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Development of an Introduction to Basic Mathematics Textbook Integrated with Islamic Values

Pengembangan Buku Ajar Pengantar Dasar Matematika Terintegrasi Nilai-Nilai Keislaman

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Abstract

Mathematics can be used as an approach to explaining several Islamic by interconnecting using conceptual and meta-mathematical foundations, thus producing integrated mathematics teaching materials. This study aims to describe the development of an integrated Introduction to Basic Mathematics textbook with Islamic values and then see student responses to the textbook. The type of research used is Research and Development (R&D) which refers to modified 4-D models. The instruments used are product validation sheets and response questionnaires. The data obtained were analyzed quantitatively and qualitatively. The results showed that the textbook Introduction to Basic Mathematics integrated with Islamic values was valid by the validators and very suitable for use by students with interesting categories. This finding can be the basis for the development of teaching materials by integrating Islamic values in Islamic universities.

Keywords: *Integrated Textbook, Islamic Values; Introduction to Basic Mathematics.*

Abstrak

Matematika dapat digunakan sebagai pendekatan dalam menjelaskan beberapa ajaran Islam dengan cara interkoneksi menggunakan dasar konseptual maupun meta-matematis, sehingga menghasilkan bahan ajar matematika yang terintegrasi. Penelitian ini bertujuan mendeskripsikan pengembangan buku ajar Pengantar Dasar Matematika terintegrasi nilai keislaman kemudian melihat respon mahasiswa terhadap buku ajar tersebut. Jenis penelitian yang digunakan adalah Research and Development (R&D) yang mengacu pada model 4-D yang dimodifikasi. Instrumen yang digunakan adalah lembar validasi produk dan angket respon. Data yang diperoleh, dianalisis secara kuantitatif dan kualitatif. Hasil penelitian menunjukkan buku ajar Pengantar Dasar Matematika yang terintegrasi nilai-nilai keislaman dinyatakan valid oleh tim validator dan sangat layak digunakan oleh mahasiswa dengan kategori menarik. Temuan ini dapat menjadi dasar pengembangan bahan ajar dengan mengintegrasikan nilai-nilai keislaman di perguruan tinggi keislaman.

Kata Kunci: *Buku Ajar Terintegrasi; Nilai-Nilai Keislaman; Pengantar Dasar Matematika.*

Introduction

Mathematics is one of the most important, especially for students who majored in mathematics at the university. However, some cases show that students are still confused about mastering mathematical concepts. Students find it difficult to express ideas and find patterns in complex analysis cases ¹. Students also tend to be confused about using postulates or theorems relevant to the case ². Mathematics is also still considered a science that is difficult to learn, boring, and uninteresting, resulting in low mathematics learning performance ³. Even mathematics has always been one of the sciences to avoid ⁴.

Learning activities are educational interactions carried out by educators and learners in a situation⁵. Learning activities in the classroom must be well-planned and designed. The use of methods that are suitable for a student, can help the learning process run well ⁶. To achieve this goal, the use of teaching materials as a means of delivering interesting information can make it easier for educators to deliver the material. So, the role of education is important in fulfilling the responsibility of the national education system that is integrated with character values⁷.

In designing teaching materials, it is necessary to present a variety of examples, pay more attention to communication between students during the learning process, and present material that is connected to various concrete objects. So, the teaching materials developed can be easily understood by

¹ Annisa Prima Exacta et al., "Analysis of Student Problem Solving Ability in Complex Analysis Course in Initial Ability," *JEID: Journal of Educational Integration and Development* 1, no. 2 (July 29, 2021): 83, <https://doi.org/10.55868/jeid.v1i2.86>.

² Ruina Nur Fitria et al., "The Response of Unipma Mathematics Education Students in Solving Geometry Problems in terms of Aspects of Philosophy of Science During Online Lectures," *Journal of Education and Teaching Review (JRPP)* 4, no. 1 (June 20, 2021): 83, <https://doi.org/10.31004/jrpp.v4i1.1750>.

³ Faizah, Prof. Udin Syaefudin, and Oneng Nurul Bariah, "Islamic-Based Mathematics Learning Management Model Development (Case Study at the State Islamic Senior High School 1 of Jakarta)," *International Journal of Research and Innovation in Social Science* 04, no. 12 (2020): 20–26, <https://doi.org/10.47772/IJRISS.2020.41202>.

⁴ Dian Rizky Utari, M. Yusuf Setia Wardana, and Aries Tika Damayani, "Analysis of Mathematics Learning Difficulties in Solving Story Problems," *Elementary School Scientific Journal* 3, no. 4 (November 4, 2019): 545, <https://doi.org/10.23887/jisd.v3i4.22311>.

⁵ Nur Sa'diah, "Improving Teacher Performance in Designing Learning through the Principal Development Program at SDN 1 Natai Raya in 2019," *Anterior Journal* 20, no. 3 (August 3, 2021): 10–21, <https://doi.org/10.33084/anterior.v20i3.2652>.

