



## Enhancing fiqh learning achievements: Integrating Project-Based Learning with Android applications

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**Abstract:** This study was prompted by the low learning achievement in Fiqh among students at Madrasah Aliyah, as indicated by preliminary data showing that only about 70% of students in several grade X classes reached the minimum mastery criteria (KKM), set at a score of 75. To address this issue, the study aims to analyze needs, design, develop, implement, and evaluate the effectiveness of an Android-based Project-Based Learning (PJBL) application called MaBar FIQIH in improving Fiqh learning outcomes for grade X students at MAN 2 Bandung and MAS Baitus Shofaa Ciheulang Bandung. The research used a Convergent Parallel Mixed Method approach and the Research and Development (R&D) method, applying the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The subjects included media and content experts, as well as 355 students from MAN 2 Bandung and 150 students from MAS Baitus Shofaa. Implementation results showed that the application had a significant effect on students' learning achievements. There was a significant difference in students' learning achievements after the use of the MaBar FIQIH application. The findings suggest that this PJBL-based application is effective and feasible for use by teachers and students in enhancing Fiqh learning outcomes.

**Keywords:** Android application; learning achievement; Project-Based Learning (PJBL); smart society

### Introduction

The era of smart society 5.0 is a concept of a human-centered and technology-based society (Carayannis et al., 2022). In this era, society is expected to be able to solve various challenges and social problems by utilizing various innovations born in the era of the Industrial Revolution 4.0 to improve the quality of human life. Along with the rapid development of digital technology, education has undergone a significant transformation that changes the way of learning. The use of technology in the learning process is now increasingly needed to meet the needs of students living in the Smart Society Era (Calp & Bütüner, 2022). In this case, Android-based applications have begun to be widely integrated into teaching and learning activities, including in Fiqh learning in madrasas.

In a global context, developed countries such as Japan, South Korea, Finland, Germany, and the United States have integrated smart technologies into their education systems through educational technology-based policies and digital curricula (Gabriel et al., 2022). In these countries, project-based learning (PBL) integrated with mobile applications has become the main approach to foster creativity, collaboration, and problem-solving in the 21st-century curriculum (Al-Thani & Ahmad, 2025).

Mobile-based learning platforms are increasingly being used in various parts of the world,

including for religious education such as Fiqh, to increase student engagement and academic achievement (Basyiroh et al., 2024). UNESCO and other international educational institutions have even encouraged the use of mobile technology in religious learning to bridge the access gap and improve spiritual literacy in the digital era (Pujiwati & Subekti, 2024). In countries with large Muslim populations, such as Egypt, Malaysia, Turkey, and the United Arab Emirates, various Android-based applications have been developed to support the learning of fiqh, tajwid, and Islamic character education (Ifikhar & Hayat, 2024). Countries such as Saudi Arabia have developed an integrated e-learning system based on applications targeting madrasah students with integrated learning of the Qur'an, Hadith, and Fiqh (Salam et al., 2025), while in Pakistan and Bangladesh, the use of learning technology for Islamic education in rural areas continues to be expanded by international non-profit organizations such as Islamic Relief and the Global Education Partnership (M. Ahmad & Hasan, 2006).

The application of PJBL in religious education has also become a concern in global academic forums such as the International Conference on Islamic Education (ICIE) and the World Education Summit, discussing how project-based learning approaches can enrich religious education in the context of the 21st century (Louro, 2019). Many studies have shown that the integration of PJBL in religious education can improve students' internalization of values, deep understanding of religious teachings, and life skills. These models have proven to be relevant not only in formal education in schools, but also in madrasahs, Islamic boarding schools, and other religious-based schools.

Indonesia has responded to this development by adopting technology-based learning to improve access and quality of education, especially since the COVID-19 pandemic (2019–2021) forced all teaching and learning activities to be carried out online. With the increasing use of devices such as smartphones and internet connections, Android-based learning applications have emerged as a practical solution to support distance and hybrid learning. However, many madrasahs in Indonesia, especially in Fiqh learning, still experience difficulties in implementing an effective digital approach, especially due to limitations in the pedagogical approach that touches on cognitive, affective, and psychomotor aspects as a whole (Hidayat et al., 2024).

