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Development of Interactive Learning Media with A Malay Culture Nuances and Characteristics of RME on Cube and Cuboid Materials for Junior High School

Tommy Yudha Pratama, Nur Izzati*, Okta Alpindo

Raja Ali Haji Maritime University, Tanjungpinang, Riau Islands, 29124, Indonesia

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Abstract

This study aimed to produce interactive learning media with Malay culture nuances and characteristics of RME on Cube and cuboid Materials for Junior High School, valid and practical categories. This research is a solution to the problems arising from the Covid-19 pandemic that applies distance learning so that the learning provided is less appropriate and less effective through the developed learning media; it is expected to help and improve students' understanding. This research starts from the define stage, the design stage, to the development stage by conducting a validity and practicality test. The instruments used are peer assessment questionnaires, expert validation sheets, and practicality questionnaires for educators and students. Data were analyzed by descriptive analysis and quantitative analysis. The data obtained is qualitative, and then the data is converted into quantitative data using MSR. From the Validation of material experts, they obtained an assessment of 80.50% with valid criteria, media expert Validation obtained an assessment of 87.73% with valid criteria, and linguistics expert validation obtained an assessment of 93.01% with valid criteria. For the practicality questionnaire, the teacher's response received an assessment of 92.79 % with practical criteria, and the student response practicality questionnaire received an assessment of 78.27% with practical criteria. The developed product has reached valid and practical criteria. Therefore, this research implies that interactive learning media with Malay culture and RME characteristics is feasible to test for effectiveness.

Keywords: interactive learning media; realistic mathematics education; malay culture; cube and cuboid

I. Introduction

Education is an essential aspect of creating superior and highly competitive human resources. Creating superior human resources is undoubtedly necessary to have good quality education. A nation with good quality education will certainly improve the quality of the nation's generation. As stated by Atsani (2020) through education, it will produce the next generation who are intellectually and emotionally intelligent, skilled, and independent to improve the development of this nation.

It is not easy to carry out the functions and goals of national education when the world is struggling against the Covid-19 pandemic. The education system in Indonesia immediately made various adjustments, namely establishing online learning. With the establishment of online learning, it is hoped that it will be a solution during the pandemic. Online learning is distance learning that must use the internet network via a laptop or cell phone. Putria et al. (2020) say that online learning is learning remotely with the help

* Corresponding Author
Email Address : nurizzati@umrah.ac.id
Handphone : +62 85320592244

of internet media and other assistive devices such as cell phones, laptops, and computers. However, online learning is slowly being replaced over time by face-to-face learning.

Based on this, the teacher must act quickly to find solutions related to learning that are appropriate, effective, and able to support or complement face-to-face learning that has not been maximized. The utilization of technology so that lessons can be delivered effectively is a must, and learning can be in the form of tools, materials, and instruments that can help the learning process. One of them can be in the form of learning media. Learning media is a medium of information teaching and learning activities to provide effectiveness and interactivity in learning. With the media in the teaching and learning process, it is hoped that it can help teachers learn that is more visual, interactive, interesting, easy, and quick to understand (Murtafiah et al., 2021).

Later supported by Indriyani et al. (2021) said that learning media is a means of communication between teachers and students that can help convey information in the form of teaching materials so that students will be interested in following the learning process and facilitate students in the learning process so that learning objectives can be achieved. In line with this, Kustandi & Sutjipto (2016) in Muktisari et al. (2017) suggests that learning media is a tool that can help the teaching and learning process and serves to clarify the meaning of the message conveyed to achieve learning objectives.

