Science-islam integration in islamic elementary school: a development of islam-based thematic teaching material

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development of islam based thematic teaching material;
elementary school

Abstract

This research aims to produce Islamic-based teaching materials that are valid and practical. The method used in this research is Research and Development (RnD). The development model used is ADDIE (Analysis, Design, Development, Implementation and Evaluation). The data in this research was obtained through expert validation questionnaires (material experts, design experts, and language experts), student response questionnaires, and teacher response questionnaires to the Islamic-based thematic teaching materials that have been developed. Product trials of teaching materials that have been developed were carried out on grade 5 students at Alamul Yaqin Islamic Elementary School of Palembang. Data analysis techniques are carried out by referring to standard criteria for the validity and practicality of teaching materials. The results of the research show that first, the Islamic-based thematic teaching materials developed are categorized as very valid. This is proven by the score of material validation results reaching a percentage of 100%, design validation results reaching 96.84%, and language validation results reaching 100%. Second, the Islamic-based thematic teaching materials being developed are categorized as very practical. This is proven by the response score of students in the small group reaching 91%, while the response score of students in the large group reached 96%. The score from the teacher's assessment of the product reached 92%. This research proves that the Islamic-based teaching materials developed are very valid and very practical, so they are suitable for use in the learning process in grade 5 Islamic Elementary School.
INTRODUCTION

Background of the Study

As an educational institution with an Islamic religious background, Islamic Elementary School (Madrasah Ibtidaiyah) should implement learning practices that have Islamic characteristics that are different from other public elementary schools. In practice, Islamic Elementary Schools should present learning that makes Islam the frame and value of all teaching material given to students (Yusuf, 2017). Therefore, the ability to combine Islam with general sciences (science) becomes a necessity through the concept of the integration paradigm (integrative paradigm) in learning and teaching activities (LTA).

This concept of integration is a form of implementation of Islam as a science and value that does not only contain aspects of theology, worship and jurisprudence (Siregar et al., 2019). More than that, Islam teaches its followers always to study all the universe's phenomena. Moreover, Islam emphasizes scientific exploration, as the Prophet Muhammad SAW said, seeking knowledge is obligatory for Muslims (Nudin, 2016; Pasiska & et al., 2023). The science in question is not only in the Islamic realm but also includes the science and technology exploration and technology through the concept of Islam-science integration.

The integration of Islam and science in teaching and learning activities is very important to implement, especially at the basic education level (elementary school/ Islamic elementary school) (Mustafa et al., 2021; Suprihatiningrum, 2016). The integration of Islam and science is also an answer to realizing national education goals in creating students who have faith and good morals (Zumrotun et al., 2023). The religious aspect (beliefs and morals) in educational goals cannot be realized effectively if teaching materials only rely on religious materials but must be integrated into all other materials.

Learning at Elementary School, especially at Islamic Elementary School, which incidentally is Islam, must be flavored and framed with Islamic knowledge (values or ethics) which is based on the Al-Qur’an/revelation (bayani, burhani and irfani) and hadith (Bujuri et al., 2020). Learning is very appropriate and meaningful when combined with the values contained in Islam (Ismiyanti, 2020). Therefore, it is very important for teachers to understand and understand how to implement Islam-science integration in teaching and learning at the preparation, implementation and evaluation stages.
Problem of The Study

In the context of implementing the integration of science and Islam, one important component is Islamic-based integrative thematic teaching materials. So far the thematic teaching materials used at Islamic Elementary School are general in nature. In the sense that the materials taught at Islamic Elementary School are still independent, such as science materials only containing scientific content, not integrated with Islamic aspects. Vice versa, Islamic material is not integrated with scientific aspects (Bujuri et al., 2022). For example, linking ablution material to the scientific aspect, namely to clean dirt, germs and bacteria.

The facts in the field are that there are still many teachers who do not understand and apply the concept of integration in teaching materials or in LTA. This is proven by the results of the researcher's interviews with several Azizan Islamic Elementary School teachers in Palembang City, the teachers admitted that they did not understand and had only just heard of the concept of science-Islam integration in thematic learning. At Islamic Elementary School there is also no development of integrative teaching materials (science-Islam). Likewise, in LTA, teachers have never developed thematic teaching materials integrated with Islam.