Based on initial observations at MAN 1 Bandung and MAS Mathla'ul Huda Bandung, the results of the learning evaluation found that many students had difficulty understanding concepts in the Fiqh subject. Lack of student involvement and minimal use of innovative learning media are some of the main factors influencing students' low interest and motivation to learn (Al-Said, 2023). This is exacerbated by the lack of technological applications that can accommodate students' diverse learning styles and enrich their learning experiences.

Application usage of Android as a platform for implementing PJBL can increase student engagement and give them the opportunity to access materials and instructions wherever they are (Saad, 2021). Thus, they can learn Fiqh more flexibly and contextually. In the Android application, students can also access various multimedia content, such as videos, audio, and images, that support their understanding of the Fiqh concepts taught.

PJBL allows students to learn actively through exploration, research, and solving real problems that are relevant to their daily lives. However, the application of PJBL in Fiqh classes is still rare, especially by utilizing digital technology. The use of digital devices, especially Android-based applications, has become an integral part of students' daily lives. The use of Android applications for PJBL is expected to increase student engagement, deepen their understanding of Fiqh materials, and ultimately improve learning outcomes.

The success of implementing PJBL through Android applications in learning Fiqh requires readiness from various parties, especially teachers and students. Teachers need to have the skills to design and facilitate appropriate projects according to Fiqh material. Meanwhile, students must have adequate access to Android devices, both at school and at home. Infrastructure support factors, such as the availability of adequate internet networks, are also an important requirement in implementing this learning model (Omwenga et al., 2004).

Based on the results of temporary empirical observations by researchers at MAN 2 Bandung Regency, in the learning process, they have implemented E-learning and learning evaluation is already based on Android. The second locus is MAS Baitus Shofa, although it is a private Madrasah Aliyah, but learning and evaluation have used digital learning. With the potential of both loci, researchers can develop PjBL through an Android application to improve fiqh learning outcomes.

Several empirical data were found regarding the conditions that occurred related to student learning outcomes in fiqh subjects at MAN 2 Bandung and MAS Baitus Shofaa as follows: the results of the author's initial observations on October 4, 2022. Student Learning Outcomes (CP) in Fiqh subjects showed several significant challenges. Students have not achieved the completeness set by the curriculum. This can be seen from the evaluation results, which show that the majority of students are only able to achieve learning outcomes in the cognitive aspect, while the affective and psychomotor aspects are still less than optimal.

Based on data taken from the recapitulation of the Fiqh subject report cards at MAN 2 and MAS Baitus Shofaa Ciheulang Bandung on December 18, 2022, related to the competency test results. The grade X report card scores from several classes at each school generally reached 70% which reached the KKM from the KKM score of 75. Thus, learning outcomes are still lacking.

The development of PJBL through Android applications is also relevant to the paradigm shift in the Independent Curriculum, which emphasizes more contextual and student-centered learning. This curriculum encourages students to learn independently, collaboratively, and creatively through projects that can be applied in real life.

Based on what is stated in the background of the problem above, it appears that in fiqh learning, there is less opportunity for students to develop affective and psychomotor abilities. As a result of the lack of methodological understanding of teachers in the fiqh learning process. So that the learning achievement is not in accordance with the KKM, it is necessary to develop a learning model that can improve the achievement of fiqh learning at MAN 2 Bandung and MAS Baitus Shofaa Ciheulang Ciparay Bandung.

Era Smart Society 5.0 is a concept of a human-centered and technology-based society. In this era, society is expected to be able to solve various social challenges and problems by utilizing various innovations born in the era of the Industrial Revolution 4.0 to improve the quality of human life. Along with the rapid development of digital technology, education has undergone a significant transformation that has changed the way of learning. The use of technology in the learning process is now increasingly needed to meet the needs of students living in the Era of Smart Society. In this case, Android-based applications have begun to be integrated into teaching and learning activities, including in Fiqh learning in madrasas.

