


Islamic Values-Oriented Math Modules with Discovery Learning Model: Validity, Practicality, and Effectiveness

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ABSTRACT

The unavailability of adequate learning modules can lead to suboptimal student learning outcomes. Therefore, this research aims to design an Islamic values-oriented math module using the Discovery learning model. The development stage refers to the 4-D model, which includes: define, design, develop, and disseminate. In the define stage, a curriculum analysis and student needs assessment are conducted. In the design stage, the module is designed. In the develop stage, validity tests are conducted, including the validity of Islamic content, language, math content, and media. In the disseminate stage, a field trial is conducted at MA Annuriyah. The module validity test results were 87.5%, 88.6%, 90%, and 82.8%, respectively, in the aspects of math content, Islamic values, language, and media. The practicality test results showed a score of 83.1%, categorized as very practical. The effectiveness test results showed a significant difference in pre-test and post-test scores with a sig. $0.00 < 0.05$ and an average increase from 21.88 to 87.20. It was concluded that the developed math module was proven to be valid, practical, and effective.

Keywords: Math Module, Islamic Values, Discovery Learning.



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INTRODUCTION (TIMES NEW ROMAN, FONT SIZE 13, UPPERCASE)

As stated by Rasulullah ﷺ, education is a must for every moslem. The education is expected to form students who have akhlaqul karimah. Education should focus on both mastery of sciens and forming attitudes, skills, and thinking skills (Triana et al., 2023). As a part of education, school math taught to students to train reasoning, form personality, instill values, and prepare students to be skilled at solving problems (Aini & Andreansyah, 2023; Maulida et al., 2025; Sholihah & Aini, 2023; Umam et al., 2024). In the era of Society 5.0 students should can adapt, organize, and self-control when participating in learning and completing complex assignments (Nasir et al., 2024; Syaikhu et al., 2022). In this era, the flow of information is massive (Triana et al., 2023). Easy access to information through the use of various gadgets should stimulate students' independent learning (Aini & Masrurrotullaily, 2024; Wantoro et al., 2025). This is because independent learning is a factor in academic success (Nasir et al., 2024).

However, not all students have access to information that facilitates independent learning. As the situation at MA Annuriyah, where smartphone use is prohibited within the Islamic boarding school. Limited learning resources and teacher-centered learning methods result in low math learning outcomes.

In addition to independent learning and learning outcomes, the learning process in schools should form students' religious character (Hifzhi et al., 2024). Math learning should be able to touch on spiritual, social, knowledge, and skill aspects to contribute to students' character and personality (Aini & Nikmatuzzahro, 2025; Choirunnisa et al., 2022). Therefore, it is important to develop a variety of models, approaches, strategies, methods, and teaching materials that can facilitate students' appreciation of math (Atsnan, 2023). One innovation that can be implemented is through the use of math teaching materials (Nasir et al., 2024). One of the teaching materials that can be used is the module.

A module is also defined as a printed instructional resource that allows students to learn independently, minimizing external assistance and presented in an integrated, systematic, and comprehensive package (Rakhmawati, 2023) to increase the efficiency and effectiveness of learning in school (Kandira et al., 2025). Thus, to design a module, it should be arranged in the forms of modules, who the users are, and the resources needed (Kandira et al., 2025).

The background of MA Annuriyah students who live in Islamic boarding schools (pesantren), the presentation of mathematical concepts integrated with Islamic values will attract them (Hikmah & Haqiqi, 2021). One way to optimize mathematics learning outcomes is to use contexts that are closely related to students' daily lives (Annisa et al., 2023). This innovation is needed in developing teaching materials that not only focus on math content but also integrate spiritual values to form character and stimulate student learning motivation (Hifzhi et al., 2024).

Islamic value-oriented modules can help students develop their spiritual character (Nasir et al., 2024). Modules with Islamic educational principles such as tolerance, respect for diversity, and holistic learner development can support Islamic educational values in addressing the challenges of globalization and cultural diversity (Azkiya et al., 2025). The integration of Islamic values in math content forms students' behavior to appreciate the usefulness of mathematics through Islamic values (Atsnan, 2023). Through the integration of religious values, students can internalize ethics and moral principles that guide them in making appropriate and responsible decisions (Hifzhi et al., 2024). This integration can also foster a conducive learning environment where honesty, cooperation, and patience are valued and implemented in all aspects of school life (Hifzhi et al., 2024). Islamic values, rooted in Islamic teachings derived from the Qur'an and Sunnah, constitute beliefs and principles that can be understood, internalized, and transmitted through Islamic education efforts (Rakhmawati, 2023). Islam teaches rationality and logic, which are symbolized in math through mathematical symbols and language (Atsnan, 2023). Strong character and good moral values will help students face the challenges of everyday life (Hifzhi et al., 2024).