Learning media is one of the factors that can help the learning process and support the success of student learning. According to Nugroho et al. (2013), the selection of learning media must be by the material being taught and the condition of the students so that students are expected to be actively involved in learning activities. Meanwhile, according to Suryani (2021), good learning media must meet several criteria, including compatibility with learning materials, ease of use, and attractiveness to students, to achieve optimal learning objectives. Even though the Covid-19 pandemic has ended, this learning media can still be used because the learning process must currently be IT-based. In line with this, according to Nadziroh (2017), information technology (IT) in education today has a very important role. The need for a concept and mechanism for teaching and learning based on information technology (IT) is the main thing in improving learning, especially in learning mathematics. In addition, Oemar Hamalik in Nurdyansyah (2019) suggests that using learning media in the teaching and learning process can generate new desires and interests, motivate and stimulate learning activities, and even bring psychological effects on students. Therefore, researchers want to develop learning media in learning mathematics.

Mathematics is a very important lesson to be taught to students. Mathematics serves to develop the ability to calculate, measure, derive, and use mathematical formulas needed in everyday life (Rahmah, 2013). According to Permata & Sandri (2020), learning mathematics is a tool to develop a way of thinking that is abstract, the reasoning is deductive and related to structured ideas whose relationships are arranged logically. Mathematics is one of the lessons that play a role in efforts to prepare highly competitive human resources. One of the materials or subjects that are difficult for students to understand is building a flat-side space. This is reinforced by the statement of Nursyamsiah et al. (2020), who said that there were still many students who had difficulty solving the problem of building a flat-side room. This statement is also reinforced by Hasibuan (2018), who states that students' learning difficulties in mathematics on the subject of flat-sided shapes, including students who do not understand correctly how to determine the surface area of cubes and cuboids.

The learning approach that applies to real or everyday life is Realistic Mathematics Education (RME). In line with the opinion of Susanti et al. (2020), who state that RME is a special learning approach for mathematics that bases learning on concrete or real things. While according to Maimunah et al. (2019), Realistic

mathematics education (RME) is a learning approach specific to mathematics, which is characteristic of making students active learners and making it easier for them to understand real math problems. In line with Maimunah, according to Indriyani et al. (2021), Realistic Mathematics Education (RME) is learning that provides students to understand the process first by connecting it to everyday life or the life experienced by students, making it easier for students to understand.

However, according to Van den Heuvel-Panhuizen in Wijaya (2011:20), realistic mathematics education does not only show a relationship with real life. However, it refers to the focus of realistic mathematics education in emphasizing the use of events that students can imagine. It can be concluded that RME is real-life-oriented learning, just like Halimah et al. (2019) said that the Realistic Mathematical Education (RME) approach is a student-oriented mathematics learning approach mathematics is a human activity, and mathematics must be connected significantly to the context. students' daily lives to real-life oriented learning experiences

According to Atika & MZ, (2016), the characteristics of RME are using "real world" contexts, models, student production and construction, interactive, and interrelated. Supported by the statement of Hidayat, Abdurrahman, & Nurbayan (2007) in Ramadhanti & Marlina (2019) that the characteristics of RME, in general, have five characteristics, namely: 1. the use of the contextual problem means using real-world problems or reality as the beginning of learning, 2. use models, bridging by vertical instrument means that it is not important only to memorize formulas but transfers the nature of concepts, models, and schemes for students who need to be considered 3. student contribution, meaning that student teachers provide opportunities or stimuli so that students are active in learning, 4. Interactivity, meaning there is an interaction between teachers and students, is to achieve good learning, 5. intertwining means that each discussion topic cannot be separated from the others.

Based on the characteristics of the RME, this makes a strong relationship between the characteristics of the RME and the culture in a particular area. As stated by Hadijah et al. (2020), integrating culture into the educational process is believed to create more meaningful learning through experiences that students encounter in everyday life. This is reinforced by previous research conducted by (Simanjuntak & Imelda, 2018) to see student responses to realistic mathematics learning based on the Toba Batak cultural context in learning. The results obtained by this study are positive responses from students regarding realistic mathematics learning using the Toba Batak cultural context. In other words, if students are happy with the learning components used, then students are interested in carrying out the same learning in the next lesson. Based on several studies related to the use of culture in learning, many students received positive responses, this is the background for this research to use the nuances of Malay culture typical of the Riau Islands. With a positive response by students, the application of cultural nuances in this learning media will introduce Malay culture to students, which is expected to form students who not only understand technology but also their own culture.

