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DEVELOPMENT OF QURAN LEARNING WEBSITE FOR THE ISLAMIC SHARIA SERVICE IN SOUTHEAST ACEH DISTRICT USING THE WATERFALL METHOD

PEMBANGUNAN LAMAN WEB PEMBELAJARAN AL-QURAN BAGI PERKHIDMATAN SYARIAH ISLAM DAERAH ACEH TENGGARA MENGGUNAKAN KAEDAH AIR TERJUN

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Abstract
This study aims to develop an Al-Quran learning website for the Islamic Sharia Office of Southeast Aceh District using the waterfall method. The website development stage includes needs analysis, design, implementation, testing, and maintenance. At the design stage, the website features and appearance are made. Functional testing results show that the website can run correctly and according to the desired specifications. This research benefits the Southeast Aceh District Islamic Sharia Office and future researchers who wish to develop a website for learning the Qur'an using the waterfall method. In future website development, it is advisable to involve users actively in every stage of development to ensure their involvement in design and testing.

Keywords
Qur'an learning websites, Islamic Sharia Office, waterfall method, needs analysis, design, implementation, testing, maintenance, validation, users.

1.0 Introduction

Southeast Aceh is one of the districts in Aceh with a majority Muslim population. However, the Al-Quran literacy rate results in Southeast Aceh still need to be higher. One of the efforts to increase Al-Quran literacy is developing an Al-Quran learning website.

Several previous studies have been conducted on the development of Al-Quran learning websites. For example, El Munsy and Alaydrus's (2020) research at the Bandung Central Sharia Campus shows that developing an Al-Quran learning

website can increase students' understanding of the Qur'an. In addition, research by Anwar, Ahmad, and Rahman (2021) at the State Islamic University of North Sumatra also shows that developing Al-Quran learning websites can significantly contribute to increasing understanding and appreciation of the Al-Quran.

The current phenomenon shows that the use of technology in education is growing. One form of using technology in education is the development of learning websites. In this case, Al-Quran learning websites have great potential to increase Al-Qur'an literacy. However, developing Al-Quran, learning websites also has its challenges, such as a need to understand user needs, differences in understanding between users and website developers, and so on.

Developing an Al-Quran learning website for the Southeast Aceh Regency Islamic Sharia Service using the Waterfall method is expected to solve the problem of low Al-Quran literacy rates in Southeast Aceh. The Waterfall method was chosen because it has clear and systematic stages, making it easier to develop Al-Quran learning websites. In addition, the Waterfall method also pays attention to user needs in detail to improve the quality of the Al-Quran learning websites produced. It is hoped that this research can contribute to the development of educational technology and provide alternatives for educators in dealing with situations.

In addition, the Southeast Aceh Regency Islamic Sharia Office still needs an adequate online learning platform to accommodate the community's needs in learning the Qur'an. In recent years, information and communication technology has developed rapidly, thus providing excellent opportunities for developing innovative and interactive Al-Quran learning platforms.

In previous research, using technology in learning the Quran has proven effective in increasing student motivation and involvement and improving the quality of learning (Husamah et al., 2020). A learning website is one type of technology that can be used in learning the Qur'an. Al-Quan learning websites have been proven to improve students' understanding of reading and the Al-Quran better (Husamah et al., 2020).

However, the success of developing an Al-Quran learning website lies in more than just technical aspects. However, content management and marketing aspects must also be considered to reach target users. Therefore, the waterfall method was chosen for developing Al-Quran learning websites because it can guide developers in carrying out projects in a structured manner, from planning to maintenance.

With the waterfall method, the development of Al-Quran learning websites can be structured and effective to positively impact the community in increasing Al-Quran literacy. In addition, the results of this research can contribute to the development of educational technology in Indonesia and provide an alternative for educators in dealing with the current situation, which demands more effective online learning.

Based on the background and research objectives that have been described previously, the formulation of the problems in this study are:

1. How is the analysis of the need to learn the Quran at the Islamic Sharia Office of Southeast Aceh District?
2. What is the process of developing an Al-Quran learning website that can increase Al-Qur'an literacy for the people of Southeast Aceh using the waterfall method?
3. What is the user's view of using the Al-Quran learning website built on the second objective through a questionnaire?

