

Development of a Mathematics Module Based on a Contextual Approach to Opportunity Material for Class VIII SMP

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ABSTRACT

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This research is research that intends to produce a mathematics module employing a contextual methodology to opportunity material that is valid, practical and has potential effects. This research uses a 4D model with stages: define, design, develop, disseminate. This research was conducted at Durian Remuk State Middle School with the research subjects being material, media, language experts, teachers and students. According to the results, 78.57% of students achieved mastery, indicating that the module enhanced their learning outcomes. Based on the data obtained, It is evident from this that the contextually based mathematics module to the opportunity material for class VIII SMP that was developed is valid, practical and has a potential effect on student learning outcomes and can be used in mathematics learning opportunity material.

A. INTRODUCTION

It is anticipated that mathematics will be of achieving educational goals, namely changes in students' attitudes and behavior (Wulandari, et al, 2020, p.206). According to Elly and Mandasari 2016, pp.61-70 Mathematics is a science with an abstract structure.

Through observations at Durian Remuk State Middle School, interviews were held on October 16, 2023. The findings revealed that teachers seldom clarify the topics being discussed in relation to issues that are relevant to the students. Then it is noted that students are often not very engaged during the teaching and learning procedures with the instructor or while working on the practice problems assigned by the teacher. According to the interview findings, it was discovered that the school had indeed supplied a textbook, yet it had not been adequately explained, focusing primarily on delivering content that was restricted to formulas and appeared quite vague. Therefore, when students are presented with practice questions that differ from the sample questions provided by the teacher during lessons, they struggle to find solutions.

This affects the way that pupils in class VIII learn where the average mathematics score of many students is still below the KKM, namely 65. Of the 28 class VIII students, only 5 students got a score above the KKM, so only 17.8% of class students VIII completed and 82.2% of class VIII students did not complete. Apart from that, the reason for the low learning outcomes of students is also because the package books provided are no longer suitable for use because they are damaged and some pages are missing. One of the efforts made by students is to copy the package books or take notes, but not all participants students make these efforts.

Therefore, the textbook is uninteresting, boring and does not meet students' needs, therefore it is important to update it. Daryanto and Dwicahyono (2014, p.186) argue that learning activities can be conditioned to be more independently organized, comprehensive, and have measurable results by using modules. The use of pictures and illustrations in modules that match students' memories will increase students' curiosity to understand them, allowing them to be maximally involved in learning. The module can be used as a guide so that students can carry out activities actively and are interested in learning. One thing that can be done to attract students' interest in learning is to combine modules with a contextual approach.

Nilasari (2016, p.1399) in his research stated that the use of contextual learning modules can give students the freedom to develop their own knowledge in relation to real-world situations, allowing them to

explore their learning experiences. in their surrounding environment. Especially in this era of very sophisticated technology, the development of mathematics modules can be made more creative and innovative so that it attracts more students' interest in learning mathematics. By developing a contextual model-based module, we're hoping it can help students independently understand the learning material by relating examples from everyday life.

The researcher is interested in carrying out study entitled because of the description given above. "Development of a Mathematics Module Based on a Contextual Approach to Class VIII Opportunity Material at SMP Negeri Durian Remuk". It is hoped that the contextual module developed in this research can produce a mathematics module that is valid, practical and has a potential effect on students.

B. RESEARCH METHODS

This research is development research which aims to develop a product (Sugiyono, 2013, p.297). The end result of this study is a mathematics module built on a contextual approach to class VIII opportunity material, referring to the 4-D (Four-D) development model. According to Arkadiantika, et al, (2020, p.29) the 4-D model is a model for development that can be utilized in the creation of diverse learning media. The reason researchers chose this model is because the 4D model's stages are programmed, simple, easy to understand and its implementation is more systematic.