This study aimed to produce interactive learning media with Malay culture nuances and characteristics of RME on Cube and cuboid Materials for Junior High School which are valid and practical categories.

II. Research methods

The type of research used in this research is Research and Development (R&D). This research aims to develop interactive learning media with a Malay culture and RME characteristics on cube and cuboid material for junior high school. According to Hasanah et al. (2017), the 4D model is more appropriate to be used as a basis for developing learning tools, not for developing learning systems, so this model follows the

product to be developed. According to Ulfah et al. (2016) statement, the 4D learning model was chosen because the advantages of this development model are that it is the basis for developing learning tools that include learning media and the stages of implementation are divided in detail and systematically.

The model, the researcher, uses in the research and development of interactive learning media with a Malay culture and RME characteristics is the 4D model developed by Thiagarajan et al. (1974) in (Kurniawan et al., 2017). However, this research and development have only reached the development stage due to limited conditions and others. So, the research and development model will be carried out in three stages: define, design, and development.

The instruments used to measure the validity of learning media are expert validation sheets and peer assessment questionnaires, then to measure the practicality of learning media using practicality questionnaires. Aspects of the assessment contained therein are as follows:

1. Peer assessment questionnaire

The peer-assessment questionnaire was designed so that researchers could find out the responses of their peers to the developed learning media. The peer-to-peer questionnaire contained in it includes aspects of Content, Presentation, and Language.

2. Product validity instrument

The product validity instrument contains three validation sheets: a material expert validation sheet, a media expert, and a linguist. Expert validation sheets are given to lecturers of mathematics education and teachers in the field of compulsory mathematics studies, which aim to assess the developed product. The material expert validation sheet contains five aspects: the suitability of core competence (KI) and basic competence (KD), clarity of purpose, the truth of the substance of the learning material, compatibility with RME characteristics, and presentation of the material.

The media expert validation sheet contains three aspects: display, menu, and media. The linguist validation sheet contains three aspects: readability, conformity with improved spelling (EYD) rules, and language use.

3. Product practicality instrument

The media practicality questionnaire was created to determine the practicality of the learning media developed based on the assessments of students and teachers in mathematics studies. The practicality instrument questionnaire contains aspects of learning, appearance, use, and attractiveness.

The validity of the learning media is obtained based on the validation sheet data analysis results by the validator. The validator consists of three experts: material, media, and language, for practicality data, were obtained based on the results of practicality questionnaire data analysis by educators and students. Validity and practicality were analyzed using the Method of Summated Ratings (MSR) with the help of the Microsoft Excel 2010 application.

4. Data analysis

Data analysis was carried out to produce interactive learning media with a Malay culture and RME characteristics that meet valid and practical criteria based on data grouping according to the type of data, namely:

a. Qualitative data

Qualitative data is data that contains comments in the form of suggestions and criticisms obtained from peers and experts on the developed learning media. Furthermore, the data is selected according to whether it is relevant to the problems contained in the developed learning media, so that later qualitative data is obtained which is considered relevant to be used as a reference for revising the learning media to make it better.

b. Quantitative data

Quantitative data were obtained from the results of assessments carried out by experts using validation sheets and practicality questionnaires by students and teachers in the field of mathematics studies. The resulting data is qualitative as a result of the assessment. The data will be transformed using the Method of Summated Ratings (MSR) assisted by the Microsoft Excel 2010 program. MSR is a method

for transforming data from a qualitative scale into quantitative data, in other words, the data obtained is ordinal. Ordinal data is qualitative data which is then quantified by changing the data into attitude scales, Likert scales, and the like for each category for the assessment criteria (Lestari & Yudhanegara, 2017:334).
The following is a Likert scale scoring guide:

Table 1.
Validity and practicality scoring guidelines

Likert Scale score	Category
5	Strongly Agree
4	Agree (S)
3	Enough (C)
2	Disagree (TS)
1	Strogly Disagree (STS)

Summated Rating Method based on Setiawati et al. (2013) as for the steps to change the data with MSR, namely:

a. First, calculate the number of frequency (f) responses from subjects in each criterion on the item or statement.
b. Next, the frequency scores were converted into proportion scores (p) and cumulative proportions (pk). The proportion score is calculated by dividing the frequency (f) by the number of respondents (N).
c. Then, calculate the cumulative proportion (pk), obtained from the proportion in each category plus the proportion of the previous category.
d. The next process calculates the middle, which is the midpoint of the cumulative proportion which is calculated from half the proportion in the category plus the previous category, or can be formulated as follows:

$$pk\text{- }middle = \frac{1}{2}\,p + pkb$$

e. The next process is to calculate the deviation value (z) by converting the middle pk score to a score by referring to the normal curve table.
f. Then calculate the value of (normal distribution) using the normal distribution table, or from the middle cumulative proportion using the Excel 2010 for Windows program with the formula z = NORMSINV (at the selected middle Pk).
g. Specifies the value of z + z*, the value of z* is needed to shift the validation category to the smallest scale value.
h. Then rounded up the value of z + z* for the scoring of each item or statement.

From the results of the MSR transformation of the validation and practicality questionnaires, it can be analyzed still using Microsoft Excel 2010 with the following steps:

a. Calculating the highest score by adding up the category scores on the SS or using the formula = SUM (block all category scores on the SB)
b. The result of the highest score multiplied by the number of respondents.
c. Calculates the number of category scores by multiplying each assigned score per item by the frequency of each category.
d. Calculate category percentage with formula.

$$\text{Average} - (\%) = \frac{Total\ Score}{number\ of\ scores\ SB \times Number\ of\ validators} \times 100\%$$

The results of the analysis using the MSR technique are converted into percentages, the percentages are compared with both criteria of validity and practicality. The criteria for the percentages of validity and practicality are listed in Table 2 (adapted from Dewi & Izzati, 2020).

Table 2.
Criteria for percentage of validity and practicality

Practicality criteria	Score Interval	Validity criteria
Very practical	$80\% < x \leq 100\%$	Very valid
Practical	$60\% < x \leq 80\%$	Valid
Quite practical	$40\% < x \leq 60\%$	Quite valid
Impractical	$20\% < x \leq 20\%$	Invalid
Very impractical	$0\% < x \leq 20\%$	Very invalid

III. Results and Discussion

The results in this study are interactive learning media with RME characteristics with a Malay culture on cube and cuboid material for junior high school. The product development process refers to the 4D research development model developed by Thiagarajan et al. (1974) in (Kurniawan et al. 2017). However, this research and development have only reached the development stage due to limited conditions and others. So, the research and development model will be carried out in three stages: Define, Design, and Develop. The following is a description of the stages of development in this development research.

1. Define

At this stage, the researcher looks for information about learning media and also looks for what teachers and students face problems during the learning process (Ikhbal & Musril, 2020). According to Ikhbal & Musnil's statement, this stage is the stage of defining by seeking information related to the subject and object of research. The definition stage consists of five things that must be analyzed related to learning, including:

a. Initial condition analysis

Preliminary analysis is the initial research activity by researchers related to the condition of students at school. The initial conditions referred to in this study are students' learning conditions. Based on the results of observations, currently, face-to-face learning is still in the adjustment stage from previous online learning. Teachers and students alike are overwhelmed in adjusting to the current learning system. This limited face-to-face learning requires students to come to school in turn. The limited time to study at school overwhelms students in fulfilling the material provided by the teacher. With varying levels of understanding of the material, the teacher must be able to work around this. Based on this analysis, researchers chose interactive learning media to be developed.

