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Development of Culturally Responsive Teaching Approach Teaching Module Based on Ethnomathematics of The Kasepuhan Cirebon Palace

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Abstract

Teaching modules are one of the important aspects for teachers to design learning that supports students in achieving learning outcomes and learning objectives based on student characteristics. Mathematics learning is one of the most important subjects in elementary school education. Learning carried out by teachers is currently still monotonous by relying on textbooks and LKS, so that students do not know the relevance of learning, especially the culture of the Kasepuhan Palace. The type of research model used in this research method is using the ADDIE development model (Analysis, Design, Development, Implement, and Evaluate). The research was conducted at SDN Kesenden in the 2024/2025 academic year with research subjects of 21 grade IV students on the material of flat shape decomposition. Data collection techniques in the research on the development of teaching modules with the Culturally Responsive Teaching (CRT) approach. Data collection techniques in the research on the development of teaching modules with the Culturally Responsive Teaching (CRT) approach, researchers used Observation, Questionnaires, and Tests based on the ethnomathematics of the Kasepuhan Palace. The results of the validation of the teaching module showed very satisfactory results with a percentage of 90%, so this module was considered very valid. The results of the practicality test involving student responses produced a percentage of 88%, which was categorized as very practical. The effectiveness test of the module based on the learning completion of 21 students reached a percentage of 64.38%, which met the effective criteria. These findings indicate that the developed teaching module is able to support learning in a valid, very practical, and effective manner.

Keywords: **Teaching Module, Culturally Responsive Teaching, Etnomatematics, Keraton Kasepuhan**

I. INTRODUCTION

Mathematics is a compulsory subject that is found at the levels of elementary school, junior high school, and senior high school and vocational high school. Many math concepts are found in daily activities (Putri, Alpusari, & Muhammad , 2024). However, in reality, students do not know that mathematical concepts have nothing to do with everyday life and consider math as a difficult subject for students (Tayibu & Faizah, 2021). This is because students are given material by teachers only limited to memorizing and understanding formulas. So that students view mathematics as boring and cause high anxiety to understand the material or solve the problems given by the teacher (Nurhasanah & Luritawaty, 2021).

Cultural mathematics or known as ethnomathematics, can integrate mathematical concepts with local culture and traditions, so that learning becomes more relevant and contextual. According to (Bimantara, 2024), ethnomathematics is a form of mathematics combined with cultural values so that students can understand mathematical material with elements of local culture while instilling cultural identity in students. With this approach, students are invited to understand mathematics by exploring relevant cultural elements, such as observing building architecture and ornaments found in the Kasepuhan Palace. According to (Wulandari, Kusumah, & Priatna, 2022) in the study Exploration of Philosophical and Conceptual Mathematical Values in the Cirebon Kasepuhan Palace Building Viewed from the Ethnomathematics Aspect, suggests that the Kasepuhan Palace building which can be seen in the architecture of the building, and the ornaments in it have mathematical elements, one of which is flat building material. One of the flat building materials in grade IV mathematics learning materials is Flat Building Decomposition.

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The ethnomathematics approach is in line with the principles of Culturally Responsive Teaching (CRT), which is a learning approach that uses the socio-cultural context of learners (Fitriani, Untari, & Jannah, 2024). This approach focuses on helping learners recognize, accept, and strengthen their cultural identity, so that learners do not just improve learning achievement (Siregar, Batubara, & Jalil, 2023). In the context of mathematics learning, the Culturally Responsive Teaching (CRT) approach encourages integrating elements of local culture into teaching materials, so that students feel more connected to the lessons they are learning. This is especially important in Indonesia, which has a rich culture.

Based on researcher observations at SDN Kesenden, learning resources that are often used include textbooks, student worksheets (LKS). As for teachers using simple teaching aids, as well as visual media such as pictures, they are only occasionally applied during learning. Although these resources are quite helpful, most of them are still general in nature and pay little attention to the local context. This only tends to present mathematics material in an abstract and memorizing manner without linking it to the real life of students. Props used in the classroom are often limited to presenting basic concepts.

As a teacher, it is important to develop learning modules in mathematics subjects. According to students (Sriwanti & Sukmawarti, 2022), said that teaching modules are an important aspect for teachers to design learning that supports students to achieve learning outcomes and learning objectives based on the characteristics of students. According to (Tayibu & Faizah, 2021), said that mathematics learning is one of the most important subjects in the aspect of elementary school education. However, the reality is that until now mathematics is considered one of the most difficult subjects for students.

Based on observations at SDN Kesenden, that students in participating in math learning at school often experience difficulties and consider it not relevant to everyday life. This causes a lack of motivation and students' understanding of the subject is very low. In these observations, there are still many students working on math learning assessments looking at each other with peers. Learning carried out by teachers today is still monotonous by relying on textbooks and LKS, so that students do not know the relevance of learning, especially the culture of the Kasepuhan Palace (Febriyanti & Ain, 2021). Thus, what is found in teachers at SDN Kesenden so that students are able to understand mathematics learning, it is necessary to add references to teaching materials in the module, such as finding knowledge outside of school by involving culture in mathematics learning (Zega, Mendrofa, Mendrofa, & Harefa, 2024) In addition, in this problem, teachers in designing lessons do not involve culture-based mathematics teaching modules. No teacher has used learning with a local cultural approach such as using the Kasepuhan Palace building architecture. One of the obstacles for teachers is, making teaching modules that are only pegged to modules that have been provided by the school, so the modules designed do not involve culture. Ethnomathematics-based modules allow students to learn mathematics through exploring their own culture, which in turn can increase student motivation and learning outcomes.

