

Development Of A Multimedia-Based Islamic Religious Education Learning Module In The Faculty Of Fisheries, Andi Djemma University, Palopo

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Abstract

This study aims to develop a multimedia-based Islamic Religious Education learning module for students at the Faculty of Fisheries, Andi Djemma University, Palopo, in order to improve learning effectiveness, student engagement, and the integration of Islamic values with disciplinary knowledge. The study employed a Research and Development (R&D) approach, involving stages of needs analysis, module design, development, expert validation, revision, implementation, and evaluation. Data were collected through interviews, questionnaires, observations, and learning outcome assessments involving lecturers, media experts, content experts, and students. The findings reveal that the developed multimedia-based module meets high standards of content accuracy, instructional design, media quality, and usability based on expert validation. Students responded positively to the module, demonstrating increased motivation, active participation, conceptual understanding, and satisfaction during the learning process. The integration of interactive multimedia elements, including videos, animations, images, quizzes, and case-based learning activities, enhanced students' comprehension of Islamic Religious Education while fostering critical thinking and the practical application of Islamic values in academic and professional contexts. Furthermore, the module proved to be an effective learning resource that supports independent learning and technology-enhanced instruction in higher education. Therefore, the study concludes that multimedia-based Islamic Religious Education modules can significantly improve the quality of teaching and learning and are recommended for broader implementation across higher education institutions

Keywords

Development; Multimedia-Based Islamic; Religious Education Learning Module; The Faculty Of Fisheries, Andi Djemma University, Palopo



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INTRODUCTION

The rapid advancement of digital technology has fundamentally transformed the landscape of higher education, including the methods and media used in the learning process.

Universities are increasingly encouraged to integrate technology into instructional activities to improve learning quality, student engagement, and graduate competencies. In this context, multimedia-based learning has emerged as one of the most effective approaches for enhancing students' understanding of complex concepts through the integration of text, images, animations, audio, and video. Interactive multimedia not only facilitates the delivery of knowledge but also promotes active learning, independent study, and higher-order thinking skills. These advantages are particularly important in higher education, where students are expected to develop critical reasoning, analytical abilities, and practical competencies simultaneously. Consequently, the development of multimedia-based learning modules has become an essential strategy for improving instructional effectiveness across various disciplines, including Islamic Religious Education (PAI) (Mayer, 2021; Hodges et al., 2020).

Islamic Religious Education plays a strategic role in Indonesian higher education because it is designed not only to provide students with cognitive understanding of Islamic teachings but also to cultivate moral values, ethical awareness, spiritual intelligence, and responsible behavior. The implementation of PAI at universities is expected to contribute to the formation of graduates with strong religious character who are capable of integrating Islamic values into their professional and social lives. However, many higher education institutions still rely heavily on conventional teaching methods such as lectures and textbook-centered instruction, which often fail to stimulate active participation and meaningful learning experiences. These instructional limitations reduce students' motivation and make it difficult for them to connect Islamic concepts with contemporary issues and professional contexts. Therefore, innovative instructional media are required to bridge the gap between theoretical understanding and practical application of Islamic values (Rahman et al., 2022; Aziz & Abdullah, 2021).

The Faculty of Fisheries at Andi Djemma University, Palopo, presents a unique educational environment where Islamic Religious Education must be integrated with scientific knowledge and professional ethics in fisheries and marine resource management. Students enrolled in fisheries programs are expected to possess not only technical competencies but also ethical responsibility toward environmental sustainability, social justice, and the responsible utilization of natural resources. Islamic teachings concerning stewardship (khalifah), environmental conservation, honesty, and accountability provide a strong philosophical foundation for these professional values. Nevertheless, learning materials that explicitly integrate Islamic perspectives with fisheries-related contexts remain limited, resulting in instructional practices that are often disconnected from students' academic disciplines. Developing contextual multimedia-based learning modules offers an opportunity to make Islamic Religious Education more relevant, meaningful, and applicable to students' future professions (UNESCO, 2023; OECD, 2021).