The results of the pre-research analysis (Define) indicated that MA Annuriyah did not yet have a module used as a reference for math learning. The learning outcomes in mathematics are not yet optimal and the learning that has been carried out tends to only use the expository method. Teacher-centered learning often limits students' opportunities to construct understanding and enhance their thinking skills; therefore, there is a need for innovations in student-centered learning, one of which is discovery learning (Pramiswari & Aini, 2024). It also encourages students to participate actively in Learning process (Amir et al., 2024). The Discovery Learning model is designed to enable students to organize their understanding of information independently and actively, guided by the teacher (Romadhon, 2024). The learning steps using the Discovery Learning model include (1) Stimulation, (2) Problem Statement, (3)

Data Collection, (4) Data Processing, (5) Verification, and (6) Generalization (Pramiswari & Aini, 2024).

Learning modules can be designed in such a way as to support the implementation of learning, such as integrating learning modules with discovery learning models (Ramadhani et al., 2023). Previous R&D have shown that the math module meets the criteria for validity and practicality (Atsnan, 2023; Hifzhi et al., 2024; Nasir et al., 2024). Module development using the Discovery Learning model and integration of Islamic values has been conducted and the results show that it is valid and practical, and effective (Krisnanti et al., 2020; Wulandari et al., 2020).

An initial questionnaire given to students showed that 82% agreed that a module would be designed to support the learning process. Therefore, development research will be conducted to produce an Islamic values-oriented math module with a discovery learning model that is valid, practical, and effective to improve student learning outcomes in statistics. The integration of Islamic values can be carried out by linking mathematics learning materials with the content of the verses of the al-Qur'an (Abdullah et al., 2021; Triana et al., 2023). Previous research showed that module development based on discovery learning can improve student's understanding (Amir et al., 2024).

Validity refers to the suitability of the module's content to the learning material (Rakhmawati, 2023). Validity testing will be conducted with the assistance of experts in math content, language, media, and Islamic values. Practicality refers to the ease with which teachers and students can use the developed module (Rakhmawati, 2023). Practicality testing will be conducted using a questionnaire given to students. Effectiveness refers to the module's success in achieving learning objectives (Rakhmawati, 2023). Effectiveness testing will be conducted using pre-test and post-test instruments and statistically analyzed to determine whether there is an improvement in learning outcomes.

METHOD

The objective of the research was to produce a valid, practical, and effective math module. The developed math module is Islamic values-oriented, referring to the Discovery Learning model. The development model used the 4Ds, which include Define (identifying the needs and problems), Design (developing prototypes or instructional designs), Develop (producing and testing the materials), and Disseminate (implementing and sharing the final product).

In the initial Define stage, curriculum, students' needs, and math content were analyzed. In the Design stage, the module and instruments for validity, practicality, and effectiveness tests were designed. In the Develop stage, module development and validity testing were conducted. Expert validity testing was conducted on the aspects of math content, language, media, and Islamic values. In the final stage, practicality and effectiveness testing were conducted with students from MA Annuriyah, Jember, as the test subjects. The criteria for validity, practicality, and effectiveness testing are as follows (Arikunto, 2021):

Table 1. Validity, practicality, and effectiveness criteria

No.	Skor	Criteria		
		Validity	Practicality	Effectiveness
1.	$0 \leq x \leq 20$	Invalid	Impractical	Ineffective
2.	$20 < x \leq 40$	Less valid	Less practical	Less effective
3.	$40 < x \leq 60$	Fairly valid	Enough practical	Enough effective
4.	$60 < x \leq 80$	Valid	Practical	Effective
5.	$80 < x \leq 100$	Very valid	Very practical	Very effective

RESULTS AND DISCUSSION

The results of this development research will be outlined in each 4-D stage as follows.

Define

At this stage, problems are identified as the basis data for development. The curriculum analysis results indicate that the subjects are using the Kurikulum Merdeka, but in practice, the expository is still frequently used, resulting in passive student behavior. An analysis of student needs and characteristics indicates that students previously used worksheets as the primary learning resource. This results in a lack of independent learning. The student needs questionnaire showed that 82% of students agreed with the plan to design a math module.

The material analysis results indicate that the math content with a low score is statistics, which is in phase E. Therefore, the module design will focus on this material. After determining the math content to be developed, the CP (Learning outcomes) and ATP (learning goal flow) are determined following the independent curriculum.

