GIJES
Greenation International Journal of Engineering Science
+62 81210467572 https://research.e-greenation.org/GIJES greenation.info@gmail.com
GREENATION RESEARCH
DOI: https://doi.org/10.38035/gijes.v2i3

Multimedia Development Life Cycle Method in Designing Interactive Learning Media for Introducing Basic Religious Knowledge at the Quran Learning Center

Fata Nidaul Khasanah[1]
[1]Bhayangkara Jakarta Raya University, Jakarta, Indonesia, fatanidaul@gmail.com

Corresponding Author: fatanidaul@gmail.com[1]

Abstract: Education is a crucial element in shaping an individual's character and abilities, especially from an early age. In one Quran Learning Center (TPA), the learning process still faces challenges due to a lack of varied teaching methods, which reduces children's understanding of essential subjects such as the Pillars of Islam, the Pillars of Faith, and the Arabic alphabet (Hijaiyah). This study aims to develop and implement an interactive learning medium based on Adobe Flash as an innovative solution to enhance the quality of learning at TPA. The research method used is the Multimedia Development Life Cycle (MDLC). The developed learning medium integrates visual, audio, and interactive features such as animations and quizzes, creating an engaging and enjoyable learning environment for children. The research findings indicate that the designed application meets the expected results in its functional testing. Furthermore, during the distribution stage, the application was exported in *.exe format, making it easy to use on computer devices.

Keyword: Adobe Flash, Interactive Learning Media, Multimedia Development Life Cycle

INTRODUCTION

Education is a crucial element in shaping a person's character and abilities from an early age. It is a conscious effort to facilitate the transmission of culture from one generation to the next. This process enables students to develop their potential. Religion serves as one of the fundamental guidelines that individuals follow in their daily lives. Understanding the basics of religious education can be introduced from an early age (Haris & Khasanah, 2018).

In the field of education, effective teaching methods play a key role in determining the success of the learning process. With technological advancements, innovations in teaching methods have become more widespread, one of which is the use of interactive learning media (Toha & Khasanah, 2020). This media integrates visual, audio, and interactive elements designed to make learning more engaging, effective, and easier to understand. Interactive learning media is characterized by its ability to motivate students through visually appealing displays and interactive features, such as videos and quizzes. Compared to conventional teaching methods, this media can help students grasp the subject matter more effectively. By

leveraging modern technology, interactive learning media creates an enjoyable learning environment that supports various learning styles, especially for children (Khasanah et al., 2019).

Interactive learning media is particularly effective in motivating students with its attractive visuals and interactive features such as videos and quizzes. This approach helps students understand the material more effectively than conventional teaching methods. Utilizing modern technology, interactive learning media fosters a fun learning atmosphere and accommodates different learning styles, particularly for young children (Utomo, 2023). One of the most widely used platforms for developing interactive learning media is Adobe Flash. Flash-based learning media can enhance students' motivation, skills, and understanding of subjects such as letter and number recognition through visualization, animation, and interactive features (Abubakar et al., 2024). Adobe Flash CS6 has been proven effective in improving student learning outcomes, making it an ideal tool for creating engaging educational materials tailored to students' needs. Technology-based learning media, such as Flash-based applications, can enhance student engagement, comprehension, and motivation by presenting information in an easily digestible format. Additionally, its ease of use and accessibility across multiple devices make Adobe Flash a suitable choice for education, especially for children who require a more dynamic learning experience (Anyan et al., 2023).

However, despite its proven effectiveness, the application of this technology in religious educational institutions, such as Qur'anic Learning Centers (TPA), remains relatively rare. TPA is an educational institution that focuses on teaching the fundamental values of Islam from an early age (Khasanah et al., 2024). Several fundamental subjects are essential for young learners, including the Five Pillars of Islam, the Six Articles of Faith, and the Arabic Alphabet (Huruf Hijaiyyah). Understanding these foundational aspects of Islamic teachings is crucial for students to develop a deeper comprehension of their faith.

One Qur'anic Learning Center in South Tambun faces several challenges, including the use of traditional teaching methods such as lectures and textbooks, which lack variety. These methods often fail to capture children's attention, as they tend to become easily bored with monotonous learning approaches. As a result, children's understanding of the material is suboptimal, and their engagement in the learning process remains low. To address this challenge, a more varied learning model incorporating technology-based innovations is needed. This approach can facilitate children's understanding of the subject matter while making learning more interactive and motivating (Halimah et al., 2021). Interactive learning media has been found to be more effective than conventional methods in enhancing early childhood comprehension. Well-designed animated videos can help children grasp concepts more easily (Haris & Khasanah, 2018).

