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DEVELOPMENT OF ETHNOMATEMATICS-BASED SOCIAL ARITHMETIC LKPD WITH A CONTEXTUAL APPROACH AT MAIMUN PALACE TO INCREASE LEARNING INTEREST

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Abstract

This study aims to develop Student Worksheets (LKPD) on social arithmetic material based on ethnomathematics with a contextual approach through the context of Maimun Palace to increase the learning interest of students in class VIII-1 at Cerdas Murni Junior High School. The approach used in this study is the ADDIE development model, which includes five stages: Analysis, Design, Development, Implementation, and Evaluation. The results of validation by subject matter, media, and language experts showed that the developed LKPD was in the highly valid category with an average score of 0.84. The practicality test conducted by teachers and students obtained an average score of 4.08, which was classified as highly practical, and the results of the student response questionnaire classification were in the strong category with a percentage of 79.57%. Furthermore, the effectiveness of the LKPD was observed through the results of a student learning interest questionnaire, which showed an increase from an average of 59.33% to 76.97%, which is classified as effective. Thus, the ethnomathematics-based social arithmetic LKPD through a contextual approach is declared valid, practical, and effective in supporting the mathematics learning process and can increase students' conceptual understanding and learning interest. The results of this study are expected to become an alternative innovative teaching material that supports more contextual learning activities and is in line with how the brain works.

Keywords: LKPD; Ethnomathematics; Social Arithmetic; Learning Interest; Maimun Palace.

1. Introduction

Education is one of the factors that supports a country's development in terms of human quality. Education has become a very important necessity for children for their future (Septian *et al.*, 2019). The educational process is also a method for improving the quality of students after going through learning activities to achieve certain goals. The goal is for students to hone their abilities so that they are useful for themselves and others. Education is not only related to the mastery of knowledge, but also a means of applying that knowledge in everyday life and instilling noble ethical values in a person (Nisa & Rayungsari, 2024). Because the objectives of education are so crucial, efforts to improve the quality of education in Indonesia, especially in schools, must continue.

The quality of education is a major factor in measuring a country's development (Suryani *et al.*, 2020). The Indonesian government has implemented new policies to improve the quality of education (Mendikbud., 2020), but inequalities still exist, as evidenced by high illiteracy rates and unequal access to education (Anita & Astuti, 2022). Efforts to improve the quality of education are not sufficient by merely improving facilities, infrastructure, and curriculum (Nugraheni & Jailani, 2020), but must also be supported by the learning process.

Learning activities play a crucial role in life. Learning can be said to be the result of cognitive and metacognitive memory that influences understanding (Asrul, 2020). This is because through the learning process, a person will gain new insights and experiences (Nareswari *et al.*, 2021). This activity aims to improve the abilities of students so that they can achieve optimal learning outcomes (Harefa *et al.*, 2022). One of the key factors in achieving this goal is by applying open learning methods. In solving problems, students must go through the stages of formulating problems and selecting appropriate strategies (Lubis & Lubis, 2024). In this case, the direct learning model is suitable for teaching basic conceptual and procedural knowledge (Siregar, 2020).

Mathematics as a compulsory subject at every school level should have its own appeal for students (Hasanah *et al*., 2024). However, many students consider mathematics to be a difficult and intimidating subject (Narpila, 2020). This condition causes many students to dislike mathematics and encounter obstacles in understanding it, so that many of them lose interest in learning mathematics and fail to achieve the expected learning outcomes (Nisa & Rayungsari, 2024). In addition, challenges such as low conceptual understanding, difficulty in designing problem-solving strategies, and time pressure also exacerbate these difficulties (Lubis & Lubis, 2024). Therefore, these competencies must be improved (Andhany & Maysarah, 2023).

Interest is one of the elements that plays an important role in the success of learning activities, where in the learning process, interest is one of the psychological aspects that influences a person in carrying out learning activities (Mukhlis, 2020). This is because the interest that each person has will foster feelings of pleasure and a sense of connection to something or an activity without any element of coercion. Enthusiasm in learning plays a very significant role for students because this motivation to learn is one of the main factors of activity that originates from within themselves (Khatimah, 2023). One of the elements that can influence an increase in interest in learning is learning tools. According to Mustikawati (2019), learning tools are devices used to convey or impart knowledge to students. The use of appropriate, varied, and aligned learning tools can maximize learning outcomes.

In mathematics learning, there is an important aspect that lies in its relevance to daily activities, because many aspects around us are closely related to mathematics (Afri & Reflina, 2024). The process of learning mathematics in relation to cultural elements is known as ethnomathematics. Ethnomathematics is one of the main elements that demonstrates the importance of culture-based learning in overcoming the obstacles experienced by students in relating mathematics to everyday situations (Talo, 2022; Afri *et al*., 2024). Through the process of learning mathematics, students' abilities to think logically, creatively, critically, rationally, and structurally can be improved, and it can help them solve real-world problems (Cahya & Budi, 2023). With ethnomathematics learning, the learning process is much more interesting and does not make students bored with math problems. In addition, individual learning success is largely determined by habits, which, when practiced continuously, become stronger and more ingrained in the individual, making them difficult to change (Siregar & Hasanah, 2022).

