicality, and effectiveness. The questionnaire Teacher Response is shown in Table 1.

**Table 1.** Questionnaire Teacher Response

No	Statement
1	Appearance Attractive cover page
2	Every title activity is displayed clear so that student can describe fill teaching materials
3	Layout placement on consistent teaching materials with pattern certain
4	Appearance type letters, spaces used appropriate and clear
5	Existence picture can convey material
6	Teaching materials use communicative language
7	Teaching materials use appropriate language with level maturity participant educate
8	Teaching materials use structure clear sentences
9	Teaching materials use simple and easy sentences understood
10	Instruction usage can help participant idk in do teaching materials
11	Indicators, KI, KD in appropriate teaching materials
12	Material presented help participant educate in reach objective learning
13	Material presented in accordance with level ability participant educate
14	Encouraging teaching materials participant educate for discuss and work the same
15	Teaching materials facilitate participant educate for dig required information
16	Encouraging teaching materials participant educate for discuss and work the same
17	Teaching materials help participant educate understand material
18	Easy teaching materials implemented in learning
19	Problem given easy understood
20	Teaching materials have identity for make it easier its administration

Analysis validity on research This done with sheet validation contains about suitability between components. Questionnaire the given to three lecturers and one class teacher. If not enough from scale the so will done repair. Assessment Sheet for Material Experts, Media Experts and Language Experts using a scale of 5. Effectiveness viewing teaching materials of the minimum percentage completeness Study students (p) which refers to table 3.3. teaching materials that have been developed said effective if the minimum percentage completeness Study student including in category good. Percentage Interval of Learning Completion showed in Table 2.

**Table 2.** Percentage Interval of Learning Completion

Intervals	Category
$p > 80$	Very good
$60 < p \leq 80$	Good
$40 < p \leq 60$	Enough
$20 < p \leq 40$	Not enough
$p \leq 20$	Not good

### 3. RESULT AND DISCUSSION

#### Result

First, Analysis Results. Before the researcher analyzes, the researcher wants to research Cadi Muaro Jambi, which can be applied to the material get up flat. Researchers do observation at Muaro Jambi Temple to see objects get up flat; only one can do ethnomathematics. Then, researchers also do analysis studies introduction through observation to SDN 197/IX Pematang Gajah that teaching materials used from book packages and worksheets obtained from the publisher. Then, the researcher analyzed the curriculum mathematics school basics and interviews with teachers, students, and the head of the school obtained agreement that the developed teaching materials get flat. Consideration determination principal discussion This among them is getting up flat is the material base in learning mathematics. As for the objects used for development, the material gets flat in the temple Muaro Jambi. Election Temple Muaro Jambi as a source and learning tool for developing teaching materials for students capable of conserving cultural areas and reminding students of the history building temple Muaro Jambi. Building material flat is used adjusted with the syllabus, plan implementation learning, and books mathematics written by the Ministry of Education and Culture for purposes learning achieved.

Second, Design Stage. Stage designing, an author's activity including designing needed teaching materials that contain description whole fill material based on competency in the curriculum used, determining existing components in teaching materials, determining the design appearance of teaching



materials with elements ethnomathematics temple Muaro Jambi, designing initial and instrument planning ( questionnaire For validation expert material, expert design and language experts ) and compiling the test instruments used to know effectiveness participant educate in learning. Third, development. Stage development is making mathematics teaching materials based on Jambi ethnomathematics to make things easier for learning participants to get up flat. The form developed teaching materials that are shaped teaching materials printed for the design of teaching materials, layout, and components teaching materials showed in [Figure 1](#).



**Figure 1.** Results of Development of Ethnomathematics-Based Flat Building Teaching Materials

Several experts validate the result of development, that is, expert material, expert design, expert language, and teacher as a practitioner. By general results evaluation to developed module \_ give evaluation good. The breadth and depth of material assessed are considered valid only on indicators, and additional diversity objects to ethnomathematics in teaching materials. With So, results from the development of teaching materials can implemented. The average results validation of three experts are shown in [Table 3](#).