⁶ Mohammad Kholil and Lailatul Usriyah, "Development of Mathematics Textbooks Integrated with Islamic Values in Instilling the Character of Madrasah Ibtidaiyah Students," *Madrasah: Journal of Education and Basic Learning* 12, no. 1 (January 7, 2020): 52–62, <https://doi.org/10.18860/mad.v12i1.7442>.

⁷ Wahyuni Puji Lestari and Fatrima Santri Syafri, "Development of Mathematics Teaching Materials (Comics) Integrated with Islamic Teachings," *Equation* 3, no. 2 (2020): 104–13, <https://doi.org/10.29300/equation.v3i2.3657>.

students⁸. Textbooks are collections of subject matter that are arranged systematically to become reference materials or learning media to motivate students and minimize learning difficulties experienced⁹. By using textbooks in learning, educators act more as facilitators in delivering material¹⁰.

The scientific paradigm vision and mission developed by UIN Datokarama Palu carries and promotes moderate Islam based on the epistemology of scientific integration, spirituality, and local wisdom. The current teaching materials are not enough to apply the integration of Islamic values, especially in mathematics learning. The learning process carried out by integrating Islamic values is a new improvement and innovation in learning because it is considered interesting and has a positive impact on shaping the character of the nation¹¹. The integrated mathematics learning of Islamic values in question is not to produce Islamic mathematics or the process of Islamization of mathematics, but as an effort to combine Islamic values and mathematics without having to eliminate the uniqueness between the two sciences, as well as bring together the way of view, way of thinking, acting between the West and Islam, so that religious people are more religious through mathematics¹². Mathematics trains logical thinking using reason, as well as consisting of various symbols so that they have abstract and unreal properties. This underlying mathematics can be used as a science-based approach to exposing some explanations in Islamic teachings¹³.

The integration of Islamic and mathematical values can be carried out through interconnection using conceptual and mathematical foundations in the form of creativity that focuses on ontological, epistemological, and axiological perspectives to produce new integrated mathematics teaching materials¹⁴. The strategy of integrating religious values in learning Basic

⁸ Kholil and Usriyah, "Development of Mathematics Textbooks Integrated with Islamic Values in Instilling the Character of Madrasah Ibtidaiyah Students."

⁹ Hayatun Nufus, Erdawati Nurdin, and Rezi Ariawan, "Integration of Islamic Values and Mathematical Communication Skills in Linear Program Textbooks," *Gantang Journal* 6, no. 1 (March 31, 2021): 47–60, <https://doi.org/10.31629/jg.v6i1.2556>.

¹⁰ Ina Magdalena et al., "Analysis of Teaching Material Development," *Nusantara : Journal of Education and Social Sciences* 2, no. 2 (2020): 311–26, <https://doi.org/10.36088/nusantara.v2i2.805>.

¹¹ Nufus, Nurdin, and Ariawan, "Integration of Islamic Values and Mathematical Communication Skills in Linear Program Textbooks."

¹² Elfi Rahmadhani and Septia Wahyuni, "Integration of ICARE and Islam-Based Mathematics Learning on Fractional Materials," *JNPM (National Journal of Mathematics Education)* 4, no. 1 (March 29, 2020): 110, <https://doi.org/10.33603/jnpm.v4i1.2874>.

¹³ Tia Ekawati, "Development of Mathematics Learning Modules on Integrated Statistics Material Islamic Values," *AXIOM: Journal of Mathematics Education Study Program* 8, no. 1 (June 18, 2019), <https://doi.org/10.24127/ajpm.v8i1.1826>.

¹⁴ Kusno, Kusno and Marsigit, Marsigit, "The Integration of Spiritual Values in Relationship Materials," *AlphaMath: Journal of Mathematics Education* 4, no. 1 (May 1, 2018): 46, <https://doi.org/10.30595/alphamath.v4i1.7354>.

Mathematics is implemented through modeling techniques, analogies, and philosophical foundations.

Introduction to Basic Mathematics is a compulsory subject in the curriculum structure of Tadris Mathematics FTIK UIN Datokarama Palu. This theoretical course contains the concepts of logic, set, relations, and functions. Integrated mathematics learning with Islamic values is considered to be evidence that mathematics can help in understanding and mastering religious problems, as well as playing a role in instilling student moral values so that the goals of national education can be achieved¹⁵. Another application is through giving sample questions, every material presented will be inserted verses of the Qur'an relating to logic, sets, relations, and functions so that students not only get mathematical knowledge but are also able to relate it to religious values¹⁶. This integrated teaching can improve the intellectual and spiritual intelligence of students and can introduce the relationship of mathematics with Islamic values to students.¹⁷ It can provide hints, guidelines, and drivers to solve various life problems, to form patterns of motivation, life goals, and good behavior.¹⁸

In the teachings of Islam, there are several concepts such as *rakaat* prayer, *zakat* calculation, trade, arithmetic, algebraic concepts through the law of inheritance (*faraidh*), and trigonometry in determining the direction of Qibla. Vice versa, in mathematics there are Islamic values such as the concept of mathematical logic contained in Surah Al Ashr¹⁹. The application of the affective domain of mathematics demands the internalization of faith and goodness values through the strategy of internalizing Islamic values²⁰. Previous research stated that the integrated mathematics learning tools of the Qur'an on the subject matter of integers and fractions were considered

¹⁵ Nihayati, Nihayati and Suminto, Suminto, "The Integration of Mathematical Logic in Qur'anic Verses with Moral Values," *E-DuMath JOURNAL* 6, no. 1 (January 30, 2020): 40–47, <https://doi.org/10.52657/je.v6i1.1163>.

