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No-Code Digital Learning Innovation for Islamic Education: Development and Usability Evaluation of a GlideApps-Based Instructional Media

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Abstract. *The transformation of digital learning in vocational education requires media innovations that adapt to the characteristics of digital-native students. This research aims to develop and evaluate GlideApps-based Islamic Religious Education learning media as an effective, adaptive, and accessible no-code solution. Using the ADDIE model, this research involves the stages of needs analysis, multimodal content design, application development, implementation on a limited and broad scale, and usability evaluation. Data was obtained through observations, interviews, and questionnaires from a total of 96 students. The study's results show that students need flexible, visual, and interactive media to better understand Islamic Education materials. The design process yielded an app with intuitive navigation, structured modules, interactive quizzes, and multimedia support. Expert validation shows a very high level of feasibility in both the material (89%) and media design (87%) aspects. User implementation shows that the app is easy to use and supports both self-paced and structured learning. The usability evaluation recorded an average score of 4.41 (88.13%), indicating excellent effectiveness, efficiency, and user satisfaction. The indicators of ease of understanding the material and ease of use obtained the highest score (4.53). These results confirm that GlideApps meets the principles of multimodal learning and technology acceptance theory. This study concludes that GlideApps media is efficacious in improving accessibility, engagement, and student learning experience, while offering a no-code media development model that can be replicated in the context of religious and humanities learning in vocational education environments.*

Keywords: *GlideApps; mobile learning; Islamic education; digital instructional media; usability evaluation*

1. Introduction

The development of digital technology has had a significant impact on the education system, particularly by transforming learning methods and approaches at various levels, including vocational education (1). This shift requires innovation in learning implementation that addresses the characteristics of the digital generation, namely, students who prefer visualization, speed, and technological interactivity (2). In the context of vocational education, the need for adaptive and contextual learning is becoming increasingly important (3). Teaching media is generally defined as any form of assistance used in the teaching and learning process to convey learning messages and facilitate the achievement of instructional objectives (4). In the context of vocational higher education, a good learning medium not only conveys information, but also supports character development, critical thinking skills and increased engagement (5,6).

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Several studies have confirmed that the use of interactive digital media in Islamic Religious Education can increase students' interest in learning religious materials, their understanding, and their attitudes (4,7). Innovation in the delivery of religious materials is important to address the challenges of the digital generation, which tends to prefer visual, mobile, and experiential learning.

The Islamic Religious Education course at the Samarinda State Polytechnic, as part of the national compulsory curriculum, plays a strategic role in shaping students' religious, ethical, and spiritual character (8,9). However, conventional, one-way, lecture-based approaches are considered less effective at meeting current student interests and learning styles (1,10). This results in low active student involvement and weak absorption of Islamic values taught (12,13).

In line with the shift from teacher-centered to student-centered learning, the development of technology-based learning media is an urgent need (14). Interactive digital media has been shown to increase learning engagement and conceptual understanding, including in religious education (1). On the other hand, it emphasizes the media's role in increasing students' motivation and active participation in the learning process (15).

GlideApps is one of the platforms that offers practical, innovative solutions in digital media development. Glide is a no-code Platform that enables rapid mobile app development without programming skills (16). With the ability to integrate multimedia (text, images, videos), interactive quizzes, and intuitive user navigation, GlideApps are rated according to the learning needs of the digital age. GlideApps are effective in increasing student engagement and flexible in accommodating different types of educational content (17). However, there has been no development of glideapps-based learning media in Islamic Religious Education courses in universities.

Building on this urgency, this research aims to develop GlideApps-based learning media for Islamic Religious Education courses in Higher Education. The app is designed to present Islamic material in a digital format that is engaging, easily accessible on mobile devices, and suitable for the learning styles of the digital-native student generation. This media can be a strategic alternative to overcome the limitations of conventional learning and support the optimal achievement of Islamic Religious Education learning goals in the era of digital transformation.

2. Methods

This study adopts a Research and Development (R&D) approach using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model as a framework to systematically develop and evaluate GlideApps-based digital learning media in the Islamic Religious Education course at the Samarinda State Polytechnic. The ADDIE model is widely recognized for its clarity in guiding the instructional design process, ensuring that the product developed is aligned with learners' educational needs and goals (18,19). The respondents were 96 students selected through random sampling; the data collection techniques included interviews, observations, and questionnaires on the effectiveness of learning media.

The stages of developing learning media with the ADDIE model are as follows:

Figure 1. Learning Media Development Flow with the ADDIE model

The research and media development procedures to be carried out are as follows:

1. Analysis

The analysis stage focuses on identifying the learning needs, characteristics, and challenges vocational students face in learning Islam. Data were collected through observation questionnaires and needs assessments distributed to first-semester students in the Department of Business Administration. The analysis revealed that students prefer a flexible, mobile-accessible, and visually rich learning environment. In addition, interviews with lecturers emphasized the limitations of conventional teaching methods and the need for media that can bridge digital engagement with Islamic values.