**Table 3.** Average Validation Value

No	Expert	Average value	Category
1	Material Validator	83.5%	Fairly Valid
2	Design Validator	86.7%	Very Valid
3	Language Validator	85.2%	Very Valid
<b>Average</b>		<b>85.13%</b>	<b>Very Valid or can used</b>

Based on [Table 3](#), values obtained from validation expert material average 83.5% with the category quite valid (can use However, needs revised small), expert design obtained an average of 86.7% with a very valid category, expert Language obtained an average value of 85.2% with very valid category. So, that obtained an average value of the third expert. For module mathematics-based Jambi ethnomathematics obtained 85.13% with a very valid category.

Fourth, Stage Implementation (Trial). Stages fourth from the ADDIE model viz implementation (trial). After stated worthy by expert validators material, expert language, and expert design. Mathematics teaching materials based on ethnomathematics were tried out on participants. Scale tests currently take 10 participants to educate from class IV SDN 197/IX Pematang Gajah. Fifth, stage evaluation. Stage fifth from the ADDIE model viz evaluation. Aspects seen at stage this are validity, practicality, and effectiveness of mathematics teaching materials based on ethnomathematics. Aspect validity can seen from filling out the validity instrument. Aspect practicality can be seen from charging instrument questionnaire response participant educate and questionnaire teacher response. At the same time, aspect effectiveness is seen from post-test results. Following exposure results stage evaluation.

Data collection from student response questionnaires is used to evaluate the practicality of teaching materials in terms of the suitability of the content, presentation of the material, and the language used. Students' responses to ethnomathematics-based mathematics teaching materials using an average value of 4.6 indicate a good category with an average value of 5.0. Based on the material, the teaching materials do not need to be revised to be tested on students on a large scale. Students' responses to the ethnomathematics-based mathematics teaching materials showed a very good category with an average

score of 4.65. Based on ethnomathematics-based mathematics teaching materials, there is no need for revision. Questionnaire teacher responses are used to evaluate the practicality of mathematics teaching materials based on ethnomathematics reviewed from aspect appropriateness content, presentation material, and language used. Teacher responses to teaching materials that have been used show a very good category with amount a score of 80 and a mean of 3.85 with category good. The percentage completeness of teacher response was 77%. Based on the results, mathematics teaching materials are based on ethnomathematics. There is no need to be revised with category goods. Taking mark posttest. It is taken from mark question evaluation contained in the competency test teaching materials that have been done. Based on the results of the data analysis, an average value of 78.7 was obtained, and the percentage of learning completeness was 90%. Based on the learning materials using ethnomathematics-based mathematics teaching materials, it is effective, and it is stated that the teaching materials developed are effective.

## Discussion

Based on the research results, it was concluded that ethnomathematics-based teaching materials on flat shapes are suitable for use in learning. Several factors cause this. First, ethnomathematics-based teaching materials on flat shapes are suitable because they make learning more accessible for students. The developed ethnomathematics-based teaching materials can improve students' critical thinking skills. Previous research findings state that appropriate teaching materials can make learning more accessible for students (Lepiyanto & Pratiwi, 2015; Riwu et al., 2018; Wibowo et al., 2017). This teaching material allows students to understand and express the meaning of various experiences, such as habits, customs, and beliefs (Dahlan & Permatasari, 2018). Students can also identify relationships between statements, questions, concepts, experiences, and opinions (analysis). Students can assess inferential relationships (evaluation) and carry out inferences, identifying and making reasonable conclusions. The teaching materials developed contain systematic stages, leading to knowledge construction, and are appropriate to the student's cognitive level. It makes it easy for students to understand the material presented in teaching materials (Darmayasa et al., 2018; Sari & Manuaba, 2021). The use of these teaching materials helps students learn and understand learning materials more quickly (Uygarer & Uzunboylu, 2017; Weng et al., 2019).