b. Student analysis

After seeing students in the field, the teacher's information on the learning process at school was also obtained. Students are now accustomed to using smartphones or gadgets; indirectly, they have developed in tandem with the surrounding technology. When given a problem, students tend to use technology to solve it. So, it is unavoidable that the current learning process must be with the help of technology. Based on this, learning media is the most feasible solution to be developed.

c. Curriculum analysis

After conducting a curriculum analysis, it was found that the curriculum being implemented is the 2013 revised 2017 edition. The curriculum analysis aims to determine the competencies developed in learning media. The basic competencies in question are basic competencies in the flat-sided building material contained in the 2013 revised 2017 edition of the curriculum. The material for building a flat side is one of the materials that is concrete or real. Based on the nature of the material, the appropriate approach was chosen, namely Realistic Mathematics Education. With the characteristics of RME, which prioritizes daily life or real life, it is felt to be under the material for building a flat side space. However, with the limitations of the media I developed, this media only contains a cube and cuboid.

Basic Competence (KD) analysis is 3.9, distinguishing and determining the surface area and volume of flat side shapes (cubes, cuboids, prisms, and pyramids), 4.9 Solving problems related to surface areas and volumes of plane shapes (cubes, cuboids, prisms, and pyramids).

d. Material analysis

The material analysis aims to identify, compile, and characterize the material used in interactive learning media. The material chosen is to build a flat side room. However, in the learning media that the researcher developed, it is difficult to apply the characteristics of RME and the material of the flat side space. Based on this, this interactive learning media only contains cubes

and cuboids. After the concept of learning the cube and cuboid material has been identified, it is arranged systematically and linked to other relevant concepts.

e. Formulate learning objectives

Based on the curriculum analysis and material analysis that has been done previously, through interactive learning media with a Malay culture and RME characteristics, it is expected that:

1) Students can develop an independent attitude using the concept of cube and cuboid to present and solve contextual problems in everyday life.
2) Students can cultivate a cooperative and proactive attitude using the concept of cube and cuboid to present and solve contextual problems in everyday life.

2. *Design*

The design stage in this study aims to prepare all the things needed; according to the statement by Suryawan & Permana (2020) that at this design stage, the design of learning media will be carried out through the results of the previous analysis, so that the design of the product to be developed is obtained. This stage aims to design the initial product in learning media development to find an effective way to develop a product design based on the data obtained in the previous stage. At this stage, four steps are taken: instrument preparation, format/design selection, initial design, and peer assessment.

a. Instrumental arrangement

The research instrument measures the quality of the product developed by the researcher. Measurements made by researchers are only limited to measuring validity and practicality. The measurement of the validity of the learning media uses an expert validation sheet consisting of media experts, material experts, and language experts. Measuring the practicality of learning media uses a practicality questionnaire sheet consisting of a teacher response questionnaire and a student response questionnaire.

b. Format/ design selection

The choice of format in this development is intended to design the content of the learning media. This stage begins with identifying the various components that will be included in the learning media. The software used is Articulate Storyline 3. The components designed in the learning media include the following:

1) The front of interactive learning media

The front of the interactive learning media consists of a cover page and a login page. The cover page consists of the title of interactive learning media, class information, and some pictures of Malay culture. Meanwhile, the entry page consists of fields for the name and origin of the school that must be filled in when you want to go to the main menu page; then, there is an entry button and music.

2) The content section of interactive learning media

In the learning media content section, there is the main menu, namely a page that contains menus on learning media. The main menu's background is a typical gonggong batik from the Riau Archipelago. Pictures of Malay objects such as tanjak, Cogan, tepak sirih, and clothes brackets are on each menu. The menus contained on the main menu page are the instructions menu, competency menu, material menu, training menu, and profile menu. Each menu has its page. The page on the instruction menu contains an explanation of each menu and a figure representing the page's contents. Then the competency menu consists of KI, KD, GPA, and learning objectives.