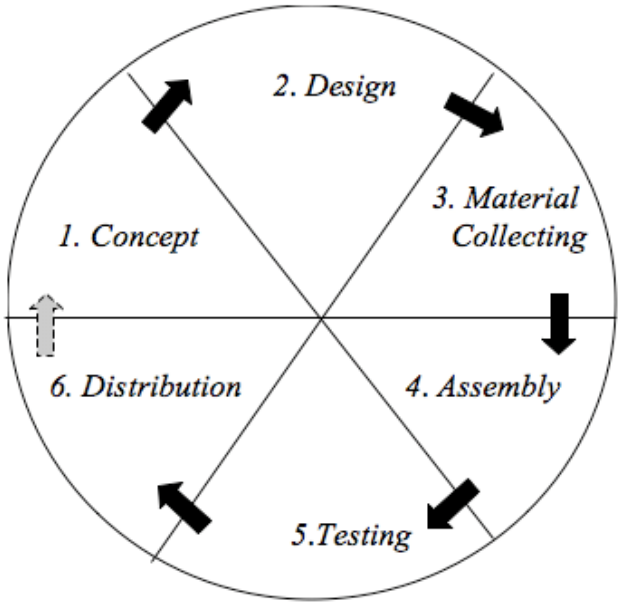
Based on these issues, the implementation of Flash-based interactive learning media in TPA activities is proposed as a viable solution. This media is expected to create a more engaging and interactive learning experience. The use of Adobe Flash as an integrated thematic learning tool can make education more engaging, enjoyable, effective, and practical. Through this innovation, it is hoped that children will develop a better understanding of the Five Pillars of Islam, the Six Articles of Faith, and the Arabic Alphabet, while also enhancing their learning motivation. Therefore, this study aims to implement the Multimedia Development Life Cycle (MDLC) method in designing interactive learning media for teaching fundamental religious knowledge at Qur'anic Learning Centers.

METHOD

This study employs the Multimedia Development Life Cycle (MDLC) method, a systematic approach to designing and developing multimedia applications. This method is structured to ensure that each stage of the development process is carried out methodically to

achieve the intended objectives, such as education, entertainment, or marketing. The MDLC method was chosen because it aligns with the research goal of designing an interactive application for introducing learning materials. The effectiveness of this method can be observed in various studies that focus on multimedia development, where MDLC is commonly used as the primary development approach. Its application in this research is highly relevant and accurate, making it an ideal choice for ensuring a structured and effective development process. (Topan Bahari et al., 2023)(Widiati et al., 2023).

The Multimedia Development Life Cycle (MDLC) consists of six stages: Concept, Design, Material Collecting, Assembly, Testing, and Distribution**,** as shown in Figure 1**.**



Source: Research Results

Figure 1. Stages of the Multimedia Development Life Cycle

The Concept stage focuses on defining the objectives and identifying the target users of the program, also known as audience identification. The purpose and final use of the program influence the multimedia design, serving as a reflection of the organization's identity and ensuring that information reaches the end users effectively (Fauzan Febriansyah & Sumaryana, 2021).

The Design stage involves creating specifications for program architecture, style, interface, and required materials. During this stage, the use case diagram and navigation structure are designed.

The Material Collecting stage is where all necessary materials are gathered according to the project's requirements. These materials may include clip art, animations, videos, audio, and other multimedia elements that align with the design plan.

The Assembly stage focuses on developing all multimedia objects and components. The application is built based on the design specifications, and in this study, Adobe Flash is used for development.

The Testing stage takes place after the Assembly stage, where the program is executed to identify potential errors. The Black Box Testing method is used, which evaluates the program based on its functional performance. The primary goal of this testing method is to detect functional errors within the program (Khasanah, Untari, et al., 2022).

Finally, the Distribution stage involves storing the application on a storage medium. If the available storage is insufficient, file compression will be performed. This stage also serves as an evaluation phase, allowing for further improvements to enhance the final product.