Maimun Palace is one of the popular cultural heritage sites in North Sumatra, featuring various elements of geometry, symmetry, and the relationship between numbers and daily activities, which can be used as a context in the mathematics learning process. However, this potential is still rarely utilized in the development of teaching materials, especially on the topic of Social Arithmetic. Therefore, the development of student worksheets using a contextual approach that incorporates ethnomathematics with the backdrop of Maimun Palace is a suitable alternative. The aim of this is to increase student participation in the learning process while introducing them to the richness of local culture. The use of various shapes found in the architecture of the Maimun Palace has been widely applied in the teaching of geometry. Findings from research on the Maimun Palace can be used as teaching materials for mathematics through a more innovative approach.

Based on observations conducted at Cerdas Murni Junior High School on educators and students, it was found that student achievement in mathematics is still relatively low. The subject that students find difficult is social arithmetic. Social arithmetic is the application of mathematical principles in everyday social activities such as buying and selling, financial services, and so on. They stated that the topic of Social Arithmetic is a subject that is very difficult for students to understand. Various methods, strategies, and approaches have been applied to overcome this problem, but none of them have been successful. To date, mathematics remains one of the subjects that is less popular and even feared by most students. This is due to their perception that mathematics is a very difficult subject to comprehend. With its various topics, mathematics makes some students feel anxious and reluctant to learn it. The author also found that students' interest in mathematics is very low. In learning activities, student participation is low. Similarly, when given assignments, students do them solely because they are forced to learn, and their low interest in learning has a serious impact on their learning outcomes. This happens because without an interest in learning, students will not have any interest or enthusiasm in participating in the learning process. In learning activities, interest is very much needed in the learning process, because students who have no interest in learning will not be able to carry out their learning activities.

LKPD is a form of teaching material and learning tool that can support the learning process and is expected to encourage students to be more active (Septian *et al.*, 2019). However, at present, the use of LKPD is considered suboptimal because many teachers still use questions from textbooks

as LKPD rather than their own designs (Hakiky, 2020). Therefore, LKPD should be designed and developed by teachers according to the needs of students. To solve this problem, the solution offered is the use of LKPD with context, as it is more relevant to the daily lives of students. In addition, connecting the LKPD with the local culture around the students, one of which is the Maimun Palace located in the city of Medan.

Research conducted by Dewi (2021) reveals that contextual mathematics learning can improve students' understanding because they are able to see the application of these concepts in their daily lives . The contextual approach is considered efficient because it encourages students to think critically and creatively in solving problems. Through the application of a contextual approach in the mathematics learning process, it is hoped that this problem can be overcome. Research conducted by Haryanto (2021) indicates that mathematics learning using a contextual approach not only increases students' interest but also strengthens their understanding and memory of the material because they consider the material relevant and useful in their daily lives. Because learning activities begin with the presentation of problems that originate from real life, students are expected to become accustomed to analyzing, applying, and connecting concepts. Thus, the process of learning mathematics can become more interesting and not feel boring. This makes it easier for students to understand the explanations given by the teacher.

Based on the background description above, the research questions in this study include 1. How is the development process of ethnomathematics-based social arithmetic worksheets with a contextual approach at the Maimun Palace in Medan? 2. How valid, practical, and effective are the ethnomathematics-based Social Arithmetic LKPD with a contextual approach at the Maimun Palace in Medan? The purpose of this study is to develop ethnomathematics-based LKPD compiled with a contextual approach and assess its quality in terms of validity, practicality, and effectiveness in supporting the mathematics learning process. This research has important relevance for various parties. For students, this LKPD is expected to increase their interest in learning and understanding concepts through methods that are in line with how the brain works. For teachers, this product can be used as alternative teaching materials that support more creative and participatory learning. For schools, this research contributes to efforts to improve the quality of education by providing teaching tools that are in line with the Merdeka Curriculum. Meanwhile, for researchers, this research is a form of contribution to the development of science in the field of education, particularly related to the development of ethnomathematics-based mathematics teaching materials with a contextual approach.

2. Method

This research is classified as research and development (R&D) aimed at developing ethnomathematics-based Student Worksheets (LKPD) with a contextual approach to Social Arithmetic material for eighth-grade students at Cerdas Murni Junior High School that are valid, practical, and effective. The development process used the ADDIE model, which includes five stages, namely Analysis, Design, Development, Implementation, and Evaluation. The LKPD used is declared valid if subject matter experts, language experts, and media experts, based on their

expertise, conduct validation in accordance with the criteria for LKPD that are suitable for use in accordance with the Basic Competence and Competency Achievement Indicators. The LKPD is declared practical if its use is easily understood by teachers and students. The LKPD is declared effective if, based on the results of field trials, it fulfills the purpose of its creation, namely to increase students' interest in learning.