Research's State of the Art

So far, there have been various studies related to the integration of science-Islam in the learning process, first, research regarding the integration of science-Islam and its implementation in biology learning (Minarno, 2017). Second, research on developing the IPBA module on earth-moon system material based on science-Islam integration (Fajar & Habibbulloh, 2021). Third, research on Integrated Science E-Modules assisted by the Flip PDF Professorinal Application to Integrate Character Education Values in Science Learning in junior high schools (Aswirna et al., 2023). Fourth, research regarding the integration of Islamic science using social networks in forming student character (Rahmawati, 2018). Fifth, research on efforts to implement the integration of Islamic values in science learning in elementary schools (Ramadhani et al., 2020). Sixth, study of student textbooks in science learning in the form of an integrated perspective of science and Islamic learning at Islamic Elementary School (Afbrifani, 2020).

Novelty, Research Gap, & Objective

According to those research, so far there has been a lot of research regarding the integration of Science-Islam at various levels of education. However, there have been no researchers who have conducted research into the development of Islamic-
based integrative thematic teaching materials, especially on water cycle material. Therefore, researchers consider it important to conduct research on the development of Islamic-based integrative thematic teaching materials at Islamic Elementary School. This research was conducted at Alamul Yaqin Islamic Elementary School of Palembang. This research aims to produce an updated model of Islamic-based thematic teaching materials which valid and practice. This teaching material product can be a reference for educators, especially those with an Islamic school background.

METHOD
Type and Design

The type of research used is research and development. The development model used is ADDIE (Analysis, Design, Development, Implementation and Evaluation) (Spatioti et al., 2022). First, at the analysis stage, researchers conducted initial research regarding the availability of thematic teaching materials and curriculum used at Alamul Yaqin Islamic Elementary School. Second, at the design stage the researcher carries out the next stage, namely designing/conceptualizing/designing the teaching materials being developed. Third, at the development stage, researchers carried out the core process, namely creating a product for developing Islamic-based integrative thematic teaching materials. At this stage the research also tests the validity and practicality of the product. Fourth, researchers conducted sales trials of teaching materials on students. Fifth, the researcher perfected the product by referring to the results of expert validation, notes from experts, and student responses from the product trial process.

Data and Data Sources

The main data/source of data in this research was obtained from the process of developing Islamic-based integrative thematic teaching materials, especially product validity and practicality data (Ozdilek & Robeck, 2009). Data on the validity of Islamic-based integrative thematic teaching materials were obtained from expert assessments (material experts, design experts and language experts) (Reis et al., 2022). Meanwhile, data on the practicality of selling Islamic-based integrative thematic teaching materials was obtained from responses by students at the implementation stage.
Data Collection Technique

The data in this research was obtained through expert validation questionnaires (material experts, design experts, and language experts), student response questionnaires, and teacher response questionnaires to the Islamic-based thematic teaching materials that have been developed (Cahyaningtyas et al., 2019). The product trial of the teaching materials that had been developed was carried out on class 5 students at Alamul Yaqin Islamic Elementary School of Palembang, totaling 12 students;

<table>
<thead>
<tr>
<th>No</th>
<th>Initial Name</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ARD</td>
<td>Male</td>
</tr>
<tr>
<td>2</td>
<td>ALZ</td>
<td>Female</td>
</tr>
<tr>
<td>3</td>
<td>MSA</td>
<td>Male</td>
</tr>
<tr>
<td>4</td>
<td>MDA</td>
<td>Male</td>
</tr>
<tr>
<td>5</td>
<td>MRAR</td>
<td>Male</td>
</tr>
<tr>
<td>6</td>
<td>AFA</td>
<td>Male</td>
</tr>
<tr>
<td>7</td>
<td>MAT</td>
<td>Male</td>
</tr>
<tr>
<td>8</td>
<td>MUA</td>
<td>Male</td>
</tr>
<tr>
<td>9</td>
<td>MS</td>
<td>Male</td>
</tr>
<tr>
<td>10</td>
<td>MH</td>
<td>Male</td>
</tr>
<tr>
<td>11</td>
<td>AH</td>
<td>Male</td>
</tr>
<tr>
<td>12</td>
<td>AA</td>
<td>Female</td>
</tr>
</tbody>
</table>

The sample was selected based on first, the background of school is Islam. Second, students at the class level correspond to the level of material being developed.

