Redesign of the science interpretation laboratory application (Labtafsin 2.0) using 3 languages as supporting media for science learning based on Al-Qur'an interpretation

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ABSTRACT

The application of the Science Interpretation Laboratory, as a learning media for the development of science interpretation science that leads to an Islamic worldview, faces practical obstacles by often experiencing errors (force close) in its use. This study aims to evaluate and redesign the Science Interpretation Laboratory Application to overcome these obstacles. With the stages of research (Waterfall System Development Life Cycle) SDLC has five stages: Requirements analysis, System and software design, Integration and system testing, and operation and maintenance. Then the application was tested with 2 material and media experts and 38 students. The results show that the redesign of the Labtafsin 2.0 application was successful, adding 3 language features (Arabic, English, and Indonesian). The functionality test (black box) results show that the application runs smoothly and can be used optimally on Android version 10. Ratings from material experts give an average of 94%, indicating that this app is suitable as a learning resource. Ratings from media experts give an average of 90%, the application is rated as very satisfactory. Then the assessment from students showed a score of 93%, and this application can be used very well. Further, it is necessary to develop, by adding video and quiz features according to the material to support learning.

INTRODUCTION

The development of technology has made the form of learning increasingly dynamic so today's learning media has also led to the use of technology because the use of technology has become a necessity in everyday life, especially the use of smartphones (Susilo & Prasetyo, 2020). Among the learning concepts that use smartphone technology is mobile learning, which is a process of transferring information from smartphones to the hands of individual students through a base system, namely the operating system, the operating system which connects the application with the hardware, so that users can do everything according to their function in the application (Amirullah & Hardinata, 2017). Using mobile learning will form interactions and create new learning methods, because using new technology will form a learning system on a broad and varied scale (Sari & Ma'rifah, 2020),

among The varied forms of learning systems with mobile learning is the laboratory form. Digitized or virtual laboratory.

The first virtual laboratory was introduced in 1997 with the title Virtual Physiology Laboratory, the virtual laboratory itself includes experiments called objects from a dependent domain which are simulation programs, that include data files, tools that operate on objects, or reference books (Nirwana, 2016). Online labs, on the other hand, offer a wealth of opportunities for carrying out scientific research. Furthermore, one of the most recent pedagogical developments in the educational setting over the past few years has been the use of online experiments. Additionally, in addition to increasing educational opportunities for more students, they have been adapted to science education as an effective tool for improving learning quality and teaching methodologies, improving learning experiences, and raising student participation and motivation (Kharki et al., 2021). To fulfill this requirement, current best practices from the field of web user interface design should be used, and many software components can be used (Budai & Kuczmann, 2018).

The use of electronic technology which includes web-based, computer-based learning, virtual, and digital learning that takes place via internet channels, network systems, or without a network using electronic technology for learning is called E-learning. Then E-learning experienced development with the rapid development of wireless technology and various mobile devices from electronic online learning (E-Learning) to Mobile Learning (M-Learning) (Abdullah et al., 2021). Mobile learning refers to the use of mobile or wireless devices with the aim of learning that can be done anywhere (Alam & Mohanty, 2023). Mobile learning is the fourth revolution in educational development the previous revolution included the invention of writing, the use of textbooks in schools after the invention of the printing press, the emergence of mainstream education, and the fourth revolution was the use of e-learning technology and m-learning is part of e-learning where devices The mobile uses audio, visual, cognitive, cooperative and interactive through the use of smartphone devices to create direct and dynamic learning environments that are sustainable and not limited by space and time boundaries which lead to the elimination of traditional classes, routines, and imitations (Abdullah et al., 2021). The potential and prospects for the future development of mobile learning are very wide open considering the trend of an increasingly dynamic and mobile society as well as the demand for quality and diverse educational needs (Warsita, 2010).

The use of mobile learning as a learning medium in the Department Al-Quran and Tafsir Studies at Universitas Darussalam Gontor in the Basic Natural Sciences course and the Scientific Interpretation course, both courses explain the relationship between the verses of the Qur'an and its interpretation and science. Scientific interpretation is built on the assumption that the Al-Qur'an contains various kinds of knowledge, both discovered and undiscovered. This science departs from the paradigm that the Qur'an does not conflict with common sense and other sciences. The Qur'an itself contains other knowledge, not only of religious sciences, but also of political sciences, economics, and theoretical scientific knowledge contained therein (Puspitasari et al., 2020). so that the wonders of the Qur'an will be seen which are linked to the realities of contemporary life and make the Qur'an suitable for use at any time and place. Therefore, scientific discourse is needed as a link between science and the Qur'an, namely with *tafsir ilmy*.