Kasepuhan Palace is a cultural heritage that has an interesting architectural design, in which there are elements of cultural acculturation between Javanese culture which boils down to Islam, Hinduism, China, and Europe so that it reflects a very beautiful harmony. This Kasepuhan Palace, in the past. This can reflect plurality and religious tolerance. As the Center for Cultural Maintenance and Development, this palace has an important role in preserving cultural heritage and promoting the cultural richness of Cirebon (Ahnaf, Rukmi, & Siregar, 2023).

On the other hand, the architectural buildings of Kasepuhan Palace have high historical, philosophical and aesthetic values, but also contain mathematical concepts that can be used in learning. The elements of mathematics found in the palace building include geometric shapes, symmetrical patterns and building structures in the palace being an example of the application of mathematical concepts in everyday life which can be known as ethnomathematics.

Integrating ethnomathematics findings in learning can be done through the preparation of teaching modules with a Culturally Responsive Teaching (CRT) approach. This bridges mathematics material, culture and designs the preparation of learning modules. Learning modules designed based on ethnomathematics not only help learners understand mathematical concepts in depth but also strengthen their cultural identity. Such module development also supports national education goals to form students who are knowledgeable as well as strong in character. In his research (Nasution, Efendi, & Yunita, 2023)said that the application of the Culturally Responsive Teaching (CRT) approach to learning that can increase students' activeness and interest in learning.

The novelty in this article lies in the development of teaching modules based on the Culturally Responsive Teaching (CRT) approach that integrates the ethnomathematics of the Cirebon Kasepuhan Palace into something new in learning mathematics at the elementary school level. Most of the existing mathematics teaching modules are still general in nature and pay little attention to the local cultural context of students. the use of teaching modules for learning Culturally Responsive Teaching (CRT) approach based on ethnomathematics of Cirebon Kasepuhan Palace. Thus, this research not only offers innovations in teaching mathematics but also contributes to the preservation of local culture through education.

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Several studies related to ethnomathematics-based teaching modules have shown their effectiveness in improving literacy, understanding and student involvement in learning mathematics. According to (Zega, Mendrofa, Mendrofa, & Harefa, 2024), said that the ethnomathematics-based module to improve mathematical literacy has a very practical category and is classified as effective. In addition, according to (Ray, Harahap, & Kartika, 2024), said that the Culturally Responsive Teaching (CRT) approach can improve students' understanding of mathematical concepts in compound interest material in class XI. Thus, the Culturally Responsive Teaching (CRT) approach leads to increased active participation of students during learning and makes learning more meaningful (Acquah & Szelei, 2020)

Based on these problems, it is necessary to develop a mathematics learning module with a Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Kasepuhan Cirebon Palace. This can make it easier for teachers to find references to teaching modules and teaching materials in learning. This developed learning module has a new nuance in learning mathematics with flat building decomposition material. From this description, the researcher will conduct a study entitled Development of Teaching Modules Culturally Responsive Teaching (CRT) Approach Based on Ethnomathematics of the Cirebon Kasepuhan Palace .

II. METHODS

In this research using the research method development or Research and Development (R&D). According to Sugiyono (Sugiyono, 2022) Explains that the research and development approach can be understood as a scientific method for conducting research, designing, making, and testing the validity of products that have been created. And development refers to activities carried out in the scientific realm, which are tailored to a particular academic area or discipline. This activity includes stages such as planning, implementation, evaluation, and refinement in a process (Sa'adah & Wahyu, 2020). This research can be defined as a research method by systematically developing, improving, formulating and producing valid products (Alfian, et al., 2022).

The type of research model used in this research method is using the ADDIE development model (Analysis, Design, Development, Implement, and Evaluate). ADDIE is an instructional design using a knowledge and learning system approach (Hidayat & Nizar, 2021).According to (Tegeh, Jampel, & Pudjawan, 2014), the research model has 5 stages which include analysis, design, development, implementation, and evaluation.

The research was conducted at SDN Kesenden in the 2024/2025 school year with a research subject of 21 fourth grade students on flat building decomposition material. The selection of these subjects, based on the observations of researchers that there are students at SDN Kesenden who find it difficult to understand mathematics subjects with Flat Buildings Decomposition material. Data collection techniques in research on the development of teaching modules with the Culturally Responsive Teaching (CRT) approach, researchers use observations, questionnaires, ethnomathematics-based tests of Kasepuhan Palace. The instrument used was a module validation observer questionnaire, pretest and post-test questions based on Kasepuhan Palace ethnomathematics and a student response questionnaire. In this study, data analysis techniques were used in the form of validity analysis, practicality analysis, and effectiveness analysis.

In determining the validity analysis, researchers used a Likert scale to classify the level of effectiveness and teaching modules. The Likert scale is a measurement instrument used to measure the settings, opinions and perceptions of a person or group about social phenomena (Sugiyono, 2022). Below are the Likert scale criteria and validity classification:

Table I. Likert Scale Scoring

Assessment	Score
Strongly Agree (SS)	4
Agree (S)	3
Disagree (TS)	2
Strongly Disagree (STS)	1

Source: (Sugiyono, 2022)

The criteria for the validity of the Culturally Responsive Teaching (CRT) approach teaching module developed based on the percentage obtained from the results of the teaching module validity assessment, namely:

Table II. Criteria for Validity

Interval (%)	Criteria for validity
81 - 100	Very Practical
61 - 80	Practical
41 - 60	Practical enough
21 - 40	Less Practical
0 - 20	Not Practical

Source: (Fitraini & Andriani, 2020)

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In determining the practicality analysis, researchers used a questionnaire to students which was then analyzed, as well as through response analysis and learning implementation, and qualified to make a conclusion on the teaching module of the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Cirebon Kasepuhan Palace on Flat Build Decomposition material. The practicality of the teaching module can be seen in the table below.