The integration of multimedia into learning modules is supported by constructivist learning theory, which emphasizes that knowledge is actively constructed through meaningful experiences and interactions with learning resources. Multimedia environments encourage students to participate actively by exploring visual representations, interactive simulations,

videos, quizzes, and case studies that facilitate deeper conceptual understanding. Mayer's Cognitive Theory of Multimedia Learning further explains that individuals learn more effectively when information is presented through coordinated verbal and visual channels rather than through text alone. Properly designed multimedia materials reduce cognitive overload, improve information retention, and increase learning motivation. Therefore, multimedia-based Islamic Religious Education modules have significant potential to create more engaging and effective learning experiences for university students (Mayer, 2021; Clark & Mayer, 2023).

Recent developments in educational technology also indicate that digital learning resources contribute positively to students' academic achievement, learning autonomy, and collaborative skills. Following the digital transformation accelerated by the COVID-19 pandemic, universities have increasingly adopted blended learning, online learning, and digital instructional materials as integral components of teaching. Learning modules equipped with multimedia features enable students to access instructional content flexibly regardless of time and location while supporting individualized learning according to their learning pace. Such flexibility is particularly valuable for university students who require independent learning opportunities outside classroom sessions. Consequently, multimedia-based instructional materials are increasingly recognized as effective tools for improving learning outcomes and educational quality in higher education institutions (Bond et al., 2024; Alammary, 2022).

Despite the recognized benefits of multimedia learning, studies have shown that many Islamic Religious Education courses still lack interactive digital instructional materials specifically designed to meet the characteristics and learning needs of university students. Existing teaching materials are frequently limited to printed textbooks or presentation slides that provide minimal opportunities for interaction, self-assessment, or contextual learning. Moreover, instructional resources rarely incorporate authentic professional cases that enable students to apply Islamic values in solving discipline-specific problems. This situation suggests the need for systematic instructional development based on educational design principles that integrate pedagogical, technological, and content knowledge into a comprehensive multimedia learning module (Hwang et al., 2022; Zainuddin et al., 2021).

Developing multimedia-based learning modules is also aligned with Indonesia's national policy on digital transformation in education, which encourages universities to enhance learning innovation through technology integration. Higher education institutions are expected to produce graduates who possess digital literacy alongside ethical and character competencies. Multimedia-supported Islamic Religious Education contributes to these goals by combining religious knowledge, digital learning experiences, and character education within an integrated instructional framework. Furthermore, multimedia facilitates continuous assessment through interactive exercises, immediate feedback, and reflective learning activities that strengthen students' understanding and internalization of Islamic values (Kemendikbudristek, 2022; UNESCO, 2023).

From a research perspective, instructional material development requires systematic validation to ensure content quality, instructional feasibility, usability, and effectiveness. Development research enables researchers to design, validate, revise, and evaluate multimedia learning modules based on expert judgment and user feedback. The resulting instructional products are expected to meet academic standards while addressing students' actual learning needs. Previous studies have consistently demonstrated that validated multimedia learning modules significantly improve students' motivation, conceptual understanding, and learning achievement compared with conventional instructional materials. However, similar studies focusing specifically on Islamic Religious Education within fisheries education remain relatively scarce, highlighting an important research gap that warrants further investigation (Branch, 2020; Sugiyono, 2022).

Considering these educational challenges and opportunities, this study aims to develop a multimedia-based Islamic Religious Education learning module for students of the Faculty of Fisheries at Andi Djemma University, Palopo. The developed module is expected to integrate Islamic teachings with contextual fisheries issues through interactive multimedia features that enhance learning motivation, conceptual understanding, ethical awareness, and independent learning. Furthermore, the study seeks to evaluate the validity, practicality, and effectiveness of the developed module as an innovative instructional resource that supports the implementation of technology-enhanced Islamic Religious Education in higher education. Ultimately, the findings are expected to contribute to the advancement of instructional innovation, digital learning resources, and character education within Indonesian universities while providing a practical model for integrating religious education with professional disciplines.