Tafsir Ilmy is a science that interprets the verses of the Al-Qur'an with a scientific approach and explores the content of the Al-Qur'an based on scientific theories (Mustikasari & Badrun, 2021). An attempt to understand the verses of the Qur'an with *Isyarah Ilmiyah* from the perspective of modern science (Habibullah et al., 2024). Because the Qur'an is the source of all knowledge, research, and attention of Muslims are needed so that humans think about the greatness of the Qur'an, many verses of the Qur'an encourage humans to think, understand, and research the creation of Allah SWT. (Rifaannudin & Alauddin, 2022). There are more than 1000 verses that contain concrete verses and hundreds of others are related to universal phenomena (Rifanudin & Munandar, 2021), So this *Tafsir Ilmy* is the interpretation of ulama, scholars in looking at cosmic verses related to various scientific events using a scientific approach.

So a mobile e-based science interpretation laboratory was developed to help students get to know *Kauniyah* verses as a modern learning medium (Puspitasari et al., 2021). By making the smartphone a device for explaining scientific interpretation. One proof of the miracle of the Qur'an

is that it has verses on law, *muamalat*, and the science of *aqidah* which are a guide for humans in this world to know the Creator, every Muslim believes in everything created by Him, including faith with The day of resurrection and retribution will thus be depicted with grace, patience for Muslims and the wisdom of everything (Muthi'ah, 2019). In the *Kauniyyah* verses there is an indication of His majesty and power in this world. Thus, not all people understand and understand the existence of *kauniyyah* verses. In this case, the researcher wants to design an application regarding understanding the meaning of the Al-Qur'an and science.

The State of Art of this research draws from the results of previous research on the Preliminary Study of the Development of Mobile Learning in the Science Interpretation Laboratory (Labtafsin) which obtained the results that the study of the development of m-learning in the science interpretation laboratory needs to pay attention to the curriculum that will be implemented, and the form of m-learning as a description of the laboratory concept that will be developed (Puspitasari et al., 2020). Apart from that, further research into the effectiveness of Labtafsin 1.0 as a learning medium showed that the mobile learning science interpretation laboratory (Labtafsin Apps) took the form of an application on Android to help users access know kauniyah verses with explanations of scientific interpretations, as well as to increase interest in studying natural phenomena in perspective. Islam, the final result of the validity of the Science Interpretation Laboratory's M-learning is that regarding mobile learning it is in the good category, with a score of 4.5 from material and media experts, and a score of 4.4 from schoolgirl. The increase in pre-test and post-test results was 6 points, showing the results of testing the feasibility of application products on several students using a questionnaire and obtained an average score of 87.25%. Field trials based on material expert assessments and trials were 86.25% in the very feasible category. Therefore, it can be interpreted that in developing the mobile learning platform in the Tafsir Ilmy course, it is very suitable to be used as a learning media (Puspitasari et al., 2021).

Other research about mobile learning to support learning Tafsir Hadith shows the results that the product feasibility test based on the assessment of material experts and media experts obtained a percentage of 84.16% and 83.33% in the feasible category. Then the results of limited trials obtained a feasibility percentage of 81.61% and field trials of 88.33% in the very feasible category. Therefore, it can be concluded that the development of a mobile learning platform in the Tafsir Hadith course is very suitable to be used as a learning supplement (Ramadhan & Hamdan, 2022).

The Science Interpretation Laboratory application edition 1.0 could previously be downloaded on Playstore, but in 2023 the application experienced an error (force close). Then there is a need for evaluation and rework to overcome these obstacles. Researchers found an error in the hosted material database which could not be accessed again. One of the respondents from the Playstore of this application, explained that "this application experienced an error when changing the language. With this, you have to overcome errors that occur in the application". Apart from that, the languages used are still Indonesian and English, and there is no Arabic in the material, so it is necessary to perfect the previous application.

Then, in designing the Tafsir Sais Laboratory application, edition 2.0, researchers added three languages, namely Indonesian, English, and Arabic, by re-creating this application so that it would experience changes in terms of appearance, features, and additional language material. This application has the potential to be an effective and efficient learning tool in studying scientific interpretation and has a correlation with modern knowledge.