Data Analysis

Data analysis techniques are carried out by referring to standard criteria for the validity and practicality of teaching materials (Bujuri et al., 2022). The scores from the validation results for the teaching materials that have been developed are analyzed using the formula:

\[ P = \frac{F}{N} \times 100\% \]

Note: \( P \) = Percentage, \( N \) = Maximum Score, \( F \) = Total Score

The categories for assessing the validity of the teaching materials being developed are described in the following table:
Table 2. Categories of Validity and Practicality of Teaching Materials

<table>
<thead>
<tr>
<th>Score</th>
<th>Category</th>
<th>Percentage %</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Very Valid</td>
<td>81 - 100</td>
<td>Not Revised</td>
</tr>
<tr>
<td>4</td>
<td>Valid</td>
<td>61 - 80</td>
<td>Not Revised</td>
</tr>
<tr>
<td>3</td>
<td>Fairly Valid</td>
<td>41 - 60</td>
<td>Partially Revised</td>
</tr>
<tr>
<td>2</td>
<td>Invalid Valid</td>
<td>21 - 40</td>
<td>Revision</td>
</tr>
<tr>
<td>1</td>
<td>Very Invalid</td>
<td>1 - 20</td>
<td>Total Revision</td>
</tr>
</tbody>
</table>

Meanwhile, the categories for assessing the practicality of the teaching materials being developed are described in the following table:

Table 3. Categories of Practicality of Teaching Materials

<table>
<thead>
<tr>
<th>Score</th>
<th>Category</th>
<th>Percentage %</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Very Practical</td>
<td>81 - 100</td>
<td>Not Revised</td>
</tr>
<tr>
<td>4</td>
<td>Practical</td>
<td>61 - 80</td>
<td>Not Revised</td>
</tr>
<tr>
<td>3</td>
<td>Fairly Practical</td>
<td>41 - 60</td>
<td>Partially Revised</td>
</tr>
<tr>
<td>2</td>
<td>Impractical</td>
<td>21 - 40</td>
<td>Revision</td>
</tr>
<tr>
<td>1</td>
<td>Very Impractical</td>
<td>1 - 20</td>
<td>Total Revision</td>
</tr>
</tbody>
</table>

RESULTS
Analysis Stage

The research results indicated that, at the analysis stage, based on observation results, students participated well in learning. However, several problems occur during the learning process. Few students do not understand and pay attention to the material presented by the teacher in thematic books. From the results of interviews with students, they said there was a demand for books that contain Islamic values because they did not know that the thematic learning material could be combined with Islamic values such as from the Al-Qur’an and Hadith.

Mrs. Ica said, “Currently, we study using thematic books. However, and at our school, there are no books that contain verses from the Al-Qur’an.” When Mrs. Ica explained the material, Mrs. Ica only explained general material without linking to verses from the Al-Qur’an. Thus, we did not know that the material in this thematic book could sometimes be linked to verses from the Al-Qu’ran.”

On the other hand, the interview with the 5th-grade teacher, Mrs. Hafsyah Nurjanah, S.Sos., revealed that she had used thematic books in classroom learning activity but still found it challenging to implement all core competencies, especially core competency number one: spiritual competency. Therefore, researchers consider it vital to integrate Islam into thematic teaching materials.
Design Stage

Second, at the design stage, the researcher determines the design of the teaching materials. The design of teaching materials was carried out by researchers using a supporting application, namely Canva. The researchers pay attention to the choice of typeface, font size, background, images, color and layout in designing or making teaching material designs. The following is the design of thematic teaching materials integrated with Islamic values in theme 8, sub-theme 1 (Human and Environment), starting from the front and back covers, core competencies, mapping of basic competencies and indicators, background on sub-learning and discussion of the material. The samples of design results for developing teaching materials are as follows:

**Table 4. Design of Islamic-Based Thematic Teaching Materials**

The background, writing and images in the sub-learning must be attractive and appropriate to the sub-learning material. In sub-learning, the material is integrated with Islamic values and the images, colors and writing of the verses of the Koran and Hadith must be clear and in accordance with the material being integrated.
Development Stage

Third, at the Development stage, researchers developed Islamic-based thematic teaching materials. The process of developing teaching materials integrated with Islamic values includes structuring the content structure of teaching materials in each learning activity, designing basic competencies in each learning activity and adding broader learning materials based on verses from the Koran and Hadith. The comparison of thematic teaching materials used in schools with thematic teaching materials integrated with Islamic values can be seen in the following table description:

**Table 5. Comparison of Thematic Teaching Materials Before and After being Developed**

Before being developed, the appearance and writing of thematic teaching materials were not bright enough. The appearance, background and writing of the teaching materials are brighter and the images on the teaching materials are in the form of Islamic cartoons which are in accordance with Islamic values.

At this stage, the validity of the Islamic-based thematic teaching materials that have been developed is tested by experts (material experts, design experts and language experts). The validity test results are described as follows:
Table 6. Validation Results of Islamic-Based Thematic Teaching Material Sales

<table>
<thead>
<tr>
<th>Validation Aspect</th>
<th>Score Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language</td>
<td>100%</td>
<td>Very Valid</td>
</tr>
<tr>
<td>Material</td>
<td>100%</td>
<td>Very Valid</td>
</tr>
<tr>
<td>Design</td>
<td>96.84%</td>
<td>Very Valid</td>
</tr>
</tbody>
</table>

Material experts responded that the "Islamic-Based Thematic Teaching Material Model" in Theme 8 Subtheme 1 "The Environment of Our Friends" is very appropriate to the material content in science learning at Islamic Elementary School, so the model is suitable for use in learning. Linguist experts responded that linguistically the Islamic-Based Thematic Teaching Material Model for Theme 8 Subtheme 1 "Our Friend’s Environment" has followed good language rules, so this model is very suitable for use in learning at Islamic Elementary School.

Design experts responded that the thematic teaching material products developed were excellent and interesting. However, there are several notes to serve as a basis for improvement, namely that some pictures and writing must be made clearer, the margins of teaching materials, the arguments of the Al-Qur’an and Hadith, the size of the letters, and the color of the font that contrasts more with the background or the writing contrasts with the colors in each background. Researchers then followed up on these notes or suggestions from design experts to improve the teaching material product, as follows.

Table 7. Teaching Materials Before and After Revision

Before revision

After revision
Implementation & Evaluation stage

Fourth, a trial stage is carried out at the implementation stage, meaning that the product that has been designed, developed and revised will be tested. This implementation aimed to determine student responses after using the thematic teaching materials that have been developed. At this stage, the researchers conducted group trials and field trials. The following is the result of small and large group trials:

<table>
<thead>
<tr>
<th>Validation Aspect</th>
<th>Score Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Group</td>
<td>97.2%</td>
<td>Very Valid</td>
</tr>
<tr>
<td>Large Group</td>
<td>88%</td>
<td>Very Valid</td>
</tr>
</tbody>
</table>

The score resulting from teacher responses regarding the practicality of Islamic-based thematic teaching material products reached 92%. This score proves that Islamic-based thematic teaching material products can be used in implementing the learning process. The teacher responded based on the comments and suggestions given by the teacher. It showed that the teaching materials developed were suitable, but a few pictures were added to some of the discourse. The results of expert validation and the responses of students and teachers above became the basis for researchers to perfect Islamic-based thematic teaching material products at the evaluation stage.

DISCUSSION

Product Validity

Expert validators assessed the validity of the teaching materials as very valid through a validation questionnaire sheet. These results indicated that the development of Islamic-based integrative thematic teaching materials that were developed meets the criteria for excellent teaching materials. This is relevant to a theory suggesting that the validity of a product is shown in the suitability, usefulness and meaningfulness of the product being made. The higher the validity of a product, the better the level of product meaningfulness (Afriadi et al., 2013; Fatmawati et al., 2023; Harlis & Budiarti, 2017).