Application usage of Android in learning not only offers flexibility of access, but also provides various interactive features that can increase students' learning motivation. In addition, project-based learning or Project-Based Learning Student-centered (PJBL) is becoming an increasingly used approach in teaching (Aisyah & Novita, 2025). However, the use of PJBL in Fiqh learning is still very limited. In 2019-2021, Indonesia experienced the COVID-19 pandemic, which resulted in the learning process being carried out online. To create online learning, learning devices are used with technology. such as cellphones, laptops, projectors, and internet networks, are one of the supporting factors for learning online.

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This research is research focuses on the discussion of language style and science in the story of Maryam Study, which will eventually lead to a correlation between *'ijaz bayani* and scientific instructions in the story of Maryam. Correlation means "relationship", or "interconnected" or "reciprocal relationship" (Sudijono, 2005). It is a reciprocal relationship or cause and effect (Pusat Bahasa, 2023). So the discussion that will be discussed in this study is the relationship between language style and science in the story of Maryam in the letter of Maryam.

Al-Qur'an has the highest position in the beauty of language (eloquence), and no one can match it. The structure of language or words is one of the wonders of the Qur'an, even the priority in its arrangement, *siyaq*, the beauty of the word structure, examples in the Qur'an such as stories and news are *i'jaz* in the Qur'an that have the function of being a guide, a healer, and also a life guide for the path of life on earth.

Science is a collection of human knowledge about nature obtained from the results of critical analysis and observation of natural phenomena (Fakhry, 2010). The science of the Qur'an is a scientific miracle contained in the Qur'an, namely, news about science that could not have been known to humans at the time of the Prophet Muhammad SAW, but can be proven in this modern era. This happened to prove the power of Allah as the owner of all nature (Ridha, 1990). The Qur'an has scientific signs to understand its wisdom and benefits, but this does not mean that the Qur'an is a scientific book (Saleh, 2011). Several verses in the Qur'an contain scientific signals, as well as verses that discuss the story of Maryam in the Qur'an.

Meanwhile, the story of Maryam is one of the stories in the Qur'an. In the Surah of Maryam, Allah tells the story of Maryam with a different order of words or style of waiting, namely the style of waiting that shows the nature of gentleness, mercy and pleasure (Al-Mahami, 2012). This story has a special function as explained in the Letter of Yusuf verse 111, namely justification, explanation, guidance and mercy for anyone who believes in it (Al-Hifnawi & Utsman, 2008; Baghaway, 1997).

In examining *I'jaz Bayani* in the story of Mary, Aishah Bintu Syati will use the anti-synonym theory in her book *Al-I'jaz Al-Bayani Lil Qur'an and At-Tafsir Al-Bayani Lil Qur'an Al-Karim*. Steps based on Aisyah bintu Syati's Anti-Synonym Theory (Syati, 1977): First, identify the story of Mary in the Qur'an. Second, understand the context of the Nash by looking at the verse according to its

nuzul to find out where and when the verse was revealed.

Third, understand that it is *alfadz* with several steps: write down the word in the verse of the Qur'an, see if there is a word that is the same both in pronunciation and meaning, see the meaning of the word in the mosque, collect every verse that contains that word, conclude the difference between that word and other words, and state the reason why the verse should use that word. And finally, understand the secret phrase by looking at its interpretation.

The linguistic approach is very important, because to understand the contents of the Qur'an requires knowledge of Arabic, or in other words, that *I'jaz Bayani* is the door to knowing how much scientific signal is in it (Saleh, 2011). The correlation between the two can be found from scientific clues scattered in the verses of the Qur'an, as well as verses about the story of Mary. To be able to understand the scientific signals from the verses of the Qur'an, a scientific approach is needed, namely an approach that involves studying the scientific terms contained in the Qur'an and trying to seriously conclude various sciences from these terms, so that a scientific interpretation is formed. With the hope that the application of these two approaches can help understand the wording of the Qur'an, especially the story of Mary, which is the object of study, and with this understanding, can reveal the secret of the miracle of the Qur'an, which contains scientific information that is useful for humanity. In addition, by applying these two approaches, it is hoped that we can come to a conclusion about the function of the story of Mary, whether it functions as justification, explanation, guidance or perhaps grace.