2.0 Research Purposes

The specific objectives of this research are:

1. Analyzing the need to learn the Koran at the Southeast Aceh Regency Islamic Sharia Office.
2. Building an Al-Quran learning website that can improve Al-Qur'an literacy for the people of Southeast Aceh using the waterfall method.
3. Knowing the user's views on the use of Al-Quran learning websites built on the second objective through a questionnaire

3.0 Research Scope

The scope of research in developing Al-Quran learning websites with the waterfall method includes several aspects that will be analyzed and developed. This research will be conducted at the Southeast Aceh Regency Islamic Sharia Office, which focuses on developing an Al-Quran learning website.

First, this research will identify the need for Al-Quran learning in the Southeast Aceh District. This was done by interviewing the Southeast Aceh Regency Islamic Sharia Office. This stage will analyze the factors that become obstacles to learning the Quran and the expectations of society in learning the Quran.

Second, this research will focus on developing Al-Quran learning websites that can improve Al-Quran literacy for the people of Southeast Aceh District using the waterfall method. This waterfall method will be used in developing Al-Quran learning websites, starting from planning, needs analysis, design, implementation, testing, and maintenance. At this stage, a complete Al-Quran learning website will be produced that can be accessed easily by the people of Southeast Aceh District.

Third, this research will carry out functional testing on the website that has been built. Functional testing is carried out to ensure that every feature on the website runs skillfully and according to the desired specifications. This test was conducted to determine to what extent this Al-Quran learning website can help improve Al-Quran literacy in the community in Southeast Aceh District.

4.0 Literature Review

In research on developing Al-Quran learning websites for the Southeast Aceh Regency Islamic Sharia Office using the Waterfall method, a literature review was conducted to obtain the necessary information in developing Al-Quran learning websites and also to find out the extent to which previous studies regarding Al-Quran learning using technology has been carried out.

4.1 Learning the Quran with Technology

At this time, information technology is growing and has become an essential part of human life. Information technology has also begun to be utilized in various sectors,

including education. According to Adiputra (2018), technology can help teachers and students face obstacles in learning. In learning the Quran, technology can also be utilized. Fadhilah and Rahman (2018) stated that learning the Quran with technology has become a common practice. Technology can help learn the Quran so that the learning process can become more accessible and practical.

4.2 Development of Al-Quran Learning Website with Waterfall Method

The Waterfall method is a software development method often used in website development. According to Hidayanto et al. (2016), the Waterfall method is a software development method that runs in a linear and structured manner, starting from planning, analysis, design, implementation, and testing to maintenance. The Waterfall method has been widely used in developing websites and other software. The Waterfall method provides advantages in software development because the stages of development are structured and measurable to help developers minimize development risks.

4.3 Al-Quran Literacy

Al-Qur'an literacy is essential in Muslim society. According to Munawaroh et al. (2019), Al-Qur'an literacy can help individuals to understand Islamic values and also as a form of practicing religious teachings. In Muslim society, Al-Quran literacy is an important thing to do. In addition to deepening religious understanding, Al-Quran literacy can help individuals become better and have good character.

4.4 Using Al-Qur'an Learning Websites

The use of Al-Quran learning websites has also been carried out in previous studies. According to Fadhilah and Rahman (2018), using Al-Quran learning websites can help students learn the Al-Quran; several previous studies have also shown that technology can play an essential role in increasing Al-Quran literacy. For example, a study by Al-Emran, Elsherif, and Shaalan (2016) found that using technology, such as websites and applications, can increase students' motivation and interest in learning the Quran. In addition, technology can enable students to learn the Qur'an more interactively and excitingly.

The use of technology in Al-Quran education is also a current phenomenon. One example is Quranic, a popular Al-Quran learning application in Indonesia. This application offers various features, such as audio and video, to help users understand the meaning of each verse in the Quran. In addition, this application also provides interactive features, such as quizzes and games, which can make learning more exciting and fun.

Although the use of technology in Quran education offers much potential, some challenges and problems still need to be overcome. For example, several regions in Indonesia still need to have adequate access to technology and the internet. In addition, the need for more availability of quality Quranic educational content on the internet is also a problem that needs to be addressed.

