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Development of Islamic Values-Integrated E-Module in Plane Shapes for Grade V Elementary School Students

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ABSTRACT

This paper reports a development research of an integrated Islamic values mathematics E-Module on the plane shapes material for grade V elementary school using the limited ADDIE model (Analysis, Design, Development). The analysis stage identifies learning problems through interviewing the teacher. In the design, the E-Module was designed in Canva and converted into a flip-book via Heyzine. Development involved validation by six experts (two material experts, two language experts, and two design experts) as well as a small-scale trial with one teacher and ten students. Data were collected through structured interviews and validation sheets, and analysed qualitatively and quantitatively. The expert validation results indicated very high feasibility, consisting of 95.25% material experts, 90% language experts, and 93.5% design experts (average 93%). The responses of teachers (83.3%) and students (84.6%) also met the criteria of "Very Feasible". It was concluded that this E-Module is feasible to use as an innovation in integrated Islamic value learning.

Keywords*: *e-module development, integrated Islamic values, elementary school, plane shapes

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INTRODUCTION

Education is the foundation of individual and societal progress through a process of teaching, training, and directed self-development (Yusuf, 2018). As the core of education, learning in schools facilitates the multidimensional development of students, including cognitive, affective, and psychomotor aspects, which are very relevant in the era of globalization that demands critical thinking skills and adaptation to technology (Fauzan & Anshari, 2024) . Integration of technology in learning, such as the use of digital learning media, is a crucial solution to increase student engagement and learning effectiveness (Pagarra H & Syawaludin, 2022). Electronic modules (e-modules) stand out as innovative media that combine text, images, audio, video, and interactive elements, in accordance with the characteristics of the learning styles of generations Z and Alpha (Widiana & Rosy, 2021). E- modules function as structured independent learning resources, allowing students to learn independently without direct guidance from teachers (Reza, 2023).

However, mathematics learning in elementary schools (SD) faces significant challenges, such as low motivation and concentration of students, who often consider mathematics as a boring and difficult subject (Buyung et al., 2022). Intrinsic factors, such as lack of student interest, and extrinsic factors, such as limited teaching materials that are monotonous and not in accordance with learning styles, exacerbate this problem (Husni, 2023). In fact, mathematics plays a central role in developing logical, critical, and creative thinking skills, which are the basis for building a systematic analytical framework and problem-solving skills (Fauzan & Anshari, 2024 ; Hasanah et al., 2021). Plane geometry material, which includes the concepts of circumference, area, symmetry, and geometric properties, is one of the important pillars in the elementary school mathematics curriculum, but is often difficult to understand due to its abstract nature (Nika, 2022).

Based on an interview with a fifth-grade teacher at public elementary school in one of the cities of Dumai, on February 8, 2025, it was found that the teacher had difficulty explaining the properties of flat shapes

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due to the limitations of conventional teaching materials, such as textbooks and student worksheets (LKS), which only present materials, sample questions, and exercises without interactive elements. This causes students to become passive, less independent in exploring, and have difficulty understanding arithmetic operations (multiplication and division), the concept of area/circumference, and abstract formulas. As a result, interest in learning decreases, and students tend to play around during lessons (Husni, 2023 ; Riko et al., 2023). Previous studies have shown that a teacher-centered learning approach and minimal variation in learning media exacerbate low student activity and understanding (Adrila, 2022).

On the other hand, education in Indonesia not only aims to develop cognitive abilities, but also instills character and moral values that are in line with the culture and religion of the majority, namely Islam (Aini et al., 2024). The integration of Islamic values in learning can enrich the meaning of education, combining academic achievement with the formation of noble morals (Pulungan & Hayati, 2024 ; Dahiri & Rusmin, 2024). However, the current education system still separates religious and general subjects, with a lack of policies and teaching materials that support the integration of Islamic values holistically (Taufiqurahman et al., 2025 ; Nurfadila et al., 2024). In fact, Islamic values, such as order, the beauty of geometry in Islamic art, or the concept of balance, can be an epistemological bridge to connect abstract mathematical concepts with students' religious lives, so that learning becomes more meaningful (Mannan & Atiqulla, 2023 ; Nuraini, 2019).