Second, teaching materials based on ethnomathematics on plane figures are suitable because they facilitate student learning. By using in-depth ethnomathematics activity learning, it can be used as a tool to support solidarity and cooperation among students (Astuti & Supriyono, 2020; Dahlan & Permatasari, 2018). Teachers need to use the principles of community culture. In teaching, teachers must respect the cultural traditions and languages students use daily in learning. It causes ethnomathematics-based teaching materials to facilitate students' learning of mathematics and various cultures (Astuti & Supriyono, 2020; Dahlan & Permatasari, 2018; Mahendra, 2017). Innovations that prioritize learning cultural aspects in Jambi can support mathematics learning activities. Teaching materials are adapted to theory and student characteristics to foster a sense of love for culture. Mathematics teaching materials based on Jambi ethnomathematics can foster the character of loving local culture and critical thinking. After studying teaching materials, students can master the targeted abilities without leaving traces of their culture (Baka et al., 2018; Kurnita et al., 2022; Wijiningsih et al., 2017). In this way, students can find out how their culture uses mathematics.

Third, ethnomathematics-based teaching materials on plane figures are suitable for use to increase students' learning motivation. Ethnomathematics-based teaching materials are an approach to mathematics learning that integrates cultural aspects into mathematics learning. The approach aims to make mathematics learning more relevant, engaging, and meaningful, increasing students' learning motivation (Astuti & Supriyono, 2020; Dahlan & Permatasari, 2018). Mathematics learning materials are integrated with student culture so that students can understand the relationship between mathematical concepts and everyday life (Dahlan & Permatasari, 2018; Utami et al., 2018). It makes mathematics seem more relevant and applicable in real situations, increasing students' motivation to understand and learn it. Previous research findings also confirm that appropriate teaching materials can increase students' learning motivation (Nuryasana & Desiningrum, 2020; Rifqiawati et al., 2020). The ethnomathematics approach respects students' cultural diversity. It will help students feel recognized and accepted in the learning environment, which can increase their motivation and self-confidence.

Other research also states that culture-based teaching materials can help students learn about culture (Dahlan & Permatasari, 2018; Tinja et al., 2017). Other findings also confirm that teaching materials that are suitable for students can help and facilitate students learning anywhere and anytime (Asrial et al., 2020; Kurniawati, 2020). The advantage of this research is that the ethnomathematics-based teaching materials developed can be used by teachers in teaching mathematics and introducing culture to students. This can have an impact on learning activities that can run smoothly. The limitation of this research is that

this research has yet to test the effectiveness of ethnomathematics-based teaching materials. However, they can still be used in learning because they have received excellent qualifications from experts. The development of ethnomathematics-based teaching materials has generally contributed to critical thinking activities and fostered a love of local culture. Students can think through manipulating natural objects in the community environment. It helps simplify the process of constructing mathematical knowledge. Expanding ethnomathematics by students' cultural diversity and everyday mathematical practice makes mathematics closer to students' environments. Ethnomathematics is implicitly a program or activity delivery of values in mathematics and mathematics education.

#### 4. CONCLUSION

Based on the results of the research conducted, it was found that ethnomathematics-based teaching materials on plane figures are very valid based on validity criteria, according to experts. The response from teachers and students was efficient. Based on the student response questionnaire, the completion percentage was very good. It was concluded that ethnomathematics-based teaching materials on flat shapes are suitable for learning. The development of ethnomathematics-based teaching materials has generally contributed to critical thinking activities and fostered a love of local culture. Students can think through manipulating natural objects in the community environment. It helps simplify the process of constructing mathematical knowledge. Expanding ethnomathematics by students' cultural diversity and everyday mathematical practice makes mathematics closer to students' environments. Ethnomathematics is implicitly a program or activity delivery of values in mathematics and mathematics education.