Table III. Practicality Criteria

Interval (%)	Criteria for validity
81 - 100	Very Practical
61 - 80	Practical
41 - 60	Practical enough
21 - 40	Less Practical
0 - 20	Not Practical

Source: (Fitraini & Andriani, 2020)

The Culturally Responsive Teaching (CRT) teaching module is said to be practical if it gets a minimum score of 61% or practical. If less than 61% then revisions will be made.

In addition, to determine the analysis of the effectiveness of the teaching module developed by measuring the completeness of students in completing the pretest and postest tests based on the ethnomathematics of the Cirebon Kasepuhan Palace. The results of students' answers can be said to be complete if based on the value of the Criteria for Achieving Learning Objectives (KKTP) at SDN Kesenden, which is a minimum score of 80. As for seeing the completeness of students in working on questions based on ethnomathematics of the Cirebon Kasepuhan Palace can be seen in the table below.

Table IV. Criteria for Effectiveness

Interval (%)	Criteria for Effectiveness
81 - 100	Very Practical
61 - 80	Practical
41 - 60	Practical enough
21 - 40	Less Practical
0 - 20	Not Practical

Source: (Fitraini & Andriani, 2020)

The development of teaching modules for the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Cirebon Kasepuhan Palace can be said to be effective if the results of student learning completeness reach at least 65%.

III. RESULTS AND DISCUSSION

A. Results

In the development of teaching modules for the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Cirebon Kasepuhan Palace, researchers used five stages including analysis, design, development, and evaluation. This research was conducted on 21 fourth grade students at Kesenden Elementary School in the 2023/2024 school year.

In the analysis stage, researchers analyzed the curriculum applied at school, and the need for teaching modules and teaching materials in learning mathematics. The results obtained at school are that the school already uses the Merdeka curriculum and requires teaching modules based on the Culturally Responsive Teaching (CRT) approach. The mathematics learning material used is Flat Buildings Decomposition material. The cultural analysis used is the Cirebon Kasepuhan Palace. This is because students have a cultural background in the Cirebon City area, West Java. The results obtained when analyzing culture can be seen below.

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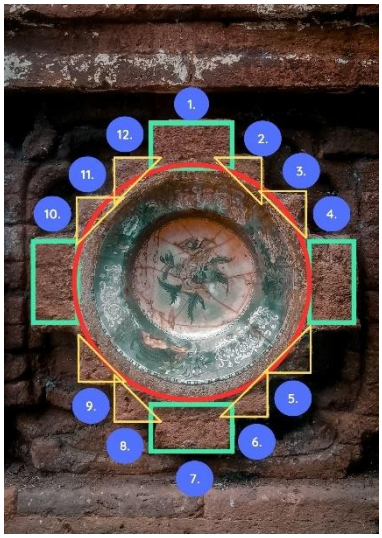
Table V. Analysis Results of Kasepuhan Palace

No.	Ethnomathematics Findings	Description
1.		On the walls of the palace, there are ornaments of the concept of flat shapes, trapezoids, and rectangles.
2.		On the walls of the kesepuhan palace, there are ornaments of the concept of flat shapes of 1 circle, 4 rectangles, and 8 triangles.
3.		On the walls of the kesepuhan palace there are ornaments of the concepts of rhombuses and rectangles

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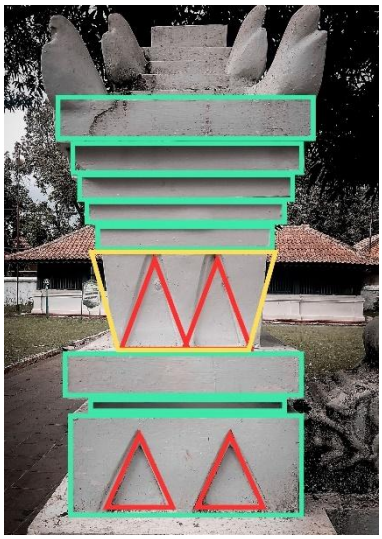
4. 

On the roof of the kesepuhan traditional house there are ornaments of the concept of flat shapes Trapezoid, rectangle

5. 

On the saka of the Kesepuhan traditional house building, there are ornaments of the concepts of Trapezoidal and Rectangular flat shapes.

6. 

On the mamsuki wall of the grand langgar, there are ornaments of the concepts of triangles, rectangles, and trapezoids.

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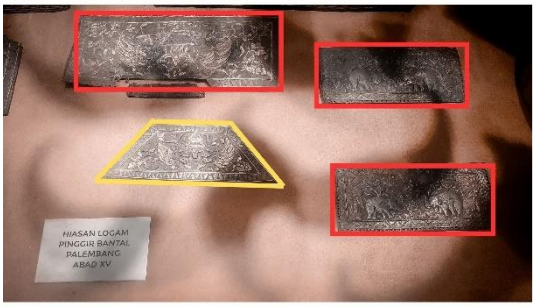
7. 

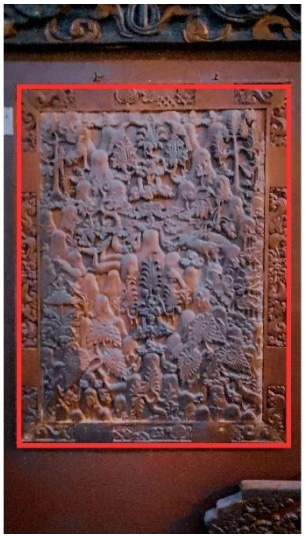
On the brass bridal jewelry in 1526 AD there is an ornament of the concept of the flat kite.

8. 

On the brass bridal jewelry in 1526 AD there is an ornament of the concept of a circular flat shape

9. 

On the metal decoration of the edge of the Palembang cushion in the XV century, there is an ornament of the concept of rectangular and trapezoidal flat shapes.

10. 