In general, Al-Quran literacy is an important issue and needs more attention in education in Indonesia. The development of Al-Quran learning websites using the

waterfall method can be an alternative to increase Al-Quran literacy in the Islamic Sharia Office of Southeast Aceh District. By understanding the phenomenon and previous research, it is hoped that the development of an Al-Quran learning website can overcome several problems in Al-Quran education and contribute to the development of educational technology in Indonesia.

5.0 Research Methodology

This study uses the waterfall method in developing an Al-Quran learning website for the Islamic Sharia Office of Southeast Aceh District. The waterfall method is a structured software development process model carried out sequentially from the planning, analysis, design, coding, and testing to the maintenance stages. This method consists of five stages: needs analysis, design, implementation, testing, and maintenance.

The first stage in the waterfall method is needs analysis, where the researcher conducts an initial study to understand the needs and desires of users. At this stage, researchers analyzed the need to learn the Koran at the Southeast Aceh Regency Islamic Sharia Office through interviews and documentation studies. The results of this needs analysis form the basis for the next stage, namely design.

The second stage is designs, where the researcher designs the features and appearance of the Al-Quran learning website according to user needs. At this stage, the researcher creates a website mockup design which the user then validates to ensure compliance with requirements.

The third stage is implementation, where the website design is built into a website that users can use. At this stage, the researcher used the WordPress CMS and the LMS Plugin to implement the designs designed in the previous stage.

The fourth stage is testing, where researchers carry out functional testing. At this stage, researchers ensure that the website can function correctly and according to user needs.

The final stage is maintenance, in which researchers conduct regular repairs and maintenance of the website to ensure its availability and functionality.

In this study, the waterfall method was used because it has several advantages, such as a structured development process, careful planning, complete documentation, and easy maintenance. This method also ensures that the built Al-Quran learning website can adequately meet users' needs and function optimally.

6.0 Results And Discussion

6.1 Needs Analysis

The analysis of the need to learn the Quran at the Southeast Aceh Regency Islamic Sharia Office shows that several things need to be considered in the development of Al-Qur'an learning websites.

1. First, teachers need complete and integrated learning resources to teach Al-Qur'an material.
2. Second, students need learning resources that are easily accessible and understandable.

3. Third, there is a need for features that make it easier for teachers and students to interact and communicate.

The interviews and documentation studies show that teachers and students in Southeast Aceh District still use conventional methods in learning the Quran, such as textbooks and face-to-face lectures. Although several Al-Quran learning websites are available on the internet, these websites still need to meet the needs of teachers and students fully. Most websites only provide limited material and need to be better integrated.

Based on the results of this needs analysis, we developed an Al-Quran learning website to provide learning resources that are complete, easy to access and understand, and equipped with interaction and communication features between teachers and students. We adopted the waterfall method as a systematic and structured software development framework in its development.

Developing this Al-Quran learning website through the needs analysis stage is an essential first step to ensure that the developed website can adequately meet the needs of teachers and students. The results of this needs analysis become the basis for the next stage in the waterfall method: design, implementation, testing, and maintenance. In the next stage, we will design an Al-Quran learning website according to the needs that have been identified, implement the design into a website, carry out tests on the website that has been built, and carry out maintenance and repairs if necessary.

6.2 Design

In the second stage of developing an Al-Quran learning website using the waterfall method, namely design, researchers have made a feature design and website appearance. Before the design is implemented, the researcher makes a mockup to facilitate an understanding of the structure and layout of the website to be made. The user then validates the design to ensure compliance with requirements.

