

## **Mathematics e-Module with Malay Islamic context for 8<sup>th</sup> grade students: Formative Evaluation on Practicality**

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(Received 08-12-2023, Reviewed 14-12-2023, Accepted 07-05-2024)

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### **Abstract**

*Study aims to determine the practical of Mathematics E-modules on polyhedron using the context of Malay Islam which contains audio visual packaged attractively using the Canva application and makes it easier for students to understand the material. This research uses quantitative descriptive research methods following the formative evaluation stage in one-to-one, small group and field tests. The subjects of this study were 8<sup>th</sup> grade students at one of junior high school in Palembang which totaled 31 students. This research resulted in (1) E-modules with "Very Practical" criteria in terms of clarity, attractiveness, thoroughness, effectiveness, attractiveness of implementation, user acceptance and durability. The final value of practicality in this study was obtained through instruments in the form of teacher response questionnaires and student response questionnaires as users in field tests and analyzed with quantitative data analysis techniques. The results of the research obtained through the student response questionnaire, the average value of practicality was 85,71% with a very practical category.*

**Keywords:** e-Module, polyhedron, Malay Islam context, practicality

### **Abstrak**

Penelitian ini bertujuan untuk mengetahui kepraktisan E-modul matematika pada materi bangun ruang sisi datar menggunakan konteks Islam Melayu. E-modul tersebut memuat *audio visual* dikemas dengan menarik menggunakan aplikasi *canva* dan memudahkan peserta didik untuk memahami materi. Penelitian ini menggunakan metode penelitian deskriptif kuantitatif mengikuti tahap *formative evaluation* pada *one-to-one*, *small group* dan *field test*. Subjek penelitian ini adalah peserta didik kelas IX di salah satu SMP Negeri Palembang yang berjumlah 31 peserta didik. Penelitian ini menghasilkan (1) E-modul dengan kriteria "Sangat Praktis" dilihat dari aspek kejelasan, daya tarik, ketelitian, efektivitas, daya tarik implementasi, penerimaan pengguna dan daya terap. Nilai akhir kepraktisan pada penelitian ini diperoleh melalui instrumen berupa angket respon guru dan angket respon peserta didik sebagai pengguna pada uji lapangan dan dianalisis dengan teknik analisis data kuantitatif. Hasil penelitian yang diperoleh angket respon peserta didik dihasilkan nilai rata-rata kepraktisan yaitu 85,71% dengan kategori sangat praktis.

**Kata kunci:** e-Modul, Bangun Ruang Sisi Datar, Konteks Islam Melayu, Kepraktisan

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## **INTRODUCTION**

The demand in the world of education in the New Normal Era, Curriculum K13 and Revolution 4.0 is the incorporation of ICT (Information, Computer and Technology). The use of ICT leads to learning that uses ICT limited to the use of learning media in supporting teaching and learning activities and not in unity with teaching and learning activities. In accordance with the Ministerial Regulation on Education and Culture number 65 of 2013 states that the 2013 curriculum only focuses on the use of ICT in Kegiatan Belajar Mengajar (KBM) activities (Kemendikbud, 2017). This is also supported by the New Normal era which directs ICT not yet as an additional learning medium, but in order to incorporate it into teaching materials, for example books/teaching modules. Progress in education is learners as connector, creators and constructivist (Ahmad, 2018).

Applying ICT to the world of education are some of the main points in technological advances known as Education 4.0 and Curriculum K 13 as a reference for the implementation of KBM in our country RI. The integration of ICT in education has been carried out for a long time, this was also implemented in 2006. However, the existence of ICT in the integration of teaching and learning activities is only as a learning medium. ICT has not been used in teaching and learning activities, is not used consistently and is only used in some subject matter. However, the use of ICT is still necessary in teaching and learning activities to date. This is so that teaching and learning activities can be connected to the use of technology anytime and anywhere. The material becomes developed according to the needs of the students. The use of ICT in teaching and learning activities can affect the learning system (Abdurrahman et al., 2019).