RESULT AND DISCUSSION

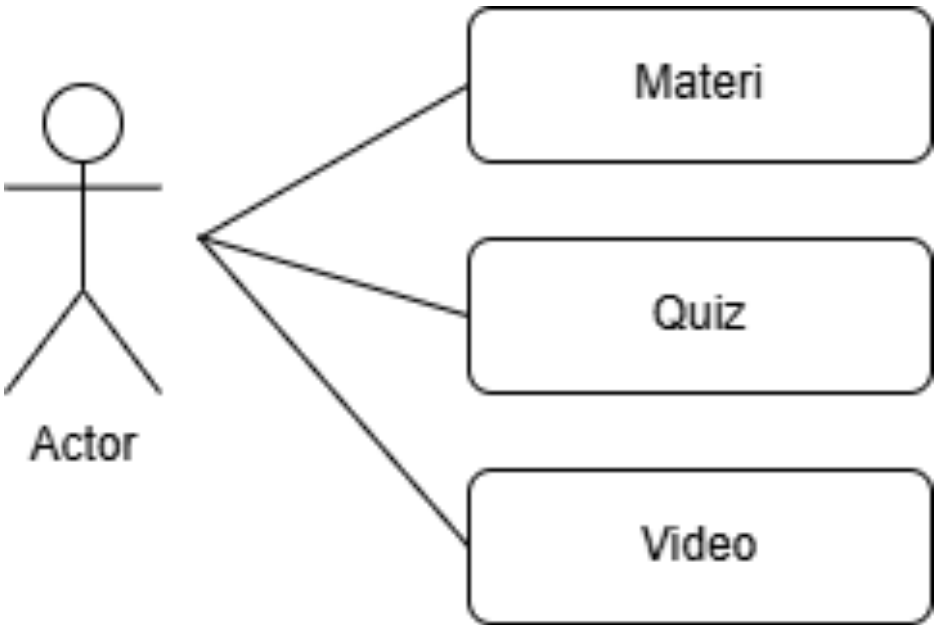
The Results and Discussion section presents the findings of the research conducted on the Multimedia Development Life Cycle (MDLC) method in designing interactive learning media for introducing fundamental religious knowledge at a Qur'anic Learning Center (TPA). In the Concept stage, the results obtained include the identification of objectives and target users for the program. The main objective of this program is to design an interactive learning application focused on fundamental Islamic education for TPA students. Based on this objective, the primary users of the program have been identified as TPA students and teachers. The media format specifications determined during this stage include: Image format: .png for static images; Animation format: .gif; Audio format: .mp3, used as background music when the program is running; Main content: Educational materials, quizzes, and videos. Table 1 presents the findings from the Concept stage.

Table 1. Concept Stage Results

Title	Interactive Learning Media for Introducing Fundamental Islamic Knowledge at TPA
Audience	TPA students and teachers
Duration	Unlimited
Image Format	*.png for images, *.gif for animations
Audio Format	*.mp3 for background music
Content	Learning materials, quizzes, videos

Source: Research data

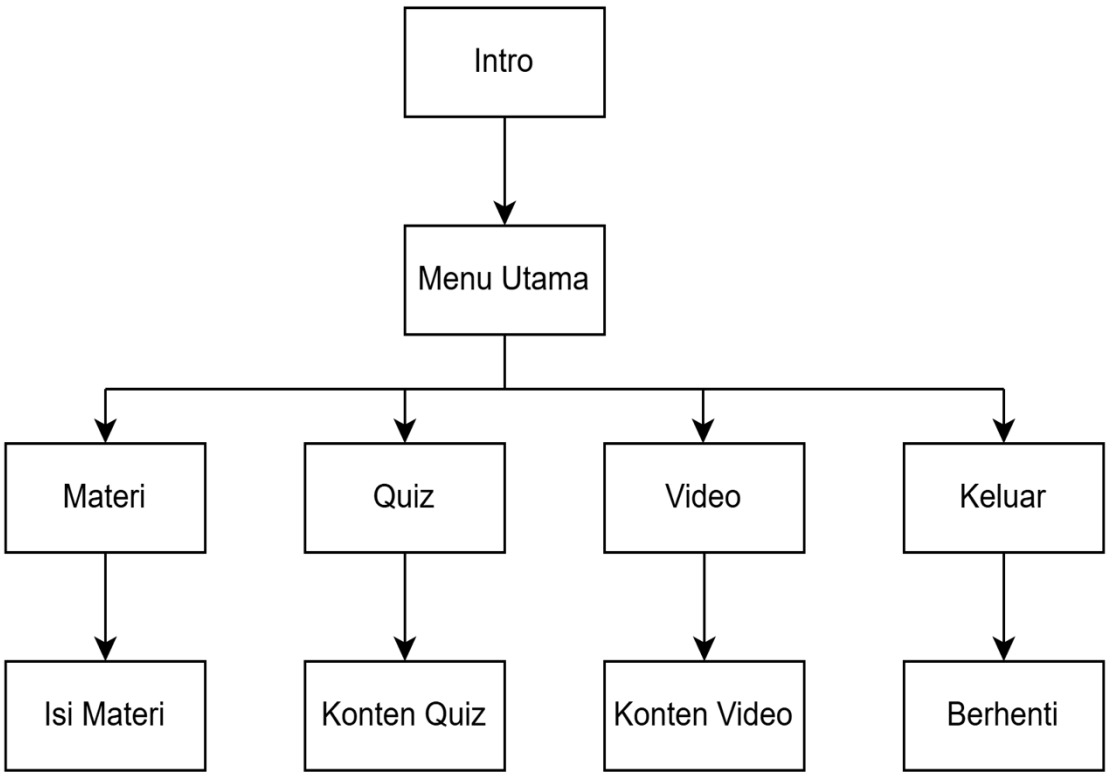
The design phase resulted in a Use Case Diagram, which illustrates the interaction between users and the program. The purpose of this diagram is to identify user roles and their interactions with the system.