METHOD

This research was conducted on the campus of Universitas Darussalam Gontor. The research object is the student's Department Al-Qur'an and Tafsir Studies, with the population used by students in semesters 4, 6, and 8 in the study program and 2 experts in material and media. The database used for this application uses Firebase provided by Google. The application design method in this research uses the Waterfall System Development Life Cycle (SDLC) method. This method develops systematic software and also sequential and continuous stages of the method (Purnia et al., 2019). Development of the system used for this research. The SDLC method has five main stages in its

development, namely Requirement Analysis, Design, Coding, Testing, and Maintenance. The stages of the SDLC method are depicted in Figure 1.
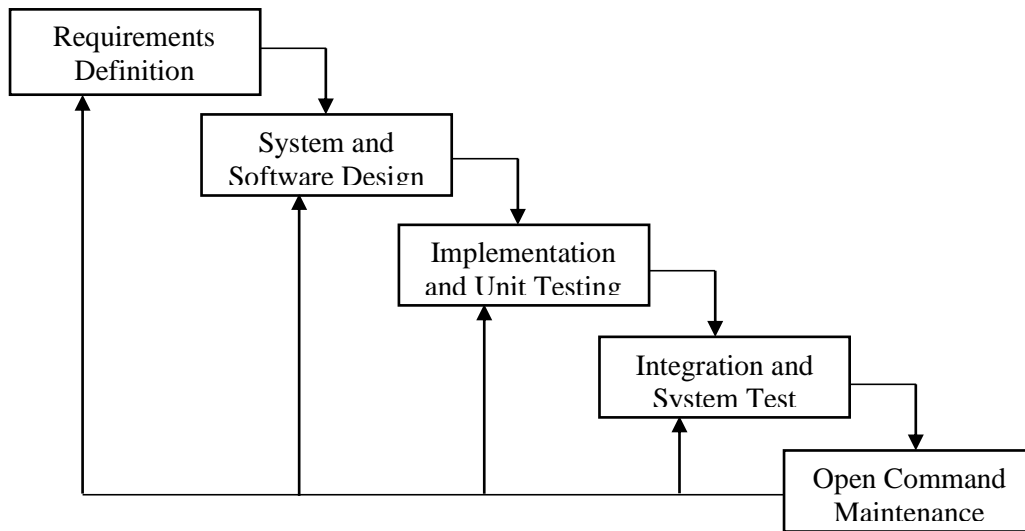

Figure 1. Methodology Stages of SDLC

1. Requirements Analysis
   Constraints are analyzed and applied to the results of consultations with users, then defined in detail and with more specifications in the system (Muhlisah, 2017). This identification stage is the stage of exploring and formulating the problem until the technological solutions used in the development of this learning media are then assembled and summarized. At this stage, initial planning is carried out regarding the completion of the force close and the development of the use of three languages. This design will be directed at improving the quality of learning by targeting an increased understanding of the material through the use of more inclusive language.
2. System and Software Design
   The design stage aims to meet the needs of the software system by forming the design or architecture. The formation of this system is the basis for describing the system equipment in its development, including Figure 2.
   a) Use Case Diagram
      The user actors in this application system are students or lecturers. When you first enter the application, you must log in to register first. After logging in, the user enters the home page on this display and can select the favorite icon and material. In the favorite display, the user can determine favorites on the material they like. For the material display, they can select the title and explanation studied in the application.
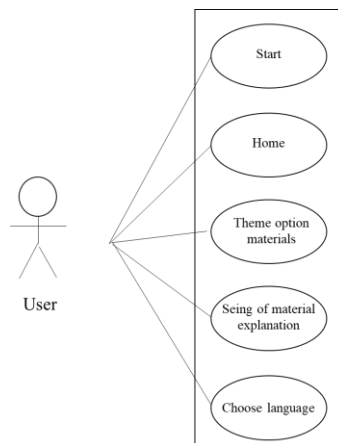

Figure 2. Use Case Diagram

b) Activity Diagram

Diagram activity modeling a workflow sequence of a process described in Figure 3. The Diagram Activity in Figure 3 displays a user page that will direct you to the home page and then on the home page there are several language and material options. After selecting some of the material that has been presented, then enter the content of the material that can be studied on the detail page.
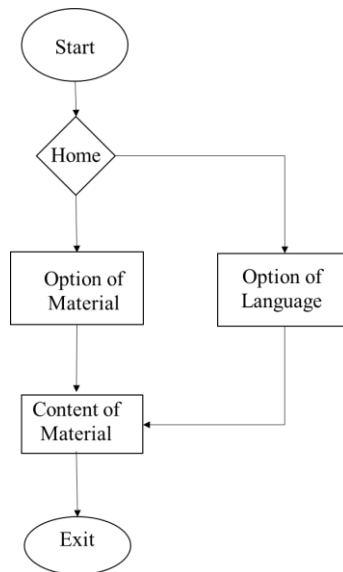
Figure 3. Activity Diagram

a) Use Case Database

The Database Usecase above in Figure 4 illustrates the workflow of the "Science Interpretation Laboratory" application, which is focused on users who want to access scientific materials. In addition to language options, there is material displayed with 12 choices of material to be studied in it. Of the 12 materials, namely: Astronomy, Botany, Embryology, Physiology, Geology, Animals, Hydrology, Medicine, Marine Affairs, General Knowledge, Biology, and Physics.