¹⁶ Rahmadhani and Wahyuni, "Integration of ICARE and Islamic-based mathematics learning on fractional materials."

¹⁷ Nailil Hikmah and Arghob Khofya Haqiqi, "Development of Integrated Mathematics E-Module Islamic Values Based on Scientific Approach on Algebraic Form Material," *Journal Focus Action of Research Mathematic (Factor M)* 4, no. 1 (December 30, 2021): 125–40, https://doi.org/10.30762/factor_m.v4i1.3438.

¹⁸ Siska Andriani and Rizki Wahyu Yunian Putra, "Development of SMP/MTs Mathematics Modules Integrating Islamic Values," *Delta: Scientific Journal of Mathematics Education* 9, no. 1 (January 25, 2021): 37, <https://doi.org/10.31941/delta.v9i1.1254>.

¹⁹ Nuhyal Ulia, Yunita Sari, and Mohamad Hariyono, "The Influence of Teaching Materials for Basic Concepts of Mathematics Based on the Internalization of Islamic Values on Religious Attitudes," *Journal of Teacher Studies and Learning* 3, no. 1 (February 22, 2020): 1–10, <https://doi.org/10.30605/jsgp.3.1.2020.154>.

²⁰ Abdussakir, "Internalization of Islamic Values in Mathematics Learning with Analogy Strategies," *Proceedings of SI MaNIs (National Seminar on Integration of Mathematics and Islamic Values)* 1, no. 1 (2017): 659–65.

effective, practical, and valid to maximize student learning outcomes with a classical learning completeness score of 77.14% ²¹.

The spiritual aspect presented in the textbook will not have an impact on reducing the quality of the scientific level of the lesson. These additions can help restore students' understanding, for example, of phenomena that are destiny that has been ordained by God. Integrated teaching of spiritual values can increase spiritual attitudes measured using student self-assessment questionnaires with an N-Gain *score* of 26.78% while correlating with sufficient classification between spiritual attitudes and learning outcomes ²².

Syahratulnisa Syamsuar has developed printed teaching materials in the form of mathematics modules that are integrated with Islamic values with the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model on one-variable linear equation material to produce very valid teaching materials with a score of 3.8, practical, and effective, which are measured based on religiosity tests and test results learning by 88.23% ²³. Meanwhile, Wida Rachmiati and Mansur Mansur have used teaching materials in the form of videos and found that the increase in students' mathematical understanding is still in the medium category, meaning that there has not been too significant improvement ²⁴. From these two studies, it can be seen that printed teaching materials in the form of books and modules are still considered potentially better and more systematic than learning videos because they are arranged in an integrated, systematic, and detailed manner to facilitate students to learn ²⁵.

Inna Saftina et al stated that most schools with Madrasah status have vision and mission demands that are directed toward the field of religion, but most do not have learning resources that can integrate Islamic values with

²¹ Fahrurrozi, Nila Hayati, and Miptahul Rohmi, "Development of Mathematics Learning Tools Integrated with Islamic Values on the Subject Matter of Integers and Fractions," *PYTHAGORAS: Journal of Mathematics Education Study Program* 9, no. 2 (2020): 124–32, <https://doi.org/10.33373/pythagoras.v9i2.2648>.

²² Aisah Harahap and Ayi Darmana, "PBL Learning Using Spiritual Value Integrated Teaching Materials to Improve Learning Outcomes and Spiritual Attitudes," *Journal of Chemistry Learning Innovation* 2, no. 2 (2020): 64, <https://doi.org/10.24114/jipk.v2i2.19393>.

²³ Syahratulnisa Syamsuar et al., "Islamic Integrated Mathematics Teaching Materials to Improve Religiosity and Student Learning Outcomes," *Suska Journal of Mathematics Education* 7, no. 1 (2021): 13–20, <https://doi.org/10.24014/sjme.v7i1.10827>.

²⁴ Wida Rachmiati and Mansur Mansur, "Mathematics Learning Videos Integrated with Islamic Values to Develop Mathematical Understanding and Religious Character of Elementary School Students," *Primary: Journal of Basic Science and Education* 13, no. 1 (2021): 59–72, <https://doi.org/10.32678/primary.v13i1.4711>.