2. Design

At the design stage, the structure and components of the GlideApp-based learning media are planned. This includes specifying content coverage, media formats, navigation structures, and user interaction features. The learning content is organized into modular topics that are aligned with the syllabus. The main features of this app include images, interactive quizzes, videos, instructions, digital learning resources, storyboards, and downloadable modules.

3. Development

The development phase involves creating GlideApps apps using a no-code platform. Media content is developed collaboratively by a research team comprising subject matter experts (Islamic religious education lecturers) and multimedia developers. The content is integrated into the GlideApps interface, with multimedia elements such as videos, images, and audio-enhanced quizzes. The product then undergoes expert validation, which involves two validators: one for material content and one for media design. The validation instrument uses a Likert-scale assessment rubric, and feedback is used to revise the prototype before the trial.

4. Implementation

The limited-scale field was implemented with five students, while the large-scale field involved 96 first-semester students from the Department of Business Administration. Students are given access to GlideApps media and are asked to use them during a two-week learning session. Their activities are guided, but also include a self-contained component to allow for flexibility. Data collection during this stage includes observation sheets and user experience questionnaires that aim to evaluate usability, accessibility, and engagement.

5. Evaluation

The evaluation stage focuses on measuring the effectiveness of GlideApp-based learning media in Islamic Religious Education (PAI) courses. Evaluation was conducted after the implementation stage using a structured questionnaire. As for assessing the feasibility of glidepps-based learning materials and media, the following criteria are used:

Table 1. Material and Media Eligibility Criteria

Percentage	Interpretation
76%- 100%	Highly Worth It
56%-75%	Proper
40%-55%	Less Worthy
<39%	Not Eligible

Source: Idris and Suhendi (20)

Meanwhile, to find out the results of the effectiveness of the media that has been made, use the following categories:

Table 2. Media Usability Criteria

Percentage	Interpretation
0% - 20%	Very Bad
21% - 40%	Bad
41% - 60%	Pretty Good
61% - 80%	Good
81% - 100%	Very Good

Source: Riduwan, (21)

3. Results and Discussion

3.1 Research Results

1. Analysis

   The results of the needs analysis show that vocational students have a strong preference for learning media that are flexible, easily accessible through mobile devices, and rich in visual elements. Most students stated that learning Islamic Religious Education requires a more interactive and contextual approach. Classroom observations and lecturer interviews confirm that conventional lecture methods have not reached digital-native learning styles, especially in the delivery of religious concepts that require visualization and technology integration. The needs analysis stage shows that students want flexible, visual, and interactive learning media. This data underscores the need to develop application-based media that increase learning engagement and independent understanding of concepts.

2. Design

   At the design stage, the team arranged the media structure for the primary material into three levels, drawn from 3 PAI topic modules that align with the semester lesson plan. *Storyboards* were developed to map the app's navigation, and early-stage respondents found the initial design easy to understand. Features designed—including home, instructions, start, storyboard, learning resources and chat by adapting the principles of practical, concise, and contextual learning. This design planning ensures that the app's usage flow is intuitive and supports self-paced learning. The following is the design of the features in the glideapps-based religious learning media:

Figure 2. Home

Figure 3. Instruction

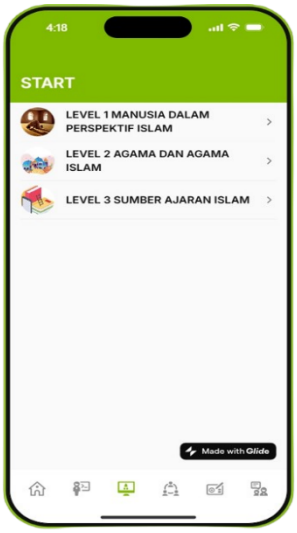

Figure 4. Start

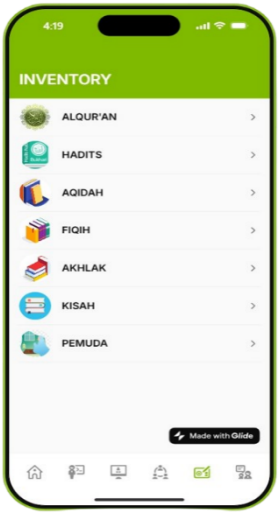

Figure 5. Inventory

Figure 6. Leaderboard

Figure 7. Chat

3. Development

During development, the GlideApps application was built entirely without code (*no-code development*) and included all the multimedia content designed. An expert validation test was then carried out on the material and design of the learning media.