Design

At this stage, the math module is designed. The Islamic values to be integrated into the math content are sourced from several references (Abdussakir, 2006, 2014; Nasution, 2010; Zahra, 2021). The math module contains 3 parts: (1) beginning (cover, foreword, table of contents, introduction), (2) content (module description, instructions for use, CP, concept map, math content, and (3) closing (bibliography). Meanwhile, the module design was created using Canva in A4 size as Figure 1.



Figure 1. Module interface

The content section presents statistical concepts based on discovery learning syntax, integrated with Islamic values. The following is a preview of the module's contents (Figure 2).

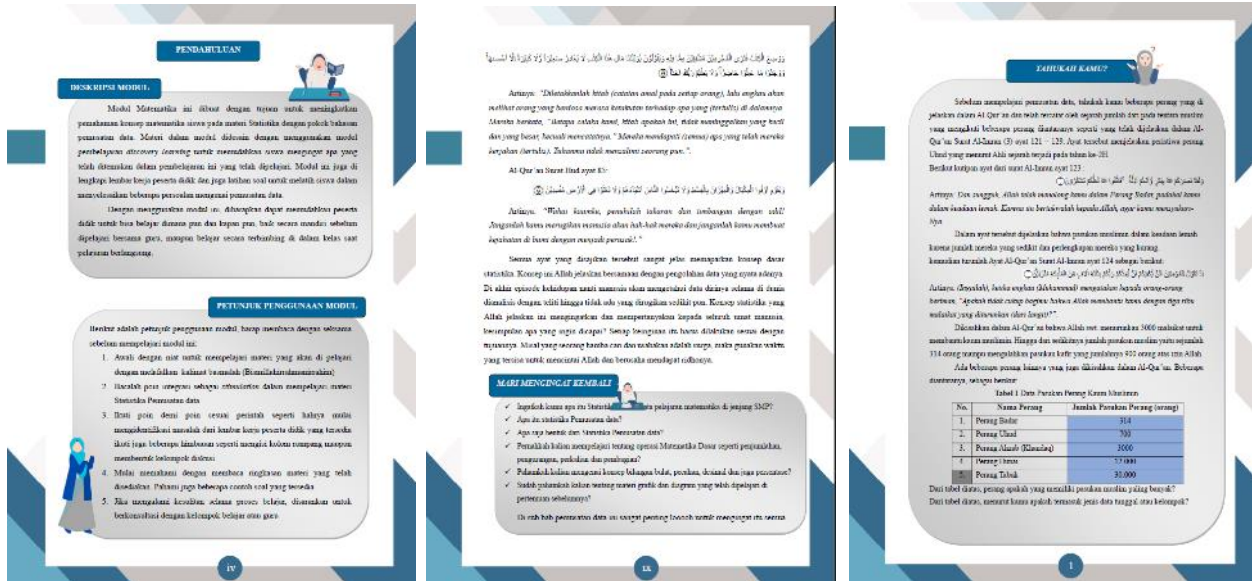


Figure 3. Module contents

Develop

The results of the validity test are presented in the following table.

Table 1. Validity test results

No.	Expert validation	Percentage	Criteria
1.	Math content	87,5 %	Very valid
2.	Islamic values	88,6 %	Very valid
3.	Language	90 %	Very valid
4.	Media	82,8 %	Very valid

Disseminate

At this stage, a field trial was conducted on students at MA Annuriyah, which included practicality and effectiveness tests. The results of the practicality test showed that 83.1% of students considered the module to be very practical. The pre-test and post-test results using the Wilcoxon test showed a significance level of $0.000 < 0.05$. This null hypothesis was rejected, concluding that there was a significant difference in learning outcomes between before and after using the module. The average pre-test score was 21.88, while the average post-test score was 87.20. Therefore, it can be concluded that the use of the module has an impact on improving student learning outcomes. This means that the designed module has proven effective.

CONCLUSION

The module validity test results were 87.5%, 88.6%, 90%, and 82.8%, respectively, in the aspects of math content, Islamic values, language, and media. The practicality test results showed a score of 83.1%, categorized as very practical. The effectiveness test results showed a significant difference in pre-test and post-test scores with a sig. $0.00 < 0.05$ and an average increase from 21.88 to 87.20. It was concluded that the developed math module was proven to be valid, practical, and effective.

CONFLICT OF INTEREST

The author(s) declare that there is no conflict of interest regarding the publication of this article. The research was conducted independently, and no financial or personal relationships could have influenced the results or interpretation of the study.

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