SYAIKHUNA: Jurnal Pendidikan dan Pranata Islam STAI Syichona Moh. Cholil Bangkalan
p-ISSN:2086-9088, e-ISSN: 2623-0054
DOI: https://doi.org/10.62730/syaikhuna.v16i02.7700

Development of a Kodular-Based Learning Media Application for Qur'an and Sunnah Material

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Abstract: *This study aims to develop and validate an Android-based learning media application, utilizing the Kodular platform, for Islamic Religious Education (PAI) focusing on Qur'an and Sunnah material. The application is designed as a learning guideline for grade VII students at SMPN 1 Palangka Raya. Employing the 4D development model (Define, Design, Develop, Disseminate), the research encompassed needs analysis, product design, iterative development, and validation stages. The developed application integrates interactive content, educational videos, and assessment quizzes. Validation by media experts yielded a very feasible score of 98.43%, while content experts rated it 80.77% feasible. Subsequent small-scale and large-scale field trials with students confirmed positive responses, achieving feasibility scores of 81.84% and 88.54% respectively. These findings indicate that the Kodular-based learning application is highly feasible, effective, and suitable for enhancing students' engagement and ability to read the Qur'an with proper tajweed. This media innovation offers a promising, accessible, and engaging solution to improve Islamic Religious Education delivery at the junior high school level.*

Keywords: *Learning Media, Kodular Application, Islamic Religious Education, Qur'an and Sunnah, Digital Learning*

Abstrak: *Penelitian ini bertujuan untuk mengembangkan dan memvalidasi aplikasi media pembelajaran berbasis Android, menggunakan platform Kodular, untuk Pendidikan Agama Islam (PAI) yang berfokus pada materi Al-Qur'an dan Sunnah. Aplikasi ini dirancang sebagai panduan pembelajaran untuk siswa kelas VII di SMPN 1 Palangka Raya. Menggunakan model pengembangan 4D (Define, Design, Develop, Disseminate), penelitian ini mencakup analisis kebutuhan, desain produk, pengembangan berulang, dan tahap validasi. Aplikasi yang dikembangkan mengintegrasikan konten interaktif, video edukatif, dan kuis penilaian. Validasi oleh ahli media menghasilkan skor kelayakan yang sangat tinggi sebesar 98,43%, sementara ahli konten memberikan skor kelayakan 80,77%. Uji lapangan skala kecil dan besar dengan siswa mengonfirmasi respons positif, dengan skor kelayakan masing-masing 81,84% dan 88,54%. Temuan ini menunjukkan bahwa aplikasi pembelajaran berbasis Kodular sangat layak, efektif, dan cocok untuk meningkatkan keterlibatan siswa dan kemampuan mereka dalam membaca Al-Qur'an dengan tajwid yang benar. Inovasi media ini menawarkan*

p-ISSN:2086-9088, e-ISSN: 2623-0054
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solusi yang menjanjikan, mudah diakses, dan menarik untuk meningkatkan penyampaian Pendidikan Agama Islam di tingkat sekolah menengah pertama.

***Kata Kunci**: Media Pembelajaran, Aplikasi Kodular, Pendidikan Agama Islam, Al-Qur'an dan Sunnah, Pembelajaran Digital*

Introduction

In the current digital era, technology integration in education has become essential to enhance learning processes and outcomes (Maritsa et al., 2021). Mobile learning, especially through Android-based applications, offers flexible and accessible platforms for delivering educational content outside traditional classrooms (Wahyudi, Agustin, & Ambarawati, 2022). The increasing adoption of smartphones among students has fostered the development of interactive learning media that supports various subjects, including Islamic Religious Education (IRE) (Bagania, Maramis, & Kolibu, 2021).