Figure 4. Use Case Database

3.	Integration and Unit Testing

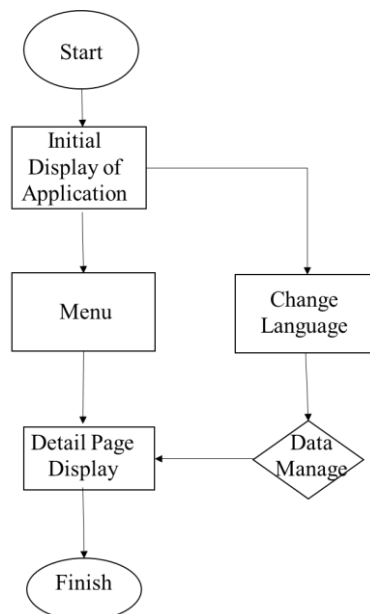The next stage, designing software involves verification testing to fulfill software requirements. This stage aims to explain the details or description of the components that will be used and help see what was needed previously at the program creation stage.

4.	Integration and System Testing

Features and programs are combined and tested to ensure whether they meet the requirements of the software or not. And after testing, the software can be sent to customers or published. This testing stage will be carried out after the Science Interpretation Laboratory application is completed. This research will carry out several tests such as:

a)	Testing Blackbox

This test is carried out to test several aspects of the system, by looking at and paying attention to the internal logic structure of the software. The results of this test will provide if the input and output produced are adjusted to the system created. This application testing system is built from the conditions for success in every case where the software test is successful and doesn't fulfill the category.

b)	Testing Hardware

In this test, several hardware or smartphones with different brands and specifications will be tested to see whether the application runs smoothly or not.

RESULTS AND DISCUSSION

Results

It was revealed that the Science Interpretation Laboratory Application could previously be downloaded via Playstore. However, in 2023 the use of this application will be hampered by significant technical problems, that errors or force closes. The existence of this problem indicates the need for in-depth evaluation and rebuilding of the application to overcome this problem. During the research, researchers discovered that the main obstacle lay in the material database which couldn't be accessed again, affecting the availability and accessibility of the material for users.

Design Stage

At this stage, the ideas obtained in the previous stage will be implemented into an application that can be used on several mobile devices. The redesign can be seen in Figure 5 below.
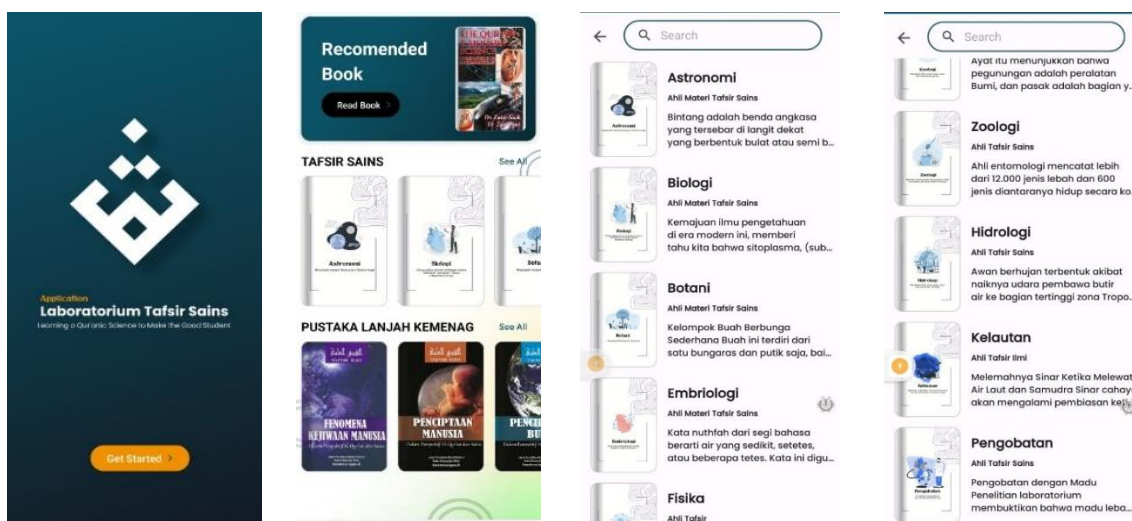

Figure 5. Main View

As seen in Figure 5, the Science Interpretation Laboratory application has undergone a logo change by including an Arabic Kufic style logo so that it looks like it symbolizes strength and firmness in adhering to principles and beliefs.