Although studies such as Husni (2023) have developed e-modules based on a scientific approach for plane geometry material in elementary schools, the integration of Islamic values is still rare. Other studies, such as Ria (2023), integrate Islamic values in open-ended e- modules for higher levels, but have not specifically addressed the needs of fifth grade elementary school students. This gap indicates the need to develop e-modules that link the concept of plane geometry with Islamic geometric patterns, such as mosque architecture or Islamic art motifs, to increase cultural relevance, motivation, and student understanding (Maharani, 2023 ; Afgani et al., 2024).

The selection of teaching materials that are appropriate to student characteristics is a key factor in increasing learning effectiveness (Utami, 2022). E-modules offer strategic advantages, such as supporting independent learning outside school hours, flexible access without space and time limits, and the presentation of aesthetic and interactive multimedia content (Hutahaean et al., 2019 ; Saputro, 2024). Elements such as text, graphics, video, and audio can increase engagement and motivation in learning mathematics, especially for elementary school students who need a visual and contextual approach (Sholikha et al., 2022 ; Rahmadi et al., 2024) . Therefore, this study aims to develop an interactive e-module integrated with Islamic values for flat geometry material for grade V elementary school, as an innovative solution to increase motivation, conceptual understanding, and character formation of students through a contextual approach that is relevant to their religious life.

METHOD

This study uses a development research design, which is a structured approach to generating innovative knowledge, solving problems, or creating more effective products, procedures, and services (Arif Rachman et al., 2024). The focus of the research is to develop a product in the form of an E-Module that integrates Islamic values to improve students' mathematical reasoning skills in flat geometry material. The development process includes needs analysis and product validity testing so that it can be widely used, although the scope of the evaluation is limited only to the aspect of product validity without testing its effectiveness in the field.

The development model used is the ADDIE model (*Analysis, Design, Development, Implementation, Evaluation)* . This model is applied to form a foundation of competence in learning, especially through the design of structured learning products (Hidayat & Nizar, 2021). The ADDIE model was chosen because of its simplicity and ease of understanding, thus allowing for application by researchers from various fields.

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This research was conducted at SD Negeri 002 Ratu Sima, Dumai City (January-June 2025) by implementing the ADDIE model with a focus on three initial stages: (1) Analysis through a dual approach in the form of performance analysis to identify the limitations of conventional teaching materials (books/LKS) which tend to be less varied, thus reducing students' interest in learning flat geometry material, as well as needs analysis to determine the essential competencies that must be developed in the integrated E-Module of Islamic values, (2) Design by compiling systematic components (cover, learning materials, evaluation instruments, glossary) and designing learning activities based on Islamic values, (3) Development through validation by material, language, and learning design experts to improve the prototype before the trial. by limiting the ADDIE stages. This limitation aims to focus resources on refining prototypes that have been validated and meet the initial implementation criteria.

This study collected data defined as relevant information related to the research objectives Idrus (in Rahmadi, 2011) through systematic methods (observation, interviews, documents). The data were classified into: (a) primary in the form of interview results with grade V teachers of SD and validation questionnaires/responses from material, language, design, teacher, and student experts; (b) secondary sourced from relevant literature (books, journals, theses). Data sources include: (1) teacher interview transcripts, (2) validation results from material experts (content suitability evaluation), language experts (term accuracy assessment), and design experts (graphic and structural construction tests), and (3) teacher- student response questionnaires. The research subjects involved a population of teachers and grade V students of SD and 6 expert validators (2 materials, 2 languages, 2 designs) as key samples.

This study used data collection techniques through structured interviews and questionnaires (structured questionnaires for teachers, students, and validation experts) according to the methodology (Rahmadi, 2011). Supporting instruments include: (a) interview sheets to dig up in-depth information; (b) two types of validation questionnaires (evaluated by material, language, and design experts using a Likert scale) and teacher-student responses; and (c) visual documentation as supporting evidence. The assessment of the validity of the e-module includes an expert advice column and additional sheets to measure the feasibility of the material, learning strategies, and graphic design.