Figure 1. Front Page Display Design

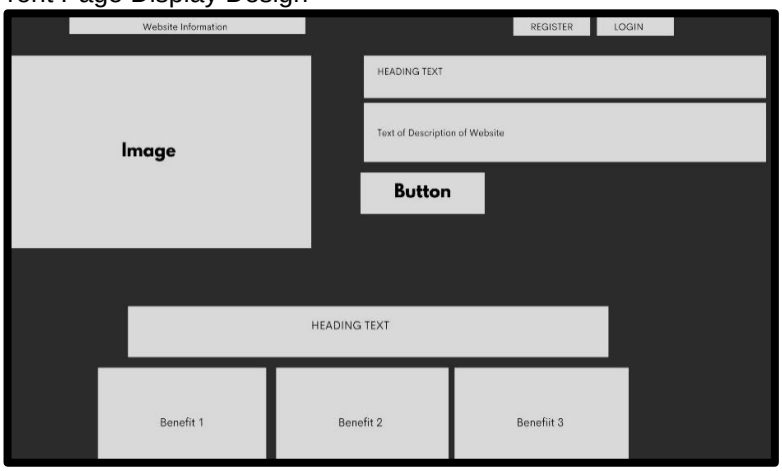


Figure 2. Registration Page Display Design

Figure 3. Login Page Display Design

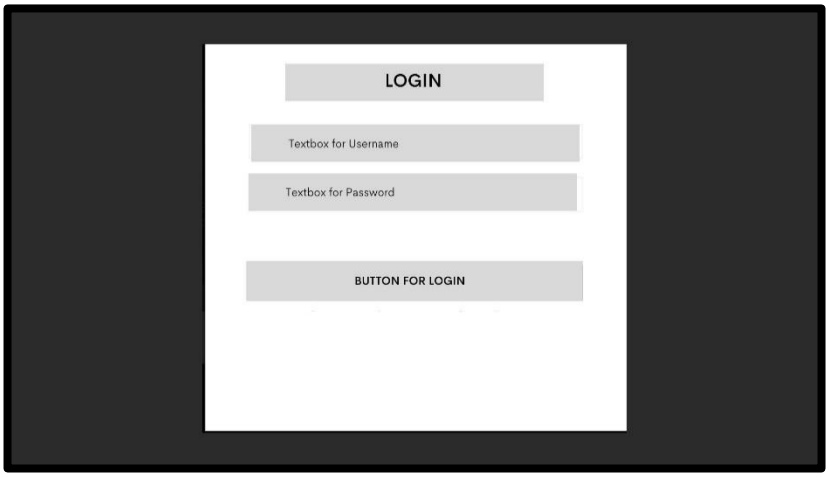


Figure 4. Learning Page Display Design

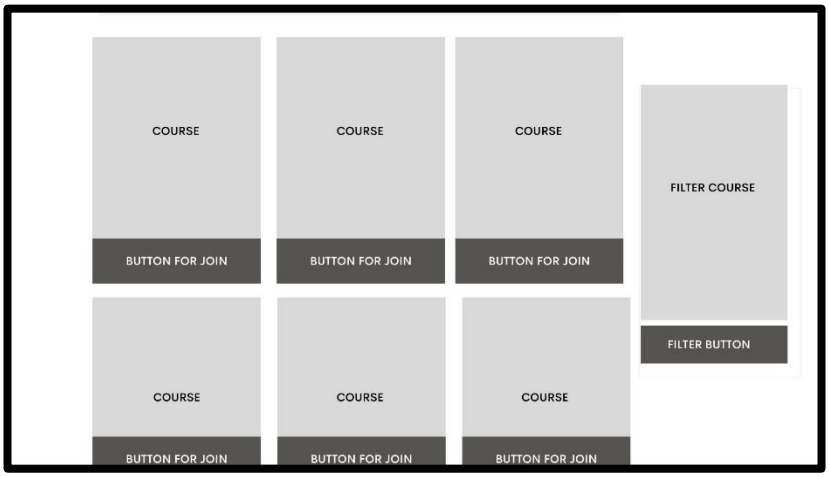


Figure 5. User Menu Page Display Design

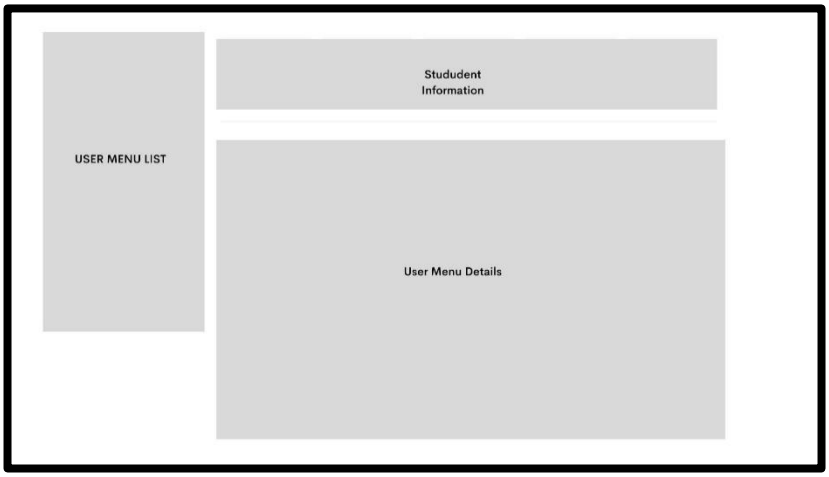
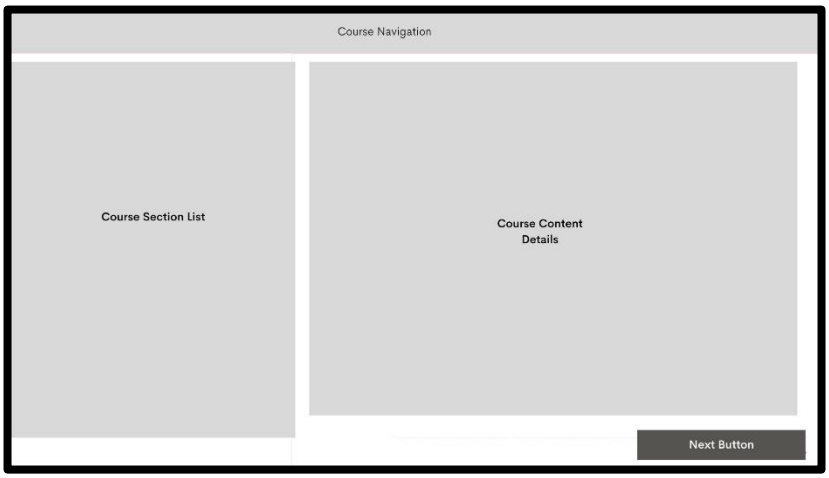


Figure 6. Course Page Display Design



Validation is carried out by involving several related users in using the mockup that has been made. Users are asked to provide input regarding the appearance, navigation, and proposed features. The validation results are then analyzed to determine which aspects need to be improved and changed. Thus, the design stage is carried out by directly paying attention to users' needs.

From the results of the mockup validation that has been carried out, several things were found that needed to be corrected and changed. Some users propose to add specific features that can make it easier for users to learn the Quran. Several users also provided input regarding the appearance and layout of the proposed website. This helps researchers in making improvements and adjustments to the initial design that has been made.

In this design stage, the researcher has succeeded in designing the features and appearance of the website according to user needs. Through mockup validation, researchers can identify weaknesses and strengths in the designs that have been made and make necessary improvements and adjustments. In the next stage, the implementation stage, the validated design will be implemented into an Al-Quran learning website according to user needs.

6.3 Implementation

After the design phase is complete, the next step in the waterfall method is website implementation or development. At this stage, a design plan approved by the user is developed into a website that can be used online. In this study, researchers used a WordPress CMS with an LMS plugin to build an Al-Qur'an learning website for the Islamic Sharia Office of Southeast Aceh District.

WordPress CMS was chosen because of its high flexibility in accommodating user needs and being easy to use by ordinary people who do not have a technical

background. In addition, the LMS plugin used allows users to manage learning content, including learning materials, assignments, and exams. At the implementation stage:
Figure 7. Website Front Page Implementation