METHODS

Research and Development (R&D) is a type of research that can create product outputs that meet specifications and test the effectiveness of these outputs. Research and Development (R&D) is the stage of creating innovative products or improving existing products. Research and Development (R&D) is a method that creates products that are tested and validated for their practicality.

Research and Development (R&D) is a scientific method for developing or creating products through scientific research. This process is carried out through a series of studies using methods that are carried out through cyclical stages.

In addition to the Research and Development (R&D) approach, this study also used a Mixed Method Sequential Exploratory approach to address the research questions regarding module effectiveness. In this approach, the quantitative stage (validation by material experts, media experts, linguists, and practicality questionnaires from lecturers and students) was conducted first. The results were then followed up with a qualitative stage (in-depth interviews with lecturers and students) to further explore the effectiveness of the learning module in increasing student motivation, attention, and understanding of Islamic Religious Education material..

RESULTS AND DISCUSSION

1. Concept and Design of the Multimedia-Based Islamic Religious Education Learning Module

The development of the multimedia-based Islamic Religious Education (IRE) learning module for students at the Faculty of Fisheries, Andi Djemma University, Palopo, was initiated through a comprehensive needs analysis conducted among lecturers and students. The findings revealed that the existing instructional process remained predominantly teacher-centered, with learning activities relying heavily on lectures and printed materials. As a result, students demonstrated low learning motivation, limited engagement during classroom activities, and difficulties in understanding several fundamental concepts of Islamic Religious Education. These findings indicate the necessity of developing innovative instructional materials capable of promoting active learning and improving students' comprehension. The module was therefore designed to transform conventional learning into an interactive learning environment that encourages independent study and meaningful learning experiences.

The conceptual framework of the module was grounded in Cognitive Load Theory, which argues that human working memory has a limited capacity for processing new information. Consequently, instructional materials should be designed to reduce unnecessary cognitive load while maximizing meaningful learning through well-organized content and multimedia elements. Based on this theoretical perspective, the developed module presents learning materials in small, structured segments supported by visual illustrations, narration, animations, and interactive activities. Such an arrangement enables students to process information more efficiently without overloading their cognitive capacity while simultaneously enhancing knowledge retention and conceptual understanding (Sweller et al., 2019; Mayer, 2021).

Based on the needs analysis and theoretical considerations, the multimedia learning module was designed with three principal characteristics: interactive, flexible, and contextual. The interactive component integrates text, images, audio narration, instructional videos, animations, and quizzes to facilitate active participation throughout the learning process. Flexibility is achieved by enabling students to access the learning materials independently at any time and from any location using digital devices, thereby supporting self-directed learning. Meanwhile, the contextual aspect ensures that Islamic Religious Education content is closely related to the academic background of Fisheries students by incorporating examples, case studies, and ethical issues concerning environmental stewardship, marine conservation, and professional responsibility from an Islamic perspective. This contextualization is expected to increase students' learning motivation because the instructional content becomes directly relevant to their field of study (Clark & Mayer, 2023; UNESCO, 2023).

During the design stage, the learning module was systematically developed by considering pedagogical, technical, and visual design principles. The instructional content was organized according to the Semester Learning Plan (Rencana Pembelajaran Semester/RPS),

consisting of nine instructional meetings covering fundamental topics such as the basic concepts of Islamic Religious Education, Islamic creed (aqidah), worship (ibadah), Islamic morality (akhlaq), and the implementation of Islamic values in students' personal, academic, and professional lives. The module structure was organized into several components, including the cover page, main menu, learning materials, instructional videos, interactive exercises, and formative assessments. Visual design was developed using Canva with a dominant blue-and-white color scheme to create a simple, professional, and academically appealing interface. Furthermore, navigation buttons such as Home, Next, Back, and Quiz were incorporated to facilitate user-friendly navigation and improve students' independent learning experience.