Despite the undeniable potential of technological integration, the implementation of Islamic Religious Education (PAI) in schools, particularly for Qur'an and Sunnah material, often faces significant challenges. Initial observations and feedback from educators at SMPN 1 Palangka Raya indicate that Year 7 students consistently struggle with mastering correct *tajweed* and precise Qur'anic recitation. Predominantly conventional teaching methods, coupled with a lack of engaging and interactive media, contribute to student disengagement and a less profound understanding of complex Qur'an and Sunnah concepts. This pedagogical reality underscores a pressing need for innovative learning tools that can actively address these specific difficulties and enhance student motivation.

Previous studies have explored the use of mobile learning and digital media for religious education with positive results. For instance, Cholid and Ambarwati (2021) developed an Android-based learning media for Zakat material that significantly improved students' motivation in Madrasah Ibtidaiyah. Similarly, Rosyidin (2023) designed a learning application for Islamic history, which enhanced critical thinking skills among junior high students. Hamdi et al. (2022) emphasized the role of digital learning media in increasing literacy and innovation in Islamic education. Moreover, Muyaroah and Fajartia (2020) reported that Android-based media improved students'

p-ISSN:2086-9088, e-ISSN: 2623-0054
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engagement in biology learning, indicating the cross-disciplinary potential of mobile learning.

Despite these aforementioned advancements, and in direct response to the specific pedagogical challenges identified, there remains limited research specifically addressing the development of learning media focused on Qur'an and Sunnah materials using Kodular. Kodular, a visual programming platform known for simplifying app development without extensive coding skills, offers a promising avenue for creating accessible and interactive learning tools (ensure Cholid & Ambarwati, 2021 specifically supports the Kodular claim, or find a different reference about Kodular's capabilities). This gap presents a significant opportunity to innovate learning resources tailored to the unique requirements of PAI, particularly for junior high school students who are still striving to master *tajweed* and Qur'anic recitation rules. (Maritsa et al., 2021).

Furthermore, existing applications often face challenges such as large file sizes, limited offline accessibility, and lack of interactivity, which may hinder effective learning (Wahyudi et al., 2022). Kodular's drag-and-drop programming approach can address some of these limitations by enabling the creation of lightweight, customizable, and user-friendly applications (Cholid & Ambarwati, 2021).

This study aims to fill this research gap by developing a Kodular-based Android learning media focused on Qur'an and Sunnah materials for grade VII students at SMPN 1 Palangka Raya. The objectives are to design, develop, and validate the learning media to ensure it meets educational needs, enhances students' understanding, and is feasible for implementation in the school context.

The novelty of this research lies in the integration of Kodular technology to create an interactive, multimedia-rich learning media tailored for Islamic Religious Education, which is less explored in previous studies. Additionally, this study contributes by combining video content, quizzes, and audio recitations specifically targeting the mastery of tajweed and Quranic reading, addressing the practical challenges faced by students in this subject area.

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Research Method

This study employed the Research and Development (R&D) approach following the 4D instructional design model developed by Thiagarajan, Semmel, and Semmel (1974). The 4D model consists of four systematic stages: Define, Design, Develop, and Disseminate. This model is widely adopted in educational research for creating and validating instructional media due to its clear procedural steps and iterative nature (Sugiyono, 2022). The choice of this model ensures that the learning media developed meets the educational needs and quality standards before implementation.

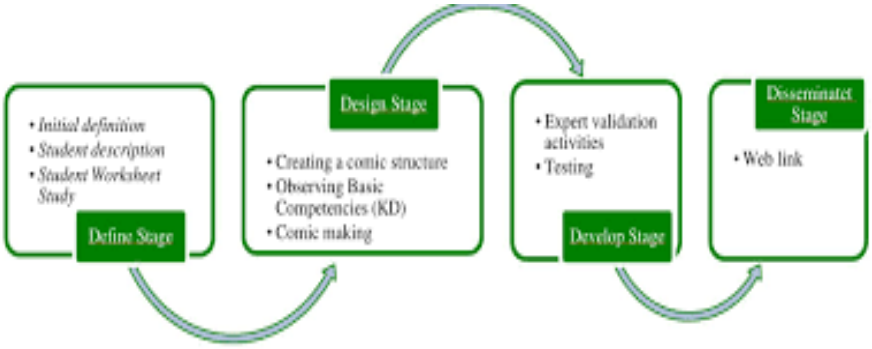

Figure 1. The 4D Model Stages in Developing Learning Media (Thiagarajan et al., 1974)