#### 5. REFERENCES

- Agphin, R. M., Handoyo, S. S., & Alfarisi, M. M. (2020). Pengembangan Bahan Ajar Mekanika Tanah Berbasis E-Modul Pada Program Studi Pendidikan Teknik Bangunan, Universitas Negeri Jakarta. *JPTS*, 11(2), 117–123. <https://doi.org/10.21009/jpensil.v9i1.11987>.
- Aisara, F., Nursaptini, N., & Widodo, A. (2020). Melestarikan Kembali Budaya Lokal melalui Kegiatan Ekstrakurikuler untuk Anak Usia Sekolah Dasar. *Cakrawala Jurnal Penelitian Sosial*, 9(2), 149–166. <https://ejournal.uksw.edu/cakrawala/article/view/4411>.
- Andarwulan, T., Al Fajri, T. A., & Damayanti, G. (2021). Elementary teachers' readiness toward the online learning policy in the new normal era during Covid-19. *International Journal of Instruction*, 14(3), 771–786. <https://doi.org/10.29333/iji.2021.14345a>.
- Asrial, Syahrial, Maison, Kurniawan, D. A., & Piyana, S. O. (2020). Ethnoconstructivism E-Module to Improve Perception, Interest, and Motivation of Students in Class V Elementary School. *JPI (Jurnal Pendidikan Indonesia)*, 9(1), 30–41. <https://doi.org/10.23887/jpi-undiksha.v9i1.19222>.
- Astuti, E. P., & Supriyono, S. (2020). Karakteristik Pelaksanaan Pembelajaran Matematika Berbasis Etnomatematika Untuk Siswa Sekolah Menengah Pertama. *Jurnal Pendidikan Surya Edukasi (JPSE)*, 6(1), 49–60. <https://doi.org/10.37729/jpse.v6i1.6492>.
- Baka, T., Laksana, D. N., & Dhiu, K. (2018). Konten dan Konteks Budaya Lokal Ngada sebagai Bahan Ajar Tematik di Sekolah Dasar. *Journal of Education Technology*, 2(2), 46–55. <https://doi.org/10.23887/jet.v2i2.16181>.
- Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. Springer Science & Business Media.
- Dahlan, J. A., & Permatasari, R. (2018). Pengembangan Bahan Ajar Berbasis Etnomatematika dalam Pembelajaran Matematika Sekolah Menengah Pertama. *JNPM (Jurnal Nasional Pendidikan Matematika)*, 2(1), 133–150. <https://doi.org/10.33603/jnpm.v2i1.987>.
- Darmayasa, I. K., Jampel, N., Simamora, A. H., & Pendidikan, J. T. (2018). Pengembangan E-Modul Ipa Berorientasi Pendidikan Karakter di SMP Negeri 1 Singaraja. *Jurnal Edutech Undiksha*, 6(1), 53–65. <https://doi.org/10.23887/jeu.v6i1.20267>.
- Dewantara, J. A., & Sulistyarini, S. (2020). Efektivitas Penggunaan Bahan Ajar PPKn Berdimensi Penguatan Pendidikan Karakter dengan Contoh Kontekstual. *Jurnal Civics: Media Kajian Kewarganegaraan*, 17(2), 164–174. <https://doi.org/10.21831/jc.v17i2.30681>.
- Dudung, A. (2018). Kompetensi Profesional Guru. *JKKP (Jurnal Kesejahteraan Keluarga dan Pendidikan)*, 5(1), 9–19. <https://doi.org/10.21009/jkkp.051.02>.
- Faizatun, F., & Mufid, F. (2020). Supervisi Akademik Kepala Madrasah Dalam Meningkatkan Kompetensi Profesional Guru (Studi Multi Kasus Madrasah Aliyah Negeri Kabupaten Pati). *Quality*, 8(2), 241. <https://doi.org/10.21043/quality.v8i2.8097>.
- Gultom, T. (2020). Penilaian Kinerja Guru Mengenai Profesionalisme Guru Di Smp Negeri 2 Pangaribuan Kabupaten Tapanuli Utara Tahun 2020 mempunyai tugas , fungsi , serta peran penting dalam