Table 1 Material Expert Validation Sheet Grid

No	Aspect	Indicator	Number
1	Suitability of materials	Material compliance with CP & ATP	1,2,3
		Alignment of learning objectives with ATP	4
		Correspondence between material and evaluation	5
2	Accuracy and clarity of material	Accuracy of material coverage	6, 7
		The attraction of matter	8
		Correspondence of conceptual abstraction with students' cognitive development	9, 10
3	Integrated Islamic values	Compliance of the material with Islamic values	11
		The relationship between mathematics and Islamic values	12
		The suitability of example questions in daily life with Islamic values	13
		There are Islamic-themed images	14
		Can increase students' insight into learning materials	15
4	Evaluation or practice questions	Suitability of evaluation questions with learning objectives and materials and ATP	16, 17, 18
		Instructions for completing the questions are easy for students to understand	19
		Measuring student abilities	20, 21
Amount			**21**

Source: modified from (Violadini in Oktavia 2022 ; Hertanti, 2021)

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Table 2. Language Expert Validation Sheet Grid

No	Aspect	Indicator	Number
1	Straightforward	The language rules that are measured	1
		Use of sentences that are not convoluted	2, 3
2	Interactive	Ability to encourage students' critical thinking	4, 5
3	Correspondence with language rules	Accuracy of letter usage in writing	6, 7, 8
4	Use of symbols, icons and terms	Consistency in the use of symbols, icons and terms	9, 10, 11
5	Use of Language with Islamic values	The material in *the E-Module* integrates Islamic values according to EYD	12, 13, 14
		Clear translation & verses of the Qur'an	15
		Amount	**15**

Source: modified from (Violadini in Oktavia 2022 ; Hertanti, 2021)

Table 3 Design Expert Validation Sheet Grid

No	Aspect	Indicator	Number
1	Visual display	*E-Module* format is attractive	1, 2
		E-Module layout and display screen	3
		Color selection correspondence	4, 5
		Correspondence background selection	6
		Correspondence of backsound selection	7
		Photo selection correspondence	8, 9
		Image selection correspondence	10, 11
		Design appeal	12
2	Use of letters	Correspondence of font selection	13
		Correspondence of font size selection	14
		Accuracy of the color of the letters used	15
		Clarity of letter display on E-Module	16
		The levels of main titles and sub-titles are clear and proportional	17
3	Physical criteria	Can express the meaning of an object	18
		Creativity in design	19
4	Voice	Sound quality	20, 21
5	Ease of use	Operation in using E-Module	22, 23
		Amount	23

Source: modified from (Violadini in Oktavia 2022)

This study uses mixed data analysis: (1) Qualitative with a descriptive approach to present user needs and learning contexts related to the development of integrated Islamic value e-modules narratively; (2) Quantitative through a Likert scale (5 levels of assessment: very good–very poor) on the validation questionnaire of material, language, and design experts, equipped with the calculation of the average percentage of validity to measure the e-module's feasibility. The percentage formula for finding the average validity is as follows:

$$SA = \frac{\sum SP}{\sum SM} \times 100\%$$

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Information:
SA = Presentation
∑SP = Total Number of Respondents' Answers
∑SM = Total Number of Ideal Values 1 Item Source:
Rahmawati in (Oktavia, 2022)

The quantitative validation results are converted into descriptive qualitative assessments to assess the feasibility of the e-module based on the established indicator criteria.

Table 4. Eligibility Interpretation Criteria

Level of achievement	Criteria
81% <p <100%	Very worthy
61% <p <81%	Worthy
41% <p <61%	Quite decent
21% <p <41%	Not feasible
0% <p <21%	Totally unworthy

Source: Riduwan (in Oktavia, 2022)

The integrated Islamic values e-module was declared valid (score 81% on the Likert scale) with the predicate "very feasible" without revision, proving its readiness for implementation as teaching material.

RESULTS AND DISCUSSION

This development research produces a digital E-Module integrated with Islamic values for flat geometry material (grade V elementary school mathematics) through a 5-month process starting from preparation to expert validation. The initial stage includes needs analysis via teacher interviews to identify learning obstacles, followed by module design using Canva and publication in flipbook format via Heyzine. Validation by material, language, and design experts is a crucial stage to ensure product feasibility before implementation. This study adopts the ADDIE model by limiting implementation to only three initial stages. will be explained below:

Analysis Stage

This study applies the ADDIE analysis stage through structured interviews with grade V teachers of SD (February 8, 2025). The results reveal:

a) Performance Analysis, Teachers rely on conventional teaching materials (books/LKS) without optimal teaching aids. Students have difficulty calculating area/circumference, low concentration, and lack of motivation due to disinterest in mathematics and limited adaptation to digital media.
b) Needs Analysis, Schools only use LKS as the only teaching material, causing monotonous learning. An interactive E-Module based on Islamic values is needed to increase interest and understanding of the concept of flat shapes.
c) Student Analysis, Students need teaching materials designed with interactive multimedia elements to increase student engagement, adaptive, relevant to life, and integrated with Islamic values to overcome boredom and conceptual difficulties.
d) Curriculum Analysis, The Learning Achievements (CP) are described into a tiered Learning Objective Flow (ATP) for flat geometry material, with substantive integration of Islamic values into each learning objective.