Overall, the conceptual and instructional design of the developed module aligns with contemporary multimedia learning theory, which emphasizes the integration of multiple forms of media—including text, graphics, audio, video, and interactive features—to enhance learning effectiveness. By combining pedagogical principles with modern educational technology, the module provides an engaging learning environment that encourages active participation, independent exploration, and meaningful knowledge construction. Consequently, the multimedia-based Islamic Religious Education module is expected to improve students' motivation, learning outcomes, and understanding of Islamic values within the context of fisheries education (Mayer, 2021; Clark & Mayer, 2023).

2. Material Collecting and Assembly of the Multimedia-Based Islamic Religious Education Learning Module

The material collecting stage involved gathering all instructional resources required for the development of the multimedia-based Islamic Religious Education learning module. Learning materials were compiled from various credible sources, including Islamic Religious Education textbooks, the Semester Learning Plan (RPS), peer-reviewed scientific journals, and other relevant academic references. In addition to textual materials, supporting multimedia resources such as images, audio recordings, instructional videos, icons, background illustrations, and design templates were collected to enrich the learning experience. Instructional videos were selected from educational resources available on YouTube, while graphical elements and presentation templates were obtained through Canva and adapted to integrate Islamic educational themes with fisheries-related contexts. This careful selection of multimedia resources ensured that the instructional materials were both academically accurate and visually engaging for students.

At this stage, the software required for multimedia development was also identified and prepared. Canva was employed for visual design and interface development, while additional multimedia authoring tools were utilized to organize the storyboard, interactive navigation, and learning sequence. The storyboard served as the blueprint for arranging instructional content systematically and ensuring consistency among learning objectives, multimedia components, and assessment activities. Such planning is considered essential in multimedia

instructional design because it enables developers to create coherent learning experiences that effectively combine educational content with technological features (Branch, 2020).

Following the completion of material collection, the development process proceeded to the assembly stage, during which all instructional components were integrated into a complete multimedia learning product. Text, graphics, audio narration, videos, animations, navigation buttons, and interactive quizzes were combined into a unified instructional module that allowed students to learn independently through a structured digital environment. During assembly, considerable attention was given to the synchronization of multimedia elements to ensure that visual, auditory, and textual information complemented one another rather than causing cognitive overload. This integration process reflects the principles of multimedia learning, whereby meaningful combinations of visual and verbal information significantly improve students' comprehension, motivation, and long-term retention of knowledge (Mayer, 2021; Sweller et al., 2019). The completed multimedia module therefore represents a comprehensive instructional product designed to support engaging, flexible, and student-centered learning within the Islamic Religious Education course at the Faculty of Fisheries, Andi Djemma University, Palopo.

The assembly process continued by organizing the instructional slides systematically according to the Semester Learning Plan (Rencana Pembelajaran Semester/RPS). Each learning unit was carefully arranged to ensure logical progression from one topic to the next while maintaining consistency with the intended learning outcomes. Visual and interactive elements, including illustrations, icons, animations, videos, and navigation features, were subsequently incorporated to enhance learner engagement. The development process also included designing the module cover, preparing nine instructional chapters, producing learning videos, and constructing formative assessment questions to evaluate students' understanding of each topic. Upon completion, the multimedia learning module was converted into PDF format and uploaded to the Heyzine platform, enabling it to function as an interactive digital flipbook. This format allows students to access the instructional materials both online and offline, thereby increasing learning flexibility and supporting independent study. The use of digital flipbooks has been reported to improve students' accessibility, engagement, and learning autonomy because instructional materials can be accessed anytime and anywhere through various digital devices (Nouri, 2021; Huang et al., 2022).