In the garden arum penembahan I motif of the XV century there is an ornament of the concept of a rectangular flat shape

11. In the vine motif of penembahan I XV century there is an ornament of the concept of a square flat building

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12.		On the wheels of Pak Nagaliman's carriage, there is an ornament of the concept of a circular flat shape

Based on the table above, that the buildings and ornaments in the Kasepuhan Palace have the mathematical concept of decommposition of flat shapes. According to (Amalia & Wahyudi, 2019) said that decomposition is a way to break down a flat shape into small parts. On the wall of the kesepuhan palace there are ornaments of the concept of flat shapes Trapezoids, and rectangles, On the wall of the kesepuhan palace there are ornaments of the concept of flat shapes circles, rectangles, and triangles. On the wall of the kesepuhan palace there are ornaments of the concept of rhombus and rectangle. On the roof of the kesepuhan traditional house, there are ornaments of the concepts of Trapezoid, rectangle, and triangle. On the saka of the kesepuhan traditional house building there are ornaments of the concept of Trapezoidal and Rectangular flat shapes. On the wall of the mamsuki langgar agung there are ornaments of the concepts of flat shapes of triangles, rectangles, and trapezoids. On the brass bridal jewelry in 1526 AD there is an ornament of the concept of Kite. On the brass bridal jewelry in 1526 AD there is an ornament of the concept of a circle. On the metal decoration of the edge of the Palembang pillow in the XV century there are ornaments of rectangular and trapezoidal flat concepts. In the garden arum motif of Penembahan I XV century there is a rectangular flat concept ornament. In the vine motif of the first XV century there is a square flat concept ornament. On the wheels of Pak Nagaliman's carriage, there are ornaments of the concept of a circular flat shape. will be processed into a product design for making teaching modules with the Culturally Responsive Teaching (CRT) approach based on ethnomathematics.

After analyzing the curriculum, needs, and conducting an analysis in the Kasepuhan Palace environment. In the next stage, namely designing products, researchers designed a teaching module for the Culturally Responsive Teaching (CRT) approach based on ethnomathematics of the Cirebon Kasepuhan Palace which was developed based on references to teacher books, student books, student worksheets, and assessment sheets as teaching material learning resources, as well as the results of analyzing ethnomathematics findings in architecture and ornamentation- ornamentation found in the Kasepuhan Palace. The flat shape decomposition material in this module

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is designed to link mathematical concepts with cultural elements, such as decomposition in traditional architecture and ornaments found in palace buildings. When creating teaching modules, researchers use the Canva design application to create covers, backgrounds on teaching modules, LKPD, and teaching materials. As for module writing, researchers used the M.S Word application. In addition, researchers made a student response practicality test, a practicality test for teachers as observers, and module validation sheets. The following is the product design for teaching modules with a Culturally Responsive Teaching (CRT) approach based on ethnomathematics.