You can see changes when this application is opened, then the main display has a Get Started button, when this button is pressed it will go to the page menu. The structure that has changed is the choice of Arabic, Indonesian, and English, and the material presented is: Astronomy, Botany, Embryology, Physiology, Geology, Animals, Hydrology, Medicine, Marine Affairs, General Knowledge, Biology, Physics.

Figure 6. Details Page

Then in Figure 6, the Details Page presents detailed information on each material. Through the Reading View, this application provides an interactive learning experience with material explanations, arguments, and image visualization to facilitate users' understanding of science interpretation material. Thus, it is hoped that the Science Interpretation Laboratory Application can become an effective learning tool and support students' understanding of science interpretation concepts.

Figure 7. Content Page

On this page, users can view and read the contents of the selected material. The material page in this view can be found on the material page Shows the display of material content selected by the user. This page is designed to present the content clearly and easily to read, providing a comfortable and informative reading experience.

In addition to the scientific interpretation explanations provided, the Labtafsin 2.0 application is also supported by references that can be read directly from the reading source, namely from the following books.
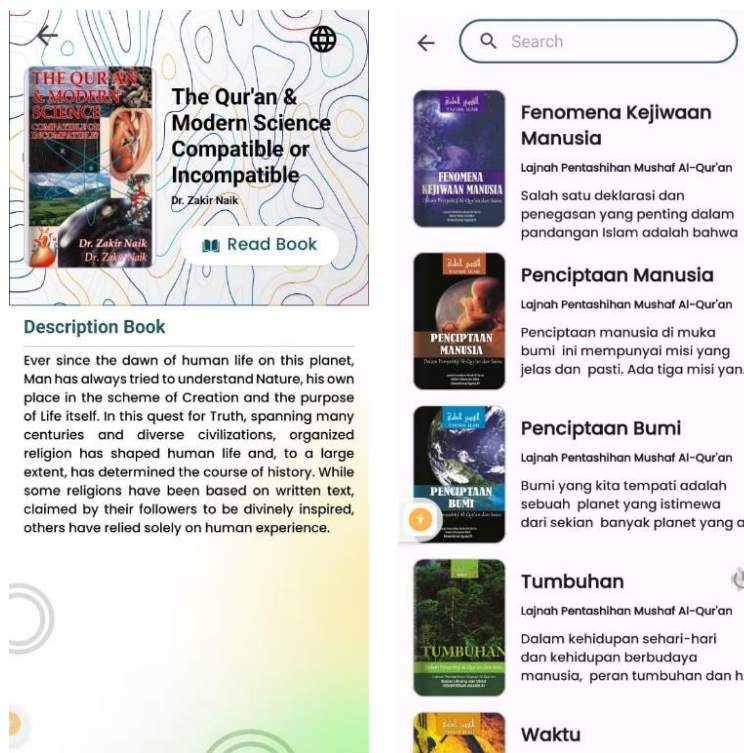

Figure 8. Book View

If you look at this application, it supports being used for wider knowledge, that is, it is not limited to the data contained in the application, but also the availability of books will make it easier for readers to refer directly to the knowledge which is explained more broadly and in detail, while for short data and In general, this application is sufficient to provide information related to scientific interpretation in several themes.

Implementation Stage

Then the next step is the testing stage for the Science Interpretation Laboratory application (Labtafsin 2.0). Before this application is used by all users, we have designed and carried out a series of testing stages, as explained in the previous chapter. This is an important step to ensure the application works well and is ready to be used by all users later. Researchers conducted experiments on 38 student respondents and 2 respondents from material and media experts to see the results obtained from the Labtafsin 2.0 application experiment.

Testing Blackbox

The test results in this section are designed for the testing phase with several kinds of processes and stages. This application will be tested by trying all the features to get the results.