During the analysis stage, a curriculum analysis is conducted to identify learning problems and analyze the learning media needs of students. This allows the basic competencies that are relevant to the learning problems to be determined. The design stage includes determining the material to be compiled from relevant sources, designing the structure of the student worksheets, creating the student worksheets, and compiling assessment instruments for the student worksheets (valid, practical, and effective). The development stage includes validation by subject matter experts, media experts, and language experts, revisions based on input from the validators, and administering learning interest questionnaires before and after using the LKPD. Then, in the implementation stage, the product is tested through a limited trial in one class with 24 students to observe its practicality and effectiveness. The final stage is evaluation, which is carried out to assess the feasibility and quality of the LKPD that has been developed, including product revisions based on the results of implementation.

The subjects in this study included one eighth-grade mathematics teacher and 24 students who acted as respondents in the trial. The types of data collected included qualitative and quantitative data. Qualitative data was collected through interviews, observations, and documentation, while quantitative data was obtained from validation questionnaires, teacher responses, student responses, and the results of questionnaires on students' interest in learning.

Data collection instruments included:

1. Expert Validation Questionnaire Data Analysis

The data analysis technique from the validator's assessment results can be done using the following formula (Retnawati, 2016):

$$V = \frac{\sum S}{n(c-1)}$$

After testing, the validation results are obtained. Then, the data is analyzed using descriptive methods to determine the validity level of the LKPD developed based on the contextual approach. The category accepted in this study is the valid category.

2. Practicality Analysis

The results of converting the average score into a qualitative value according to the criteria, with a minimum score of 1 and a maximum score of 5 (Widoyoko, 2012). The data analysis method from the teacher response questionnaire and student response questionnaire can be done using the following formula (Sugiono, 2015):

$$NR = \frac{The\ total\ response\ score\ for\ each\ aspect}{The\ total\ overall\ questionnaire\ response\ score\ for\ each\ aspect} \times 100\%$$

Table 1. Percentage of Response Scores from Teachers and Students

Criteria	Percentage
Very Strong	$81\% \leq NR \leq 100\%$
Strong	$61\% \leq NR \leq 80\%$
Quite Strong	$41\% \leq NR \leq 60\%$
Weak	$21\% \leq NR \leq 40\%$
Very Weak	$0\% \leq NR \leq 20\%$

Ethnomathematics-based LKPD is considered practical if it obtains a proportion of at least 61% or falls into the strong category.

3. Analysis of Effectiveness Test Results

The measurement of LKPD effectiveness is based on the analysis of data from the student learning interest questionnaire after utilizing the ethnomathematics-based social arithmetic LKPD. Calculate the percentage of the student learning interest questionnaire results using the following formula:

$$E = \frac{TS}{S_{max}} \times 100\%$$

An ethnomathematics-based student worksheet (LKPD) is considered effective if it achieves a minimum proportion of 61% or falls into the effective category.

3. Results and Discussion

This study aims to design ethnomathematics-based social arithmetic LKPD with a contextual approach at the Maimun Palace to increase the learning interest of students in class VIII-1 at Cerdas Murni Junior High School, by applying the ADDIE model which includes five stages, namely Analysis, Design, Development, Implementation, and Evaluation. The results of each stage can be summarized as follows:

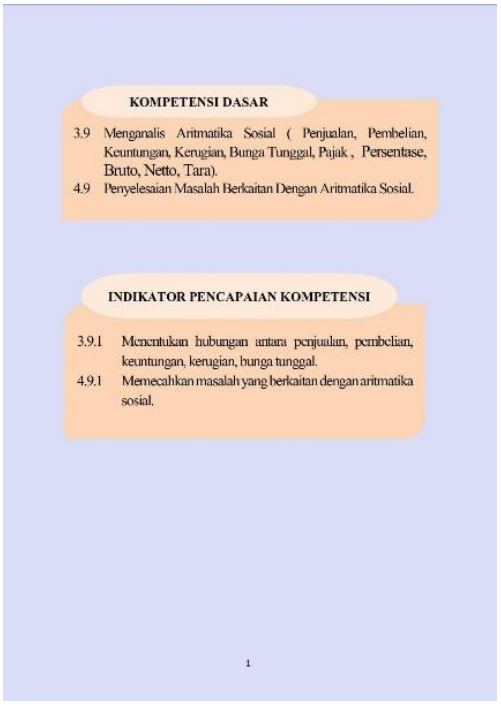
Analysis Stage

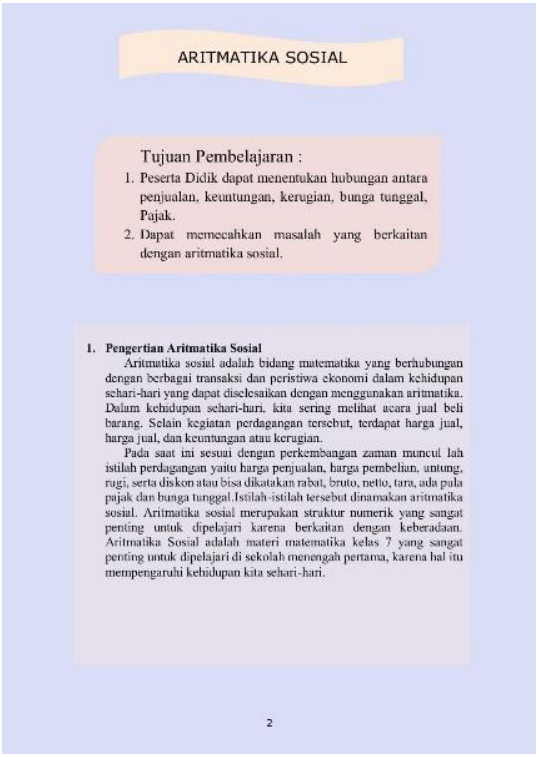
During the analysis stage, researchers determined the Basic Competence and Competency Achievement Indicators through curriculum review, student needs, and materials to design ethnomathematics-based social arithmetic LKPD with a contextual approach for students in class VIII-1 at Cerdas Murni Junior High School. The analysis results showed that the LKPD used was still teaching material from publishers, which was uninteresting and unable to increase students' interest in learning. Therefore, Basic Competence 3.9 and 4.9 along with Competency Achievement Indicators were determined as the basis for development. The material was also structured and made interesting so that it was easier to understand and suited to the needs and characteristics of the students.

Design Stage

At the design stage, the researcher prepared references in the form of books and supporting images that were suitable for social arithmetic material. The researcher designed ethnomathematics-based LKPD with a contextual approach at the Maimun Palace, which contained contextual problems in the students' environment so that the topic of social arithmetic would be easier to understand. The components of the LKPD include a cover, foreword, table of contents, Basic Competence, Competency Achievement Indicators, instructions, subject matter, learning objectives, social arithmetic material, activities 1 and 2, and a bibliography.

1. Developed Product





ARITMATIKA SOSIAL

Tujuan Pembelajaran :

1. Peserta Didik dapat menentukan hubungan antara penjualan, keuntungan, kerugian, bunga tunggal, Pajak.
2. Dapat memecahkan masalah yang berkaitan dengan aritmatika sosial.

1. Pengertian Aritmatika Sosial

Aritmatika sosial adalah bidang matematika yang berhubungan dengan berbagai transaksi dan peristiwa ekonomi dalam kehidupan sehari-hari yang dapat diselesaikan dengan menggunakan aritmatika. Dalam kehidupan sehari-hari, kita sering melihat acara jual beli barang. Selain kegiatan perdagangan tersebut, terdapat harga jual, harga jual, dan keuntungan atau kerugian.

Pada saat ini sesuai dengan perkembangan zaman muncul lah istilah perdagangan yaitu harga penjualan, harga pembelian, untung, rugi, serta diskon atau bisa dikatakan rabat, bruto, netto, tara, ada pula pajak dan bunga tunggal.Istilah-istilah tersebut dinamakan aritmatika sosial. Aritmatika sosial merupakan struktur numerik yang sangat penting untuk dipelajari karena berkaitan dengan keberadaan. Aritmatika Sosial adalah materi matematika kelas 7 yang sangat penting untuk dipelajari di sekolah menengah pertama, karena hal itu mempengaruhi kehidupan kita sehari-hari.

2

A. Penjualan dan Pembelian

Harga pembelian merupakan suatu harga beli oleh pedagang dari grosir atau tempat lain. Harga dari barang yang akan di jual, adanya selisih antara harga pembelian dan penjualan yang dinamakan untung atau rugi.
Berikut rumus harga penjualan saat mengalami kuntungan:

$$Harga\ penjualan = Harga\ jual + Laba$$

Adapun rumus harga penjualan saat mengalami kerugian ialah:

$$Harga\ penjualan = Harga\ beli - Rugi$$

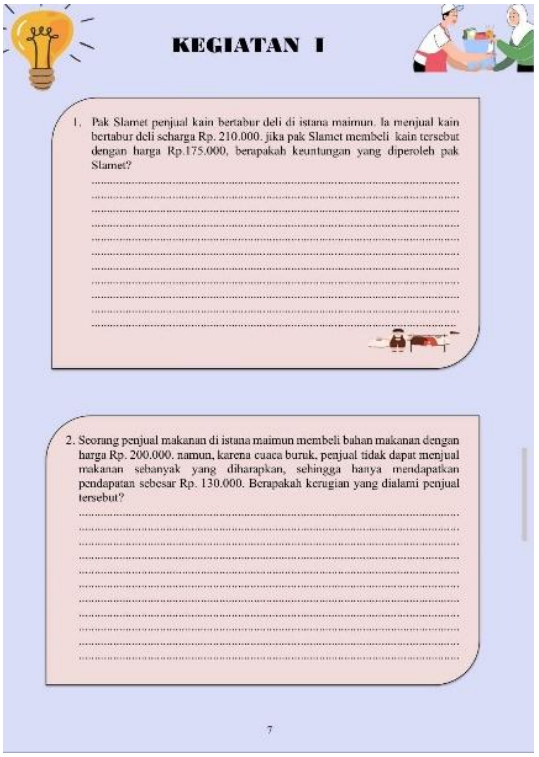
Dari cerita yang telah dibaca sebelumnya maka perhatikan contoh soal berikut!

