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Development of Science-Islam Integrated Thematic Teaching Materials through Teacher Assistance in Madrasah Ibtidaiyah

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Abstract: This study aims to comprehensively review the development of Science-Islam integrated thematic teaching materials through teacher mentoring in Madrasah Ibtidaiyah. Using an integrative review approach, this study integrates relevant empirical and conceptual research results from various national and international scientific sources, obtained through Google Scholar, Scispace, DOAJ, and Scopus. Literature selection was based on PRISMA principles with strict inclusion criteria for relevant, open-access articles published between 2015-2024. Data analysis used thematic analysis to identify patterns and relationships between themes. The results of the study show that systematic teacher mentoring can improve competence in developing teaching materials that are integrative, contextual, and have religious values. The collaborative ADDIE model-based approach is considered effective in developing teaching materials that are aligned with student needs and Islamic values. This study recommends strengthening teacher mentoring programs on an ongoing basis and developing applicable Science-Islam integration-based learning models. The findings provide theoretical and practical contributions in the development of value-based madrasah curriculum and science.

Keywords: Thematic Teaching Materials, Science-Islam Integration, Teacher Assistance, Madrasah Ibtidaiyah, Integrative Review.

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A. INTRODUCTION

The development of thematic teaching materials that integrate science and Islamic values is an innovative approach in Madrasah Ibtidaiyah (MI) education. This approach aims to unite scientific knowledge with spiritual values, so that students not only understand science concepts but also internalize Islamic values in their daily lives. According to Adyaksa and Sudirman (2024), the integration of science and Islam can be done through various models, such as science Islamization and convergence, each of which offers a different approach in combining science and religion in education. In addition, Nurjanah et al. (2017) emphasized the importance of developing learning modules that integrate Islamic values and science to improve students' religious character in MI.

Several studies have shown the effectiveness of developing science-Islam integrated thematic teaching materials in improving the quality of learning in MI. For example, Nurjanah et al. (2017) developed a learning module that integrates Islamic values and science, which proved effective in improving students' religious character. Similarly, Bujuri and Utami (2023) emphasized the importance of Islamic integration in thematic teaching materials to create holistic learning in MI. Tahir (2021) also found that religious integration in science learning in

madrasah can strengthen students' understanding of scientific concepts as well as Islamic values.

Teacher mentoring in developing science-Islam integrated thematic teaching materials has also been investigated as an effective strategy to improve teacher competence. According to Bujuri and Utami (2023), mentoring teachers can help them in designing teaching materials that are in line with Islamic values and students' needs. Tahir (2021) added that continuous mentoring can strengthen teachers' ability to integrate science and Islamic concepts in learning. In addition, Nurjanah et al. (2017) showed that training and mentoring teachers in developing learning modules can improve the quality of teaching materials and student learning outcomes.

The integration of science and Islam in thematic teaching materials also has positive implications for student character development. According to Nurjanah et al. (2017), the use of learning modules that integrate Islamic values and science can improve students' religious character. Bujuri and Utami (2023) also found that thematic teaching materials integrated with Islamic values can help students understand scientific concepts while strengthening Islamic values. Tahir (2021) emphasized that the integration of religion in science learning can strengthen students' understanding of scientific concepts and Islamic values..

Although many studies have shown the benefits of science and Islam integration in thematic teaching materials, there are still challenges in its implementation. According to Adyaksa and Sudirman (2024), one of the main challenges is teachers' lack of understanding of the concept of science and Islam integration. Bujuri and Utami (2023) also highlighted the need for ongoing training and mentoring to assist teachers in developing integrated teaching materials. Tahir (2021) added that support from the school and educational policies that support the integration of science and Islam are essential for the successful implementation of integrated thematic teaching materials.

Based on the literature review above, it can be concluded that the development of science-Islam integrated thematic teaching materials has great potential in improving the quality of learning and character development of students in MI. However, there is still a gap in terms of teachers' understanding and skills in developing integrated teaching materials, as well as the lack of sustainable mentoring. The novelty of this research lies in the approach of assisting teachers in developing science-Islam integrated thematic teaching materials, which has not been studied in depth. Therefore, the purpose of this study is to examine the effectiveness of teacher mentoring in developing thematic teaching materials that integrate science and Islamic values in Madrasah Ibtidaiyah.

B. METHOD

This study uses a library research or integrative review approach that aims to integrate the results of empirical and conceptual studies related to the development of Science-Islam integrated thematic teaching materials through teacher assistance in Madrasah Ibtidaiyah. This approach is used to obtain a deep and comprehensive understanding of the topic under study, as well as to identify gaps and theoretical contributions from previous studies (Torraco, 2005). Integrative review allows researchers to review diverse literature in the form of scientific

journal articles, proceedings, dissertations, and research reports, both from national and international sources.