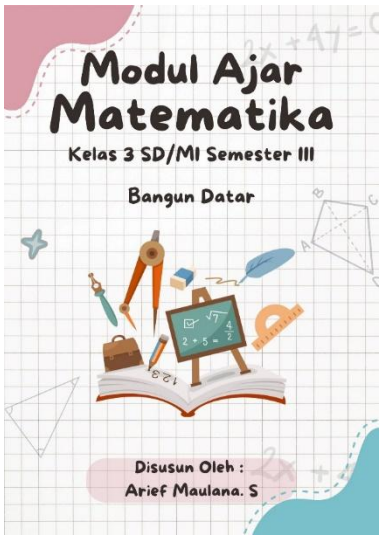

Fig. 1. Cover of Math Module

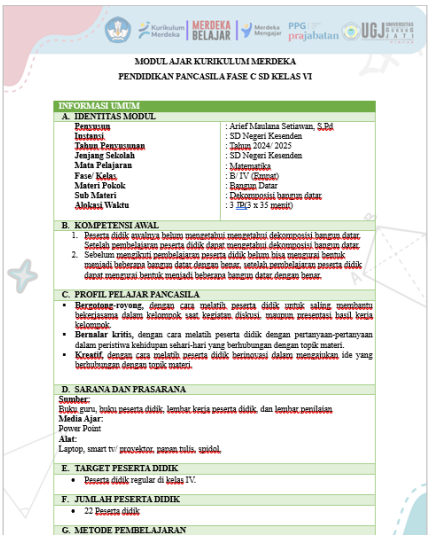

Fig. 2. Teaching Module

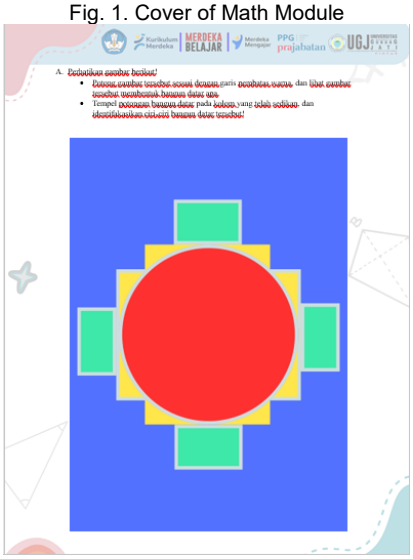

Fig. 3. LKPD

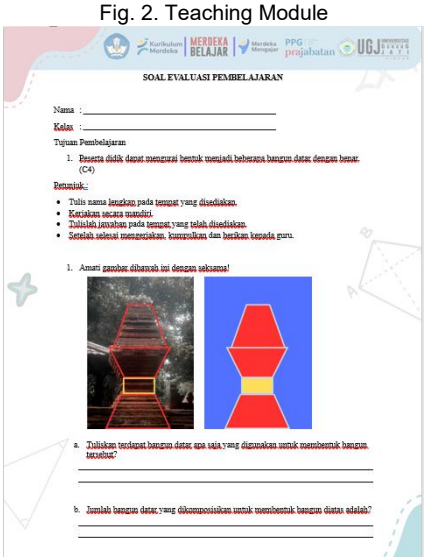

Fig. 4. Evaluation Questions

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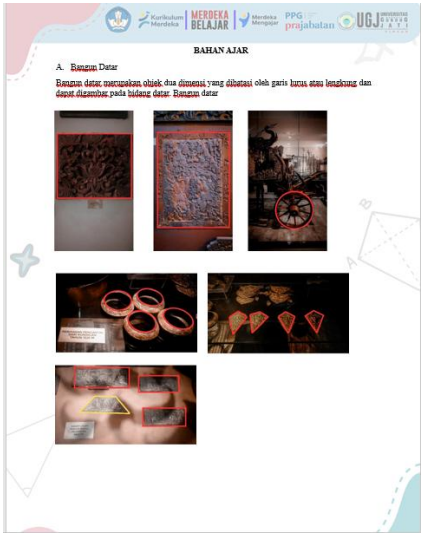

Fig. 5. Teaching Materials

The development stage, this stage is the stage that develops products in the form of teaching modules for the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Kasepuhan Palace from the design form into actual products according to the designed design. After the teaching module has been completed, the next stage is to conduct a validation test.

The validation test was carried out by the validator, namely the first grade homeroom teacher of SDN Kesenden. In the teaching module with the Culturally Responsive Teaching (CRT) approach developed in accordance with the format, suitability for the curriculum, and language. The following are details of the module validation assessment results

Table V. Teaching Module Validation

Assessment Aspect	Total Score	Average	Overall Average	Criteria
Format	14	88%		
Suitability to the curriculum	33	83%	90%	Very Valid
Language	16	100%		

Based on the table above, the percentage of module validation assessment obtained an average of 90% very valid. So, the teaching module for the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Cirebon Kasepuhan Palace on the material of Flat Buildings Decomposition for class IV SDN Kesenden is very valid and can be used in the next stage. As for the module validation assessment, there are several improvements to the module in accordance with the suggestions given by the validator. The following are improvements from the product development stage below.

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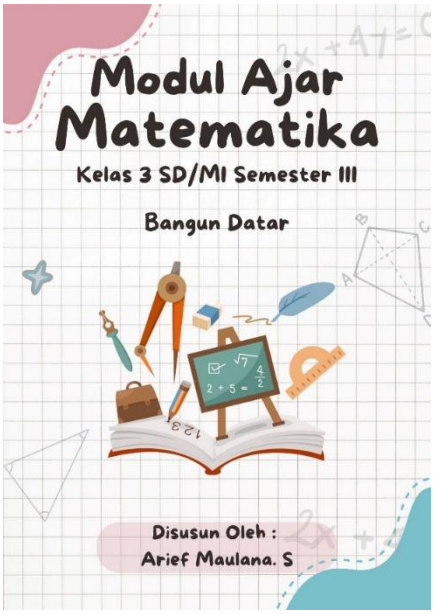
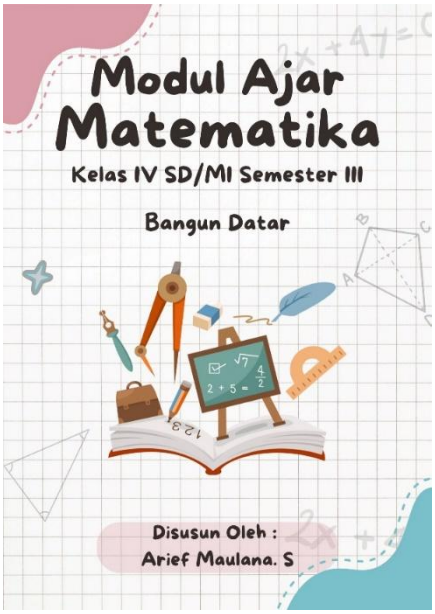
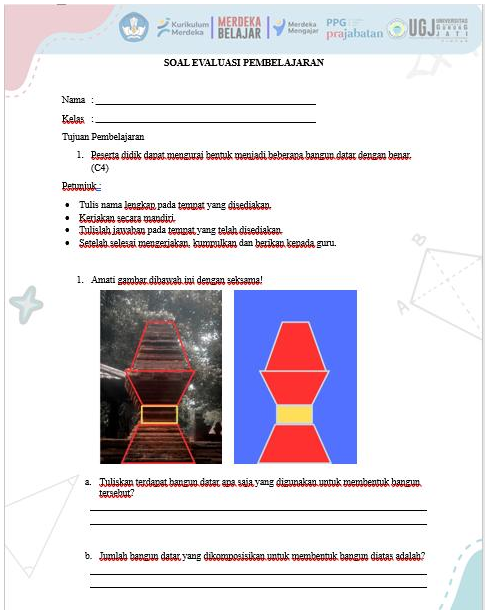
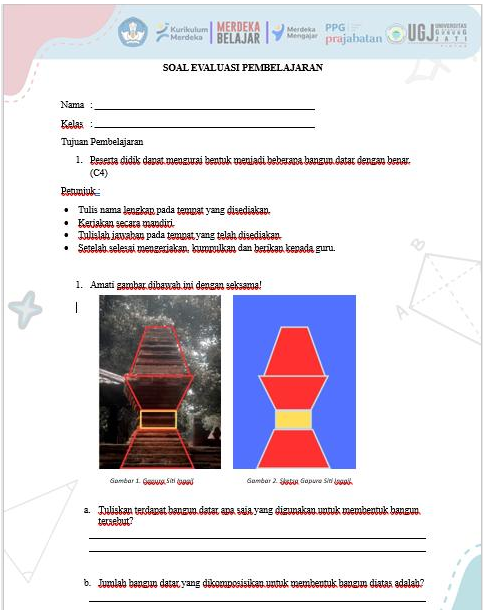
Tabel VI. Hasil Revisi Validator