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Design Stage

At the Design stage, the researcher compiled an integrated E-Module of Islamic values for flat building material by referring to three main sources: the Independent Curriculum RPP, the 2022 Teacher's Guide Book, and the Student LKS Book. The pre-production process utilized five digital platforms: (1) Canva (visual design of the module), (2) YouTube (concept explanation video), (3) Quizizz (interactive quiz), (4) Puzzle Maker (puzzle activity to activate initial knowledge), and (5) Heyzine (conversion of design to flipbook format). This stage directly realizes the flowchart output in the form of " E-module teaching materials " and "E-module designed to be integrated with Islamic values".

This learning e-module was developed with the title "Integrated e-module of Islamic Values in Flat Building Materials for Grade V Elementary School Students", which specifically discusses the comparison of triangular and quadrilateral flat buildings according to Chapter 2 Semester 2 of the Merdeka Curriculum. The e-module includes examples of triangular and quadrilateral patterns on mosque domes, linked to the hadith about the importance of precision in building, to strengthen understanding of concepts and moral values. The e-module begins with a Foreword explaining the development context and the author's expectations, complete with a structured Table of Contents covering all components from the cover to the appendices. As a reflection of the integration of Islamic values, the Pray Before Learning feature is included to build a religious atmosphere. Learning Objectives, Learning Outcomes, and Time Allocation are presented as systematic guides, while Apperception is designed in the form of "Let's Read" activities of stories and puzzles to prepare students' initial understanding. The Orientation section uses contextual analogies (such as the role of architects and observation of objects) to connect abstract concepts to real life. The main learning material facilitates exploration of the characteristics of triangles and quadrilaterals and angle classification through learning videos, interactive quizzes with a minimum completion standard of 70, and integration of Islamic values including relevant hadiths. The evaluation provides an objective assessment instrument that allows students to calculate their own scores, supported by an Answer Key for validation of the results. The module closes with a Conclusion that summarizes the integration of geometry and Islamic values in three aspects: the relevance of the hadith, the application of Islamic architecture, and the pedagogical approach, and is equipped with a Reading Book (including a teacher's guide, LKS, and RPP) and a Glossary of key terms to facilitate understanding.

Development Stage

In the development stage, the integrated Islamic values mathematics E-Module for flat building material was refined through a validation process by 6 experts (consisting of 2 material experts , 2 language experts, and 2 design experts) and limited trials with teachers and students. Based on input from experts and the results of the trial, a comprehensive revision was carried out to fix weaknesses and improve product quality before being used by students.

Material expert validation results

Table 5. Material Expert Validation Results

Validators	Empirical Score	Maximum Score	Presentation	Category
Validator 1	97	105	92.4%	Very valid
Validator 2	103	105	98.1%	Very valid
	Average		**95.25%**	**Very valid**

The material validation process was carried out face-to-face in two stages: the first validator on June 13, 2025, and the second validator on June 21, 2025. During validation, the E- Module product was shown directly and the validator filled out an assessment questionnaire. The results (Table 5) showed a very high

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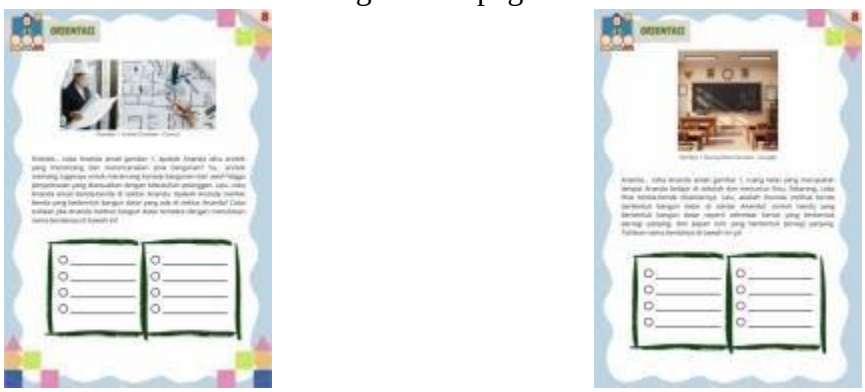
score: Validator I gave 92.4 % (very valid category), Validator II gave 98.1% (very feasible), with an overall average of 95.25% which confirmed the feasibility of the E-Module material integrated with Islamic values for flat shapes. The suggestions for improvement from the material expert (Figure 1) include: (1) improving the concept of the Kaaba on page 6, (2) improving the image on page 8, and (3) adding illustrations to the evaluation section. Based on this input, the researcher made improvements to the product by revising all the recommendations given.