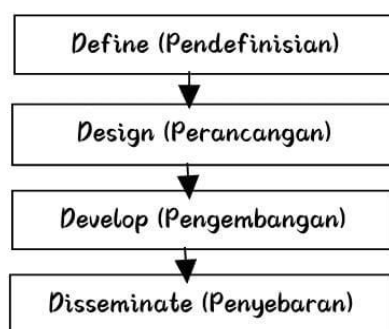


Figure 1. 4D Development Steps
(Source: Maydiantoro, 2020, p.29)

Define

In the initial phase of the 4D approach, there are various elements that need examination, which include the analysis of both the starting and concluding stages, assessment of students, evaluation of concepts, breakdown of tasks, and an analysis of learning goals. As stated by (Maulana, 2017, p.36), this initial definition phase is essential for identifying the requirements of the educational process and collecting data concerning the product that is to be created. In the case of the school setting examined in this study, the educational environment is already conducive to the learning activities.

Design

As stated by Thiagarajan and others in 1974, "the initial design involves delivering the core instruction using suitable media and in a logical order." The objective of the design phase is to create a prototype for a digital module that is based on inquiry. This phase includes four primary steps, which are (1) choosing media, (2) selecting the format, and (3) creating the initial design. During this phase, the concepts and requirements identified in the planning stage are articulated in a more tangible design. Choosing media is done to assist in identifying educational tools that should be tailored to the content being taught and matched with the students' traits or the environment around them.

Develop

Thiagarajan et al. (1974, p.8) describe that the goal of development is to modify or enhance a product after it undergoes adjustments influenced by expert feedback and trial information. To create a product that is in development, two necessary steps are involved: (1) evaluation by specialists followed by modifications, (2) testing for development purposes.

Disseminate

The dissemination phase is the last phase. Thiagarajan et al. (1974, p.9) state that the purpose of the dissemination phase is to gather feedback, make corrections, and receive evaluations to refine the final product development, ensuring the product is well-received by users (students) and aligns with the intended learning goals and essential competencies. The objective of this phase is to share information (Rahmawati & Subanti, 2017, p.379).

The purpose of this research is to construct a mathematics module based on a contextual approach to Class VIII Opportunity material. The subjects of this research are Durian Rumuk State Middle School class VIII students and specialists in material, language, and media.

A Likert scale is used as the data analysis method in this research and development project. An individual or group of people's attitudes, views, and perceptions can be measured using the Likert scale (Sugiyono, 2018, p.68). There are four possible answers on the Likert scale in the questionnaire format.

Data processing is done once the test data has been successfully obtained. A percentage formula was used to examine the data processing from the experiment results. Both quantitative and qualitative data were collected. Numbers from product development assessment questionnaires created using a Likert scale are used to provide quantitative data. Qualitative information in the form of responses and suggestions outlined in questionnaires and interviews with students and teachers. Testing of the Math module employing a contextual methodology in class VIII opportunity material is in the form of testing validity, practicality and potential effects.

a. Data Validity Test

Validation is the process by which the developer or user of a tool empirically collects data to support the conclusions generated by the tool's scores. Three specialists will receive the product, specifically those with expertise in materials, language, and media. In this study, Aiken's V validity coefficient was used to test the statement questionnaire used as a measuring instrument. Criticism and suggestions provided by experts will be included in the revised module which will be made into a module for use by class VIII students. The formula used is as follows:

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

(Yusrizal dan Rahmawati, 2020, p.336)

The calculation results of the validators' assessments of the modules being developed are then adjusted to the interval class to determine the feasibility criteria for the modules being developed. These criteria can be presented in the form of table 1 below:

Table 1 Expert Test Validity Criteria

Intervals	Criteria
0,80 < V ≤ 1,00	Very Valid
0,60 < V ≤ 0,80	Valid
0,40 < V ≤ 0,60	Fairly Valid
0,20 < V ≤ 0,40	Less Valid
0,00 < V ≤ 0,20	Invalid

Source: Modification (Anshary & Edidas, 2018, p.4)

b. Practicality Analysis

Data was obtained from student response questionnaires regarding product use. Providing questionnaires to teachers and students of class VIII at SMP Negeri Durian Remuk to obtain data related to the implementation of mathematics modules based on a contextual approach in class VIII opportunity matrices. The following formula is used to get the percentage for each subject.

$$P = \frac{\sum X}{N} \times 100\%$$

(Sriwijayanti et al, 2020, p.98)

The data obtained from teacher and student questionnaires will be averaged and then converted according to practicality level criteria. Then analyzed in the form of descriptive percentages.