Before Revision	After Revision
class penulusin on the module cover has errors in writing	
	
Need to improve the image captions on each image	
	

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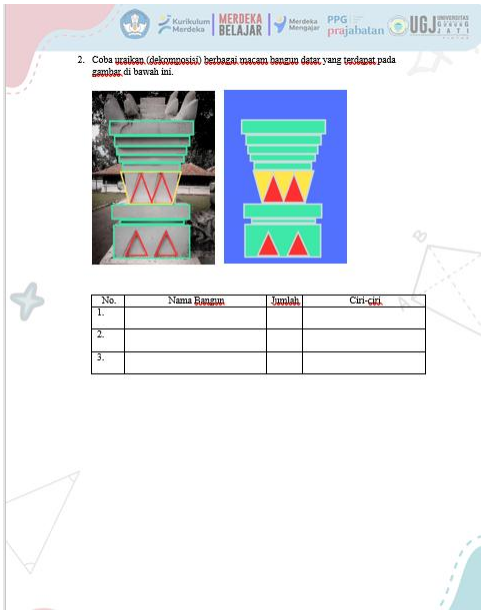
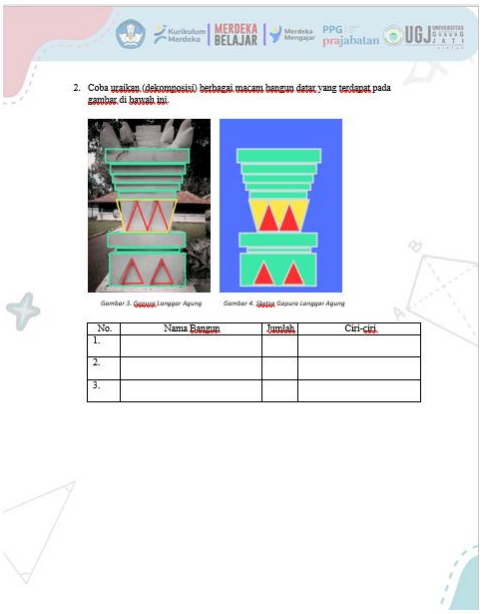
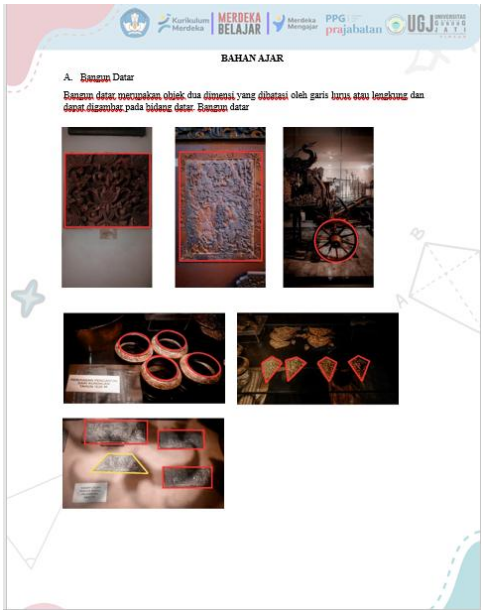

2. Coba uraikan (dekomposisi) berbagai macam bangun datar yang terdapat pada gambar di bawah ini.

No.	Nama Bangun	Jumlah	Ciri-ciri
1.			
2.			
3.			


2. Coba uraikan (dekomposisi) berbagai macam bangun datar yang terdapat pada gambar di bawah ini.

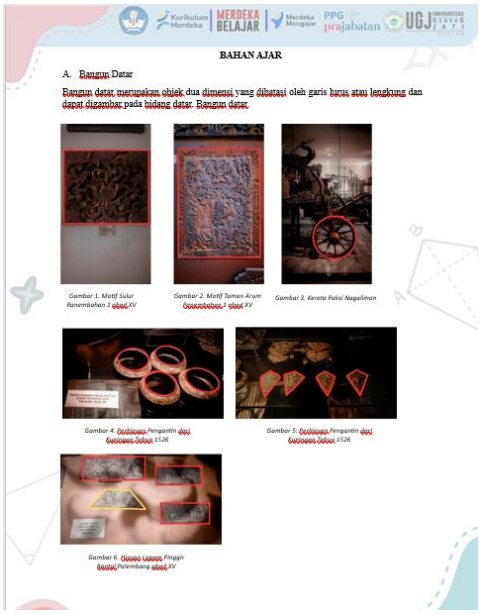
Gambar 3. Gapura Langgar Agung Gambar 4. Detail Gapura Langgar Agung

No.	Nama Bangun	Jumlah	Ciri-ciri
1.			
2.			
3.			


BAHAN AJAR

A. Bangun Datar

Bangun datar merupakan objek dua dimensi yang dibatasi oleh garis lurus atau lengkung dan dapat digambar pada bidang datar. Bangun datar


BAHAN AJAR

A. Bangun Datar

Bangun datar merupakan objek dua dimensi yang dibatasi oleh garis lurus atau lengkung dan dapat digambar pada bidang datar. Bangun datar

Gambar 1. Motif Sulur Gambar 2. Motif Taman Arum Gambar 3. Kereta Paksi Nagaliman

Gambar 4. Gambar 5.

Gambar 6.