Various ICT incorporations in teaching and learning activities improve the quality of learning, such as students can understand and be skilled in the use of computers and devices connected to them both software and hardware both at home school and other places. These skills can be used in daily activities (Al-Hilli, 2018; Darma et al., 2019; Wong, 2019). Therefore, ICT skills are needed in the learning process in all subjects. This also applies to mathematics learning. But in fact, the results of (Apriyanto & Herlina, 2020) research report that mathematics is one of the subjects that students dislike because mathematics is a difficult subject and not easy to understand. Meanwhile, based on the results of research by (Irkhamni et al., 2021), students' interest in learning mathematics is very low due to the use of less attractive teaching materials. Therefore, the skills of educators are needed to utilize existing technology as an effort to increase participants' interest in learning mathematics lessons and facilitate students with various innovations

(Ilmi et al., 2021a). Innovative teaching materials that are relevant to the current situation that can be done by educators are the development of electronic learning modules (E-Modules) (Sofyan, Anggereini, et al., 2020). One of them is the use of Mathematics E-Modules designed using ePUB3 SIGIL, Canva, and Flip PDF Professional applications. One of them is the Canva application. The Canva application was chosen by researchers to develop e-modules because the use of Canva is relatively easy, looks user-friendly and can be accessed through the website or downloaded on various digital devices such as computers, laptops, tablets and Android smartphones. In addition, the advantages of the Canva application are not only fixated on writings but there are interesting features in it such as motion animation, video shows, audio and images that make the presentation of material richer and more interesting so that during the learning process students do not feel bored (Nur Pasiuli Harahap, 2021).

Several studies that have developed e-modules using the context of Malay Islam include research that raises the material of building curved side spaces (Ridho et al., 2021), building cubes and blocks (Agustini et al., 2021) and building prism and pyramid spaces (Agustina et al., 2021) which are the background of this research. In addition, the research behind this research is research by (Ridho et al., 2021) entitled "Development of E-modules to Build Curved Side Space Using the Malay Islamic Context" which still has shortcomings, namely the evaluation questions presented in the e-module are too simple or easy and without the use of a learning approach. The above problems are caused by the lack of visualization in the form of videos, animations and images during the learning process of building space materials.

The use of E-modules that are integrated in teaching and learning activities so that educators can control teaching and learning activities. Educators can also compile learning materials according to the abilities and competencies of students (Tsai et al., 2018). Based on the problems discussed, the researcher aims to determine the practical of Mathematics E-modules on polyhedron using the context of Malay Islam. The integration of the Malay Islamic context in the development of this e-module is intended to provide opportunities for students to explore local wisdom with Malay Islamic patterns in South Sumatra so that the material presented becomes interesting.

## METHOD

This research uses quantitative descriptive research methods following the formative evaluation stage in one-to-one, small group and field tests. Formative evaluation is an assessment of the advantages and disadvantages of a learning product in its development stage, with the aim of revision, increasing the effectiveness, and attractiveness (Tessmer, 1993). The product developed in this study is the E-Module. The location used in this study was a public junior high school in Palembang. This research was carried out in the odd semester of the 2023/2024 academic year. The subjects of this study were teachers and students of grade VIII B.

To see its effectiveness, this research focuses on assessing its practicality first by using questionnaire and interview. The practicality is seen from several aspects, namely the ease of use of E-module for teachers and students, the time needed, the readability and the presentation of E-module in the learning process in the classroom.

The questionnaire that has been filled out by the teacher and students will be analyzed using quantitative analysis so that an average value is obtained to determine the practicality category of the learning tools developed.

**Table 1. Questionnaire aspect in one-to-one phase**

Practicality Aspect
The display used in the e-module is interesting and makes the spirit of learning
The material using the Malay Islamic context is easy to understand
The language used is easy to understand
Sample images are easy to understand
The e-modules presented are interesting
Tasks and questions are easy to answer
Attractive task view
Interesting videos
Video according to polyhedron material
Learning becomes more accessible
Learning becomes more interesting and fun

**Table 2. Questionnaire aspect in small group and field test**

Aspects	Statements
Durability	1. I like studying more after using the e-module
	2. I found it helpful to learn polyhedron material by using the Malay Islamic context e-module
	3. I feel there is no difficulty learning using the Malay Islamic context e-module
	4. I was able to understand the polyhedron material using the Malay Islamic context e-module
	5. I don't need books or other media to understand polyhedron material using the Malay Islamic context e-module
Attractiveness	6. I understand how to use the e-module
	7. I can study on my own using the e-module
	8. I can use e-modules to help learn polyhedron material
	9. I feel there is no boring part on the e-module
	10. I feel that the language used on the e-module is clear and easy to understand
Effectiveness	11. There is clarity of images/animations contained in the e-module
	12. Videos and geogebra presented on the e-module can clarify the material
	13. The e-module used does not take much time
	14. I have become more fond of learning after using emodules

## RESULTS AND DISCUSSION

To find out the practicality of the e-module with the context of Malay Islam, it could be seen from the Tessmer stage, namely one-to-one, small group and field test. The following table of practical results is assessed per aspect of each phase.