Contoh :

1. Istana Maimun adalah salah satu destinasi wisata populer di Medan. Harga tiket masuk untuk dewasa adalah Rp. 10.000 per orang, sedangkan untuk anak-anak di bawah 12 tahun adalah Rp 5.000 per orang. Jika sebuah keluarga terdiri dari 5 orang dewasa dan 3 orang anak-anak ingin mengunjungi Istana Maimun, berapa total biaya yang harus mereka bayar untuk tiket masuk?
   Penyelesaian :
   Biaya tiket dewasa = 5 orang x Rp 10.000/orang = Rp 50.000
   Biaya tiket anak-anak = 3 orang x Rp 5.000/orang = Rp 35.000
   Total biaya = Rp 50.000 + Rp 35.000 = Rp 85.000
   Jadi, total biaya yang harus dibayar oleh keluarga tersebut untuk tiket masuk Istana Maimun adalah Rp 85.000.

2. Seorang pengunjung istana maimun membeli 3 buah kain sarung motif melayu dengan harga Rp. 100.000 per buah. Berapakah total biaya yang harus dibayar pengunjung tersebut?
   Penyelesaian:
   Harga kain = Rp. 100.000
   Jumlah kain yang dibeli = 3 buah
   Total biaya = Rp. 100.000 x 3 = Rp. 300.000
   Jadi total yang harus dibayar ialah Rp. 300.000

4

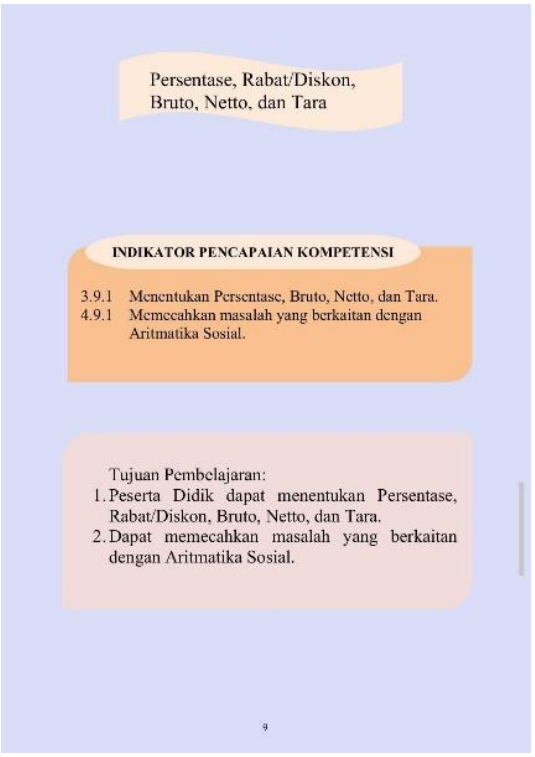


KEGIATAN I

1. Pak Slamet penjual kain bertabur deli di istana maimun. Ia menjual kain bertabur deli scharga Rp. 210.000. jika pak Slamet membeli kain tersebut dengan harga Rp.175.000, berapakah keuntungan yang diperoleh pak Slamet?

2. Seorang penjual makanan di istana maimun membeli bahan makanan dengan harga Rp. 200.000. namun, karena cuaca buruk, penjual tidak dapat menjual makanan sebanyak yang diharapkan, sehingga hanya mendapatkan pendapatan sebesar Rp. 130.000. Berapakah kerugian yang dialami penjual tersebut?

7



Persentase, Rabat/Diskon, Bruto, Netto, dan Tara

INDIKATOR PENCAPAIAN KOMPETENSI

3.9.1 Menentukan Persentase, Bruto, Netto, dan Tara.
4.9.1 Memecahkan masalah yang berkaitan dengan Aritmatika Sosial.

Tujuan Pembelajaran:

1. Peserta Didik dapat menentukan Persentase, Rabat/Diskon, Bruto, Netto, dan Tara.
2. Dapat memecahkan masalah yang berkaitan dengan Aritmatika Sosial.