Table 1. Testing Blackbox

No.	Menu	Process & Install	Information
1	Splash Screen	Displays SplashScreen	Success
2	Main menu	Main Menu Displays	Success

No.	Menu	Process & Install	Information
3	Option language	Display Option of Language (English, Arab, Indo)	Success
4	Menu of Astronomy (English, Arab, Indo)	Detail Page Display	Success
5	Menu of Botany (English, Arab, Indo)	Detail Page Display	Success
6	Menu of Embryology (English, Arab, Indo)	Detail Page Display	Success
7	Menu of Physiology (English, Arab, Indo)	Detail Page Display	Success
8	Menu Detail of Geology (English, Arab, Indo)	Detail Page Display	Success
9	Menu of Zoology (English, Arab, Indo)	Detail Page Display	Success
10	Menu of Hidrology (English, Arab, Indo)	Detail Page Display	Success
11	Menu of Medicine (English, Arab, Indo)	Detail Page Display	Success
12	Menu of Marine (English, Arab, Indo)	Detail Page Display	Success
13	Menu of General Knowledge (English, Arab, Indo)	Detail Page Display	Success
14	Menu of Biology (English, Arab, Indo)	Detail Page Display	Success
15	Menu of Physics (English, Arab, Indo)	Detail Page Display	Success

After applying it to each student's smartphone, the result was that all the designed applications could be opened smoothly. This indicates that the use of mobile learning-based applications can be applied well (Nuri et al., 2023). The characteristic of the developed Android application that integrates the use of digital tools and resources gives teaching materials advantages that are expected to increase students' digital literacy (Febriyanti & Ain, 2021).

Testing Hardware

In this section, the author tests the user interface on several devices or versions of Android. The following is a summary of the results from testing the Science Interpretation Laboratory application.

Table 2. Testing Hardware

No.	Android Version	Results
1	Android 12	6.38 inci
2	Android 14	6.6 inci
3	Android 11	6.5 inci
4	Android 10	6.5 inci
5	Android 6	5.5 inci

The discussions carried out in redesigning the Science Interpretation Laboratory application included improvements to the display style and the addition of features and language material. Then researchers can increase the level of user satisfaction. These steps are in line with continuous efforts to improve the quality of applications and provide optimal learning experiences (Lagowski, 1995). This finding is consistent with some earlier research showing that the percentage of people eligible for media testing is rising from small-scale to large-scale (Cahyana et al., 2018).

Testing Learning Materials

This testing stage is designed with the main aim of producing a careful evaluation of the material presented in the learning application. This testing process was implemented by involving an expert on Qur'an interpretation material at Universitas Darussalam Gontor, namely Dr. Aqdi Rofiq Asnawi, Lc, M.A He holds the role of Lecturer in the Qur'an and Tafsir Studies Program with a specialization in the field of Tafsir Science.

This test is carried out to assess the quality, accuracy, and usefulness of the material presented in the application as learning material for users. Aqdi Rofiq Asnawi, Lc., M. A. as an expert on scientific interpretation material, provides in-depth views and assessments of the content provided.

The results of the test obtained are presented in detail in the table below. This table reflects expert assessments of various aspects of the material and will be an important guide in improving and perfecting the content of learning applications.

Table 3. Testing Learning Materials

No.	Questionnaire Questions	Score	Max
1	Suitability Language of the Material Presented in the Application	5	5
2	Material Organized	5	5
3	Students are Capable of Providing Scientific Arguments in the Islamic Worldview	5	5
4	Students can Prove Scientific Concepts Contained in the Al-Quran	5	5
5	Communicative Use of 3 Languages	4	5
6	Sentences with an Easy Level of Understanding	4	5
7	Sentences are Easy to Understand	5	5
8	Students are Capable of Understanding the Flow of Material in the Application	5	5
9	Ease of Material to Understand	5	5
10	Expected Function (Supporting Learning)	4	5
Amount		**47**	**50**
Percentage		**94%**	**100%**

After going through a testing process by a Science Interpretation lecturer at Universitas Darussalam Gontor, the material in this research application managed to achieve a score of 94%, which shows a very high level of satisfaction. These results indicate that the material presented in this application fulfills the criteria for being very satisfied, and provides a solid basis to be used as a learning media. By achieving high marks from experts in the field, the suitability of the material to the satisfaction criteria is something worth paying attention to. Therefore, plagiarism checks will then be carried out on each material presented, to ensure the integrity and authenticity of the learning content that will be implemented.

This is in line with the fact that digitally based e-modules exhibit validation results that fall under the category of legitimate and theoretically possible (Sa'diyah, 2021). The existence of e-modules can increase student participation in the learning process (Wahyuni et al., 2022).