### *One-to-one phase*

**Table 3. Results of the practicality questionnaire in one-to-one phase**

Assessment Aspect	Yes	No
The display used in the e-module is interesting and makes the spirit of learning	3	0
The material using the Malay Islamic context is easy to understand	3	0
The language used is easy to understand	3	0
Sample images are easy to understand	2	1
The e-modules presented are interesting	3	0
Tasks and questions are easy to answer	3	0
Attractive task view	3	0
Interesting videos	3	0
Video according to polyhedron material	3	0
Learning becomes more accessible	3	0
Learning becomes more interesting and fun	3	0

Based on comments and suggestions related to statements given in the one-to-one questionnaire, there was a revision of the e-module as follows. The material and instructions on the first activity of the polyhedron were still unclear and poorly understood. Then it needed to be clarified again.

- i. There were unclear operating instructions so it was still difficult to use without guidance. Then it needed a special page regarding operating instructions.
- ii. There were evaluation questions that still unclear in terms of sentences so that students did not understand the problem and could not solve the problem according to the problem-solving ability indicator.
- iii. After conducting trials at the expert review and one-to-one phase, researchers conducted analysis to make revision decisions simultaneously at the expert review and one-to-one phase.

In the one-to-one practicality questionnaire, student comments and suggestions were also obtained regarding the e-module teaching materials tested. In addition, interviews were also conducted with several students regarding the suggestions and comments given. Through students' comments and suggestions, revision decisions were obtained, namely: 1) The instructions in the first activity were still unclear, so explanatory sentences and illustrations were needed, 2) Operating instructions were unclear because there were no e-module operating instructions so a sheet discussing the operation of the e-module was needed. 3) There were evaluation questions whose sentences were unclear so that students had difficulty solving the questions according to the problem-solving indicators. Furthermore, researchers revised in accordance with the decision, and then the results of the one-to-one phase revision would produce the second prototype and would be tested at the small group phase.

Furthermore, the second prototype trials were carried out at the small group stage to six students of 8<sup>th</sup> grade. Students would evaluate the e-module teaching materials developed based on aspects of durability, attractiveness, and effectiveness. This aspect was contained in the small group practicality questionnaire. The following were the results of the small group questionnaire.

*Small Group phase*

**Table 4. Results of small group stage questionnaire**

Aspects	Statement	Score
Durability	I like studying more after using the e-module	33,33
	I found it helpful to learn polyhedron material by using the Malay Islamic context e-module	16,67
	I feel there is no difficulty learning using the Malay Islamic context e-module	100
	I was able to understand the polyhedron material using the Malay Islamic context e-module	16,67
	I don't need books or other media to understand polyhedron material using the Malay Islamic context e-module	0
Attractiveness	I understand how to use the e-module	100
	I can study on my own using the e-module	66,67
	I can use e-modules to help learn polyhedron material	16,67
	I feel there is no boring part on the e-module	16,67
	I feel that the language used on the e-module is clear and easy to understand	100
Effectiveness	There is clarity of images/animations contained in the e-module	100
	Videos and geogebra presented on the e-module can clarify the material	83,33
	The e-module used does not take much time	100
	I have become more fond of learning after using emodules	16,67
	I became more fond of learning after using the e-module	33,33

After obtaining the results of the questionnaire, researchers conducted interviews to explore students' comments and suggestions regarding disapproved answers. The following were student comments obtained from the questionnaire statement: The use of new electronic teaching materials required clearer initial instructions from the teacher so that students were not confused, Questions in the e-module were only limited to questions without any discussion or answered keys given after working on the e-module, There were no clarity of time when working on evaluation questions so that students rushed to find and write answers.

Based on the interview results regarding the questionnaire statement, there were 5 students who did not have experience and skills in using electronic teaching materials in the form of e-modules. ZLM was one of the students who did not have previous skills and experience in using e-module teaching materials so he diffculted when he had to operate e-modules. This is in line with the results of comments at the one-to-one phase where instructions were needed in the use of e-modules. So, there needed to be an additional explanation of the use of e-modules on the start page that were included with images and related elements. This was to help users operate it.