Before Revision **After Revision**

Improvement of the Kaaba concept on page 6

Image fix on page 8



Addition of illustrations to the evaluation section

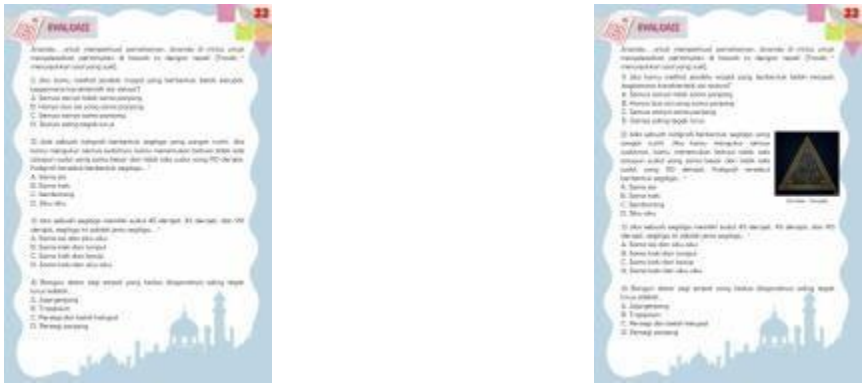


Figure 1. Material Expert Revision

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Linguist validation results

Table 6. Linguist Validation Results

Validators	Empirical Score	Maximum Score	Presentation	Category
Validator 1	70	75	93.3%	Very valid
Validator 2	65	75	86.7%	Very valid
	Average		**90%**	**Very valid**

Validation by language experts was carried out face-to-face in two stages: the first validator on May 28, 2025 and the second validator on June 21, 2025, where the E-Module product was shown directly to the validator along with filling out an assessment questionnaire. The validation results (Table 6) showed a score of 93.3% (very valid) from Validator I and 86.7% (very feasible) from Validator II, with an overall average of 90% confirming the feasibility of the language aspect of the E-Module integrated with Islamic values for flat shape material. The suggestions for improvement from language experts include: (1) Validator I stated that the E-Module was suitable for use without revision, and (2) Validator II recommended a more in-depth explanation regarding the integration of Islamic values. Based on this input, the researcher made improvements to the product by adding supporting stories to the E-Module content.

Figure 2. Validation and Revision by Linguists

Design expert validation results

Table 7. Design Expert Validation Results

Validators	Empirical Score	Maximum Score	Presentation	Category
Validator 1	102	115	88.7%	Very valid
Validator 2	113	115	98.3%	Very valid
	Average		**93.5%**	**Very valid**

The design expert validation process was carried out face-to-face on June 20, 2025 (first validation) and June 21, 2025 (second validation), where the E-Module product was shown directly to the validator along with filling out the design validation questionnaire. The assessment results (Table 7) showed a score of 88.7% (very valid) from Validator I and 98.3% (very feasible) from Validator II, with an overall average of 93.5% confirming the feasibility of the E-Module design aspect integrated with Islamic values for flat building

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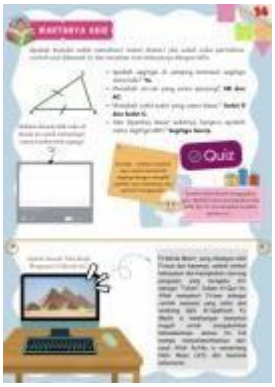
material. The suggestions for improvement from the design expert include: Validator I: (1) Addition of Islamic relief on the cover, (2) unification of pages for the mosque section (page 10), (3) separation of pages for the pyramid section (page 14), (4) separation of stories of objects of worship per content, and (5) addition of teacher images in the conclusion. Validator II: Recommendations for improving the quality of the design in general. Based on this input, the researcher made improvements to the product by revising all the recommendations given.