- mencerdaskan kehidupan konsep dan teori ilmu pengetahuan, yang berlandaskan filosofi. *Journal of Education and Teaching Learning (JETL)*, 2(3), 29–43. <https://doi.org/10.51178/jetl.v2i3.66>.
- Gustiawati, R., Arief, D., & Zikri, A. (2020). Pengembangan Bahan Ajar Membaca Permulaan dengan Menggunakan Cerita Fabel pada Siswa Sekolah Dasar. *Jurnal Basicedu*, 4(2), 355–360. <https://doi.org/10.31004/basicedu.v4i2.339>.
- Hartoyo, A. (2012). Eksplorasi Etnomatematika pada Budaya Masyarakat Dayak Perbatasan Indonesia-Malaysia Kabupaten Sanggau Kalbar. *Jurnal Penelitian Pendidikan*, 13(1), 14–23. <http://jurnal.upi.edu/abmas/view/1201/eksplorasi-etnomatematika-pada-budaya-masyarakat-dayak-perbatasan-indonesia-malaysia-kabupaten-sanggau-kalbar-.html>.
- Indrawini, T., Ach. Amirudin, & Widiati, U. (2017). Pengembangan Bahan Ajar Tematik Subtema Ayok Cintai Lingkungan Untuk siswa SD. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 2(11), 1489–1497. <https://doi.org/10.17977/jptpp.v2i11.10181>.
- Irawan, A., & Kencanawaty, G. (2017). Implementasi Pembelajaran Matematika Realistik Berbasis Etnomatematika. *Journal of Medives*, 1(2), 74–81. <https://e-journal.ivet.ac.id/index.php/matematika/article/view/483>.
- Jampel, I. N., Fahrurrozi, Artawan, G., Widiana, I. W., Parmiti, D. P., & Hellman, J. (2018). Studying natural science in elementary school using nos-oriented cooperative learning model with the NHT type. *Jurnal Pendidikan IPA Indonesia*, 7(2), 138–146. <https://doi.org/10.15294/jpii.v7i2.9863>.
- Kurniawati, E. F. (2020). Pengimplementasian e-modul etnokonstruktivisme terhadap motivasi belajar peserta didik. *Jurnal Penelitian Ilmu Pendidikan*, 13(1), 10–21. <https://doi.org/10.21831/jpipfip.v13i1.26589>.
- Kurnita, T., Mutmainnah, M., Nessa, R., Kurniawati, R., Muna, Z., Fanny, N., Wahyuni, I. W., Rizka, S. M., Arta, K. H., & Yunisari, D. (2022). Pengembangan Bahan Ajar Berbasis Budaya Aceh Untuk Pendidikan Anak Usia Dini. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 6(4), 3793–3806. <https://doi.org/10.31004/obsesi.v6i4.1699>.
- Latifah, S., & Utami, A. (2019). Pengembangan Bahan Ajar Interaktif Berbasis Media Sosial Schoology. *Indonesian Journal of Science and Mathematics Education*, 2(1), 36–45. <https://doi.org/10.24042/ij sme.v2i1.3924>.
- Lee, J.-Y., & Huh, S.-H. (2014). The Influence of the Classroom Climate in Elementary School on the Onlooker Attitude in Bullying. *Journal of Fisheries and Marine Sciences Education*, 26(6). <https://doi.org/10.13000/jfmse.2014.26.6.1296>.