In the Define phase, the researchers conducted a comprehensive needs analysis. This involved classroom observations to assess student behavior and challenges in Qur'anic recitation with proper tajweed rules, interviews with subject teachers and curriculum coordinators to align the media with the current curriculum (Kurikulum Merdeka), and review of relevant documentation. This phase aimed to identify learner characteristics, curriculum requirements, and pedagogical challenges to inform the media design.

During the Design phase, the team developed a detailed blueprint of the learning media. The content structure was outlined, including the selection of Qur'an and Sunnah materials relevant to Year 7 students. Interactive features such as quizzes, audio recitations, and video tutorials were planned to increase engagement and learning effectiveness. The design also considered user interface elements to ensure accessibility and ease of navigation on Android devices.".

The Develop phase involved the actual creation of the learning media using the Kodular platform, which enables visual drag-and-drop programming without the need

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for extensive coding skills (Cholid & Ambarwati, 2021). Multimedia components including instructional videos, audio files of tajweed recitations, and interactive quizzes were integrated. The application was compiled into an APK file suitable for installation on Android smartphones. This phase also included iterative testing and revisions based on internal feedback.

Validation of the product was carried out through expert reviews involving media specialists and Islamic content experts from IAIN Palangka Raya. Media experts evaluated the application's technical and visual quality, while content experts assessed the accuracy and pedagogical suitability of the materials. Additionally, an instrument expert validated the questionnaires used to gather user feedback, ensuring content validity and reliability (Polit & Beck, 2006).

Field testing was conducted in two stages: a small-scale pilot test with five randomly selected students to identify usability issues, and an extended test with all 24 Year 7 students at SMPN 1 Palangka Raya. Quantitative data from questionnaires measuring media feasibility, satisfaction, and effectiveness were analysed descriptively, with a benchmark of 75% used to determine acceptability (Riduwan & Sunarto, 2011). Qualitative observations and interviews supplemented these findings, providing rich insights for further refinement.

Ethical considerations were observed throughout the study, including obtaining informed consent from all participants and ensuring data confidentiality. The study protocol received approval from the academic ethics committee at IAIN Palangka Raya, reflecting adherence to research integrity and participant protection standards.

Results and Discussion

This section presents the results of the research and development process, following the four stages of the 4D model: Define, Design, Develop, and Disseminate. The objective was to create an Android-based learning media for Islamic Religious Education (PAI), specifically focusing on Qur'an and Hadith materials as a Guideline for Life, targeting Year 7 students at SMPN 1 Palangka Raya.

The *Define* stage aims to identify and analyze the initial needs in the development of learning media. At this stage, several analyses are carried out as the

Submitted: 19-12-2024 Accepted: 06-05-2025 Approved: 15-05-2025 Published: 11-06-2025

p-ISSN:2086-9088, e-ISSN: 2623-0054
DOI: https://doi.org/10.62730/syaikhuna.v16i02.7700

basis for the preparation of products that are in accordance with the needs of students and the applicable curriculum.

First, the analysis of student characteristics was carried out through observation in grade VII of SMPN 1 Palangka Raya. The results showed that students were less focused when the teacher delivered the material on the board because they talked more with their classmates. In addition, they also have difficulties in reading the Qur'an in accordance with the rules of tajweed and makhraj, especially in the recitation of alif lām shamsiyyah and alif lām qamariyyah.

Second, curriculum analysis is carried out through interviews with school curriculum supervisors. It is known that SMPN 1 Palangka Raya has implemented the Independent Curriculum in grades VII and VIII. Therefore, the learning media developed must be in harmony with the principles and direction of the curriculum.