Figure 8. Registration Page Implementation

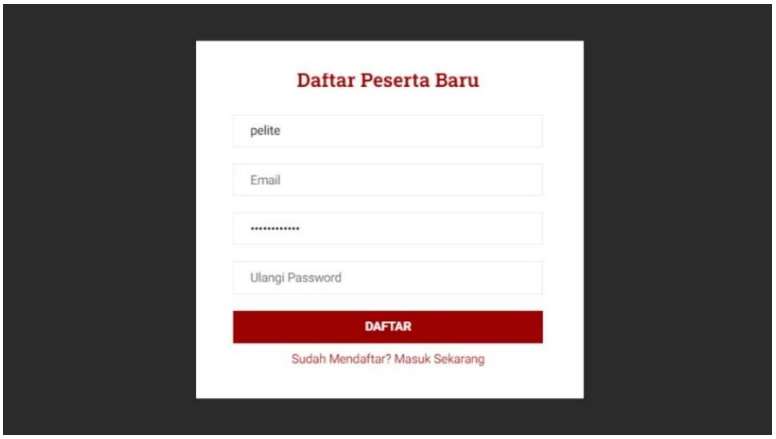


Figure 9. Login Page Implementation

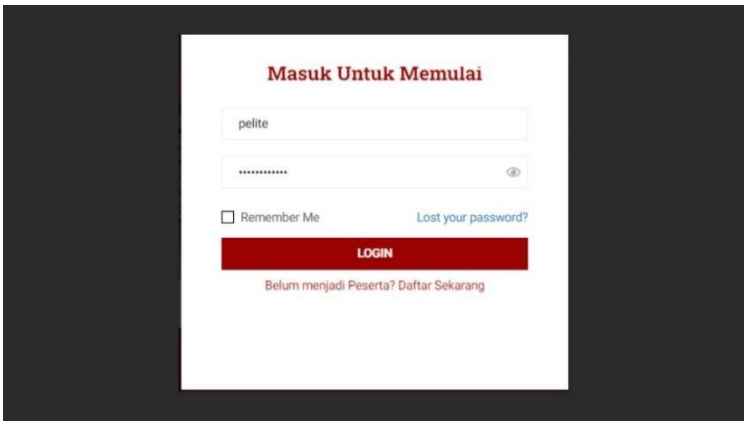


Figure 10. Implementation of Available Course List Pages

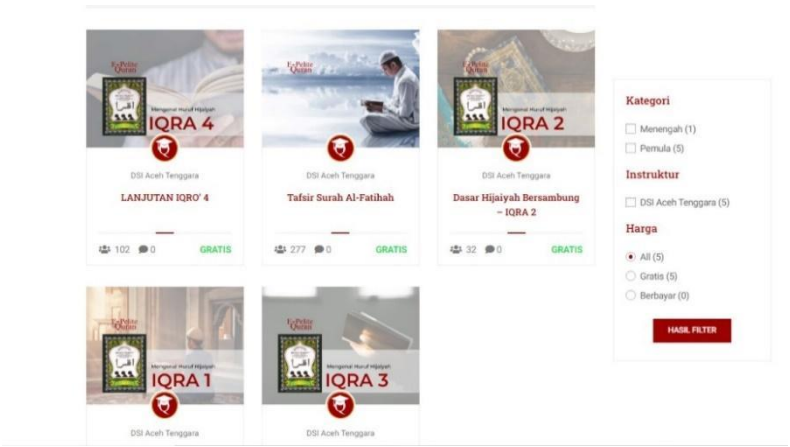


Figure 11. Implementation of User Menu Pages

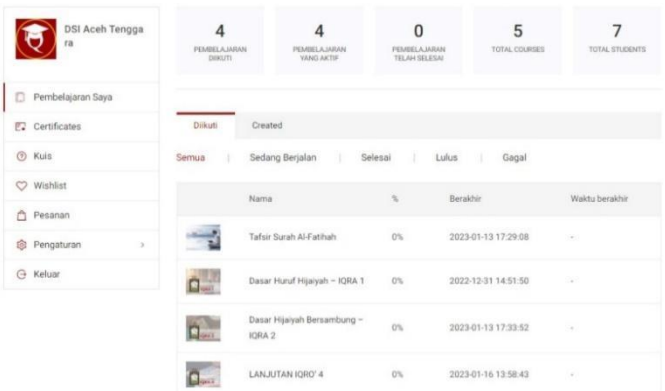
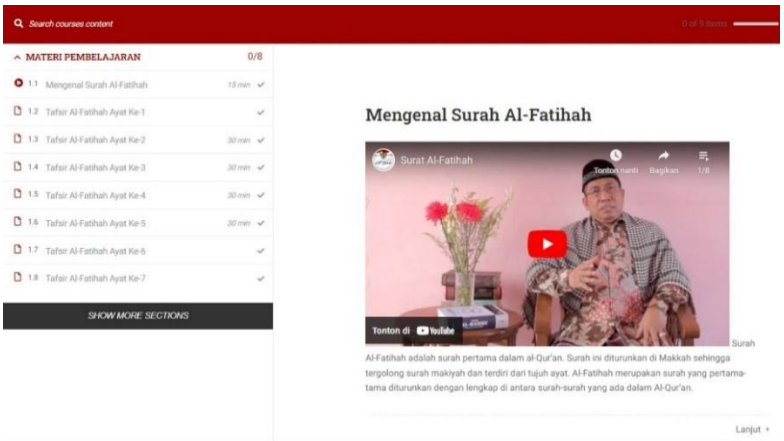