²⁵ Evi Dian Risalatul Ummah et al., "The Development Of Learning Module Trigonometry Equation Material Integrated Islamic Values To Improve Students Learning Outcome," *MATHEMATICS AND LEARNING* 7, no. 2 (January 6, 2020): 70, <https://doi.org/10.33477/mp.v7i2.1158>.

science material tools ²⁶. Education can ideologically apply the concepts of 'good' and 'values' that exist in moderate Islam into educational goals to produce moderate Islamic Education which has ten basic value indicators according to ²⁷.

The concept of integration in the Introduction to Basic Mathematics course is the first step for researchers in introducing moderate Islam through a mathematical thinking approach that highlights good and bad considerations for taking problem-solving steps. This can be seen in the establishment of the chosen strategy and the goals to be achieved. To realize the Introduction to Basic Mathematics textbook that contributes to students and the Study Program, the textbooks developed must be validated by experts in their fields. This research does not only contain set material as has been done by Zulfitra Aima and Rahima ²⁸ but all subjects in the Basic Introduction to Mathematics course, namely logic, sets, relationships, and functions.

Based on this, textbooks developed by integrating Islamic values are considered very important and needed in the Introduction to Basic Mathematics course so that learning is more meaningful, especially in the aspect of student achievement about the ability to interpret the concepts learned with other concepts. This is supported by the results of initial observations about the importance of integrated mathematical abilities of Islamic values in instilling the character values of students as the basis for achieving national education goals and the vision and mission of Tadris Mathematics FTIK UIN Datokarama Palu.

Method

This development research uses a 4-D model from Thiagarajan with 4 stages, namely: define, design, develop, and disseminate. However, due to the limited scope of product distribution, ²⁹ this research stage only reaches the development stage. The book developed is only used for students within the scope of Tadris Mathematics FTIK UIN Datokarama Palu.

²⁶ Inna Saftina, Muhammad Muttaqien, and Hadiansah Hadiansah, "Development of Teaching Materials Based on Case Study Methods Integrated with Islamic Values," *Bioeduca: Journal of Biology Education* 3, no. 2 (September 30, 2021): 135-45, <https://doi.org/10.21580/bioeduca.v3i2.6632>.

²⁷ Toto Suharto, "Indonesianization of Islam: Strengthening Moderate Islam in Islamic Educational Institutions in Indonesia," *Al-Tahrir: Journal of Islamic Thought* 17, no. 1 (May 24, 2017): 155, <https://doi.org/10.21154/altahrir.v17i1.803>.

²⁸ Zulfitri Aima and Rahima Rahima, "Development of Introductory Workbook to Basic Mathematics Based on Constructivism," *Journal of Medives: Journal of Mathematics Education IKIP Veteran Semarang* 4, no. 1 (January 20, 2020): 161, <https://doi.org/10.31331/medivesveteran.v4i1.961>.

²⁹ Sugiyono, *Quantitative, Qualitative, and R&D Research Methodology*, CV Alfabeta (Bandung: Alfabeta, 2015).

In development research, test subjects are parties who are part of product trials, playing a role in assessing the feasibility of the product. This is called a small group trial³⁰. The test subjects in this study include researchers as perpetrator subjects, Islamic Mathematics experts as expert validator test subjects, and student grade 2021 of Tadris Mathematics FTIK UIN Datokarama Palu who program the Introduction to Basic Mathematics course as product test subjects.

The instruments used in collecting data consist of expert validation instruments that function as a measure of product validity or feasibility, as well as a student response system that functions as a tool to measure student responses to the Introduction to Basic Mathematics textbook integrated with Islamic values which include display design, language, evaluation, and presentation. The questionnaire grid of learner responses is presented in Table 1.

Table 1. Student Response Questionnaire

Indicator	Statement Number
The Practicality	1, 2, 3, 4, 5, 6, 7, 8
The Effectiveness	9, 10, 11, 12, 13, 14, 15, 16

The data analysis techniques used are qualitative and quantitative analysis. In qualitative analysis, suggestions, inputs, criticisms, comments, and written answers from the validator team and students are described. Quantitative analysis is obtained from the assessment of student response questionnaires which descriptively use a percentage formula with a range of 0-100% as follows:³¹

$$P = \frac{f}{N} \times 100\%$$

Description:

P: The percentage

f: The frequency of percentage is searched

N: Number of samples

The percentage amount obtained is then adjusted according to the validation criteria interval as shown in Table 2.

³⁰ Yosi Wulandari, "Feasibility of Material and Media Aspects in the Development of Old Literature Textbooks," *Grammar of STKIP PGRI West Sumatra* 3, no. 2 (October 28, 2017), <https://doi.org/10.22202/jg.2017.v3i2.2049>.

³¹ Andi Ibrahim et al., *Research Methodology* (Makassar: Gunadarma Ilmu, 2018).

Table 2. Product Validation Criteria³²

Criteria	Level of Validation
85,01% - 100,00	Very valid (can be used without revision)
70,01% - 85,00%	Quite valid (can be used with minor revisions)
50,01% - 70,00%	Less valid (unusable)
01,00% - 50,00%	Invalid (forbidden to use)

Student responses to textbooks use questionnaires with a rating scale of 4 answer choices that match the criteria. The scoring of each answer choice is interpreted using Table 3.