Third, needs analysis is carried out through observation and interviews with Islamic Religious Education and Ethics teachers. It was found that learning is still highly dependent on textbooks, which are considered less attractive to students who are already used to technology. The teacher also said that one of the main obstacles in learning is the lack of interactive learning media that can help students understand tajweed well.

Fourth, material analysis is carried out to ensure the suitability of the content with the basic competencies in the Independent Curriculum. In the material of the Qur'an and Hadith as a guideline for life, students are expected to be able to read QS. an-Nisā/4:59 and QS. an-Naḥl/16:64 in tartil. However, students experience difficulties in mastering tajweed, especially in the reading of alif lām shamsiyyah and qamariyyah, which is caused by the lack of learning media that supports their understanding visually and interactively.

The Design stage is an advanced stage following the analysis of student needs and characteristics. At this stage, the researchers commenced designing an Android application-based learning media using the *Kodular* platform. The design process began with compiling teaching materials relevant to the curriculum, designing the

p-ISSN:2086-9088, e-ISSN: 2623-0054
DOI: https://doi.org/10.62730/syaikhuna.v16i02.7700

application's visual appearance, and determining the interactive elements to support the learning process.

He application design comprises several main pages, including the application instruction page, material pages, learning videos produced using the *CapCut* application, and quizzes developed within *Kodular* itself. To increase interactivity and attract students' interest, the researchers incorporated supporting features such as voice recordings for Qur'anic verse recitation, aligning with the material's content. Once all design components were finalised, the app was then exported into *.apk* format for direct installation and testing on Android devices. Users could access the Android application learning media through *WhatsApp Group* or *Google Drive*. A visual representation of the developed Android application is presented below:

Figure 2. application cover

On the cover of the application there are the logos of IAIN Palangka Raya and SMPN 1 Palangka Raya, subjects, material titles, pictures of SMPN 1 Palangka Raya students studying, classes, and the start button of the application. The app cover is created as an app identity, designed to attract students' attention because it uses original photos of students in the school as well as to increase students' interest in learning Qur'an and Sunnah material as a guideline for life.

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Figure 3. Application Menu

The menu display with the title of the material written as a reminder that the student is studying the material. Then there are optional buttons such as instructions for use, learning objectives, learning materials, learning videos, learning quizzes, and are equipped with support buttons such as application assistance, return to the previous page, return to the home page, and exit the application.

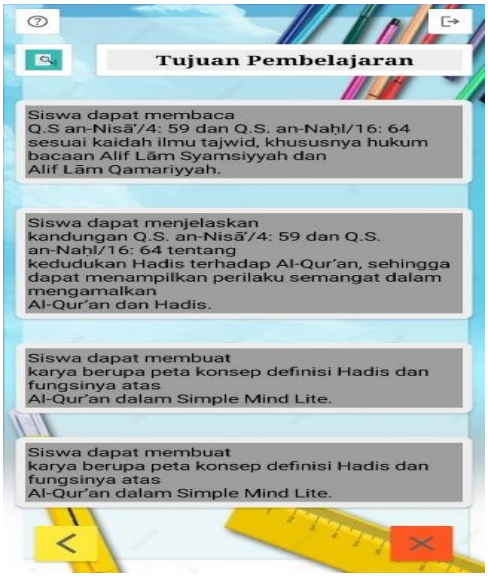

Figure 4. Learning Objectives

In the learning objectives section, it is made to adjust the Learning Outcomes of PAI & BP in phase D. Learning objectives are made as a clear and directed guide in the process of teaching and learning activities. This goal is arranged so that teachers and students have the same reference to the competencies they want to achieve in learning.

The learning material is presented within the Android application-based learning media, adapted from textbooks published by the Ministry of Religion with

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supplementary content from other references to enhance student insights. These materials include: *Q.S. an-Nisā'*/4:59 and *Q.S. an-Naḥl*/16:64; Application of the recitation of *Alif Lām Syamsiyyah* and *Alif Lām Qamariyyah*; Understanding the Content of *Q.S. an-Nisā'*/4:59 and Q.S. *an-Naḥl*/16:64; The Position of Hadith in relation to the Qur'an; and the importance of cultivating an enthusiastic approach to studying the Qur'an and Hadith in accordance with *Q.S. an-Nisā'*/4:59 and *Q.S. an-Naḥl*/16:64.