Table 2 Practicality Criteria

Interval (%)	Criteria
81-100	Very Pratical
61-80	Pratical
41-60	Quite Pratical
21-40	Less Pratical
0-20	Impractical

(Source: Apsari & Rizki, 2018, p.167)

c. Analysis of Test Results

To see the criteria for whether the learning outcomes have been completed or not, that is by looking at the completion in accordance with the Minimum Completeness Criteria that has been set by Durian Remuk State Middle School, namely 65. The module developed is said to have a good possible impact on pupils if the average student completion result is $\geq 65\%$ of students are calculated using the following formula.

$$P = \frac{t}{n} \times 100\%$$

(Norsanty & Chairani, 2016, p.20)

The results of calculating the percentage of completeness are then converted into qualitative data based on the following table:

Table 3. Classical Completion Percentage Category

Interval (%)	Criteria
$p \geq 80$	Very Good
$70 \leq p < 80$	Good
$60 \leq p < 70$	Pretty Good
$50 \leq p < 60$	Not Good
$p < 50$	Not Good

(Norsanty & Chairani, 2016, p.20)

C. RESULT AND DISCUSSION

Based on the 4D development model, the steps for developing a mathematics module with a contextual approach to circle material for class VIII students are carried out through the following stages:

Definition Stage (Define)

1. Front End Analysis

From field observations and interviews conducted by researchers, the researcher obtained some information regarding the problems that occurred, including the teacher explaining the lesson based on the textbook used and recorded on the blackboard, so that students' knowledge was limited to the content recorded by the instructor. In the learning process students cannot learn independently because the language used in the textbook is still difficult for comprehension by students.

According to (Fauziah & Sukasno, 2015, p.11) learning should be able to involve students, be oriented towards mathematical processes, students are given more questions that can train high-level thinking skills, learning is the result of dialogue and discussion between students and teachers and students with other students. So far, the books available in schools have varied, for example textbooks and student worksheets (LKS) which develop every school year. However, learning using modules has not yet been used. Based on observations, student learning outcomes are still relatively low, as can be seen from the percentage data for class VIII grades at Durian Remuk State Middle School.

2. Student Analysis

From the interviews conducted, researchers obtained some information regarding the problems that occurred, including that the only books used during the learning process in class were printed books. The available textbooks are still less interesting to read because they lack color and the vocabulary employed in the textbooks is still difficult for pupils to comprehend. So additional teaching materials are needed such as modules equipped with a combination of colors and images to make them interesting and increase students' interest during learning.

3. Concept Analysis

Analyzing the course materials for class VIII is how this step is completed. Content will be chosen and modified to meet the requirements of educators and learners. The learning material in this development research is opportunity material. The material contained in the Module is as follows:

- 1) Activity 1: Sample Space and Sample Points
- 2) Activity 2: Empirical Opportunities
- 3) Activity 3: Theoretical Opportunities

Each sub-chapter of material is designed and arranged as attractively as possible and adapted to a contextual approach and based on the KI and KD that apply to the Opportunities material.

4. Task Analysis

In this step the researcher carried out (1) analysis of learning resources, which entails gathering and identifying the sources that support the creation of teaching materials; and (2) analysis of competency standards and fundamental competencies that will be taught during the learning process based on the 2013 curriculum for class VIII even semester.

5. Analysis of Learning Objectives

Based on the findings of the KI and KD examination of the mathematics curriculum for 2013 class VIII SMP, especially in KD 3.11 and 4.1.