Testing by a Learning Media Expert

This media testing is carried out to evaluate the results of various aspects of application design, including images and text. In the context of this testing, the assessment was given by a learning media expert at Universitas Darussalam Gontor and the Dean of the Tarbiyah Faculty, namely Dr. Agus Budiman, M.Pd.

Table 4. Media Expert Validation Test Results

No.	Questionnaire Questions	Score	Max
1	Icons/Buttons that are Easy to use when using Media	4	5
2	Presentation in the Initial Display to Make it Easier to Determine the Next Activity	4	5
3	Clarity of Menus and Materials in the Media	5	5
4	User Suitability of Text colors and Fonts used	4	5
5	The Suitability of the Image Presented in the Media Display	4	5
6	Sentences are Easy to Understand	5	5
7	The Presentation of Material Allows Students to Study Independently	5	5
8	The Interface Design for the Science Interpretation Laboratory Mobile Learning Media is Good	5	5
9	Determination of Color Selection, Type, and Size of Letters on the Media	5	5
10	Ease and Simplicity in Operation	4	5
Amount		**45**	**50**
Percentage		**90%**	**100%**

After going through the testing phase by an expert in learning media, the results showed that this research application succeeded in achieving a score of 90%, reflecting a high level of satisfaction from the assessment. This evaluation covers various aspects of the application design, including images and text, and shows that the application fulfills the satisfaction criteria very well. The results

of this research indicate that the application has succeeded in meeting the expected standards in terms of design and functionality. In addition, Dr. Agus Budiman, M.Pd. as a learning media expert provides constructive direction and evaluation for further application development so that the application can continue to be improved and perfected according to user needs and expectations. This evaluation becomes an important basis for further development to improve the quality and effectiveness of the application.

In line with Wahyuni et al., (2022) Android-based mobile learning that is tailored to their needs can attract students' interest in using it. As stated by Gani et al., (2022) it is more practical and effective to use in the learning process. Innovate by creating learning media that make use of recent technology advancements to assist educators in providing content to support students' learning. When technology is used effectively in the classroom, it will help students access information and engage in learning activities (Cahya et al., 2020).

Testing of Learning Media by Students

Besides that, this learning media was tested by 38 students from the Qur'an and Tafsir study program. Then, questionnaire questions were given related to the Science Interpretation Laboratory learning media.

Table 5. Testing of Learning Media by Students

No.	Element	Value
1	I can Study Online and Independently with Android-Based Mobile Media	90%
2	I can Study According to my Independent Learning Activities and Intensity	88.42%
3	The Science Interpretation Material Presented is Easy to Understand	91%
4	With the Mobile Learning Media of the Science Interpretation Laboratory, I Gained More Knowledge about Science Interpretation Material	94.73%
5	I can Read the Text Easily Because of the Accuracy of the Type and Size of Letters used in the Science Interpretation Laboratory Mobile Learning Media	91%
6	I Like the Appearance of the Science Interpretation Laboratory Mobile Learning Media Because it has a Harmonious Color Composition	95.78%
7	I can Understand Science Interpretation Material with the Help of Good-Quality Pictures	94.21%
8	I can use the Buttons on the Science Interpretation Laboratory Mobile Learning Media Easily	94.21%
9	I Use The Science Interpretation Laboratory Mobile Learning Media to Learn Anytime and Anywhere	95.26%
10	I can use the Science Interpretation Laboratory Mobile Learning Media in Various Languages (Indonesian, English, Arabic)	97.36%
Average		**93.21%**

The results of testing by users or students showed a variety of assessments, but researchers managed to achieve an average score of 93.21%. Testing involved 38 Qur'an and Tafsir Science students from semesters 4, 6, and 8. These results reflect a positive response from students to this application, indicating that the application has succeeded in meeting the criteria for excellent satisfaction.

Students respond very favorably to enjoyable learning, which influences their interest in the material, classroom activities, and enhanced learning results. According to an examination of student response surveys, there was a very favorable reaction in terms of interest, response, interest, contentment, and motivation, indicating that Android-based mobile learning modules are being used in the learning process (Nuri et al., 2023). This occurs as a result of the goods' development to enhance the learning process by making it more engaging, varied, and simpler for students to comprehend ideas (Rismayanti et al., 2022).

The high average score confirms that the majority of students are satisfied and see this application as an effective and useful tool in supporting the learning of Qur'an and Tafsir studies. Evaluations from these students are an important parameter in assessing the success and acceptance of applications, as well as guiding researchers to continue improving the quality and functionality of applications to better fulfill user needs in the future.