9

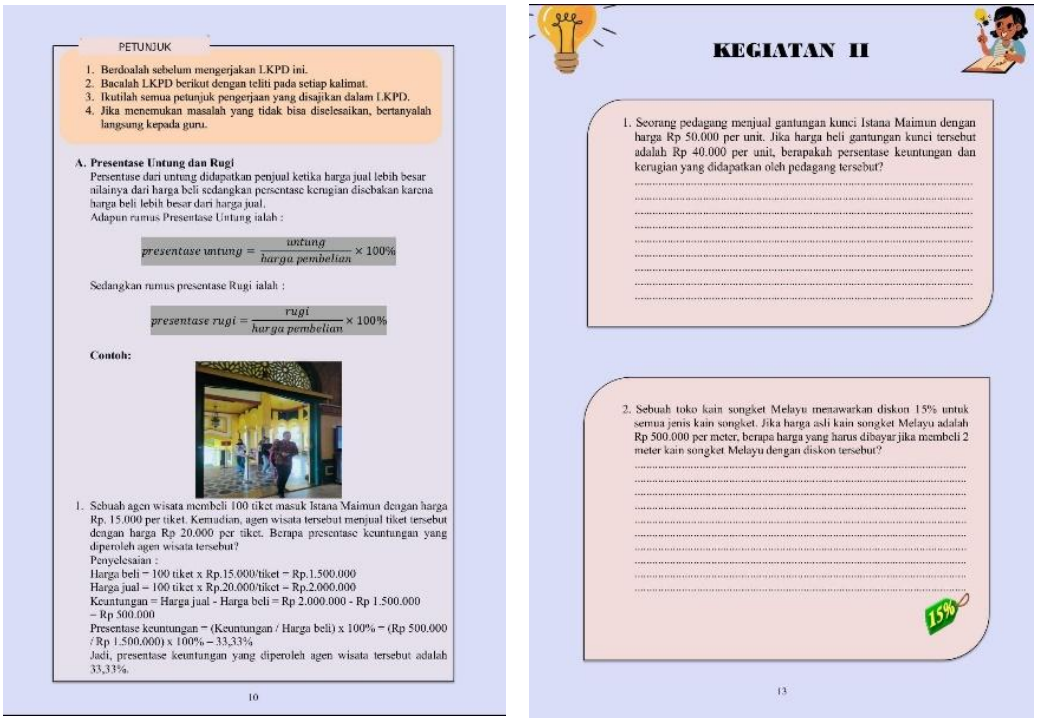


Figure 1. LKPD after revision

Then, instruments were developed, including expert validation sheets (subject matter experts, media experts, and language experts), student learning interest questionnaires, and teacher and student response questionnaires.

Development Stage

The development stage aims to assess the extent to which the LKPD requires revision based on input from the validators. The actions carried out at this stage are:

1. Validation

During the validation stage, the LKPD was assessed for suitability by three expert lecturers, namely subject matter experts, media experts, and language experts, and an eighth-grade mathematics teacher who also acted as a subject matter expert. The results of the assessment are as follows:

Table 1.

Results of expert validation for LKPD

Evaluator	Average	Category
Subject Matter Expert	0,77	Valid
Media Expert	0,87	Highly Valid
Language Expert	0,90	Highly Valid

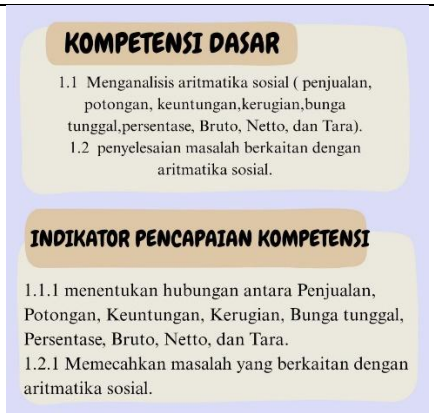
Based on the evaluation results from the validators, a score of 0.77 was obtained from the subject matter experts, which falls within the valid classification. Media experts gave a score of 0.87 in the highly valid category, while language experts gave a score of 0.90, which is also classified as highly valid. Taking the average of the scores from the three validators, the overall score was 0.84, indicating that this LKPD is considered highly valid and suitable for testing.

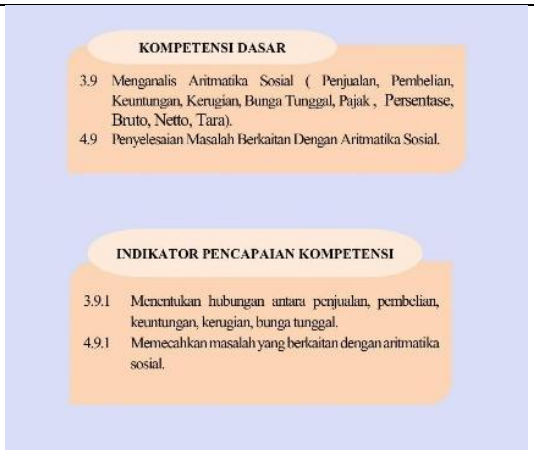
2. Revision

Based on the validation results, the researcher revised the LKPD according to the validators' input to improve the quality and readiness of the LKPD for learning.