Design Stage (Design)

a. Media Selection

Based on the analysis of students, materials and facilities available at school, the media chosen are teaching materials in the form of modules. Because the modules available at schools no longer follow curriculum developments and modules can be an alternative to student handbooks other than the textbooks currently used. According to (Dewi, 2017, p.105), learning modules are educational resources that are organized methodically and engagingly, encompassing content, instructional strategies, and assessments designed for independent use to attain desired skills. The intention of creating the module is to spark students' interest in the learning process.

b. Format Selection

The choice of teaching material format is meant to create instructional resources in the shape of modules that will be adapted to the 2013 curriculum and a contextual approach. The stages carried out in selecting the format are as follows:

1. Prepare References

This stage is the first module design stage where the researcher looks for journal or book references regarding the Contextual Approach.

2. Prepare the Design.

This contextual approach-based mathematics module was created using Microsoft Office Word 2010 and the Canva application with opportunity material that refers to the 2013 curriculum. The Microsoft Office Word 2010 application is used to type and combine the material, formulas, example questions and practice questions in the module. Meanwhile, the Canva application was used to design the front cover, back cover, as well as the header and footer design of the mathematics module being developed.

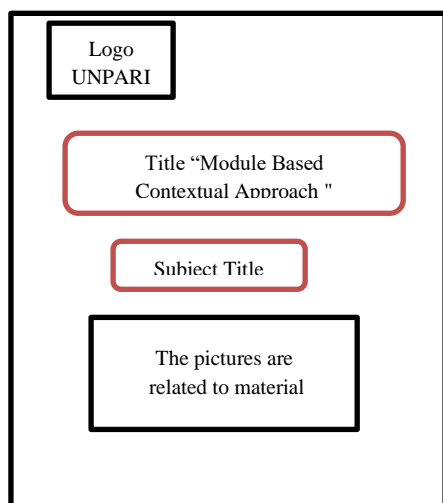


Figure 2. Initial Cover Design

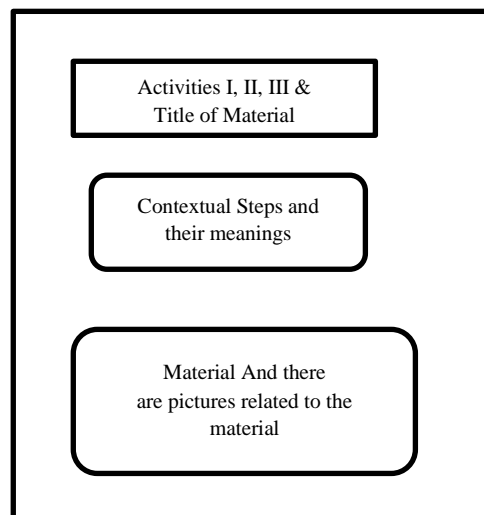


Figure 3. Initial Design Of Material Content

Development Stage (Development)

Using modules that focus on context, education becomes more significant by applying it to daily situations. According to a study by Supardi et al. (2019:92), findings indicated that mathematics modules based on context can enhance students' problem-solving skills and make learning mathematics engaging and relevant, as they grasp the real-life applications of concepts. Unlike the current modules, the one that researchers are set to create will incorporate seven elements in each session for activities 1, 2, and 3. These seven elements include constructivism, inquiry, questioning, learning community, modeling, reflection, and authentic assessment.

Nilasari and colleagues (2016, p.1399) noted in their study that contextual learning modules allow students to investigate their educational experiences, enabling them to create their own understanding connected to actual scenarios in their environment. Therefore, it can be inferred that learning materials in the form of modules are anticipated to improve when they are associated with a contextual method.

a. Expert Validity (Expert Appraisal)

According to (Lidia, 2021, p.43) this development stage aims to modify the product being developed by carrying out revisions before it becomes a reliable and useful product that can be incorporated into the educational process. In this step, the researcher provides draft 1 to the validators, then the validators provide an assessment of the module developed by the researcher with a validator who is competent and understands the preparation of mathematics modules based on a contextual approach and is able to provide input/suggestions to improve the learning tools that have been prepared.