The display of learning videos emphasizes more on explanations and how to read Qur'anic verses in accordance with tajweed. In the video, the color is given to the verse that contains tajweed and the name of the tajweed. It is hoped that students can understand and be able to practice how to read the Qur'an according to its tajwid. Then there is an explanation of tajweed from each verse below the video to strengthen students' understanding of tajweed.

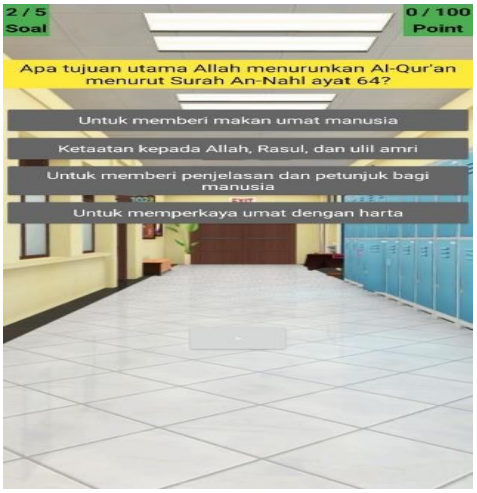

Figure 5. Learning Quiz

The quiz display creates questions from each material to find out students' understanding of the material that has been studied. After doing the quiz, students can see the correct and incorrect answers of the questions that have been done and the immediate scores automatically come out on the quiz that has been done.

This research uses validation from experts, namely experts in media, materials and instruments. Media expert validation is carried out by IAIN Palangka Raya lecturers in one stage. The results of the validation of media experts are shown in the table: 2 Below.

Submitted: 19-12-2024 Accepted: 06-05-2025 Approved: 15-05-2025 Published: 11-06-2025

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Table 1. The results of the validation of media

Yes	Validator	Total Score
1	Media Expert Lecturer	63
Maximum Score		64
Eligibility Percentage		98,43%
Criterion		Highly Worth It

Media expert validation consists of two aspects, namely media engineering and communication aspects. The results are analyzed and converted. The results of the analysis from media experts stated that the learning media for the application of kodular Qur'an and sunnah materials as a guideline for my life received very decent criteria with a percentage of 98.43% results. A slight revision was made to fit the contrasting color combinations.

The material validation was carried out by material experts from IAIN Palangka Raya lecturers. The results of the validation of the subject matter experts are shown in the table

Table 2. results of the validation of the subject matter

Yes	Validator	Total Score
1	Lecturer Material Expert	42
Maximum Score		52
Eligibility Percentage		80,77%
Criterion		Highly Worth It

The data from the validation of the material obtained can then be stated as learning material on the kodular learning media of al-Qur'an and sunnah materials as a guideline for my life to obtain very decent criteria with a percentage of 80.77% results. A slight revision was made to the writing of capital letters.

Instrument expert validation is carried out by instrument experts from IAIN Palangka Raya lecturers to validate student response questionnaires. Instrument expert validation results are shown in the table.

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Table 3. Instrument expert validation

Yes	Validator	Total Score
1	Lecturer Instrument Expert	41
Maximum Score		44
Eligibility Percentage		93,18%
Criterion		Highly Worth It

The data from the instrument validation results obtained can then be stated that the student response questionnaire obtained very feasible criteria with a percentage of 93.18% results.

Small-scale field testing is carried out after passing the validation stage. A small-scale trial was carried out on 5 randomly selected students of SMPN 1 Palangka Raya grade VII. The results of the small-scale trial showed that the percentage of 81.84% included in the keriteria was very feasible. The following data recapitulation is presented in the table below.