Discussion

The redesigned Labtafsin 2.0 application has several developments, including in terms of appearance and content. The structure that has changed is the choice of Arabic, Indonesian, and English, and the material presented is: Astronomy, Botany, Embryology, Physiology, Geology, Animals, Hydrology, Medicine, Marine Affairs, General Knowledge, Biology, Physics. These themes are part of the form of jazz of the Qur'an which is mentioned in several verses and are then interpreted and referred to as tafsir ilmy. This Ilmy interpretation is a form of answer to the doubt that science and religion cannot be united, but with this Ilmy interpretation, it indicates that science and religion or science and the Koran can be united (Habibullah et al., 2024).

The existence of an interpretation laboratory application is an effort to support the development of technology presented in the contents of the Koran so that science and religion can be united and go hand in hand (Kamil et al., 2021). Then the Labtafsin application is presented with an attractive appearance, Through the Reading View, this application provides an interactive learning experience with material explanations, arguments, and image visualization to facilitate users' understanding of science interpretation material. Thus, it is hoped that the Science Interpretation Laboratory Application can become an effective learning tool and support students' understanding of science interpretation concepts. In addition to the scientific interpretation explanations provided, the Labtafsin 2.0 application is also supported by references. In line with Hendri et al., (2021) valid digital modules are by the basic content and main material with development with clear learning objectives that can make it easier for students to understand. This is in line with the assertion that e-modules are beneficial for improving pupil participation in the learning process (Feriyanti et al., 2019).

After the design process for the science interpretation laboratory 2.0, researchers tested its use both in terms of the effectiveness of the application performance and the feasibility of its use by experts in Al-Qur'an interpretation material and learning media experts, as well as responses to its use by students of the Al-Qur'an science study program and interpretation. From black box testing, namely the application's ability to run all menus, it got successful results. Meanwhile, the hardware test results in the form of application operation in several versions of Android obtained successful results with at least the Android 10 version which allowed the application to run smoothly. This finding is consistent with some earlier research showing that the percentage of people eligible for media testing is increasing from small-scale to large-scale (Cahyana et al., 2018). With operational capabilities on many Android versions, it will make it easier for smartphone users to run this application

Then application testing was carried out again to determine the feasibility of using it for Al-Qur'an interpretation material and also learning media. The material experts gave an average score of 94%, which indicates that the application can be used as a learning resource and makes it very easy to learn scientific interpretations of the Koran. According to this description, the creation of teaching materials for Android-based mobile learning modules is deemed valid since they satisfy the content and construct feasibility requirements, making the modules suitable for use as science teaching materials (Nuri et al., 2023). Meanwhile, learning media experts obtained an average result of 90%, which indicates that this application is effective for use as a learning media. When technology is used effectively in the classroom, it will help students access information and engage in learning activities (Cahya et al., 2020).

After being tested for its suitability by experts in the field of learning materials and media, this application was again tested in its use by students, from 38 respondents it produced an average score of 93.21%, which indicates that students found it easy and very helpful by this application. By using mobile learning, students can learn anytime and anywhere, so they can overcome limitations in location and time to be able to learn independently from the resources provided (Susilo & Prasetyo, 2020).

Next, it is important to plan sustainable development steps. The evaluation and improvements made so far should be followed by regular updates that maintain the reliability and relevance of the application over time (Muriyatmoko et al., 2019). This ongoing development process will help keep

the application compatible with future user needs and expectations. Thus, this application can be an effective and reliable learning source within the Qur'an and Tafsir Study Program environment.

CONCLUSION

Conclusions were found based on the results of research and trials of the Science Interpretation Laboratory application, while suggestions were made for improvement and further development, with the following explanation: The research succeeded in redesigning the Science Interpretation Laboratory application in the second development stage, with the addition of 3 language features (Arabic, English, and Indonesian). The functionality test (black box) results show that the application runs smoothly and can be used optimally on devices with at least Android version 10. Assessments from material experts give an average of 94%, indicating that this application is suitable for publication as an e-book learning resource. Assessment from media experts provides an average score of 90%, with several suggestions for improvement. Although there are several suggestions, in general, the application is rated very satisfied. The assessment results from Qur'an and Tafsir Studies students showed a score of 93%, which included responses from 38 students. From the results of this research, the Science Interpretation Laboratory application is suitable for public use, although there are several more things that need to be added. Based on the conclusions of this research, the author recommends several suggestions for further development such as the addition of Video and Quiz features according to the material being studied. And adding the Al-Qur'an with translation, and some interpretations can be studied.

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