## Method

This study uses the research and development (R&D) method (Sugiyono, 2019). The research and development method is a research method used to produce a particular product and test the effectiveness of the product. This type of research is different from other educational research because its purpose is to develop a product based on trials, which are then modified to produce a product that can be used. In this study, a product will be developed and produced in the form of the MaBar (Let's Learn) FIQH application with the hope that the application created can improve students' cognitive, affective and psychomotor abilities in fiqh learning. This study was designed using the ADDIE version of the development model for research and development. "The ADDIE model can be used in various forms of product development, such as models, learning strategies, learning methods, media, and teaching materials." The ADDIE model includes 5 main stages, namely (A) analysis, (D) design, (D) development, (I) Implementation and (E) Evaluation. The five stages in the ADDIE model need to be carried out systematically (Samsudin et al., 2021).

## Results and Discussion

The Android application developed to support the implementation of PJBL is designed with several main features that support interactive, collaborative, and contextual learning. These features include: Structured fiqh learning materials, Project guides and examples, Discussion and Collaboration features, and Assessment and reflection tools. After the design stage is complete, the next step is for the researcher to proceed to the next stage, namely the development stage. At this development stage, the stages of the MaBar Fiqh Application will be clearly displayed.

At the stage of developing the Android application to improve the achievement of fiqh learning, it was named the MaBar Fiqih Application. This name was chosen because it was considered unique, with the application that would be used, the MaBar Fiqih Application stands for Let's Learn Fiqh. The following explanation in the description of the development of this Android application will use the term MaBar Fiqih. The development stage of this application follows the steps and flow that refer to the existing design in the flowchart and storyboard. This stage is the realization of the activities in the previous stage. The product design that has been prepared is developed based on several stages.

### Initial Product Development

The product developed is PJBL through the Android Application (MaBar Fiqih Application). The development of this product is based on the following stages: (1) media concept. Selection or development of media based on context, resources. (2) Media Development System. (3)

Visualisation. This is an element developed based on a display that is easy for users to understand. This section is developed through a validation process by material experts and media experts.

### 1. *Splash Screen*

The first page that users will see when accessing this application is the splash screen page containing the application logo. This display is to show that the user is ready to access this application.

**Figure 4**



*Splash Screen*

### 2. *Page Onboarding*

Onboarding is a process designed to help new users get to know and understand the user interface of an application or service effectively and efficiently. The goal is to guide users through key features, overcome initial obstacles, and provide a positive experience that will keep them using the application.

At this stage, the user will be guided through a series of onboarding steps designed to help them understand the product or application. Every step of onboarding must have a uniform structure, such as title and description, navigation, caption messages and directions for action. The next page that will be displayed to the user is the landing page onboarding, on this page is provided about the details of the MaBar Fiqih Application. Page onboarding is only displayed to users who have just installed the MaBar Fiqih Application. If the user presses the login button, the user will be directed to the home page.

**Figure 5**



*Onboarding Page*

### 3. *Page Home*

The home page is the initial page or front page of the application, where on this page you can access documents or content or a default page that has been set for the browser, which functions to provide a display when accessing. Page homepage is the main page or opening page of a website. Its existence is very important because it is a page index or the first one displayed when the domain is called. When the user has entered and successfully logged in, the user will be directed to the home page, which contains about icon for Fiqh material. In addition, users can access all existing features through the navigation at the bottom of the page.

Figure 6



Home Page

#### 4. Fiqh Core Material Page

On this core material page, users will get instructions to access the material that has been prepared. On the page, users just have to choose which material to study first before going further into the system. This core material page contains several materials that users must understand. There are two types of materials presented, namely material in the form of files and reinforcement material in the form of videos. To access the core material page, users can press the Fiqh Core Material menu on the page *home*. This page contains a list of core Fiqh materials.

Figure 7



Fiqh Core Material Page

#### 5. MaBar Fiqh Application Quizz Page

The Quizz page on the MaBar Fiqh Application is a section or display in the application that is specifically designed to test and evaluate the user's understanding of the concept of fiqh. After pressing the start Quizz menu, the user must first fill in their identity. If the user is ready to start the quiz, they can press the Start button.