Table 3. Results of Validation Test for Material and Media Experts

Validation	Value	Percentage	Information
Material Expert	4,45	89%	Highly Worth It
Media Expert	4,35	87%	Highly Worth It

Source: Data processed by the author

The results of expert validation showed that the media was in the "very feasible" category, with an average score of 4.45 (scale 1–5), 89% for the material aspect, and 4.35 for the media design aspect. Minor revisions were made to color consistency, simplification of technical terms, and the addition of navigation icons to improve the clarity of the view. Subject matter expert validation showed a very decent average

score, while media expert validation showed a very decent score. The final product was declared feasible for testing in a limited-scale implementation.

4. Implementation

The initial trial was conducted with a small group of 5 students to assess the clarity of navigation, the appearance, and the functionality of the GlideApps application. In this phase, students are asked to use the application for two learning sessions and provide feedback through *a user experience checklist* and a short interview. The results show that all the main features can be used without any significant problems. The main inputs from this stage include improving the layout of navigation icons, simplifying some technical terms, and adjusting the font size to make it more comfortable to read on a smartphone screen. Revisions are made to the prototype immediately to make the application more stable and user-friendly before entering a large-scale trial.

Figure 8. Limited Trial

After the application was declared feasible in a limited trial, a large-scale implementation was carried out involving 96 1st-semester students from the Department of Business Administration. Students use the GlideApps application as a learning medium, both in structured learning sessions and independent learning activities. Data was collected through observation sheets and usability questionnaires. The application serves as a primary source of materials, a reflection tool, and a practice tool through interactive quizzes. No significant technical barriers were reported, aside from network limitations at certain hours of use. In general, students stated that the application is easily accessible, attractive, and helps improve their understanding of Islamic religious material.

5. Evalution

Table 4. Media Usability Data Results

Indicator	Mean	Percentage	Interpretation
App display and design	4,42	88,3	Very Good
Clarity of application usage instructions	4,50	90,0	Very Good
Ease of material to understand	4,53	90,6	Very Good
Clarity of learning objectives in the material	4,38	87,5	Very Good
Ease of use of the app	4,53	90,6	Very Good

Color mix compatibility and font size accuracy on display	4,25	85,0	Very Good
The order in which the material (text, images, videos) is displayed	4,23	84,6	Very Good
Audio Visual Quality in Applications	4,42	88,3	Very Good
average media usability	4,41	88,13	

Source: Data processed by the author

The study found that GlideApps-based learning media had a very high level of usability, with an average score of 4.41 (88.13%), indicating that all indicators were rated "very good" by students. The indicators of ease of understanding and ease of use of the application obtained the highest scores (4.53; 90.6%), reflecting that the content structure and navigation of the application have met the principles of learnability and efficiency. The clarity of the instructions for use (4.50; 90.0%) also reinforces that the app does not place a cognitive burden on the user. Aesthetic aspects such as visual appearance and audiovisual quality (4.42; 88.3%) as well as color compatibility and font size (4.25; 85.0%) were also rated very well, indicating that the interface design supports comfort and learning experience. Although the multimedia display order indicator had the lowest score (4.23; 84.6%), the results still showed the effectiveness of content integration in supporting understanding. Overall, these findings confirm that GlideApps have strong usability and are suitable as a learning medium in vocational education.

3.2 Discussion

The study's results show that the development of GlideApp-based learning media has successfully met the needs of vocational students in the context of Islamic Religious Education. Findings from the needs analysis stage indicate that students want flexible, visual, and interactive media—characteristics consistent with the learning styles of the digital-native generation (22,23). The current tendency of students to learn through mobile devices and multimedia content requires lecturers to adopt a pedagogical approach, as also conveyed by Sahasrabudhe & Kanungo (25), who state that the effectiveness of digital learning is primarily determined by the extent to which the media used are in accordance with the user's character.

The design of GlideApp's media, which includes digital modules, learning videos, practice questions, and interactive quizzes, demonstrates a multimodal learning approach thataccording to the Cognitive Theory of Multimedia Learning (2), can improve conceptual understanding by facilitating simultaneous dual-channel processing (verbal and visual). This becomes relevant in the context of Islamic education, which not only conveys cognitive material but also requires contextual and affective understanding (26,27). Thus, the media design process is not only technical but also grounded in a strong theoretical framework and aligned with the development of digital pedagogy.

The validation results of material and media experts who scored "very decent" showed that the application met the criteria for Islamic substance, pedagogy, and proper interface design. This feasibility assessment reinforces previous research showing that no-code platforms like Glide can yield practical educational applications when designed systematically and grounded in user needs (16,28). Thus, the media design process is not only

technical but also grounded in a strong theoretical framework and aligned with the development of digital pedagogy.