Before Revision **After Revision**

Addition of Islamic relief on the cover

Unification of pages for the mosque section (page 10)

Page separation for pyramid sections (page 14)



Separation of stories of religious objects per content

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Added teacher's picture at the conclusion

Figure 3. Design Expert Validation and Revision

Table 8. Average Validation Value

No	Expert	Presentation	Average	Criteria
1	First Material Validator	92.4%	95.25%	Very worthy
	Second Material Validator	98.1%		Very worthy
2	First Language Validator	93.3%	90%	Very worthy
	Second Language Validator	86.7%		Very worthy
3	First Design Validator	88.7%	93.5%	Very worthy
	Second Design Validator	98.3%		Very worthy
	Average Total Expert Validation		**93%**	**Very worthy**

Based on the recapitulation of expert validation results (covering material, language, and design), the e-module product has been comprehensively revised according to the validators' constructive suggestions. Table 8 shows different levels of eligibility per aspect: material experts scored 95.25%, language experts 90%, and design experts 93.5%. With a combined average of 93%, this e-module meets the overall validity standards and is classified as "very feasible" to be immediately distributed to fifth grade elementary school students.

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User response results

Table 9. Average Response Score of Teachers and Students

Teacher Response				Student Response			
Empirical Score	**Max Score**	**Presentation**	**Category**	**Empirical Score**	**Max Score**	**Presentation**	**Category**
50	60	83.3%	Very Worth It	423	500	84.6%	Very Worth It
Average						**83.95%**	**Very Worth It**

On June 21, 2025, this study conducted a limited user response test involving 1 homeroom teacher and 10 students of grade V. Data were collected through 1 teacher response questionnaire and 10 student response questionnaires. The evaluation results showed: The teacher gave a score of 83.3 % (very feasible) with the recommendation of adding examples of Islamic value integration in the flat geometry material. Students gave a score of 84.6 % (very feasible) based on Table 9. The combined average of 83.95 % (very feasible) confirmed that the e-module of flat geometry integrated with Islamic values had met the final feasibility criteria (score 81-100%) and was ready to be used in learning.

Comparison with Previous Research

In line with Nika's research (2022) entitled "Development of Rejang Language Mathematics e-modules for Grade V Elementary School Students" This development research produces a mathematics e-module on Rejang language plane geometry material for grade V elementary school through the ADDIE model. This study confirms that the final product is valid and practical and has met the eligibility as a digital-based learning media, with online accessibility through the link provided.

In contrast to Husni's (2023) research which developed an e-module based on a scientific approach without integrating Islamic values, this research enriches learning through the context of Islamic culture, such as the geometric patterns of mosques, which are relevant to students' backgrounds.

CONCLUSIONS AND RECOMMENDATION

The final conclusion of this study shows that the developed learning e-module has met the optimal eligibility criteria to be implemented as an innovative teaching material. Based on the results of comprehensive validation covering aspects of material, language, and design as well as user response testing, this e-module has the potential to increase students' enthusiasm for learning based on positive responses from teachers and students (83.95 %), but requires further effectiveness testing. The systematic and simple structure of the material facilitates independent learning, allowing students to understand the concept of flat shapes without relying entirely on teacher guidance. More significantly, the integration of Islamic values in the e-module not only enriches students' religious insights, but also illustrates the concrete relationship between Islamic principles and everyday mathematical applications, such as in the forms of objects of worship or Islamic-style architecture.

The reliability of this product is further confirmed through a strict validation process by experts according to the ADDIE stages (needs analysis, E-Module design, to validity testing), which resulted in validity approval with an average score above 93%. In a flipbook format that can be accessed online, the e-module provides flexibility in learning both at school and at home. However, the limitations of the research that still focuses on the stage of opening space for further research to empirically test the practicality and effectiveness of e-modules. The main recommendations include: (1) expanding the integration of Islamic values into other subjects to strengthen students' interdisciplinary perspectives, (2) improving the interface design to be more attractive based on user response test input, and (3) implementing a comprehensive evaluation test (beyond the validation stage in the current flowchart) to measure the real impact of e-modules

on understanding flat building materials and internalizing Islamic values. The implementation of these recommendations is expected to optimize the function of e-modules as independent learning media based on flipbooks that are academically-spiritually relevant.

LIMITATION

This integrated e-module of Islamic values in the material of flat shapes for grade V of elementary school has limitations in the scope of the material (comparison of triangles and quadrilaterals), the scope of integration of Islamic values (Aqidah, Morals, Worship), and the development stage which has only been validated by experts without a large-scale practicality test (according to the research design flow which stops at the "Valid Product" stage). This limitation was made due to the limited research time (January–June 2025) and the initial focus on refining the product prototype.

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