Table 3. Product Attractiveness Criteria³³

Percentage	Score Conversion	Level of Attractiveness
80%-100%	3,20 - 4,00	Interesting
60%-79,9%	2,40 - 3,19	Quite interesting
50%-59,9%	2,00 - 3,39	Less interesting
<50%	< 2,00	Not interesting

Results and Discussion

The product produced in this study is a textbook Introduction to Basic Mathematics integrated with Islamic values. The textbook was developed using Thiagarajan's 4-D (Four-D) development model. However, due to limitations, this research was only carried out until the *development* stage.

a. The Define

The analysis and collection of information about the required textbooks are carried out in this stage. The steps are performed as follows:

1) Curriculum Analysis

The developed textbooks are adjusted to the competencies in the applicable curriculum. The adjustments made are in the form of the suitability of textbooks developed for the learning outcomes of Study Program Graduates (CPL-Prodi) charged to the Basic Introduction to Mathematics, Course Learning Outcomes (CPMK), and sub-CPMK.

CPL-Study Program is a formulation of goals to be achieved and must be owned by all graduates which include Attitude (S), Knowledge (P), General

³² Agustina Fatmawati, "Pengembangan Perangkat Pembelajaran Konsep Pencemaran Lingkungan Menggunakan Model Pembelajaran Berdasarkan Masalah Untuk SMA Kelas X," *EduSains* 4, no. 2 (2016): 94–103, <https://doi.org/10.23971/eds.v4i2.512>.

³³ Fajar Surya Utama, "Pengembangan Bahan Ajar IPS Berbasis Nilai Budaya Using Untuk Siswa Sekolah Dasar," *JPI (Jurnal Pendidikan Indonesia)* 5, no. 2 (October 10, 2016): 113, <https://doi.org/10.23887/jpi-undiksha.v5i2.8359>.

Skills (KU), and Specific Skills (KK). Especially for Study Programs in the Islamic Higher Education environment, CPL-Study Program refers to the Graduate Competency Standards (SKL) and Graduate Learning Outcomes (CPL) of the Undergraduate Study Program in 2018.

CPMK Introduction to Basic Mathematics includes: (S9) Show an attitude of responsibility for work in their field of expertise independently; (KU5) Able to make decisions appropriately, in the context of solving problems in their field of expertise based on the results of information and data analysis; (KK4) Able to facilitate the development of scientific potential in the field of mathematics to actualize mathematical abilities and skills in real life in schools/madrasah and the community; (P4) Mastering knowledge and steps in developing critical, logical, creative, innovative and systematic thinking and having the intellectual curiosity to solve problems at individual and group levels in academic and non-academic communities; and (P21) Mastering concepts, scientific methods, material substance, structure, and mathematical scientific mindset.

Based on the CPMK, it is reduced to eleven sub-CPMK, namely, students can explain concepts about mathematical logic, sets, relations, and functions (C2), and students can use concepts about mathematical logic, sets, relationships, and fun, functions problem-solving (C4). The curriculum applied in the Introduction to Basic Mathematics lecture is the curriculum of the Indonesian National Qualifications Framework (KKNI) which at the time of the research was the 2020 curriculum. Previous studies considered that the use of KKNI-based curriculum was the right step in the process of improving the quality of students because it taught knowledge as well as how the person behaved and was responsible³⁴. The Introduction to Basic Mathematics material was previously used as the basic material developed for the creation of integrative textbooks. So that at the design stage of textbook product design, the structure or components of integrative textbooks are adjusted to the curriculum used and guided by the Semester Lecture Plan (RPS).

2) Formulate learning objectives

At this stage, the expected learning objectives and competencies are formulated, namely referring to the model of integration of mathematics with the Qur'an, as has been developed by Abdussakir, namely the model of mathematics from the Qur'an (developing mathematics from the Qur'an).³⁵

³⁴ Beslina Afriani Siagian and Golda Novatrasio Sauduran Siregar, "Analysis of the Application of KKNI-Based Curriculum at Medan State University," *Pedagogia* 16, no. 3 (December 28, 2018): 327, <https://doi.org/10.17509/pdgia.v16i3.12378>.

³⁵ Abdussakir and Rosimanidar, "Model of Integration of Mathematics and the Quran and Its Learning Practices" (National Seminar on Integration of Mathematics in the Quran with the theme "Build a Competitive and Intellectual Young Mathematician Through Mathematics

Learning activities begin by studying Qur'anic verses related to the topic to be discussed

Interviews with course lecturers and students about problems faced in the learning process in the classroom become important information in formulating learning objectives. Based on the results of the interview, the teaching materials used in lectures are still conventional. There is also no teaching that applies the integration of Islamic values to the Basic Introduction to Mathematics course. For students, the Introduction to Basic Mathematics course is a basic course that must be mastered. Although the scope of material in this course is a repetition of material at the high school level, interpreting the relationship between mathematics and religion is a new thing that students want to learn in detail.