The trial of 96 students yielded empirical data: 92% of respondents found the material helpful and rated the application easy to use. This supports the Technology Acceptance Model (TAM) framework. WHO emphasizes that perceived usability and ease of use are key indicators of learning technology adoption (29,30). In addition, the fact that this media is also actively used outside of lecture hours shows its contribution to the concept of ubiquitous learning, i.e., learning that can happen anytime and anywhere (30).

The results of the usability evaluation show that GlideApps-based learning media have a very high user acceptance rate, with an average score of 4.41 (88.13%). These findings indicate that the application has met the key dimensions of usability as formulated in Nielsen's Usability Heuristics (32) and the ISO 9241-11 (33), which emphasize effectiveness, efficiency, and user satisfaction in the context of specific use. All indicators obtained a score of "excellent", which confirms that the visual design, user interaction, and quality of content in the application are in accordance with the needs of vocational students as a digital native generation.

The indicators with the highest scores were ease of understanding the material (90.6%) and ease of using the application (90.6%), indicating that the application is not only easy to use but also able to simplify Islamic Religious Education materials through a multimodal approach. These findings align with the Cognitive Theory of Multimedia Learning (34), which posits that visual-verbal combinations on digital platforms can enhance information processing and strengthen conceptual understanding. The high value of ease of use also supports the Technology Acceptance Model (TAM) model (35) especially in the perceived ease of use component, which affects the adoption and intensity of use of a learning technology.

Aesthetic aspects, such as the app's design (88.3%) and color compatibility and font size (85.0%), also scored highly, reflecting the app's consistent, ergonomic visual design. This is important, as User Experience (UX) Design theory asserts that interface aesthetics not only improve user comfort but also affect perceptions of quality and trust in the application (36) Meanwhile, the audiovisual quality indicators (88.3%) and the order of display of text, images, and videos (84.6%) showed that the flow of content presentation has supported the flow of learning, namely a learning flow that is seamless, not confusing, and facilitates holistic understanding.

Overall, this high usability score shows that GlideApp is considered very good as a learning support, both in terms of content and accessibility. This aligns with findings (6,37–39), that using digital media in learning can increase students' active participation, spiritual engagement, and motivation to learn. GlideApp-based learning media not only deliver material but also build a contextual, responsive, and immersive learning experience. The application also has the potential to be integrated into blended learning strategies, as suggested by Mhlongo et al. (40) and Zou et al. (41) who argue that effective integration of digital media can bridge pedagogical challenges in the era of digital transformation. The effectiveness of these applications also supports the concept of ubiquitous learning, in which learning can take place without spatial or temporal constraints via mobile devices (42). These findings are consistent with previous international studies showing that no-code educational platforms can increase student learning engagement, motivation, and independence in higher education (28,43).

Thus, the exceptionally high usability results confirm that GlideApps-based learning media is not only feasible, but also has the potential to become an innovative model of digital learning in Islamic Religious Education courses at vocational colleges. The integration between intuitive design, multimodal content, and high accessibility makes this application a relevant learning instrument in the era of digital transformation. Although the results of this development show high effectiveness, in the future further development is needed such as integration with the campus Learning Management System, the addition of interactive discussion features, and the measurement of the long-term impact on changes in students' religious attitudes, in order to strengthen the contribution of media to affective and spiritual learning achievements in Islamic Education courses in Higher Education.

Conclusions

This study confirms that the development of GlideApp-based learning media is a practical digital innovation that supports the learning process in Islamic Religious Education in the vocational education environment. Through the application of the ADDIE model, the media developed has been proven to meet the learning needs of digital-native students, particularly in terms of flexibility, accessibility, interactivity, and the presentation of multimodal materials. The results of expert validation showed that the media falls into the very *feasible* category across both material substance and interface design, providing a strong foundation for broader implementation. Field trials with 96 students also showed high acceptance and engagement rates, and provided empirical evidence of the effectiveness of media in improving students' understanding and learning experience.

The usability evaluation yielded a very high score (mean = 4.41; 88.13%), indicating that GlideApps meets the three main dimensions of usability—effectiveness, efficiency, and user satisfaction. These findings not only confirm the suitability of media design for the characteristics of vocational learners but also support contemporary theories such as the Cognitive Theory of Multimedia Learning, the Technology Acceptance Model (TAM), and Usability Heuristics. Thus, this application is not only feasible to use, but also has the potential to become a model of digital learning media that can be replicated in other courses, especially in the context of religious and humanities learning.

Overall, this research makes an important contribution to the literature on digital media development and pedagogical practices in the era of digital transformation. GlideApps has proven able to bridge pedagogical needs with students' technology preferences and support more adaptive, ubiquitous, and student-centered learning. Nevertheless, further research is needed to evaluate the long-term impact on students' affective and spiritual aspects, and to integrate these media with Learning Management Systems (LMS) and other collaborative features to maximize their effectiveness within the broader digital learning ecosystem.

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Conflicts of Interest

The authors declare no conflict of interest.

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