Figure 8

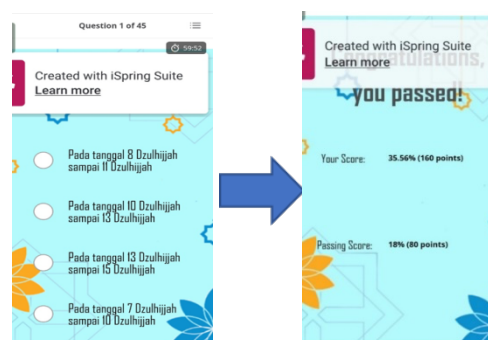


Home Quizz

After completing all the questions on the quiz, the user will be directed to view the quiz results and see the score obtained.



Figure 9



Quiz End Page

### Content Validation

In the design development stage, there are two activities, namely validating and feasibility testing. Validity testing by experts in the field of learning media and experts in the field of learning materials.

#### 1. Media Expert Validation

The MaBar Fiqih application has gone through a validation stage by a media expert validator, namely Asep Nurshobah, who is an expert in Learning Media at UIN Sunan Gunung Djati Bandung, which was carried out on March 18, 2024. Based on the processing of the validation data by the learning media expert, the results obtained were 91.66%. This figure, if categorized in the validity criteria table that has been explained previously, is categorized as "very valid, which means that the product developed, namely Android-based learning media, is considered suitable for use in the field.

#### 2. Subject Matter Expert Validation

The MaBar Fiqih application has gone through a validation stage by a media expert validator, namely Isop Syafe'i, which was carried out on March 25, 2024. Based on the processing of validation data from learning material experts, the results obtained were 98.66%. This figure, if categorized in the validity criteria table that has been explained previously, is categorized as "very valid" which means that the product developed, namely Android-based learning materials, is considered suitable for use in the field. This Material Expert validation instrument can be used if the average score is in the good/very good category. If the average score is less than or equal to 3, this test instrument needs to be revised/improved.

Based on the author's findings, the MaBar Fiqih Application was developed to support the implementation of Project-Based Learning (PJBL) in Fiqh learning represents the integration of constructivist pedagogy with mobile technology. Theoretically, this approach is in line with Vygotsky's concept of social constructivism in (Saleem et al., 2021) which argues about the importance of social interaction, collaboration, and context in building knowledge. Through features such as structured learning materials, project guides, discussion forums, and assessment and reflection tools, this application accommodates the principles of active and contextual learning. This is also emphasized by Mayer's cognitive learning theory, which emphasizes the importance of multimodal information processing through text, images, and sound to maximize understanding (Mayer, 2024).

Media and material expert validation showed very high scores (91.66% and 98.66%), indicating the suitability of this application to pedagogical and technological standards. This is in line with the results of international research, such as that conducted by Sung et al. (2016), which concluded that mobile learning improves student learning outcomes and motivation when the design is interactive and contextual (Poçan et al., 2023). Research conducted in the United States and South Korea also supports these findings, where project-based and mobile learning applications have been shown to improve students' concept retention and critical thinking skills (Lee et al., 2024).

Contextualization of this application in Indonesia, especially in MAN 2 Bandung and MAS Baitus Shofaa Ciheulang, shows that when Fiqh learning is enriched with project-based learning experiences and digital platforms, learning outcomes increase significantly. This is consistent with



the PJBL learning model according to (Berry, 2000) that authentic project tasks allow students to relate knowledge to the real world, including in the context of Islamic values.

In addition, the implementation of this application also strengthens the idea "Blended Islamic Education" which was developed in contemporary Islamic education studies in the Middle East and Southeast Asia, such as Azyumardi Azra and Wan Daud. In this framework, the integration of spiritual and moral values into the technology-based education system is seen as a form of adaptation to the changing times, without leaving the substance of Islamic teachings (Awang & Nuriz, 2020).

The MaBar Fiqih application also supports Bronfenbrenner's educational ecology theory, where the learning process is influenced by various environmental contexts, including digital technology (Navarro & Tudge, 2023). In this case, MaBar Fiqih functions as part of a "mesosystem" that connects the home environment, school, and digital community. By providing contextual materials, collaboration features, and formative assessments, this application encourages holistic learning—involving students' cognitive, affective, and psychomotor dimensions (Moon et al., 2024).