Source: Research data

Figure 2. Use Case Diagram

Next, the navigation structure was designed. This structure serves as a guide for the flow of the multimedia application, ensuring a clear depiction of the relationships and workflow of all elements within the application.



Source: Research data

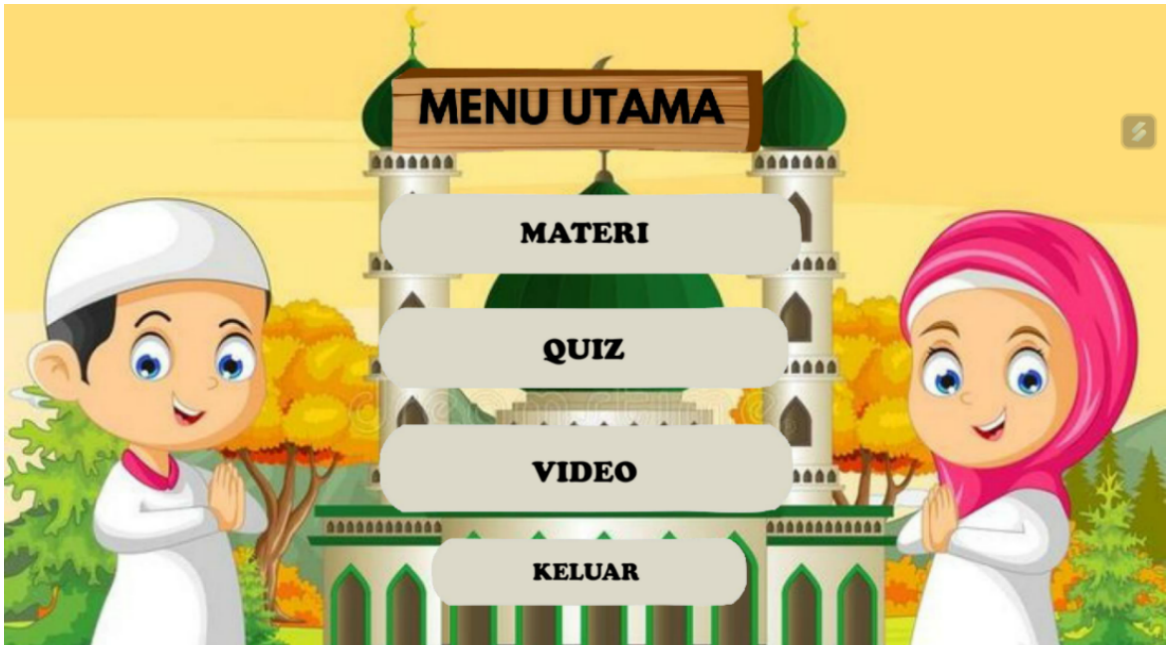
Figure 3. Navigation Structure

The assembly stage involved implementing the program design using Adobe Flash. Figure 4 presents the initial screen display when launching the application. Users can access the interactive learning media by clicking the "Enter" button.