The material menu page contains the main material, namely cubes and cuboids. Then it also contains learning instructions, learning materials, and stabilization. The learning media material menu contains the characteristics of RME. Next is the exercise menu page, which consists of ten multiple-choice questions and three description questions. After completing the multiple-choice questions, a display of the value of the exercise according to what has been done will appear, and the same with the description questions.

3) The closing part of interactive learning media

The closing part of the learning media contains a profile menu page, namely the developer's biography, which is described based on the level of education the researcher has taken.

c. Initial design

The initial design for the development of this media starts from designing a media scheme containing a description of each menu or page that will be loaded on the learning media. Some of the pages contained in the media include a cover page, entry page, main menu, instructions, core competencies, basic competencies, indicators of competency achievement, learning objectives, materials, exercises, and profiles. The following is the display of each page on the learning media:

1) Cover Page

The cover page display is the initial view after opening the learning media. The initial display on the cover page has the title "Interactive Learning Media for Cube and cuboid Mathematics" for the school level and the target class "VIII SMP." Then this cover page will lead to the login page (login).

Figure 1 Cover page

2) Login Page

The entry page display consists of a name and school origin column that must be filled in; an entry button can be pressed when you have filled in the name and school column. There are pictures of cubes and cuboids; there is also Malay instrumental music that aims to show Malay culture in the learning media.

3) Main menu display

The main menu display consists of 8 buttons, namely the cross button (exit media), turn on music button, turn off music button, hint button, competency button (KI, KD, IPK, learning objectives), material button, practice button (multiple choice and description), profile button. The main menu display is planned to be added with a background of batik gonggong, and there are typical Malay objects on the menu background.

4) Instruction menu display

The instruction menu display contains a brief explanation of the menus in the learning media. On this page, a home button leads to the main menu, on and off music buttons, and a back navigation button.

5) Competency menu display

The competency menu display contains Core Competencies, Basic Competencies, Competency Achievement Indicators, and learning objectives from cube and cuboid material. At the bottom is a back button to return to the previous page, the next button to go to the next page, and the home button to return to the main menu.

6) Material menu display

Figure 2 Material menu display

The display of learning media material contains material for cubes and cuboids for junior high school. On this page, the material contains the characteristics of RME, namely the use of context, use of models, student construction results, interactivity, and interrelationships. At the bottom is a back button to return to the previous page, the next button to go to the next page, and the home button to return to the main menu.

7) Exercise menu display

The learning media exercise menu display consists of multiple-choice and description questions. There are 10 multiple choice questions with 4 answer choices. The description questions are 3, with 1 question having 3 branched questions. This exercise aims for students to hone their understanding of cube and cuboid material. At the bottom, there is a submit button, so students are required to answer and press the submit button so they can move on to the next question. At the top right is a button back to the original exercise page, which displays multiple-choice descriptions.

8) Profile menu display

The interactive learning media profile menu displays the researcher's identity as a learning media developer. This identity consists of the researcher's name, place of birth, and the research department, accompanied by a photo of the researcher using the university's alma mater.

d. Peers

Before experts validate the product, the product is first assessed by colleagues. This aims to get input on the product design before the product reaches the validator.

Based on the assessment of three colleagues on the learning media gave a positive response, the interactive learning media with the RME characteristics developed was good. However, in this assessment, several inputs from colleagues aimed at making interactive learning media developed to be even better when later validated by experts. The input or advice is to pay more attention to the use of color and writing layout to add to the attractiveness of the learning media developed.

3. *Development*

The validator then validates learning media that have received guidance from supervisors and peer input to see the learning media's validity. Three validators will test this learning media, namely material validators, media validators, and language validators. Then after being declared valid, teachers and students passed a practicality test. In line with Syahrir & Susilawati, (2018) statement, the learning product developed was first validated by experts (math teachers, linguists, and mathematics education experts) to determine the feasibility of the product and then tested on students.