Figure 12. Course Page Implementation



The result of this implementation phase is an Al-Qur'an learning website ready to be used by users. In developing this website, researchers have ensured that the website meets the needs and desires of users and functions correctly and according to the desired specifications.

6.4 Testing

After the implementation phase is complete, functional testing is carried out on the website that has been built. Functional testing is carried out to ensure that every feature on the website is running correctly and according to the desired specifications. Functional tests carried out include the following:

Functional	Testing Techniques	Results
Login and Registration Features	testing is done by ensuring that users can create new accounts, log into the system and log out correctly. In addition, testing also includes the forgot password and password reset features.	Goes well
Navigation Features	Testing is carried out to ensure users can easily navigate between pages on the website and access all the features provided.	Goes well
Search Feature	Testing was conducted to ensure the search feature works appropriately and users can easily find the content they need.	Goes well
Content Features	Testing is carried out to ensure that the content displayed on the website can be accessed properly, including learning materials, videos, and practice questions.	Goes well

Profile Settings feature	Testing is done to make sure users can edit and manage their profiles properly.	Goes well

In developing an Al-Quran learning website using the waterfall method, functional testing is critical to ensure that the website can function properly and meet user needs. With positive test results, the website can be launched for widespread use by users.

6.5 Maintenance

The final stage of the waterfall method is maintenance. After the website has been built and tested, our developers' job is to ensure the website continues to function correctly and meet user needs. At this stage, repairs and maintenance of the website are carried out regularly to overcome technical problems and increase its functionality.

One of the website maintenance actions that can be taken is monitoring website performance and security. This can be done using website performance analysis and security testing tools to determine if any security vulnerabilities need to be addressed.

Apart from that, bug fixing and new feature development should also be done regularly. Users can provide input and suggestions regarding website functionality so that improvements and development of new features can be carried out according to user needs. By carrying out routine maintenance, this Qur'an learning website can function properly and efficiently to meet user needs.

7.0 Conclusion

Based on the research done in developing Al-Qur'an learning websites for the Syariat Islam Office of Southeast Aceh District using the waterfall method, it can be concluded that the development of this website has been carried out well and to user needs.
In the needs analysis stage, researchers have conducted initial studies and interviews with users and collected documents related to the needs and desires of users. The needs analysis results show that users need an Al-Qur'an learning website that is easy to access, easy to use, and equipped with various features and complete Al-Qur'an learning content.

Furthermore, at the design stage, researchers have designed the features and appearance of Al-Qur'an learning websites according to user needs. The user then validates the design to ensure compliance with requirements.

In the implementation stage, the website design plan is built into a website that users can use. Using a WordPress CMS with an LMS plugin that has been customized for the needs of Al-Quran learning websites for the Aceh Tenggara Islamic Sharia Service is beneficial in developing this website.

At the testing stage, researchers have conducted functional testing on the website built to ensure that the website can function correctly and according to user needs. Finally, at the maintenance stage, researchers conduct regular repairs and maintenance of the website to ensure its availability and functionality.

From the results of this study, the waterfall method can be used to develop Al-Qur'an learning websites that can meet user needs well. In this study, the waterfall

method has helped the website development process with an organized and systematic structure. In addition, the results of user testing show that this website is easy to use and satisfies user needs well. Therefore, developing an Al-Qur'an learning website using the waterfall method can be the right solution to meet user needs and improve the quality of Al-Qur'an learning at the Islamic Sharia Office of Southeast Aceh District.

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