The learning objectives produced at this stage are that students can balance the intellectual and spiritual sides and become a driver of student enthusiasm in developing science and technology according to the demands of the times. From here, this textbook Introduction to Basic Integrative Mathematics is expected to be one of the alternatives to instill Islamic values in the daily activities of students.

3) Analysis of student characteristics

Student characteristics are focused on aspects of academic ability. Based on preliminary data obtained at the beginning of the Introduction to Basic Mathematics lectures, students' initial abilities are still low in the aspect of problem-solving, but most semester students understand enough concepts in the Introduction to Basic Mathematics material.

4) Material analysis

Material analysis is carried out by identifying and compiling the material studied by RPS, namely logic, sets, relationships, and functions. In the preparation of the material, information is obtained from various supporting book sources that support the achievement of CPMK, namely that students can explain concepts about mathematical logic, sets, relations, and functions (C2), and students can use concepts about mathematical logic, sets, relationships and functions in problem-solving (C4)³⁶.

Competition and Integrating Islamic Values in Mathematics Learning," HMJ Mathematics Education IAIN Bukittinggi, 2017), <http://repository.uin-malang.ac.id/1934/2/1934.pdf>.

³⁶Directorate General of Learning and Student Affairs, *Guidebook for Higher Education Curriculum Preparation, Ministry of Technology Research and Higher Education* (Jakarta, 2016).

b. Design

An initial draft of the textbook Introduction to Basic Mathematics integrated with Islamic values produce in this stage. This initial design presented the material in the form of explanations of mathematical concepts using the verse approach in the Qur'an. This is to understand mathematical concepts from an Islamic view. From here, it is expected to have an impact on the way students think in meaningful learning. Take a look at Figure 1.

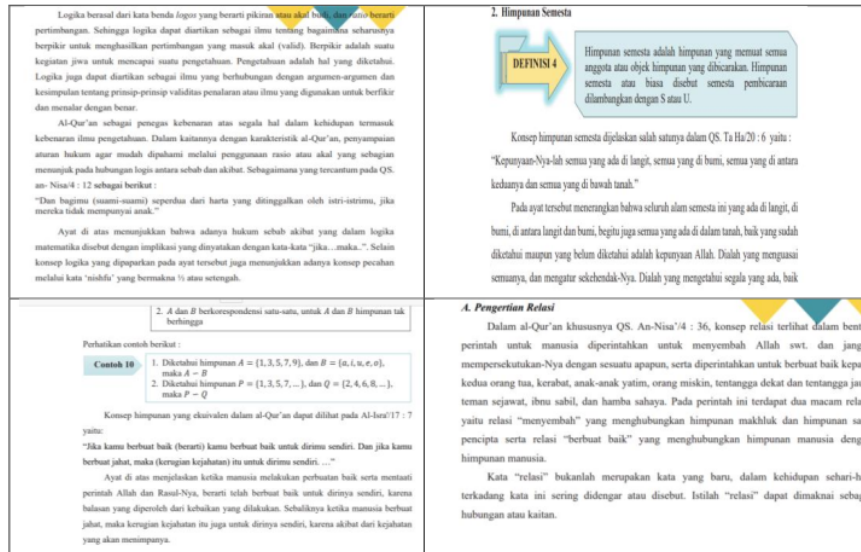


Figure 1. The Islamic Values in Drafts

In addition to drafting textbooks, researchers also create textbook assessment tools that aim to test the validity of textbooks made. Form a textbook assessment tool through an expert validation sheet consisting of 2 validators, namely expert validators Bahasa and Islamic Mathematicians. An example of an initial draft of a textbook can be seen in Figure 2.