In the process of developing teaching materials, researchers strive to create connections and combine thematic material for theme 8 subtheme 1 with Islam. In the material aspect, researchers developed Islamic-based thematic teaching
materials referring to the level of material and learning objectives that the national education system has set. Research data showed that the Islamic-based thematic teaching materials that have been developed have very valid value. The propositions from the Qur’an and Hadith that are linked to the material are appropriate and suitable to be applied in the implementation of learning because they are relevant to the context of the material being developed, namely regarding the water or rain cycle.

In the design aspect, teaching materials received a total score of 51 with a score percentage of 85% and were declared very valid. Indicators analyzed in the design aspect of teaching material content include the placement of layout elements and consistency based on the layout of spaces, titles, subtitles and typing of material, consistency in the use of numbering systems, suitability of text margins, not using many types of letters, suitability and clarity of images with the context of integrated teaching materials with Islamic values, integration of writing the propositions of the Qur’an and hadith with themes and materials, selection and suitability of colors and backgrounds, accuracy in choosing type and size of letters, creative and not excessive, and attractiveness of the entire product appearance.

This research showed that when developing thematic teaching materials at the basic education level, it is crucial to pay attention to design aspects. This is because elementary school-level students need interesting teaching materials to read and use in learning (Azizah & Budijastuti, 2021). This research suggested that the image design, colors and letters are valid. This is quite reasonable because researchers design as attractive as possible the teaching materials that are developed using attractive and bright pictures and colors.

In the language aspect, the data above shows that in developing thematic teaching materials at the basic education level it is vital to pay attention to the language aspect (Cahyaningtyas & Ismiyanti, 2022). This is because elementary school-level students need teaching materials that are interesting to read and easy to understand (Muhaimin et al., 2023). This research revealed that the language and sentences written in teaching materials are very valid. This is quite reasonable because the words or sentences used in the material are standard, communicative, practical and straightforward. The words used are also standard and simple, often heard by students in daily life. This fact proves that, apart from material and design, appropriate language aspects that are standard, communicative, effective,
straightforward and simple are also no less critical in teaching materials so that they are exciting and easy to understand by students at the elementary school level.

**Product Practicality**

Referring to field test data on students and classroom teacher assessments, the Islamic-based thematic teaching materials developed have practical value. This research indicated that, in developing teaching materials, teachers must adapt the materials developed to the curriculum, core competencies, basic competencies and learning indicators implemented in the national education system. Because if the product of the teaching materials developed does not adapt the core competencies, basic competencies and learning indicators to the level of students, this will result in the quality of the teaching materials being inappropriate and, of course, deviating from the learning objectives that have been set at a particular class level.

In this research, researchers developed Islamic-based thematic teaching materials referring to the level of material and learning objectives that the national education system has set. Research data indicated that first, students consider the Islamic-based thematic teaching materials developed very practical. Students suggested that the arguments from the Qur'an and Hadith associated with the material follow the context of the material regarding the water or rain cycle.

Students suggested they were very interested in learning with the developed Islamic-based thematic teaching materials. Through this teaching material, students claimed to gain various knowledge such as knowing that the Al-Qur'an and hadith contain various scientific explanations, understanding that Islam is rich in knowledge (science), and that Islam is not only related to worship, but also about how to study, examine and develop science.

The facts above prove that integrating Islam in learning at Islamic Elementary Schools is very important. This is very positive to cultivate in the learning process. Through this integration model, from an early age the paradigm has been instilled in students that Islam is present on earth bringing the grace of knowledge (science), not only dwelling on the theological level and the religiosity of worship (Mahmudah, 2023; Siregar et al., 2019). Thus, from an early age, students are formed into Muslim scholars who bring to life the propositions of the Al-Qur'an and hadith as a source of knowledge.

Second, the materials developed in this Islamic-based thematic teaching material are also fascinating and easy for students to understand. This is because the composition of the materials developed is very varied, such as being constructivist,
student-centred, and equipped with contextual images regarding the phenomenon of the water cycle or rain. Most of these teaching materials involve students in learning, such as asking students to answer, give opinions, ask questions and discuss. Students are stimulated to activate critical reasoning in answering and solving various questions in teaching materials.