- Lepiyanto, A., & Pratiwi, D. (2015). Pengembangan Bahan Ajar Berbasis Inkuiri Terintegrasi Nilai Karakter Peduli Lingkungan Pada Materi Ekosistem. *BIOEDUKASI (Jurnal Pendidikan Biologi)*, 6(2), 143–147. <https://doi.org/10.24127/bioedukasi.v6i2.344>.
- Mahendra, I. W. E. (2017). Project Based Learning Bermuatan Etnomatematika Dalam Pembelajaran Matematika. *JPI (Jurnal Pendidikan Indonesia)*, 6(1). <https://doi.org/10.23887/jpi-undiksha.v6i1.9257>.
- Mulyati, S., Mulyono, T., & Hartati, M. D. (2018). Pengembangan Bahan Ajar Menulis Puisi Bermuatan Kebhinekaan Pancasila untuk Mereduksi Radikalisme Siswa SMP. *Cakrawala Jurnal Pendidikan*, 12(2). <https://doi.org/10.24905/cakrawala.v12i2.1199>.
- Nawafilah, N. Q., & Masrurroh, M. (2020). Pengembangan Alat Permainan Edukatif Ular Tangga Matematika untuk Meningkatkan Kemampuan Berhitung Anak Kelas III SDN Guminingrejo Tikung Lamongan. *Jurnal Abdimas Berdaya: Jurnal Pembelajaran, Pemberdayaan dan Pengabdian Masyarakat*, 3(1), 37–46. <https://doi.org/10.30736/jab.v3i01.42>.
- Nuryasana, E., & Desiningrum, N. (2020). Pengembangan Bahan Ajar Strategi Belajar Mengajar Untuk Meningkatkan Motivasi Belajar Mahasiswa. *Jurnal Inovasi Penelitian*, 1(5), 967–974. <https://doi.org/10.47492/jip.v1i5.177>.
- Puriasih, K. N., & Trisna, G. A. P. S. (2022). Digital Comics Learning Media Based on Problem Based Learning in Science Subjects for Fourth Grade Elementary School. *MIMBAR PGSD Undiksha*, 10(2), 367–375. <https://doi.org/10.23887/jj pgsd.v10i2.48575>.
- Richey, R., & Klein, J. D. (2014). Design and development research. In *Handbook of Research on Educational Communications and Technology: Fourth Edition* (bll 141–150). [https://doi.org/10.1007/978-1-4614-3185-5\\_12](https://doi.org/10.1007/978-1-4614-3185-5_12).
- Rifqiawati, I., Ratnasari, D., Wahyuni, I., & Sari, I. J. (2020). Penerapan Biomagazine Sebagai Bahan Ajar Biologi Terhadap Literasi Membaca Dan Motivasi Belajar Siswa Kelas X Di SMA Negeri 7 Pandeglang. *Biodidaktika: Jurnal Biologi dan Pembelajarannya*, 15(1), 87–93. <https://doi.org/10.30870/biodidaktika.v15i1.8205>.
- Riwu, I. U., Laksana, D. N. L., & Dhiu, K. D. (2018). Pengembangan Bahan Ajar Elektronik Bermuatan Multimedia Pada Tema Peduli Terhadap Makhluk Hidup Untuk Siswa Sekolah Dasar Kelas Iv Di