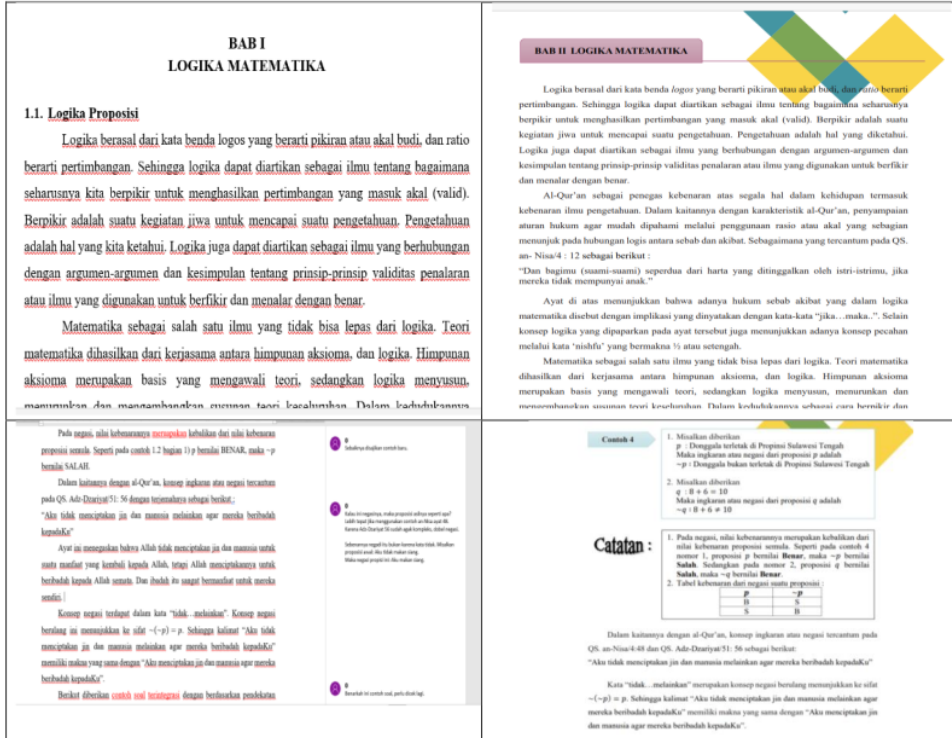


Figure 2. Some Parts of Content without Integrated Islamic Values and Integrated Islamic Value

Figure 2 also shows one of the aspects that validators assess textbooks. The presentation of the material begins with logic, revised by adding translations of Qur'anic verses related to logic, according to validators' suggestions. In addition, it is advisable to avoid putting Qur'anic verses in Arabic writing. The importance of integrating Islamic values in mathematics materials is in aby opinion of et al that Islamic integrated mathematics teaching materials are effective in increasing the religiosity and learning outcomes of students³⁷. Other findings such as Ekawati et al³⁸, Fahrurrozi and

³⁷ Syamsuar et al., "Islamic Integrated Mathematics Teaching Materials to Improve Religiosity and Student Learning Outcomes."

³⁸ Tia Ekawati, Bambang Sri Anggoro, and Komarudin, "Development of Mathematics Learning Modules on Integrated Statistics Material Islamic Values," *AXIOM: Journal of Mathematics Education Study Program* 8, no. 1 (2019): 184-92, <https://doi.org/10.24127/ajpm.v8i1.1826>.

³⁹ Harahap, and Darmana ⁴⁰ that show learning using integrated textbooks of Islamic values can motivate and instill Islamic values indirectly into students.

c. Develop

The final product of the textbook is the result here. As in Thiagarajan's model, at this stage, there are 2 activities are carried out as follows.

1) Expert appraisal

In this activity, the results of the initial draft of the textbook were validated by 2 validators who work as lecturers in the field of Language and the field of Islamic Mathematics. Researchers consider it enough with only 2 validators with the consideration that the field of study owned is in by field of study expected in this study. Suggestions and corrections from validators are then used as the basis for improvements to compile the second draft of the textbook.

On May 25, 2022, a Focus Group Discussion (FGD) was held with the validator team. Some notes from the validator team are outlined as follows:

a) The first validator's review (Islamic Mathematics expert)

- (1) The presentation of material can be made more systematic according to the complexity of the concepts that need to be understood.
- (2) The introduction of concepts can be made more complete so that this book presents something that is not yet present in other similar books.
- (3) The use of examples and practice questions to introduce concepts can be further improved.
- (4) The integration aspect needs to consider the conformity with the concept being introduced.
- (5) The integration aspect can be extended to other Qur'anic surahs, so it is not limited to suras al-Fatihah.
- (6) Reduce the dominance of writing on each sheet. The use of illustrations and drawings can be improved.
- (7) The linguistic aspect can still be improved so that it becomes even better.
- (8) Consistency in the writing of parts needs to be improved.
- (9) The selection of *layout*, layout, and type of writing as well as variations in size can be developed to make the display more attractive.
- (10) The writing of mathematical symbols needs to be uniform, that is, in italics.

³⁹ Fahrurrozi, Hayati, and Rohmi, "Development of Mathematics Learning Tools Integrated with Islamic Values on the subject matter of integers and fractions."

⁴⁰ Harahap and Darmana, "PBL learning uses teaching materials integrated with spiritual values to improve learning outcomes and spiritual attitudes."

b) The second validator's review (Language expert)

- (1) An illustration image needs to be added.
- (2) Language usage needs to be noted.
- (3) Consistency in symbol.

The draft textbook is then revised according to validators' suggestions and corrections. Furthermore, product feasibility tests are carried out from the aspects of content, language, presentation, and graphics. The results of due diligence by both validators are shown in Table 4.