Table 4. Small-Scale Trial

Yes	Respondents	Score	Criterion
1	Zainudin	85,52%	Highly Worth It
2	Madina Nur Latifa	89,47%	Highly Worth It
3	Princess Noor Vida's Grace	86,84%	Highly Worth It
4	Borneo Satria Wijaya	92,10%	Highly Worth It
5	Fikri Asyro Nabil	55,26%	Proper
Average Percentage			81,84%
Criterion			Highly Worth It

The next stage is a BSAR scale trial for grade VII students at SMPN 1 Palangka Raya. Learning media for kodular applications of Qur'an and sunnah materials as guidelines for life were distributed to students through WhatsApp Group. Large-scale trials were carried out on 24 grade VII students. The trial was carried out to determine the feasibility and response of students to the learning media products of the kodular application of Qur'an and sunnah materials as a life guideline developed. The results of the large-scale trial stated that the percentage of the score of 88.54% of the criteria was very feasible. The results show that the learning media for the application of kodular al-qur'an and sunnah materials as a guideline for life is very feasible as a learning

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medium for grade VII students of the Qur'an and sunnah materials as a guideline for life. The following data recapitulation is presented in the table below.

Table 5. Large-scale trial

Yes	Respondents	Score	Criterion
1	Adelia	96,05%	Highly Worth It
2	Annisa Latifaruz Zahra	89,47%	Highly Worth It
3	Arzachel A.N.	80,26%	Highly Worth It
4	Athoillah Al-Qodar	90,78%	Highly Worth It
5	Bayu Maviana	93,42%	Highly Worth It
6	Digta Noraiya Shafira	90,78%	Highly Worth It
7	Febry Putra Pratama	75%	Proper
8	Frecia Launa A.	98,68%	Highly Worth It
9	Girl Fitrialocca	67,10%	Proper
10	Layla Noercahyani Putri	100%	Highly Worth It
11	Mr. Alfiasa	100%	Highly Worth It
12	Mr. Hafiz Ilmi	89,47%	Highly Worth It
13	Mr. Parsya Azzury Artha	80,26%	Highly Worth It
14	Mr. Saifiansyah	89,47%	Highly Worth It
15	Nor Adelia	85,52%	Highly Worth It
16	Novrika Ramadhani Salehah	92,10%	Highly Worth It
17	Puspa Listya Kirana	89,47%	Highly Worth It
18	Rafka Arrazi	100%	Highly Worth It
19	Raina Nova Nor F.	73,68%	Proper
20	Rice	92,10%	Highly Worth It
21	Rendra Dwi Kurniawan	84,21%	Highly Worth It
22	Ruphy	94,73%	Highly Worth It
23	Solar Thunder Lake W.	86,84%	Highly Worth It
24	Vivi Arietha Mariana	85,52%	Highly Worth It
Average Percentage		88,54%	
Criterion		Highly Worth It	

According to Jennah, (2020: 27) Learning media is a component used in the learning environment to move students to learn, or it can be explained as any form or tool used to convey learning materials. It includes everything that can arouse students' emotions, thoughts, attention, and interests during the learning process, with the aim of achieving the desired learning objectives.

The purpose of the research and development of learning media for the application of kodular Qur'an and sunnah materials as a guideline for life is to help and support students in their learning process. It is hoped that the development of

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kodular learning media for the application of Qur'an and sunnah materials as a guideline for life can have a positive impact on students in learning and understanding Islamic Religious Education and Ethics lessons.

Four steps to create learning media for the application of kodular Qur'an and sunnah materials as a guideline for life, namely define, desgin, development, and dissemination. Learning media is validated by media expert validators and material experts. Then the student response questionnaire was validated by instrument experts. After completing these steps, then make a slight revision to correct the shortcomings in the learning media before being tested.

The advantages of learning media for kodular applications of Qur'an and sunnah materials as a guideline for life are made with a size of 25 MB that can be installed on students' android smartphones without causing storage space problems. Then the app interface is made as attractive as possible with a variety of images, the app has many features such as videos, voice recordings, and learning quizzes. The learning media for kodular applications of al-Qur'an and sunnah materials as a guideline for life also has disadvantages such as videos in the application can be accessed using an internet connection because there is no feature of kodular web that can include videos to be accessed offline.