Table 4 Revision by Materials Expert

Before Revision	After Revision
<p>4 Menyebut Bilangan → Suatu pembelajaran yang dilaksanakan dalam beberapa kelompok belajar yang anggotanya heterogen.</p> <p>Perhatikan ! Buatlah Kelompok yang terdiri dari 4-5 orang. Lalu lakukan Permainan Sut Daun bersama dengan teman sekelompokmu dan lialalah</p> <p>5 Pemetaan → Proses pembelajaran yang menyertakan contoh atau ilustrasi yang dapat dijadikan sebagai acuan pembelajaran saat peristiwa terjadi.</p> <p>Hasan dan Hamka memainkan permainan Sut Daun. Empat jari melambangkan Daun, satu jari melambangkan dari, tangan dikepal melambangkan Batu.</p> <ul style="list-style-type: none"> ➢ Jika Daun bertemu dari maka daun kalah ➢ Duri bertemu batu maka batulah yang menang ➢ jika batu bertemu daun, daunlah yang menang. <p>Maka Jari manakah yang memungkinkan dikeluarkan Hasan dan Hamkah saat memainkan permainan sut daun ? Untuk menemukan jawabannya, lakukan kegiatan Sut daun bersama dengan salah satu kelompokmu. Kemudian catat pasangan jari yang muncul ketika bermain Sut Daun pada kotak berikut.</p> <p>Modul Matematika berbasis Pendekatan Kontesktual Page 17</p>	<p>4 Menyebut Bilangan → Suatu pembelajaran yang dilaksanakan dalam beberapa kelompok belajar yang anggotanya heterogen.</p> <p>Perhatikan ! Buatlah Kelompok yang terdiri dari 4-5 orang. Lalu lakukan Permainan Gunting, batu, dan kertas bersama dengan teman sekelompokmu dan</p> <p>5 Pemetaan → Proses pembelajaran yang menyertakan contoh atau ilustrasi yang dapat dijadikan sebagai acuan</p> <p>Hasan dan Hamka memainkan permainan Gunting, Batu dan Kertas. Lima jari melambangkan Kertas, Dua jari melambangkan gunting, tangan dikepal melambangkan Batu.</p> <ul style="list-style-type: none"> ➢ Jika Kertas bertemu batu maka batu kalah ➢ Batu bertemu Gunting maka batulah yang menang ➢ jika kertas bertemu gunting, guntinglah yang menang. <p>Maka Jari manakah yang memungkinkan dikeluarkan Hasan dan Hamkah saat memainkan permainan sut daun ? Untuk menemukan jawabannya, lakukan kegiatan permainan Gunting, Batu dan Kertas bersama dengan salah satu teman satu kelompokmu. Kemudian catat pasangan jari yang muncul ketika bermain Sut Daun pada kotak berikut.</p> <p>Modul Matematika berbasis Pendekatan Kontesktual Page 17</p>

Suggestion :

It is feared that the modeling given will make students confused and it would be better to use modeling that is already very familiar to students.

Replace modeling with something that students use more often by conducting interviews with students first.

dihitung peluang empirik dari kemenangan club A adalah sebagai berikut:

$$P(A) = \frac{f(A)}{n}$$

$$P(A) = \frac{\text{Banyaknya Kemenangan}}{\text{Jumlah Semua Pertandingan}}$$

$$P(A) = \frac{12}{25} = 0,48$$

2 Wakt → Bagian ini dari kegiatan pembelajaran yang melibatkan peserta didik dalam proses penemuan dan penemuan ilmu baru yang diperoleh secara sistematis.

Amati lingkungan sekolahmu dengan seksama. Identifikasi setidaknya lima peristiwa atau kejadian yang sering terjadi disekitar sekolahmu. Hitung peluang empirik masing-masing peristiwa berdasarkan pengamatanmu !

NO	Peristiwa/ Kejadian	Peluang Empirik
1.		
2.		
3.		
4.		
5.		