Table 4. Results of Assessment of Teaching Materials by Validators

Aspect	Criteria	Score		Sum	Total	Average	%	Validity
		I	II					
Content Eligibility	1	5	5	10	56	4,67	93,33%	Very valid
	2	4	5	9				
	3	4	5	9				
	4	5	5	10				
	5	4	5	9				
	6	5	4	9				
Language Eligibility	1	4	4	8	43	4,3	86%	Very valid
	2	4	5	9				
	3	4	4	8				
	4	5	4	9				
	5	4	5	9				
Presentation	1	4	4	8	54	4,5	90%	Very valid
	2	4	5	9				
	3	4	5	9				
	4	5	5	10				
	5	5	4	9				
	6	4	5	9				
Graphics	1	4	5	9	42	4,2	84%	Valid
	2	4	4	8				
	3	4	5	9				
	4	4	4	8				
	5	4	4	8				
Sum				195	17,67	353,33%	Very valid	
Average				48,75	4,42	88,33%		

Based on Table 4, the textbook Introduction to Basic Mathematics integrated with Islamic values is very suitable for use by students with a percentage of 88.33%. The feasibility aspect of the content shows the highest feasibility value, then the presentation aspect, language feasibility, and finally the graphic aspect.

2) Developmental Testing

The activity of testing textbooks was carried out on students in semester 2 of the Mathematics Tadris Study Program for the academic year 2021/2022. This trial is to obtain data on student responses, reactions, or comments to textbooks. The implementation of the test can be seen in Figure 3.



Figure 3. Product Testing

The results of the student response questionnaire are shown in Table 5.

Table 5. Student Response Questionnaire Results

Number of Students	Observation Aspect			
	Practicality of Textbooks		Textbook Effectiveness	
	Average	Category	Average	Category
17	3,49	Interesting	3,47	Interesting

Table 5 shows student responses to the textbook Introduction to Basic Mathematics which is integrated with Islamic values including interesting categories. An overview of student responses to the 16 statements can be seen in Figure 4.

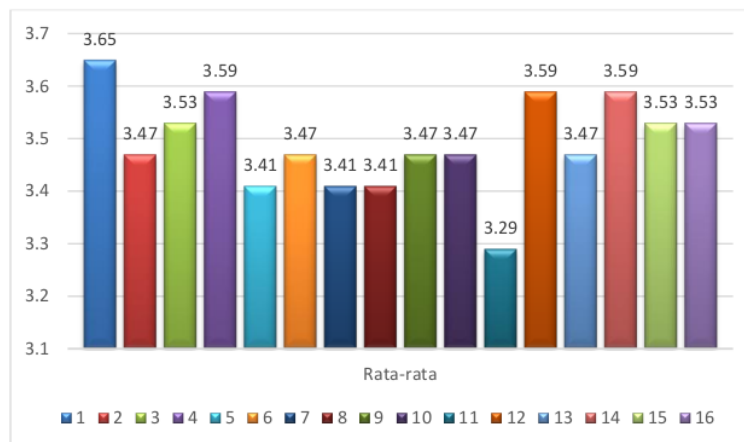


Figure 4. Response Questionnaire Score Per Item Statement

Textbooks are printed learning media that can be used to facilitate educators and students in improving competence. The use of integrative textbooks encourages students to gain their own experience and knowledge to exercise their intellectual abilities. Integrated learning plays a role in helping to create cognitive structures that can connect science and learning experiences so that understanding is more organized and deep while making it easier to understand the relationship of material from one context to another. Topics and studies studied from certain branches of science will be analyzed in depth as well as expanded the value of their relationship with various other branches of science by upholding the principles of Islamic values. Learning carried out based on learning experiences that are ⁴¹contextual and refer to the phenomenon faced is considered to be more effective. The findings in this study are in line with the results obtained by Ekawati⁴² et al (2019), ⁴³Fahrurrozi (2020), and ⁴⁴ Harahap and Darmana (2020) that learning using integrated textbooks of Islamic values can ⁴⁵motivate and instill Islamic values indirectly in students. This is due to the development of learning tools that not only focus on academics but are also able to instill Islamic values in students. Therefore, development and

⁴¹ Wiwin Herwina and H. Ajid Madjid, "Development of an Integrated Learning Model of Soft Skills and Hard Skills in Improving the Competence of Learning Citizens at Beauty Course Institutions," *JIV-Scientific Journal Vision* 13, no. 1 (June 28, 2018): 37–47, <https://doi.org/10.21009/JIV.1301.5>.

⁴² Nur Khasanah, *skilled in Islamic integrated learning through the DBUS (Discovery Based Unity of Sciences) model* (Semarang: CV. Alinea Media Dipantara, 2020).

⁴³ Ekawati, Anggoro, and Komarudin, "Development of Mathematics Learning Modules on Integrated Statistics Material Islamic Values."

⁴⁴ Fahrurrozi, Hayati, and Rohmi, "Development of Mathematics Learning Tools Integrated with Islamic Values on the subject matter of integers and fractions."

innovation in mathematics are needed to make it easier for students to understand mathematics.

Conclusion

The development of textbooks for Introduction to Basic Mathematics integrated with Islamic values using Thiagarajan's 4-D development model is considered very suitable for use by students and is an interesting category. Textbooks are designed by CPL-Study Program which is charged with the Introduction to Basic Mathematics, Course Learning Outcomes (CPMK), and sub-CPMK courses and is integrated with Islamic values, especially by exploring Surat Al-Fatihah in the Qur'an. This textbook can still be developed by refining the effectiveness test phase by involving larger subjects.

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