<table>
<tr><th>Before Revision</th><th>After Revision</th></tr>
<tr><td> 

The absence of the UINSU logo and the lack of interaction in the application of social arithmetic</td><td> 

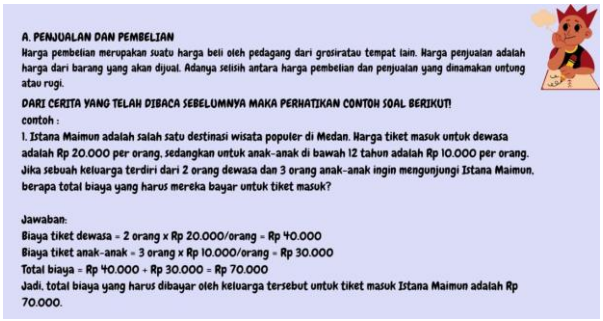
The addition of the UINSU logo and illustrations of interactions in the application of social arithmetic</td></tr>
<tr><td> 

The writing of Basic Competence and Competency Achievement Indicators is untidy and too cramped</td><td> 

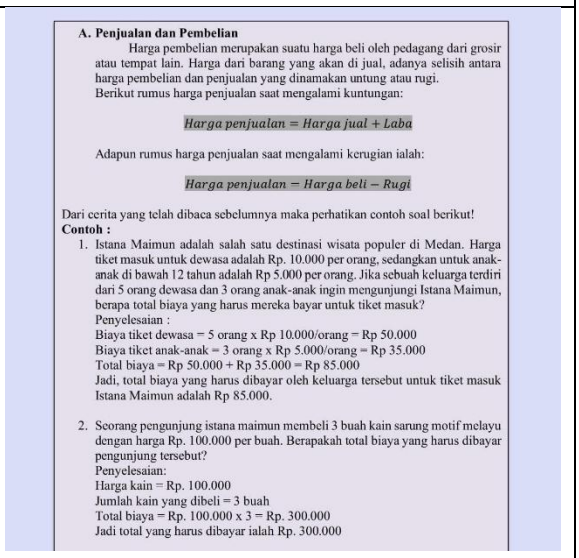
Basic Competence and Competency Achievement Indicators after revision</td></tr>
</table>

There are too many images in the story, and the images lack captions

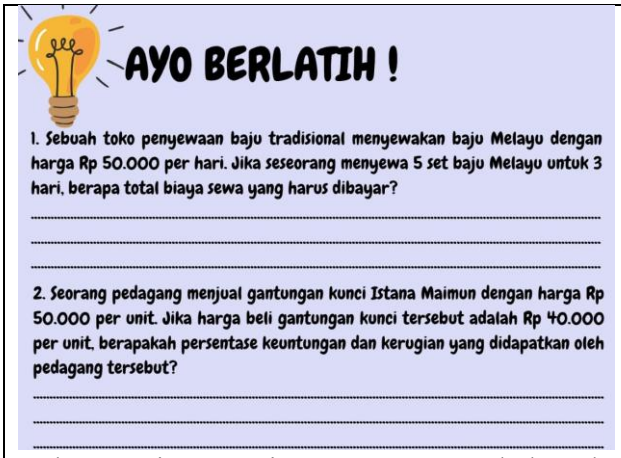
Improvement by using a single image and adding a caption



Add example problems



Addition of example problems



The practice questions are too crowded, and the design is unappealing

Practice questions and design after revision

Implementation Stage

During the implementation stage, an assessment was conducted to evaluate the practicality and effectiveness of the LKPD that had been compiled. The following are the results of the testing related to practicality and effectiveness:

1. Product Trial

After validation and revision, the ethnomathematics-based social arithmetic LKPD with a contextual approach was tested in class VIII-1 of Cerdas Murni Junior High School on August 15-22, 2025, involving 24 students. Then, to determine the practicality of the LKPD, it can be calculated through the responses of teachers and students.

Table 2.
Teacher and Student Responses to the LKPD

Evaluator	Average	Category
Teacher Response	4,2	Very Practical
Student Response	3,97	Very Practical

The teacher questionnaire results show a practicality level of 4.2, indicating that the LKPD is very helpful and does not require revision. Meanwhile, student responses show an average practicality of 3.97, which is classified as very practical in terms of content, presentation, language, and appearance. Overall, the average practicality score from teachers and students was 4.08, indicating that the LKPD is very practical for use in learning. The classification of the student response questionnaire results shows a strong category with a percentage of 79.57%.

Through a trial involving 24 students in class VIII-1 at Cerdas Murni Junior High School, data was obtained from a learning interest questionnaire to measure the effectiveness of ethnomathematics-based social arithmetic LKPD with a contextual approach.