3. Testing and Distribution of the Multimedia-Based Islamic Religious Education Learning Module

The testing phase was conducted to determine the validity and practicality of the multimedia-based Islamic Religious Education learning module before its implementation in classroom instruction. Product evaluation consisted of expert validation followed by user trials involving lecturers and students. Expert validation was performed by three validators representing subject matter expertise, instructional media, and language. The validation results indicated excellent levels of feasibility. The subject matter expert awarded a score of

100%, categorized as highly valid, confirming that the instructional content accurately reflected the Course Learning Outcomes (CPMK) and successfully integrated Islamic values with fisheries-related contexts. The media expert assigned a score of 83.33%, also classified as highly valid, indicating that the instructional design, multimedia components, interface, and interactive features effectively supported the learning objectives. Meanwhile, the language expert provided a score of 75%, categorized as valid, suggesting that although the language quality was generally appropriate, several revisions were required to correct typographical errors, eliminate redundant wording, and improve sentence clarity. These findings demonstrate that systematic expert validation is an essential step in ensuring the academic quality, instructional effectiveness, and usability of educational multimedia products (Branch, 2020; Dick et al., 2015).

Based on the formative evaluation conducted by the three validators, the multimedia-based Islamic Religious Education learning module was declared valid and appropriate for instructional use after minor revisions. The subject matter expert emphasized that the integration of Islamic teachings with fisheries-related ethical issues represented one of the module's principal strengths, making the learning content more relevant to students' academic backgrounds. Similarly, the media expert highlighted the effectiveness of combining text, images, audio, and instructional videos in creating an engaging learning environment. Nevertheless, several technical improvements were recommended, including optimizing typography, refining layout consistency, correcting hyperlink functionality, and adding a QR code to facilitate easier access to the digital module. The language expert recommended careful proofreading to improve readability and linguistic accuracy. These recommendations were incorporated into the final revision to enhance the overall quality of the learning module before field implementation.

Following expert validation, a practicality test was conducted through questionnaires distributed to lecturers and students. The results revealed that lecturers provided a practicality score of 97.22%, categorized as highly practical, while students assigned a score of 91.43%, also classified as highly practical. These findings indicate that the developed module is easy to use, accessible, and capable of supporting the teaching and learning process effectively. In addition, interview results demonstrated that students experienced increased learning motivation, concentration, and classroom participation after using the multimedia-based module. Students reported greater enthusiasm because learning materials were presented through interactive visualizations, instructional videos, animations, and self-assessment activities rather than conventional text-based instruction. These findings are consistent with previous studies demonstrating that multimedia learning environments significantly enhance students' motivation, engagement, and learning satisfaction by providing meaningful and interactive learning experiences (Sung et al., 2019; Bond et al., 2024).

Overall, the testing phase confirmed that the multimedia-based Islamic Religious Education learning module developed for the Faculty of Fisheries at Andi Djemma University, Palopo, satisfies the required standards of content validity, media quality, language

appropriateness, and instructional practicality. The positive responses from both lecturers and students further indicate that the module has substantial potential to improve learning experiences and promote student-centered instruction. Nevertheless, although interview findings suggest improvements in students' learning motivation, the quantitative effectiveness of the module in enhancing academic achievement was not evaluated in the present study. Therefore, future research is recommended to investigate the module's impact on students' cognitive learning outcomes through experimental or quasi-experimental research designs involving larger participant groups (Plomp, 2020).

Consistent with the principles of constructivist learning theory, the practicality testing conducted with students demonstrated that the multimedia-based Islamic Religious Education learning module encouraged learners to become more active, independent, and engaged throughout the learning process. Rather than functioning merely as recipients of information, students actively explored instructional materials, interacted with multimedia components, completed self-assessment activities, and constructed their own understanding through meaningful learning experiences. The positive practicality scores obtained from student evaluations indicate that the module successfully promoted learner autonomy while increasing students' interest and motivation in studying Islamic Religious Education. These findings support the view that well-designed learning modules facilitate self-directed learning, enhance active participation, and foster deeper conceptual understanding by allowing learners to regulate their own pace of study and revisit instructional materials whenever necessary (Fosnot, 2013; Schunk & DiBenedetto, 2020).