Another disadvantage is that ZN was less interested in evaluation questions because there was no answer key or discussion after doing the questions. This made students difficult to answer some questions and could not see the discussion of the questions. PJ also explained that, in the evaluation question exercise, there was no estimated written time in doing the questions, making time wasted when learning using e-modules. Based on these comments and suggestions, it was necessary to improve the second prototype of e-module. The second prototype that had undergone revision would turn into the third prototype which would be tested at the field test phase.

### *Field Test Stage*

**Table 5. Results of practicality questionnaire on field test phase**

Aspects	Statetment	Yes	No	Percentage
Durability	I like study more after using the e-module	30	1	96,77%
	I found it helpful to learn polyhedron material by using the Malay Islamic context e-module	26	5	83,87%
	I feel there is no difficulty learning using the Malay Islamic context e-module	20	11	64,52%
	I was able to understand the polyhedron material using the Malay Islamic context e-module	31	0	100,00%
	I don't need books or other media to understand polyhedron using the Malay Islamic context e-module	21	10	67,74%
Attractiveness	I understand how to use the e-module	31	0	100,00%
	I can study on my own using the e-module	18	1	58,06%
	I can use e-modules to help learn polyhedron material	24	7	77,42%
	I feel there is no boring part on the e-module	30	1	96,77%
	I feel that the language used on the e-module is clear and easy to understand	27	4	87,10%
Effectiveness	There is clarity of images/animations contained in the e-module	31	0	100,00%
	Videos and geogebra presented on the e-module can clarify the material	31	0	100,00%
	The e-module used does not take much time	25	6	80,65%
	I have become more fond of learning after using emodules	27	4	87,10%
AVERAGE				85,71%
STANDARD DEVIATION				14,41%

Based on the data above, the overall results obtained from the questionnaire sheet on aspects of durability and effectiveness are good, this was based on the results of student responses who mostly voted "yes" on each statement. Next, researchers conducted interviews with students who voted "no" on the questionnaire sheet. This was



done to get students' comments and suggestions. The following were student comments obtained from the questionnaire statement.

- a) It was still difficult to learn to use the e-module when accessing it because some smartphones did not support it so long in the operation of the e-module
- b) A lot of time was wasted considering the smartphone storage that was less supportive and made the time used wasted a lot.
- c) There was still a need for teacher guidance when studying independently because some students still did not understand.

The conclusion based on the results of student comments on e-module teaching materials is that there were still some students who need a long time to operate the e-module, this was because some smartphones were not supportive and adequate to carry out the learning process electronically. In addition, there were still some students who were not used to using electronic teaching materials so they still needed guidance in the operating process.

Although, there were some students who still needed guidance in learning, the results of the practicality questionnaire at the field test phase showed that most students carried out the learning process easily. This could be seen from the ease of access in using e-modules, the ease of opening the links provided, and the existence of animated videos and images that contain the context of Malay Islam. Based on the results of the practicality questionnaire at the field test phase, it could be concluded that the e-modules developed are practical because of the ease of learning e-modules that could help students understand the problems presented, carried out the solution planning given, carried out settlement planning and carried out the process of re-examining the results or providing conclusions on the problems presented.

Based on the practicality aspect at the one-to-one and small group phase, it was generally obtained that the e-module with the context of Malay Islam that is developed had a practical category. This was based on the analysis of the results of one-to-one and small group questionnaires seen from the answers to statements as well as suggestions and comments on the questionnaire sheet. Based on comments at the small group phase, it was found that in the aspect of effectiveness, all participants responded yes. The effectiveness aspect contained a statement that confirms that the e-module had a good influence so that it could be used in the learning process. This was in line with research (Abidin et al., 2019; Ilmi et al., 2021b; Irkhamni et al., 2021; Isharyadi & Ario, 2018; Lisyanti, 2019; Rona Nur Pasiuli Harahap, 2021; Safitri, 2017; Sofyan, Anggraeini, et al., 2020) which states that an e-module could be said to be practical. It means that it

could be used in the learning process in the classroom. So it was found that the e-module developed was practical. And also in line with research the produced e-modules are practical and efficient to utilize as teaching resources to support students' learning, according to the conclusion.

## CONCLUSION

Based on the results of research, the practicality of mathematics e-module on polyhedron using the Malay Islamic context for 8th grade students was very practical. The practical criteria in this study could be seen from the results of questionnaire instruments and interview results given at the one-to-one, small group and field test phase which state that the e-modules developed were very interesting, the language used was easy to understand, and the learning process becomes more enjoyable.

## ACKNOWLEDGMENTS

Thanks are addressed to the Ministry of Religion through *Litapdimas* which had provided research funding.

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