- Kabupaten Ngada. *Journal of Education Technology*, 2(2), 56. <https://doi.org/10.23887/jet.v2i2.16182>.
- Saleh, M., Prahmana, R. C. I., Isa, M., & Murni. (2018). Improving the reasoning ability of elementary school student through the Indonesian realistic mathematics education. *Journal on Mathematics Education*, 9(1). <https://doi.org/10.22342/jme.9.1.5049.41-54>.
- Sari, N. M. A., & Manuaba, I. B. S. (2021). Development of Interactive E-Module Based on Human Digestive System Material Inquiry on Theme 3 About Healthy Foods for Fifth Grade Elementary School. *Indonesian Journal Of Educational Research and Review*, 4(1), 54. <https://doi.org/10.23887/ijerr.v4i1.33297>.
- Sidiq, Y., Ishartono, N., Desstyia, A., Prayitno, H. J., Anif, S., & Hidayat, M. L. (2021). Improving Elementary School Students' Critical Thinking Skill in Science Through Hots-Based Science Questions: A Quasi-Experimental Study. *Jurnal Pendidikan IPA Indonesia*, 10(3), 378–386. <https://doi.org/10.15294/jpii.v10i3.30891>.
- Sugiyono, D. (2013). *Metode penelitian pendidikan pendekatan kuantitatif, kualitatif dan R&D*.
- Suhartini, S., & Martyanti, A. (2017). Meningkatkan Kemampuan Berpikir Kritis pada Pembelajaran Geometri Berbasis Etnomatematika. *Jurnal Gantang*, 2(2), 105–111. <https://doi.org/10.31629/jg.v2i2.198>.
- Sulaksana, M. D., Yudiana, K., & Simamora, A. H. (2021). Learning Circumference and Area of Building with Video Media for Fourth Class Students of Elementary School. *Jurnal Ilmiah Sekolah Dasar*, 5(4), 697. <https://doi.org/10.23887/jisd.v5i4.40129>.
- Sutrimo, S., Kamid, K., & Saharudin, S. (2019). LKPD Bermuatan Inquiry dan Budaya Jambi: Efektivitas dalam Meningkatkan Kemampuan Berpikir Kreatif Matematis. *IndoMath: Indonesia Mathematics Education*, 2(1), 29. <https://doi.org/10.30738/indomath.v2i1.3841>.
- Tandililing, E. (2013). Pengembangan Pembelajaran Matematika Sekolah dengan Pendekatan Etnomatematika Berbasis Budaya Lokal sebagai Upaya untuk Meningkatkan Kualitas Pembelajaran Matematika Sekolah. *Prosiding Seminar Nasional Matematika dan Pendidikan Matematika*, P-25, 193–202. <https://eprints.uny.ac.id/10748/>.
- Tanjung, A., & Fahmi, M. (2015). Urgensi pengembangan bahan ajar geografi berbasis kearifan lokal. *Jurnal Pendidikan Geografi: Kajian, Teori, dan Praktek dalam Bidang Pendidikan dan Ilmu Geografi*, 20(1), 24–29. <https://doi.org/10.17977/jpg.v20i1.282>.
- Tinja, Y., Towaf, S. M., & Hariyono. (2017). Pengembangan Bahan Ajar Tematik Berbasis Kearifan Lokal Sebagai Upaya Melestarikan Nilai Budaya Pada Siswa Sekolah Dasar. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 2(9), 1257–1261. <https://doi.org/10.17977/jptpp.v2i9.9990>.
- Toma, R. B., Greca, I. M., & Orozco Gómez, M. L. (2019). Attitudes towards science and views of nature of science among elementary school. *Research in Science and Technological Education*, 37(4), 492–515. <https://doi.org/10.1080/02635143.2018.1561433>.
- Utami, R. E., Nugroho, A. A., Dwijyanti, I., & Sukarno, A. (2018). Pengembangan E-Modul Berbasis Etnomatematika Untuk Meningkatkan Kemampuan Pemecahan Masalah. *JNPM (Jurnal Nasional Pendidikan Matematika)*, 2(2), 268. <https://doi.org/10.33603/jnpm.v2i2.1458>.
- Uygarer, R., & Uzunboyly, H. (2017). An investigation of the digital teaching book compared to traditional books in distance education of teacher education programs. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(8), 5365–5377. <https://doi.org/10.12973/eurasia.2017.00830a>.
- Weng, F., Ho, H. J., Yang, R. J., & Weng, C. H. (2019). The influence of learning style on learning attitude with multimedia teaching materials. *Eurasia Journal of Mathematics, Science and Technology Education*, 15(1), 1–9. <https://doi.org/10.29333/ejmste/100389>.
- Wibowo, R., Widiati, U., & Santoso, A. (2017). Bahan Ajar Tematik Materi Puisi Kelas V SD dengan Pemanfaatan Peta Pikiran dan Lingkungan sekitar. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 2(6), 743–750. <https://doi.org/10.17977/jptpp.v2i6.9324>.
- Wijiningsih, N., WahjoedWijiningsih, N., Wahjoedi, W., & Sumarmi, S. (2017). Pengembangan Bahan Ajar Tematik Berbasis Budaya Lokal. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 2(8), 1030–1036. <https://doi.org/10.17977/jptpp.v2i8.9760>.
- Zaenuri, Sudarmin, Utomo, Y., & Juul, E. (2017). Habituation model of implementing environmental education in elementary school. *Jurnal Pendidikan IPA Indonesia*, 6(2), 206–212. <https://doi.org/10.15294/jpii.v6i2.10200>.