Through this model, students are not just passive listeners but become learning subjects who can build understanding independently. This is relevant to contemporary educational theories saying that students have good enough cognitive ability. Thus, students in learning must be considered as a subject, not an object (Ni’amah & M, 2021). Students must get the opportunity to play more of a role in learning.

The availability of images that are relevant to the material also attracts students to be interested in participating in learning. Images that are contextual to the material also make it easier for students to understand the material (Ismiyanti & Permatasari, 2021). This is very relevant to the cognitive development of elementary school students at the concrete operational level (Carey et al., 2015; Lourenço, 2016). Students can understand something easily if they see the object directly/really (Bujuri, 2018a). Therefore, in developing thematic teaching materials, it is crucial to be equipped with images contextual to the material object.

Apart from that, the data above shows that when developing thematic teaching materials at the basic education level it is vital to pay attention to design aspects. Students stated that the teaching material was exciting because of lots of colourful pictures. This research indicated that Islamic-based thematic teaching material products are considered very practical by students. This fact proves that elementary school-level students need interesting teaching materials to read and use in learning.

This is quite reasonable because students at the elementary school level have quite high basic needs, namely the need for enjoyment (Bujuri, 2018; Neubauer & Martskvishvili, 2018; Zhou et al., 2022). Students could enjoy learning through various attractive, beautiful and interesting media such as colorful pictures, videos and other learning media. The availability of these aspects becomes a stimulus for students to read and study learning materials easily. Therefore, teaching materials must be designed as well as possible so that students like and enjoy learning with great pleasure, which ultimately has an impact on the ease with which students understand the learning material.
Third, the materials developed in these Islamic-based thematic teaching materials are also considered easy for students to understand because the language and sentences written in the teaching materials are very communicative, effective and straightforward. The words used are also standard and simple, often heard by students in daily life. This fact proves that, apart from material and design, appropriate language aspects that are standard, communicative, effective, straightforward and simple are also no less critical in teaching materials so that they are interesting and easy to understand by students at the elementary school level. Therefore, in developing thematic teaching materials, teachers must use standard, communicative, effective, straightforward and simple words or sentences to make it easy for students to understand the material.

CONCLUSIONS

This research proves that developing integrated thematic teaching materials with Islamic values in theme 8, subtheme 1 (Our Friend's Environment) is categorized as very valid and very practical. This is proven from the validation results, comments and suggestions from the three validators, and responses from students and teachers. The material validation results reached a percentage of 100%, the design validation results reached 96.84% and the language validation results reached 100%. This shows that thematic teaching materials integrated with Islamic values are declared very valid. Thematic teaching materials integrated with Islamic values theme 8 subtheme 1 are categorized as very practical. This can be seen from the responses of students and teachers on the questionnaire sheet. The percentage score results from small group student responses reached 91%, while the score percentage results from field trials reached 96%. And the percentage results obtained from the teacher's assessment of the product reached 92%. This shows that thematic teaching materials integrated with Islamic values are categorized as very practical. Based on the procedures for developing thematic teaching materials integrated with Islamic values and the research results, the researcher concluded that the development of thematic teaching materials integrated with Islamic values using the ADDIE development model has advantages and disadvantages that still need improvement. The advantages of thematic teaching materials integrated with Islamic values are that the discussion of the material is broader, more detailed, integrated with Islam through the content of scientific studies in the Al-Qur'an and Hadith, as well as the presentation of questions in
accordance with students' cognitive development. In terms of the design of teaching materials, they are made with brighter colors, equipped with attractive pictures and Islamic nuances, written verses from the Koran that are easier to read, and the choice of background is adjusted to Islamic values in the teaching materials. In terms of language, the teaching materials are straightforward, interactive, dialogical, communicative, in accordance with refined spelling and in accordance with the cognitive and emotional development of students. Meanwhile, the disadvantage of this teaching material is that it is limited to one sub-theme and two lessons. Therefore, the development of Islamic-based teaching materials with other learning themes/materials can be carried out by subsequent research as a complement to this research.

REFERENCES


**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be constructed as a potential conflict of interest.