Table 3.
Results of the Student Learning Interest Questionnaire Assessment Before and After the LKPD was given

Respondents	Before LKPD	After LKPD
Quantity	2.136	2.771
Average	59,33%	76,97%
Category	Fairly Effective	Effective
Highest Score	102	140
Lowest Score	79	93

The results, based on the assessment of the learning interest questionnaire before and after the LKPD was given, showed an increase in the learning interest score of the students from 59.33% to 76.97%, indicating an increase of 17.64%. Therefore, the use of LKPD designed with a contextual approach has been proven to increase students' interest in learning social arithmetic.

Evaluation Stage

The evaluation stage is the final part of the ADDIE research model, which includes two forms of assessment, namely formative and summative evaluations. Formative assessment is carried out at the initial stage of the development process with the aim of perfecting the product based on input and suggestions from expert assessors. The average score obtained from the three validators is 0.84. On the other hand, summative evaluation is carried out after the implementation stage, involving teachers and students as the parties who provide assessments. The average practicality score from both teachers and students is 4.08. Therefore, the LKPD developed is considered eligible for use.

Discussion

Based on the research results, it was found that ethnomathematics-based LKPD produce contextual and interesting learning media for social arithmetic material and was able to increase students' interest in learning. This is similar to the research by Zain *et al*., (2025) where the improvement experienced by students was influenced by the use of media in learning. The increase in student interest in learning was 17.64%, which was due to the application of ethnomathematics-based LKPD developed in accordance with Basic Competence, Competency Achievement Indicators, and input from validators. Ethnomathematics is a study that connects mathematics with culture. In accordance with research by (Surat, 2018), the advantage of ethnomathematics-based learning is that it allows students to recognize and utilize a contextual approach in learning to relate mathematical concepts in daily activities, making the learning process more interesting. The stages in the ADDIE development model include five stages, namely analysis, design, development, implementation, and evaluation.

The Analysis stage includes analysis of the curriculum, student needs, and relevant material concepts. Analysis of ethnomathematics-based LKPD development shows that students' low understanding of social arithmetic material is due to abstract and less contextual delivery. By utilizing local culture, such as the culture at Maimun Palace, which contains elements of social

arithmetic, learning can be made more meaningful and interesting. In addition, although some teachers are not yet familiar with ethnomathematics, they welcome this innovation. The conclusion of this stage is the selection of appropriate teaching materials to make it easier for students to understand the concepts, especially social arithmetic.

The Design stage includes activities such as gathering references and designing products. The ethnomathematics-based LKPD design has succeeded in producing systematic, interesting, and contextual learning media by integrating social arithmetic concepts into the local culture of the Maimun Palace. This design not only pays attention to academic aspects but also cultural values, attractive visualizations, communicative language, and appropriate evaluation tools. The results of this stage show that the LKPD design must be in line with the Merdeka Curriculum, especially for social arithmetic material at the junior high school/MTs grade VIII level.

The Development stage includes product design refinement and the validation process. The development produces a complete, attractive, and functional ethnomathematics-based LKPD by effectively integrating mathematical concepts and local culture. This stage involves the validation of LKPD by experts, with the aim of assessing the feasibility of the product and revealing its shortcomings. This process includes the preparation of materials, illustrations, and activities that are appropriate to the needs of students, as well as the use of communicative language. Products that do not meet the criteria are improved according to the input so that they are feasible and valid for testing.

The Implementation stage involves the effective application of ethnomathematics-based LKPD with a contextual approach in the classroom learning process. Through teacher training, direct application in learning, as well as observation and evaluation, these LKPD have been proven to increase student engagement, interest in learning, and understanding of social arithmetic concepts. By linking mathematical material to local culture, such as the culture at the Maimun Palace, the learning process becomes more contextual, interesting, and meaningful for students.

The evaluation stage involves assessing the success of ethnomathematics-based worksheets with a contextual approach and identifying aspects that need improvement. Through questionnaires, discussions, and observations, data was obtained showing the extent to which the worksheets increased students' interest in learning social arithmetic material. The increase in students' learning interest scores, from 59.33% to 76.97%, indicates an improvement of 17.64%. If the evaluation results show a positive increase, the worksheets are considered effective. Conversely, unsatisfactory findings become a reference for improvement. Thus, evaluation becomes the basis for continuous improvement to enhance the quality of relevant and meaningful learning.

4. Conclusion

This study successfully designed LKPD with a contextual approach to the topic of social arithmetic through the ADDIE development model, which includes the stages of analysis, design, development, implementation, and evaluation. The research findings show that the LKPD created has a very high level of validity (average validation score of 0.84), very practical to use (average

response from teachers and students of 4.08) with the classification of student response questionnaire results showing a strong category with a percentage of 79.57%, and proven to be effective in increasing student interest in learning (average learning interest questionnaire score of 76.97%). Based on these findings, this LKPD is suitable for use in mathematics learning and is recommended as alternative teaching material by teachers and schools. The researcher also suggests that similar developments be tested on a wider scale and that other learning approaches or methods be adopted to obtain more optimal and comprehensive results.

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