From an international perspective, the development of PJBL-based applications such as MaBar Fiqih can be seen as part of a global movement in digital Islamic education innovation. In the United Arab Emirates and Malaysia, similar approaches have been developed to support madrasah learning and are also used in teaching the Qur'an, Hadith, and Akhlak (Nasri & Mulyohadi, 2023). Thus, this application has the potential to be replicated internationally as a digital Fiqh learning model that is value-based, collaborative, and technology-integrated. Thus, MaBar Fiqih has successfully answered the challenges of 21st-century learning in the context of Islamic education by combining the principles of PJBL, the latest educational theories, and the use of digital technology. This proves that a local approach based on the real needs of students and teachers in madrasas can be on par with global innovations in the world of education (Amiri, 2025).

The concept of Society 5.0 envisions a human-centered, technologically advanced society that leverages digital innovation to address complex social problems and improve the quality of life (George & George, 2024). This new era builds on the foundations laid during the Fourth Industrial Revolution, utilizing pervasive technologies such as AI, IoT, and big data to transform various sectors, including education. With the rapid development of digital technology, education systems worldwide have undergone significant changes in their methodology and delivery, emphasizing the importance of technology integration to meet the demands of learners in this smart society (Kuang & Chen, 2023). In particular, mobile operating systems such as Android have become essential platforms facilitating interactive and personalized learning, including for religious subjects like Islamic jurisprudence in Islamic schools. Globally, advanced economies such as Singapore, Canada, the Netherlands, Sweden, and Australia have implemented policies promoting a digital education ecosystem by combining educational technology tools and innovative curricula (Scott & Smith, 2024). These countries often prioritize student-centered pedagogies such as inquiry-based learning paired with mobile and cloud-based applications to stimulate creativity, critical thinking, and collaborative skills aligned with 21st-century competencies (Kumar et al., 2024).

Furthermore, mobile learning apps have gained traction across various regions, serving not only secular education but also religious and ethical instruction aimed at improving student engagement and educational outcomes (N. Ahmad & Khalid, 2024). International organizations, including the World Bank and the International Islamic Educational Organization, have actively promoted the integration of digital devices and mobile apps in faith-based education to increase accessibility and foster spiritual development in an increasingly digital world (Soukup SJ et al., 2019). In Muslim-majority countries such as Indonesia, Morocco, Iran, and Jordan, numerous Android apps have been designed to support curriculum components such as Islamic jurisprudence (Fiqh), Quran memorization, and character education (Majid et al., 2024). For example, Iran has pioneered a comprehensive digital madrasah program utilizing an interactive platform that combines the study of Islamic jurisprudence, theology, and ethics (Suleiman Alqudah & Almomani, 2024). Similarly, efforts spearheaded by NGOs such as EducAid and Muslim Hands in rural Pakistan and Afghanistan have expanded access to technology for Islamic education to underserved communities (Zohra et al., 2023).

## Conclusion

Application development results *MaBar Fiqh* shows that the integration between the approaches Project-Based Learning (PJBL) and Android-based mobile technology can be an effective innovation in improving the achievement of fiqh learning. Through systematic design and development stages, this application is designed by considering pedagogical, technological, and student needs aspects in the digital era. Validation conducted by two experts, namely media experts and material experts, showed very positive results. The media validation score of 92% and material validation of 98% indicated that this application is in the "very valid" category and is suitable for use in the field. These results not only confirm the feasibility of the design and content of the application but also support the assumption that technology can strengthen the value-based learning process in the context of Islamic education.

Furthermore, the success of the development *MaBar Fiqh* is not only important on a local scale, but also globally relevant. These findings are part of a contribution to the international trend in the development of digital project-based learning for religious education. Thus, *MaBar Fiqh* is not only a learning medium, but also a real example that fiqh learning can be designed to be more contextual, collaborative, and interesting—in accordance with the challenges of the 21st century. In the future, similar developments can be replicated and expanded, both in other subjects and in various other regions, while still paying attention to pedagogical principles and infrastructure readiness. In this context, the application *MaBar Fiqh* is proof that a local approach supported by global theory and practice can produce innovative and transformative learning models.

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