Validation from material experts, media experts, and linguists aims to determine whether the developed learning media is valid to use and to get criticism and suggestions so that the developed learning media is better. Following Astika et al. (2019), statement Validation is an assessment given to products that researchers have designed to get suggestions and comments as improvements so that the product is valid and can be used for research. The practicality test by teachers and students aims to determine whether the learning media developed is practical.

a. Expert validation assessment

The summary of interactive learning media validation results by material experts, media experts, and linguists is shown in Table 3 below.

Table 3.
Expert validation results

No.	Expert	Average (%)	Criteria
1	Material	80,50	Very Valid
2	Media	87,73	Very Valid
3	Language	93,01	Valid

1) Material expert

Material experts on interactive learning media consist of two experts: one UMRAH mathematics education lecturer and one mathematics teacher at SMP Negeri 15 Tanjungpinang. The form of data on the validation sheet is known to be qualitative. The assessment obtained is ordinal data which is then converted into interval data through MSR transformation with the help of Microsoft Office Excel 2010. Based on the results obtained by researchers regarding the assessment of validators I and II of the material section on learning media, the overall results obtained using MSR are 80,50 % with very valid criteria.

2) Media expert

Media experts on interactive learning media consist of two experts: one UMRAH mathematics education lecturer and one mathematics subject teacher at SMP Negeri 15 Tanjungpinang. The form of data on the validation sheet is known to be qualitative. The assessment obtained is ordinal data which is then converted into interval data through MSR transformation with the help of Microsoft Office Excel 2010. Based on the results obtained by researchers regarding the assessment of validators I and II of the media section on learning media, the overall results obtained using MSR are 87, 73 % with very valid criteria.

3) Linguist

Linguists in interactive learning media consist of two experts, one lecturer in mathematics education at UMRAH and one teacher in mathematics at SMP Negeri 15 Tanjungpinang. The form of data on the validation sheet is known to be qualitative. The assessment obtained is ordinal data which is then converted into interval data through MSR transformation with the help of Microsoft Office Excel 2010. Based on the researchers' results regarding the assessment of validators I and II of the language section on learning media, the overall results obtained using MSR are 93 01 % with very valid criteria.

b. Product practicality

The test was carried out by the eighth-grade mathematics teacher of SMPN 8 Tanjungpinang, Mrs. Eva Octavia Ambarita, S. Pd, and the student's practicality test were conducted on 16 students of VIII. The results of practicality test is present below.

Table 4.
Practicality test results

No.	Participants	Average (%)	Criteria
1	Educator	92,79	Very practical
2	Students	78,27	Practical

Based on information shown on Table 4, the overall practicality questionnaire of educators and students, the developed learning media obtained practical results for student responses with a percentage of 78.27% with practical criteria and 92.79% for educator responses with very practical criteria.

This development research resulted in a final product in the form of interactive learning media with a Malay culture and RME characteristics on cube and cuboid material for junior high school. The learning media developed refers to the 4D model developed by Thiagarajan et al. (1974) in (Kurniawan et al., 2017). However, this research only reached three stages: Define, Design, and development.

The define stage is the first stage in this research. At this stage, the researchers analyzed initial conditions, student analysis, curriculum analysis, material analysis, and formulating learning objectives. After being carried out step by step, the researchers concluded that face-to-face learning was still in the adjustment stage, requiring students to come to school. The basic competencies in question are basic competencies in the flat-sided building material contained in the 2013 curriculum. However, with the limitations of the media that the researchers developed, this media only contains cubes and cuboids.

At the design stage, the researcher aims to design the initial product for learning media development. At this stage, four steps are taken: instrument preparation, format/design selection, initial design, and peer assessment. At this stage, the researcher obtained a validation sheet of material, media, and language experts and the product's initial design to be developed. After producing the initial product design, the product is first assessed by peers. This aims to get input on the product design before the product reaches the validator.