Modul Matematika berbasis Pendekatan Kontesktual Page 24

Suggestion:

Add descriptions and example questions to the discussion regarding Empirical Opportunities.

pertandingan. Dapat dihitung peluang empirik dari kemenangan club A adalah sebagai berikut:

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$$P(A) = \frac{\text{Banyaknya Kemenangan}}{\text{Jumlah Semua Pertandingan}}$$

$$P(A) = \frac{12}{25} = 0,48$$

Pada kehidupan sehari-hari, kita sering dihadapkan dengan beberapa pilihan. Kita diminta untuk menentukan sendiri pilihan kita. Kita dituntut untuk bijak dalam memilih kemungkinan-kemungkinan pilihan itu. Berdasarkan permasalahan inilah muncul konsep peluang. Peluang merupakan perbandingan antara kejadian yang terjadi dengan semua kejadian yang mungkin terjadi. Nilai peluang antara 0 sampai 1. Peluang dibedakan menjadi peluang empirik dan teoritik.

Peluang empirik atau frekuensi relatif merupakan suatu peluang yang diperoleh dengan cara percobaan dan pengamatan. Peluang empirik atau frekuensi relatif terjadi apabila eksperimen dilakukan berulang. Misalnya pelemparan mata uang logam yang dilakukan beberapa kali. Peluang suatu kejadian dapat dihitung dari proporsi jumlah kemunculan suatu kejadian dimana percobaan diulang sebanyak jumlah tertentu

Contoh :
Dalam 10 hari terakhir ternyata hujan turun selama 6 hari.

Maka Peluang Empirik dari turunnya hujan selama 10 hari terakhir ini adalah 6/10, dan Peluang empirik dari tidak turunnya hujan adalah 4/10.

Modul Matematika berbasis Pendekatan Kontesktual Page 24

Repair:

Add a brief description or illustration of empirical opportunities and add example questions.

Remarks and recommendations from experts include adding questions related to daily life, improving symbols and images, adding instructions for each task, paying attention to the placement of dark and light colors and paying attention to typing tabulation. After the validation process was completed by the verifier, several parts were revised. A statement item is said to be valid if the score of the item has great support for the total score (Fauziah 2010, p.41).

Tabel 5 Recapitulation of All Validators

No	Validator	Number of Question Items	total score	Aiken's V	Criteria
1	Lukti Nursiwan S.Pd	19	42	0,73	Valid
2	Dr. Dodik Mulyono M.Pd	15	31	0,68	Valid
3	Sri Murti M.Pd	9	21	0,78	Sangat Valid
Amount		43	94	0,72	Valid

After carrying out the assessment, the average expert assessment score was obtained, namely 0.72, this is among the acceptable standards. Judging from the material experts' validation findings, the average score across all evaluation categories is 0.73 with valid criteria. The results of the media expert validation, the average score of all aspects of the assessment is 0.68 with valid criteria and the results of the validation of language experts, the mean rating of all aspects of the assessment is 0.78 with very valid criteria.

b. Developmental Testing

Development testing is the activity of testing an initial product design on actual subjects, then receiving comments. Testing of this development was carried out on teachers, on a small scale (small group) as product users (Farid, 2012, p.46) and field trials (field testing) in order to see the practicality and potential effects.

1. Teacher Response

Teachers are given 16 questions and can put a checklist (√) in the questionnaire column. Where the answer choices contain 4 criteria. Criteria 1 = Very Poor, 2 = Poor, 3 = Good, 4 = Very Good. The practicality of the module developed was that it received a score percentage of 88.33% and was included in the very practical criteria. The feedback provided by the educator regarding the mathematics module designed around a contextual method for eighth-grade SMP achieved a score of 88.33%. This aligns with the views of (Apsari and Rizki, 2018, p.167), who noted that it met highly practical standards. Additionally, the teacher did not suggest any changes to the developed module, and it was advised that it be promptly tried out with eighth-grade learners. Furthermore, there was no revision from the teacher regarding the module developed and it was recommended that it be immediately tested on class VIII students.