The learning media for the application of kodular materials of the Qur'an and Sunnah as a guideline for life has the characteristic of being accessible anytime and anywhere in order to help students understand, remembering the material of the Qur'an and Sunnah as a guideline for life. The results of the development are media products that have gone through the testing and validation stage of media professionals and material experts. Thus, the product is very suitable for use as a learning medium in the subject of Islamic Religious Education and Ethics class VII of the Qur'an and Sunnah material as a guideline for life.

Students who use kodular application learning media of Qur'an and sunnah materials as a guideline for life are considered better than those who use traditional teaching techniques. In line with his understanding that learning media is a tool that supports the teaching and learning process, ensures that the message conveyed

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becomes clearer, and allows the achievement of educational or learning goals effectively and efficiently (Azis, 2021: 75-76)..

Discussion

The integration of Kodular-based mobile applications into Islamic Religious Education (IRE) represents a significant advancement in leveraging low-code development platforms for pedagogical innovation. This study demonstrates the feasibility and effectiveness of such applications in enhancing students' mastery of Qur'anic recitation and tajweed principles. By employing a drag-and-drop programming environment, Kodular lowers the technical barriers traditionally associated with app development, empowering educators to tailor interactive learning experiences to specific curricular and cultural contexts (Burge, Fouche, & Marais, 2022). This democratization of educational technology development responds to the urgent need for adaptable, context-sensitive digital tools in IRE, which has been underexplored compared to other academic disciplines (Sari et al., 2022).

The use of multimedia learning principles, grounded in Mayer's Cognitive Theory of Multimedia Learning (CTML), has been confirmed as pivotal in optimizing the cognitive processing of complex religious content. This study's application of visual cues—such as color-coded tajweed highlights—combined with synchronous audio supports dual-channel processing, thereby facilitating more effective learning and retention among students (Mayer, 2021). These findings align with Kusumaningrum et al. (2022) and Yuliana et al. (2023), who reported similar improvements in religious education contexts when multimedia elements were strategically integrated. The present research advances this knowledge by operationalizing these principles within a Kodular framework, thus offering a replicable model for scalable mobile learning development.

Another notable contribution is the incorporation of formative assessments through interactive quizzes, which provided immediate feedback and promoted learner self-regulation. This mechanism resonates with Nicol and Macfarlane-Dick's (2006) theoretical insights on feedback's role in fostering self-directed learning. Our empirical results echo Nasution, Siregar, and Prasetyo's (2021) findings that such assessments in Islamic educational apps enhance learner motivation and

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comprehension. Importantly, the study evidences that formative evaluation embedded within mobile platforms is not merely a supplementary feature but a critical pedagogical tool that drives deeper cognitive engagement and mastery.

Accessibility and inclusivity constitute a critical dimension of this research. Indonesia's burgeoning smartphone penetration among adolescents creates fertile ground for mobile learning adoption (Hidayah, Pramesti, & Widianto, 2022). By designing an app that is lightweight and optimized for smartphone use, this study aligns with Universal Design for Learning (UDL) frameworks, offering flexible learning modalities that accommodate diverse learner needs (Rose & Meyer, 2020). The practical implication is that mobile learning applications, when thoughtfully developed, can bridge educational inequities caused by geographic and infrastructural disparities.

Nonetheless, the reliance on internet connectivity for accessing video content emerged as a significant limitation. This echoes Wahyuni and Kurniawan's (2021) observations regarding infrastructural challenges in rural Indonesian contexts, underscoring the persistent digital divide even amid rapid technological adoption. Future iterations of the app should explore hybrid solutions, such as offline video caching or adaptive streaming, to mitigate this barrier and enhance usability in low-bandwidth environments.