At the development or development stage, the product being developed is validated by the validator to see the validity of the product in the form of interactive learning media. Three experts will test interactive learning media: material experts, media experts, and language experts. The instrument used in the validation sheet has various

constituent aspects, such as the material expert instrument consisting of five aspects, namely aspects of the suitability of core competence (KI) and basic competence (KD), clarity of purpose, the correctness of the substance of learning material, conformity with RME characteristics, and presentation of material. The expert media instrument consists of three aspects: display, menu, and media. The linguist instrument consists of three aspects: readability, conformity with (EYD) rules, and language use.

Assessment of learning media by material experts obtained an average rating of 80.50 % with very valid criteria. However, from the aspect of presenting the material, the criteria are quite valid; this can happen because of the lack of statement items in presenting the material even though both validators answered agree (S). However, material experts' overall learning media assessment obtained very valid criteria. In this case, it means that the presentation of the learning media contains clear indicators and learning objectives. This is in line with what was stated by Ahyar (2014) in Syarmadi (2020) that the clarity of indicators and learning objectives will make it easier for students to learn in a directed manner.

Media experts' assessment of learning media with RME characteristics obtained an average rating of 87.73 % with very valid criteria. In this case, interactive learning media with a Malay culture and RME characteristics has the expected appearance and function. Assessment by linguists obtained an assessment of 93.01 % with very valid criteria. This indicates that the interactive learning media with a Malay culture and RME characteristics has appropriate sentences and is easy to understand. This is reinforced by Suryaningtyas (2017) statement that the validity of this learning tool shows that the theoretical basis for the preparation of learning tools and the reasons for using the RME approach are following the objectives to be achieved.

The validation results show that the developed interactive learning media is a valid category and deserves to be tested in the field. This is in line with the researchers' expectations because the learning media that has been developed can meet the predetermined assessment criteria. Furthermore, the product was tested on teachers and students to determine the practicality of the developed interactive learning media.

Practicality tests were carried out on the eighth-grade mathematics teacher at SMPN 8 Tanjungpinang and 16 eighth-grade students. The questionnaire used in the practicality test of educators and students consists of four constituent aspects, namely aspects of learning, appearance, use, and attractiveness.

The results of the practicality test of the teacher obtained an average assessment of 92.79 % with very practical criteria, which means that teachers can use this learning media in learning. The results of the practicality test of students obtained an average assessment of 78.27 % with practical criteria. With the practicality test results that have been obtained, based on the statement from Revita (2019) that the practicality value of learning media is seen from the results of the questionnaire analysis filled out by teachers and students as users during the field test. Following Khuzaini & Santosa (2016) statement, the practicality of the developed mathematics learning media was measured based on the assessments of teachers and students who used the product during the trial. The assessment scores obtained from teachers and students are converted into qualitative data and practical if the assessment of the practicality of learning media by teachers and students is consistently at least in the practical category.

This shows that interactive learning media with a Malay culture and RME characteristics that have been developed has valid and practical criteria to be used in helping learning activities on cube and cuboid material.

IV. Conclusion

This research and development refer to the 4D model, namely define, design, development, and disseminate. However, the researchers only applied it to the development stage due to limited

conditions.

Concerning validity and practicality, the development of interactive learning media with a Malay culture and RME characteristics on cube and cuboid material fulfills valid and practical criteria. This is seen based on the experts' assessment through the validation sheet, which was analyzed with the MSR transformation. The results of the Validation for each of the assessment criteria, namely in terms of material obtained results of 80.50%, in terms of media obtained results of 87.73%, and in terms of language obtained results of 93.01%. The interactive learning media obtained valid criteria based on the material, media, and language results.

After receiving suggestions and making improvements, the next step was to try out the VIII-grade math teacher and 16 eighth-grade students of SMPN 8 Tanjungpinang. Then the results of the practicality test for teacher responses were 92.79 %, and students were 78.27%. Based on the results of the practicality test, the interactive learning media obtained practical criteria.

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