2. Small Group

This product trial on a small scale was carried out to find out how students responded Addressing the arithmetic module using a contextual methodology to material on opportunities for class VIII SMP which was developed using a response questionnaire to the module. After the module has been examined, and pupils complete the tasks contained in the module. Next, each student was given a practical questionnaire with 10 questions regarding the module they had studied. Students can put a checklist mark (√) in the questionnaire column.

Tabel 6. Respon Small Group

No	Respon	Total Scores on the Questionnaire
1	R01	33
2	R02	33
3	R03	32
4	R04	31
5	R05	32
6	R06	31
Amount		192
Persentase Skor		80%
Criteria		Praktis

Feedback from students in this minor group experiment indicated an 80% success rate, aligning with the view of Apsari and Rizki (2018, p.167) that the outcomes achieved by the developer meet practical standards.. This can be seen from the percentage of questionnaires obtained and several student responses in the notes column.

3. Field testing

At the field trial stage or large group trial carried out in one class (Pangke, et al, 2021, p.81), the researchers tested it on one class in class VIII.2 of Durian Remuk State Middle School, totaling 28 students, with the aim of seeing the effect the potential of using a math module built on the opportunity content for class VIII using a contextual approach. According to (Refianti et al, 2022, p.32) students generally feel that mathematics is an abstract subject so it is difficult to understand. Learning outcomes are values obtained by students through teaching and learning process activities. Every learning process certainly hopes for good learning results (Fauziah 2016, p.378). However, through learning using modules developed by researchers using a contextual approach, it was proven through tests given to 28 students that data was obtained that 22 students (78.57%) were in the complete category and 6 students (21.43%) were in the incomplete category. complete. When carrying out the post test, only 6 students out of 28 students did not complete the questions with $Y < 65$.

Table 7. Student Results

	Grade < 65	Grade ≥ 65
Number Of Students	6	22
Completeness	Not Completed	Completed
Product Eligibility Percentage	21,43%	78,57%
Category	Good	

The classical completeness percentage was 78.57% and had good criteria. If the examination of student replies yields findings in the good category, then this is consistent with Purwasih & Fitriana (2020) and indicates that the generated product has received positive feedback.. According to (Elly & Rosalina, 2019, p.74) the product developed has a potential effect if 50% of students complete it. Considering the outcomes of the classical percentage of completion, the product developed by the researcher has a potential effect. This proves that the Mathematics Module Based on a Contextual Approach in Opportunity Material for Class VIII SMP has a potential effect on students' learning.

Disseminate

The dissemination stage is the stage for disseminating products that have been developed and this stage is the final stage of this research and development. According to Al-Tabany (2014: 235) this stage is the stage of using media that has been created and developed on a wider scale, for example in other classes, in other schools, by other teachers. So at this stage the researcher used another class to disseminate the mathematics module, namely class VIII.1 and provided the mathematics module in the form of a hard file to the Durian Remuk State Middle School library in 4 copies.

D. CONCLUSION AND SUGGESTIONS

The class VIII SMP mathematics module product is contextually based opportunity material was declared "Valid" as proven by the validation results by the material validator who obtained a score of 42 with an average score of 0.73, the media valiator got a score of 31 with an average score of 0.68 and the language validator obtained a score of 21 with an average score of 0.78. So that the recapitulation of the average score from the three validators was 0.72 with valid criteria. The outcomes of the evaluation of learning's practicality that had been assessed by the teacher were 88.33% (Very Practical) and students obtained an average percentage score of 80% with the standards (Practical).

The contextual approach-based mathematics module in class VIII SMP opportunity material received a classical completeness percentage of 78.57%. This proves that the Contextualized Mathematics Module Approach to Opportunity Material has a potential effect on learning with "Good" criteria. It is hoped that the product resulting from this development can be used to support learning so that it can be useful for students,

teachers and schools. The results of this research and development can be used as a reference for developing learning media with other material that you want to discuss.

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