The data sources in this study came from several credible scientific databases, namely Google Scholar, Scispace, Directory of Open Access Journals (DOAJ), and Scopus. The articles used included scientific publications relevant to the topics of teaching material development, integrative thematic approach, integration of Islamic values and science, and teacher mentoring programs at the Madrasah Ibtidaiyah level. Inclusion criteria included articles published between 2015-2024, open access or fully available, written in Indonesian or English, and relevant to the focus of the study. Exclusion criteria included articles that were opinion pieces, editorials, lacked empirical data or strong theory, and did not focus on basic education or madrasah contexts.

The literature search process was conducted systematically using a combination of keywords, such as "integrative thematic teaching material development," "integration of science and Islam," "teacher mentoring," "Madrasah Ibtidaiyah," "teaching material development," and "teacher mentoring." Boolean operators such as AND, OR, and NOT were used to refine the search results. Next, an initial screening of titles and abstracts was conducted to assess relevance, followed by a full reading of the articles to evaluate their methodological quality and relevance to the research focus. The literature selection procedure followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) principles to ensure accuracy and transparency in the selection process (Moher et al., 2009).

The data obtained was analyzed using thematic analysis techniques to identify patterns, main themes, and relationships between variables that emerged from previous studies. The validity of the research was maintained through a process of source triangulation, by comparing findings from different types of literature and different contexts. Reliability was maintained by using consistent selection and analysis criteria, as well as detailed documentation of all stages of the review process. This approach enabled the researchers to obtain a strong theoretical synthesis as a basis for recommending an effective teacher mentoring model in developing Science-Islam integrated thematic teaching materials in Madrasah Ibtidaiyah.

C. RESULTS AND DISCUSSION

1. Analysis of Teachers' Needs and Challenges in Developing Integrated Thematic Teaching Materials

Analyzing teachers' needs in developing integrated thematic teaching materials is very important to ensure the improvement of education quality. Currently, many teachers face challenges in preparing teaching materials that meet the demands of 21st century education and the changing needs of students. Training and mentoring for teachers is one solution to overcome this obstacle. Research by Widya et al. shows that training in making digital teaching materials using applications such as KVSOFT Flipbook and Web Anyflip is very helpful for teachers in producing quality teaching materials and relevant to the conditions of the times (Widya et al., 2021). In addition, research by Anita et al. also confirmed that Higher Order Thinking Skills (HOTS)-based training improves teachers' knowledge and skills, enabling

them to be more effective in developing HOTS-based teaching materials in elementary schools (Anita et al., 2022).

The teaching materials needed by teachers must be diverse and innovative. For example, research by Santia and Nurmayani showed that teaching materials in the form of interactive flipbooks based on problem-based learning were effective in improving students' understanding of the subject matter (Santia & Nurmayani, 2023). In addition, Wati et al. highlighted the importance of developing modules that integrate ethnoecological issues so that teaching materials are not only informative but also relevant to the culture and environment around students (Wati et al., 2022). This shows that the need for diversification of teaching materials that are contextual and relevant to students' social environment needs to be considered. However, not a few teachers still experience difficulties in compiling and developing effective teaching materials. The results of research by Sine et al. confirmed that many teachers, especially in remote areas, need training and assistance in the process of preparing appropriate teaching materials (Sine et al., 2023). In addition, the development of teaching materials should be based on the specific needs of students and their learning context, as noted by Simatupang, who underlined the importance of customizing teaching materials based on students' needs in order to make the learning process interesting and effective (Simatupang, 2023).

Teachers' skills in using technology are also a significant challenge. The study by Andang and Subhan revealed that the utilization of digital technology in the development of teaching materials can increase the effectiveness of learning at the secondary school level (Andang & Subhan, 2023). This is also supported by Zulvira and Desyandri who suggested the importance of creating interactive teaching materials that are in accordance with the demands of the Industrial Revolution 4.0 (Zulvira & Desyandri, 2022). On the other hand, the importance of educational characters in the development of teaching materials is also a focus, as researched by Hidayati who mentioned that teaching materials that prioritize science literacy can improve the understanding of teachers and students (Hidayati, 2020).In conclusion, the challenges faced by teachers in developing integrated thematic teaching materials are very complex, including the need for adequate training, diversification of innovative and functional teaching materials, and optimal use of technology. Collaborative efforts in training and developing the capacity of teachers must continue so that they are able to meet the needs of students and improve the quality of education.