Source: Research data

Figure 4. Home Page Display

The main menu of the interactive learning media includes three key sections: Learning Materials, Quiz, and Video. After completing activities within the application, users can exit by clicking the "Exit" button. Figure 5. Main Menu Display.



Source: Research data

Figure 5. Main Menu Display

Learning materials menu this menu contains essential materials for introducing fundamental Islamic knowledge to TPA students, including the Five Pillars of Islam, the Six Articles of Faith, and the Arabic Alphabet (Hijaiyah Letters). Users can click on any of the topics to explore the content in detail. Figure 6 learning materials menu display.

Source: Research data

Figure 6. Learning Material Display

The quiz feature is designed to assess students' understanding of the learning materials. This menu presents several true-or-false questions, and after answering, students will receive the correct answers on the next screen. Figure 7 Quiz Menu Display

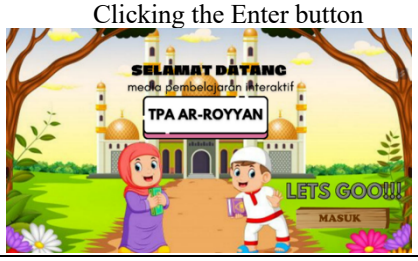
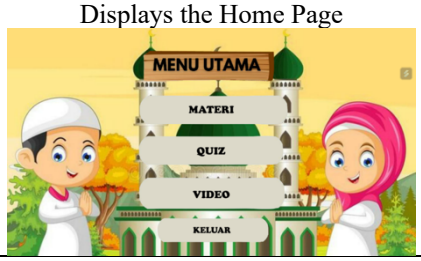
Source: Research data
Figure 7. Quiz Menu Display

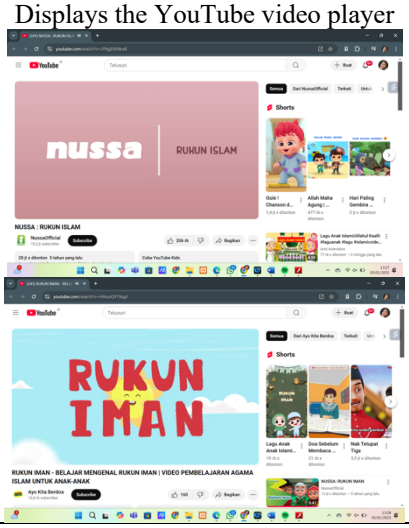
The video menu provides a collection of videos related to the main learning topics. The purpose of this feature is to create an engaging learning atmosphere, making students more enthusiastic about the three core topics of Islamic fundamentals. Figure 8 Educational Video Menu Display

Source: Research data
Figure 8. Educational Video Menu Display

The testing phase was conducted to evaluate the functionality of the interactive learning media, ensuring that the designed application performs as expected (Khasanah, Iin, et al., 2022). The testing process involved verifying the functionality of the home page, learning materials, quiz, and video menus, using the Black Box Testing technique.

Tabel 1. Testing Result

No.	Application Display	Expected Outcome	Conclusion
1.	Clicking the Enter button 	Displays the Home Page 	Successful
2.	Clicking the Learning Materials menu 	Displays the list of materials 	Successful
3.	Selecting a Material 	Displays the content of the selected material   	Successful
4.	Clicking the Answer button 	Menampilkan jawaban Displays the correct answer	Successful
5.	Clicking the Next button	Displays the next quiz question	Successful

No.	Application Display	Expected Outcome	Conclusion
			
6.	Clicking the Back button	Returns to the previous page	Successful
7.	Clicking the Educational Video menu 	Displays the YouTube video player 	Successful
8.	Clicking the Play button 	Plays the Educational Video via YouTube	Successful

Source: Research data

Distribution stage, at this stage, the application was stored on a hard drive and configured as an autoplay file, making it ready for deployment. This marks the final stage of development, where the application is fully operational. The interactive learning media was developed using Adobe Flash, with project files saved in .fla format. Once development was complete, the application was exported as an .exe file, ensuring easy execution on computer devices.

CONCLUSION

Based on the research conducted, it can be concluded that this study successfully developed an interactive learning media application aimed at introducing fundamental Islamic knowledge to TPA students. The application was successfully built using the Multimedia Development Life Cycle (MDLC) approach, following several stages: concept, design, material collecting, assembly, testing, and distribution. This research still has room for further development, such as adding more learning materials or expanding the media platforms used. One potential enhancement is the implementation of interactive learning media on mobile platforms, which could increase accessibility and engagement for users.

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