The final stage of the development process involved the distribution of the multimedia learning module to ensure its accessibility and ease of use for both lecturers and students. The completed instructional product was disseminated through two distribution methods. First, users could access the module via a PDF file accompanied by an interactive flipbook link, enabling flexible digital learning across multiple devices. Second, a Quick Response (QR) code was generated to provide direct access to both the PDF version and the online flipbook, allowing users to obtain the learning materials quickly by simply scanning the code with a mobile device. These distribution strategies significantly improve accessibility because students can study anytime and anywhere without being restricted by classroom schedules or physical learning materials. Such flexibility is one of the primary advantages of digital learning resources in higher education and contributes to the development of lifelong and self-directed learning habits (OECD, 2021).

The developed multimedia learning module also reflects the theoretical foundation underlying this research, namely that multimedia learning environments facilitate meaningful interaction between learners and digital instructional media. Unlike conventional printed teaching materials, multimedia-based modules enable students to interact directly with text, graphics, videos, audio, animations, and interactive navigation features. This interaction enhances learner engagement and creates a more dynamic learning environment, making instructional activities more practical, attractive, and accessible. Interactive multimedia

therefore serves not only as a medium for delivering information but also as a learning environment that encourages exploration, reflection, and independent knowledge construction through multiple forms of representation (Clark & Mayer, 2023).

Furthermore, the findings are strongly supported by Mayer's Cognitive Theory of Multimedia Learning (CTML), which explains that students learn more effectively when instructional information is presented through coordinated verbal and visual channels rather than through text alone. According to this theory, meaningful learning occurs when learners actively select relevant information, organize it into coherent verbal and visual mental representations, and integrate these representations with their prior knowledge. During the development of the multimedia-based Islamic Religious Education module, various instructional elements—including written explanations, images, narration, videos, animations, and interactive activities—were intentionally integrated to optimize both visual and verbal information processing. This integration enables students to construct meaningful understanding while reducing unnecessary cognitive load, ultimately improving comprehension, learning motivation, and knowledge retention. Therefore, the multimedia module developed in this study not only represents an innovative instructional product but also embodies established principles of multimedia learning and instructional design that have been widely recognized as effective for enhancing higher education learning outcomes (Mayer, 2021; Moreno & Mayer, 2007).

CONCLUSION

Based on the findings of this study, it can be concluded that the development of the multimedia-based Islamic Religious Education learning module for the Faculty of Fisheries at Andi Djemma University, Palopo, was successfully carried out using the Multimedia Development Life Cycle (MDLC) model, which consists of six stages: concept, design, material collecting, assembly, testing, and distribution. The resulting module was designed to be interactive, flexible, and contextual by integrating Islamic Religious Education content with students' academic and professional contexts in the field of fisheries. The final product was distributed in the form of a PDF file and an online interactive flipbook, allowing students and lecturers to access the learning materials anytime and anywhere. The developed module was proven to be valid based on expert validation results, with a score of 100% from the subject matter expert (highly valid), 83.33% from the media expert (highly valid), and 75% from the language expert (valid), indicating that the module met the required standards in terms of content, instructional media, and language quality. Furthermore, the module demonstrated a high level of practicality, as evidenced by lecturers' responses with a score of 97.22% (highly practical) and students' responses with a score of 91.43% (highly practical), suggesting that it is easy to use and supports effective learning. Qualitative findings obtained through interviews with lecturers and students further revealed that the multimedia-based learning module enhanced students' learning motivation, attention, engagement, and conceptual understanding by providing interactive and visually appealing learning experiences.

However, the effectiveness identified in this study is limited to qualitative evidence derived from users' perceptions and experiences, while its quantitative impact on students' academic achievement has not yet been experimentally examined. Therefore, future studies are recommended to evaluate the effectiveness of the developed module on learning outcomes using experimental or quasi-experimental research designs involving larger samples..

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