From a curricular perspective, the localization of learning materials to align with Indonesia's Kurikulum Merdeka underscores the necessity of cultural and contextual sensitivity in digital education (Alim & O'Halloran, 2022; Rahman, Sari, & Nugraha, 2023). This alignment enhances the relevance and legitimacy of the learning experience, which is essential for student engagement and sustained use. The present study thus contributes to a growing body of evidence advocating for curriculum-informed digital content development tailored to specific national and cultural educational policies.

Moreover, this research expands the discourse on digital literacy within Islamic education by showcasing Kodular as an accessible tool for educators, potentially catalyzing a shift towards greater teacher agency in digital content creation (Dillenbourg & Jermann, 2020). This empowerment aligns with global educational

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technology trends emphasizing teacher-led innovation and localized content creation (Ally, 2020). By equipping educators with user-friendly development platforms, this approach fosters sustainable and contextually appropriate digital pedagogies.

The study also adds empirical weight to the theoretical proposition that interactive, multimedia-rich mobile learning environments improve learner motivation and outcomes in religious education settings (Hasanah & Putra, 2023; Lestari, Putri, & Santoso, 2023). It challenges traditional notions that religious education is best delivered through conventional, text-based methods, instead advocating for the integration of modern pedagogical technologies that resonate with digital-native learners.

In conclusion, this research offers a novel contribution by successfully combining Kodular's low-code platform with multimedia instructional design to create a culturally responsive, pedagogically effective mobile learning application for Qur'anic education. Its implications extend beyond the immediate context, suggesting pathways for scalable, low-cost, and teacher-driven educational technology development in similar religious and cultural domains. Future research should focus on longitudinal impacts of such media on learning retention and explore broader implementation challenges across diverse educational settings.

Conclusion

The undeniable advancements in Information and Communication Technologies (ICT) have ushered in a transformative era for education, and Islamic Religious Education (IRE) is no exception. This literature review underscores the imperative of integrating ICT into IRE to effectively address the challenges of globalization and resonate with the learning preferences of the digitally native generation. It becomes evident that a paradigm shift is necessary, moving away from traditional, passive learning methodologies towards more interactive, collaborative, and technology-enhanced pedagogical approaches.

The strategic utilization of interactive media, encompassing e-learning platforms, Islamic mobile applications, multimedia resources, augmented reality (AR), and Learning Management Systems (LMS), presents a wealth of opportunities to amplify

p-ISSN:2086-9088, e-ISSN: 2623-0054
DOI: https://doi.org/10.62730/syaikhuna.v16i02.7700

the effectiveness, flexibility, and appeal of IRE. Furthermore, the development of technology-adaptive curricula emerges as a crucial endeavor to equip students with essential 21st-century skills.

However, this journey of ICT integration is not without its complexities. The review highlights several key challenges that demand careful consideration and proactive solutions. These challenges include disparities in infrastructure and technological access, varying levels of digital literacy among educators and learners, the potential for the dissemination of unreliable or inappropriate Islamic content, and the inherent difficulty in fostering spiritual and ethical dimensions within online learning environments. In response to these challenges, the literature advocates for a multi-faceted approach. This includes robust professional development programs to enhance teachers' digital competence, strategic investments in technological infrastructure, the implementation of rigorous mechanisms for monitoring and verifying the credibility of online Islamic content, and the deliberate incorporation of digital ethics education to cultivate responsible and virtuous digital citizens.

Looking ahead, this review underscores the need for a comprehensive framework to guide the effective and ethical integration of ICT into IRE. Such a framework should encompass ongoing teacher professional development, the provision of adequate resources and support, and systematic evaluation of the impact of ICT implementation on student learning outcomes. Moreover, future research should delve deeper into the nuanced effects of ICT on various facets of IRE, including character development and the cultivation of Islamic values.

Ultimately, by proactively addressing the challenges and embracing evidence-based best practices, the integration of ICT holds immense potential to revolutionize IRE, making it more effective, relevant, and engaging for learners in the digital age. The pivotal question that remains is: How can we collectively forge a digital ecosystem that nurtures meaningful, ethical, and transformative Islamic Religious Education.

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