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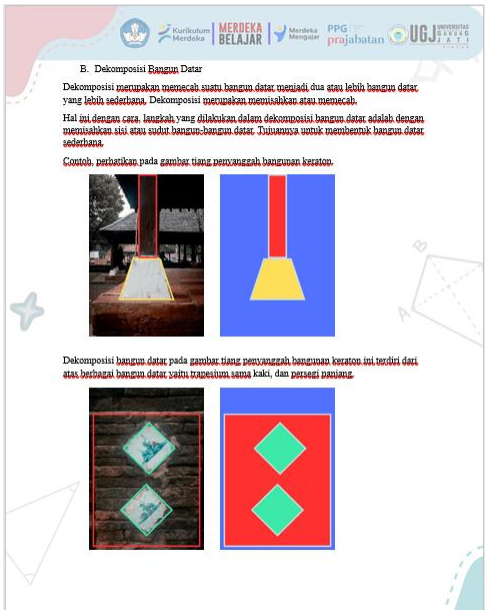

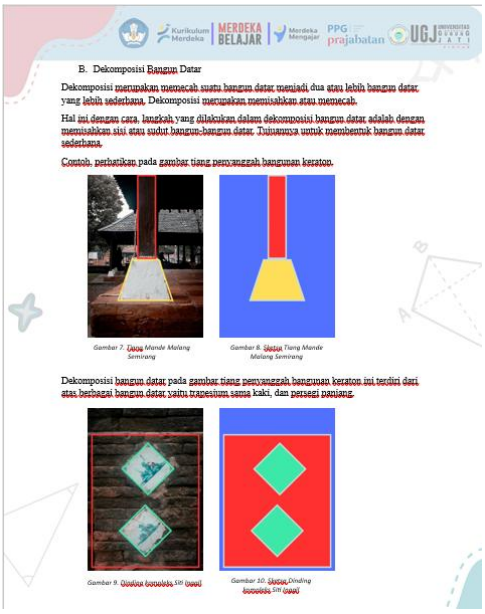

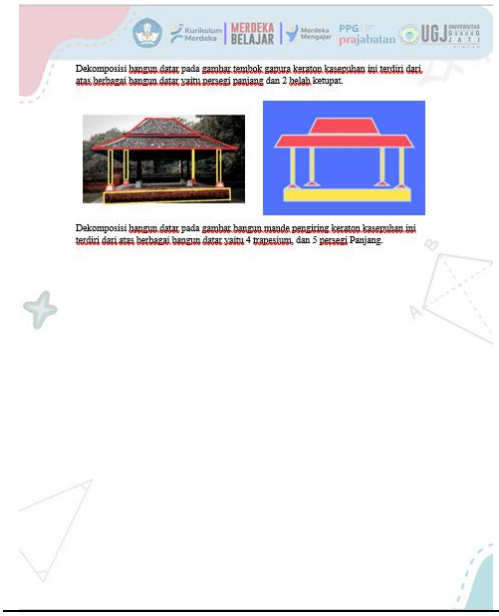

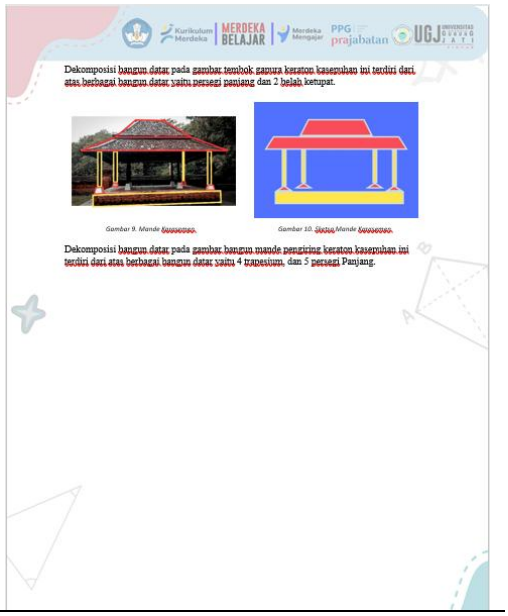

The teaching module of Culturally Responsive Teaching (CRT) approach based on ethnomathematics of Kasepuhan Cirebon Palace has been revised based on feedback from the validators. This revision includes improvements to the module design, format suitability, compliance with the curriculum, and language. These improvements aim to make it easier for students to understand how flat shapes can be broken down into small interconnected parts, by taking direct examples of geometric patterns in local culture. With this revision, the teaching module is expected to be not only valid and very practical, but also able to provide a more meaningful and contextual learning experience for students.

At the Implementation stage, researchers implemented the teaching module of the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Cirebon Kasepuhan Palace to 21 fourth grade students at SDN Kesenden. Researchers carried out the learning process following the steps of learning activities, method models, media, and assessments that had been designed. After the learning is complete, students are given a practicality test of students' responses to the learning that has been done.

To find out whether the data is normally distributed or not, use a normality test. Researchers use the SPSS application to determine the normality test. The following is a table of normality test data To find out whether the data is normally distributed or not, use the normality test. If the Significance Value > 0.05 → normal data, and if the Significance Value < 0.05 → abnormal data. Based on the normality test using the shapiro wilk test, the pretest data

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sig. 0.000 <0.05 data is not normally distributed and postest 0.020 <0.05 data is not normally distributed. So it is necessary to do a non-parametric test One way to analyze non-parametric statistical data is the wilxoson test.

Based on the wilcoxon test, the Asymp.sig (2 tailed) value = 0.000. because 0.000 <0.05, it can be concluded that the null hypothesis (Ho) is rejected and (ha) is accepted so that there is a significant difference between the results of the pretest and posttest after the use of the teaching module Culturally Responsive Teaching (CRT) approach based on ethnomathematics Kasepuhan Cirebon Palace. Thus, this teaching module is effective in implementing mathematics learning in grade IV flat building decomposition material.

The next step is to conduct the N-Gain test. Based on the results of the Wilcoxon Signed-Rank Test, the value of Z = -4.045 and Asymp. Sig. (2-tailed) = 0.000. Because the significance value <0.05, it can be concluded that there is a significant difference between the pretest and posttest results. Thus, the teaching module with the Kasepuhan Palace ethnomathematics-based approach used is proven to be effective for implementing mathematics teaching in grade IV flat building decomposition material.