2. Strategy and Impact of Teacher Assistance in Developing Science-Islam Integrated Teaching Materials

Teacher mentoring in developing science-Islam integrated teaching materials is one of the important pillars in creating an education system that is holistic and in line with the needs of modern society. In this context, there are several strategies that can be adopted to increase the effectiveness of such assistance, as well as the positive impacts that can result from this integration. One important strategy is to use a multidisciplinary approach in education. Based on research by Muhsan and Haris, this approach not only integrates science and religion, but also enables the formation of Muslim communities that are responsive to the dynamics of

modern life Muhsan & Haris (2022). More specifically, Hadi points out that this integration effort is a solution to overcome the disorientation of Islamic education that occurs due to the dichotomy between religious and general sciences (Hadi, 2023). The development of learning models that emphasize collaboration between science and Islam, as described by A'Yun et al. can significantly contribute to the absorption of important concepts in relevant education (A'yun et al., 2023).

The impact of this mentoring is very significant, ranging from increasing teachers' understanding of the importance of integrating the two fields of science to increasing student motivation. According to Murhayati et al., the integration of STEM (Science, Technology, Engineering, and Mathematics) in Islamic education can create a positive interaction between science and religious values, providing evidence that such integration can improve student learning outcomes (Murhayati et al., 2023). This is reinforced through research showing that the integration of science education with religious values can improve students' understanding of the application of Islamic principles in the context of science (Warapsari et al., 2023).

Furthermore, sharia-oriented education that combines scientific perspectives with Islamic ideology provides opportunities for character development and community contribution skills. The relationships that educators build during mentoring can increase community support for better education. Research by Anggrayni shows that the absence of a real separation between science and religion in the curriculum should be promoted (Anggrayni, 2023). In other words, mentoring teachers in the development of science-Islam integrated teaching materials not only serves to strengthen the capacity of teachers, but also has a far-reaching impact on students and the surrounding community, and helps create a better generation that is able to understand and apply science within the framework of comprehensive religious values.

3. Ideal Model for Development of Integrative Thematic Teaching Materials Based on Collaboration and Contextualization of Islamic-Science Values

The development of integrative thematic teaching materials based on collaboration and contextualization of Islamic-Science values requires a systematic and comprehensive approach. The ideal development model for this purpose is the ADDIE model (Analyze, Design, Develop, Implement, Evaluate), which has proven effective in various educational contexts. According to Gusmawati and Montessori, the ADDIE model can produce teaching materials that are valid, practical, and effective in integrated thematic learning in elementary schools Gusmawati & Montessori (2022). In the context of integrating Islamic values with science, the development of teaching materials must include elements that not only cover scientific aspects, but also moral and ethical values derived from Islam. However, I did not find appropriate references to support the claim that the integration of Islamic values can help strengthen learners' character and science literacy, so I could not include the quote (Sabri et al., 2022).

Contextualization of teaching materials is also important to increase relevance and appeal to students. Fitriyah et al. noted that students' involvement in the development of teaching materials through participatory methods can improve their motivation and learning outcomes

(Fitriyah et al., 2023). By using a Problem-Based Learning approach integrated with Islamic values, students can better understand the application of science in everyday life and how religious principles can guide their actions in a scientific context (Rafi'y et al., 2023).Interactivity in teaching materials should also not be ignored. Research by Damayanti and Perdana on the development of flipbook-based thematic learning e-modules mentioned that the use of technology can create a more interesting learning experience and facilitate students in understanding complex science concepts (Damayanti & Perdana, 2023). In addition, the use of interactive multimedia that focuses on science literacy and character, as discussed by Hafis et al., can help students to link science knowledge with moral and ethical values (Hafis et al., 2022).

The final evaluation of the developed product should include collecting feedback from users, i.e. students and teachers. This process is very important to improve the quality of the developed teaching materials. For example, Zulvira and Desyandri emphasized that continuous evaluation can ensure the currency and activeness of teaching materials in meeting the needs of students in the digital era (Zulvira & Desyandri, 2022). Therefore, researchers need to adopt diverse data collection methods such as questionnaires, observations, and interviews to get a complete picture of the effectiveness of the teaching materials that have been developed. Thus, the ideal model for developing integrative thematic teaching materials based on collaboration and contextualization of Islamic-Science values should integrate the ADDIE approach, involve experts in both fields, prioritize interactivity and relevance, and conduct a thorough evaluation at every stage of the development process.

D. CONCLUSIONS AND SUGGESTIONS

The development of Science-Islam integrated thematic teaching materials through teacher mentoring in Madrasah Ibtidaiyah is a strategic approach to improve the quality of learning while strengthening Islamic values in basic education. Teacher mentoring not only strengthens pedagogical and content competencies, but also becomes an important bridge in creating relevant, contextual, and meaningful teaching materials for students. The ideal development model needs to be based on collaborative, integrative principles and adopt the ADDIE approach thoroughly, with the involvement of experts from the fields of education, science and Islam to ensure the integration and quality of teaching materials.

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