At the last stage, namely the evaluation stage, at this stage the researcher evaluates the stages that have been done. This evaluation was carried out to determine the practicality and effectiveness of the teaching module for the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Cirebon Kasepuhan Palace. The percentage results in the practicality test with the application of the Culturally Responsive Teaching (CRT) approach teaching module involving 21 fourth grade students of SDN Kesenden, which obtained an average percentage of 88% with very practical criteria. Thus it can be concluded that the application of the Teaching Module of the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Kasepuhan Cirebon Palace involving 21 fourth grade students of SDN Kesenden is very practical when applied to mathematics learning with Flat Build Decomposition material.

The percentage results on the effectiveness test with the application of the Culturally Responsive Teaching (CRT) approach teaching module involving 21 fourth grade students of SDN Kesenden, namely obtaining an average percentage of 64.38% with effective criteria. Thus it can be concluded that the application of the teaching module of the CRT approach based on the ethnomathematics of the Cirebon Kasepuhan Palace involving 21 fourth grade students of SDN Kesenden is so effective when applied to mathematics learning with Flat Build Decomposition material.

B. Discussion

From the research data that has been presented starting from the analysis stage, it produces ethnomathematics data on the Kasepuhan Palace architectural buildings. This data collection is one of the first steps to design a teaching module design on flat building decomposition material, then at the design stage produces a teaching module product for the Culturally Responsive Teaching (CRT) approach based on ethnomathematics, then develops the development stage to validate the product to test the product and test the practicality and effectiveness of the product.

In the design stage, researchers designed teaching modules based on the results of observations made at Keseden Elementary School, grade IV on flat building decomposition material. The manufacturing process uses the Canva application to create teaching module covers, backgrounds on teaching modules, LKPD, and teaching materials. As for module writing, researchers use the M.S Word application. Designing this design is based on references to teacher books, student books, student worksheets, and assessment sheets as teaching material learning resources, as well as the results of analyzing ethnomathematics findings in architecture buildings and ornaments found in the Kasepuhan Palace.

The feasibility of the product can be done to determine the extent to which the teaching module can be implemented in learning mathematics flat building decomposition material. This is through the results of validation carried out by the fourth grade homeroom teacher validator through format assessment, curriculum suitability, and language use to obtain a very feasible category for implementation. The results of the validation of the teaching module of the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Kasepuhan Cirebon Palace on the material of flat building decomposition are 90% very valid or very feasible. That way this teaching module can be implemented in mathematics learning.

To determine the effectiveness of the teaching module development, it was carried out using the SPSS application to measure student completeness in completing ethnomathematics-based tests. The results of the effectiveness of the teaching module of the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Kasepuhan Cirebon Palace at flat building decomposition material, namely obtaining an average percentage of 64.38% with effective criteria. That way this teaching module can be implemented in learning mathematics.

The practicality of the media can be seen from the results of students' responses to the teaching module conducted using Ms. Excel to measure the practicality of the module through the results of students' responses. The

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results of the practicality of the teaching module of the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Kasepuhan Cirebon Palace on the material of flat building decomposition, namely obtaining an average percentage of 88% with very practical criteria. That way this teaching module can be implemented in learning mathematics.

In previous research conducted by (Ristayani, Wulandari, & Isfayani, 2024), that this research focuses on the Merdeka curriculum teaching module and the observed object is ulos cloth found in South Sumatra, while the researcher focuses on teaching modules with the CRT approach with the object of researching buildings and ornaments found in the Kasepuhan Cirebon Palace environment. Previous research conducted by (Putri, Alpusari, & Muhammad, 2024) focused on linking culture in learning mathematics which includes traditional games, traditional food, traditional houses and batik. on grade V material SDN 188 Pekan baru. While the researcher focuses on one object, namely the Kasepuhan Palace. In addition, previous research conducted by in this study focused on the Merdeka curriculum with the research subject of grade II flat building material at SDN 42 Mataram, while the researcher focused on teaching modules with the Culturally Responsive Teaching (CRT) approach and the material used in grade IV flat building decomposition at SDN Kesenden.

So the results of research and development that have been carried out that the teaching module of the Culturally Responsive Teaching (CRT) approach based on the ethnomathematics of the Kasepuhan Cirebon Palace is categorized as very valid, effective, and very practical for use in learning mathematics angle material. this, can be supported in the research of Teachers' multicultural attitudes and perspective taking abilities as factors in culturally responsive teaching by (Abacioglu, et al., 2020) that the Culturally Responsive Teaching (CRT) learning approach is effective in improving student learning outcomes. In addition, in Culturally Responsive Teaching: Its Application in Higher Education Environments by (Hutchison & Shields, 2020) says that the Culturally Responsive Teaching method can effectively foster student interest and learning outcomes, and has the potential to support the development of diverse student academic and psychosocial abilities.

Based on research on the development of ethnomathematics-based teaching modules on geometry material for elementary school students by (Putri, Alpusari, & Muhammad , 2024) which states that the results obtained by ethnomathematics-based teaching modules on geometry material for elementary schools are valid and feasible to use. According to research on the Development of Ethnomathematics-Based Mathematics Modules Using the Problem Based Learning Model on Junior High School Quadrilateral and Triangle Material by (Hayu, Saragih, & Kartini, 2023) states that it is quite valid and very practical so that it can be used in learning.

IV. CONCLUSIONS

Based on the results of the development and discussion, this research resulted in several important conclusions. First, the validation of the teaching module showed very satisfactory results with a percentage of 90%, so this module was considered very valid. Second, the practicality test involving learner responses resulted in a percentage of 88%, which was categorized as very practical. Third, the effectiveness of the module based on the learning completeness of 21 students reached a percentage of 64.38%, which met the effective criteria. These findings indicate that the teaching module developed is able to support learning in a valid, highly practical, and effective manner.

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