Interface Design of Quranic Application using Design Science Research Methodology: A Comparison of Gamification and Non-Gamification Design

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DOI : https://doi.org/10.46245/ijorer.v6i1.721

Sections Info	ABSTRACT
	Objective: To improve student motivation and engagement through an intuitive mobile interface with interactive visuals. **Method:** Using Design Science Research Methodology (DSRM), this study compares gamified and non-gamified interface designs. **Results:** User Experience Questionnaire (UEQ) results indicate that the gamified version outperforms the non-gamified design, particularly in stimulation and attractiveness, positively impacting learner and teacher satisfaction. Additionally, the Intrinsic Motivation Inventory (IMI) confirms that gamification significantly increases students' motivation, while the User Engagement Scale (UES) highlights the gamified version's effectiveness in creating an enjoyable, engaging, and impactful learning experience. **Novelty:** This research uniquely contrasts gamified and non-gamified designs in Quranic education, providing insights for quality improvement in Islamic e-learning platforms.

INTRODUCTION

Indonesia, with its majority Muslim population, has a longstanding tradition of non-formal Quranic education called *mengaji*, introduced by parents to their children as part of religious upbringing (Astiana, 2024). Islamic education has evolved to remain relevant in contemporary society, aligning with modernization efforts to integrate religious teaching with advancements in technology and new perspectives (Elihami et al., 2024). This modernization of Islamic education includes paradigm shifts, emerging movements, and reform initiatives aimed at renewing established religious knowledge, traditions, and institutions (Firmansyah et al., 2023). This shows that Islamic education must remain adaptable to contemporary context, including utilizing technology to increase effectiveness (Karami & Dahlan, 2022).

In response, Akram Afifi Holdings introduced *Mengaji* Online, an innovative Learning Management System (LMS) that offers a more flexible format for Quranic learning. The platform provides interactive, scheduled sessions between students and teachers, allowing for structured, on-demand learning. However, the *Mengaji* Online LMS faces design challenges, particularly in user experience, due to the absence of a mobile-friendly version and limited visual appeal, which hinders student engagement. Consequently, students often access the platform only during scheduled sessions, rarely exploring additional features due to the lack of interactivity. This contributes to low user involvement, impacting the platform's overall success (Steffen et al., 2023).

These design challenges underscore the importance of adopting a user-centered approach, as a less responsive interface can decrease satisfaction and long-term interest. The lack of interactive and visually appealing elements reduces the platform's capacity to deliver an engaging learning experience, potentially affecting revenue, risking user attrition, and weakening the product's market position (Bitrián et al., 2021). To address these issues, Akram Afifi Holdings has tasked the author as a UI/UX designer to develop a mobile interface for the *Mengaji* platform and explore elements that can enhance student engagement and motivation.

Furthermore, mobile apps are designed for on-the-go access, allowing users to learn and interact with content anytime and anywhere, which is particularly beneficial for students who may have fragmented schedules (Bernacki et al., 2020; Gupta et al., 2021). This flexibility enhances the learning experience by enabling users to engage with educational material in a manner that fits their lifestyle, thereby promoting continuous learning outside traditional classroom settings (Kacaroglu & Subasi, 2019). In contrast, web apps typically require a stable internet connection and may not offer the same level of offline functionality, limiting their accessibility. Some researchs also suggest that gamification in e-learning can effectively boost engagement and motivation. For example, a recent study on user-centered gamification in educational contexts found notable improvements in interaction, engagement, and student satisfaction (Handayani et al., 2024). These insights suggest that gamification could significantly enhance learning experiences and provide potential solutions to challenges faced by *Mengaji* Online.

In the realm of educational technology, there remains a notable gap in comparative studies specifically examining gamified versus non-gamified designs within learning platforms, particularly in the context of Islamic education. While recent research has highlighted the positive impacts of gamification on student motivation and engagement across various subjects, such as mathematics and medical education (Halim et al., 2024; Ouanes, 2024; Suwandani, 2024), there is a lack of empirical evidence focusing on how these gamification strategies can be effectively applied and compared in Islamic learning environments. For instance, studies have demonstrated that gamification can enhance learning outcomes and foster a more interactive atmosphere (Halim et al., 2024; Suwandani, 2024), yet none have systematically analyzed the differential effects of gamified versus non-gamified interfaces in the context of Quranic education. This presents a unique opportunity for the *Mengaji* Online Learning Management System (LMS) to contribute valuable insights into how gamification can modernize and improve the learning experience for students engaged in religious studies, an area that has not been thoroughly explored in existing literature (Hamdanah et al., 2024; Kumaidi et al., 2024).

This research gap presents an opportunity for the *Mengaji* Online Learning Management System (LMS) to offer valuable insights into how gamification can modernize and improve the learning experience for students in religious studies. The aim of this study is to investigate the impact of gamified and non-gamified interface designs on user engagement, motivation, and user experience in Quranic learning applications. Specifically, the research seeks to answer the question: How do gamified and non-gamified interface designs influence user engagement and motivation in the context of Quranic learning? By comparing these two design approaches, the study will evaluate

their effects on the learning experience and identify which design enhances user interaction and satisfaction the most.

RESEARCH METHOD

There are five methods to solve the problems mentioned. The first stage is Problem Identification, starting with observations of the surrounding environment and continuing with a systematic literature review. Data Collection is done through observation, interview, and questionnaire methods to obtain research data. The next step is Data Analysis using Design Science Research Methodology (DSRM), which produces a prototype as a design solution. This prototype will then be evaluated through a design assessment process using User Experience Questionnaire (UEQ) (Pratama et al., 2022), Intrinsic Motivation Inventory (IMI) (Heindl, 2020), User Engagement Scale (UES) (Amriza et al., 2023) and Usability Evaluation based on simulation results with the Cognitive Walkthrough method obtained from the Demonstration stage (Fitria, 2024). The flowchart of the research process is displayed in Figure 1.
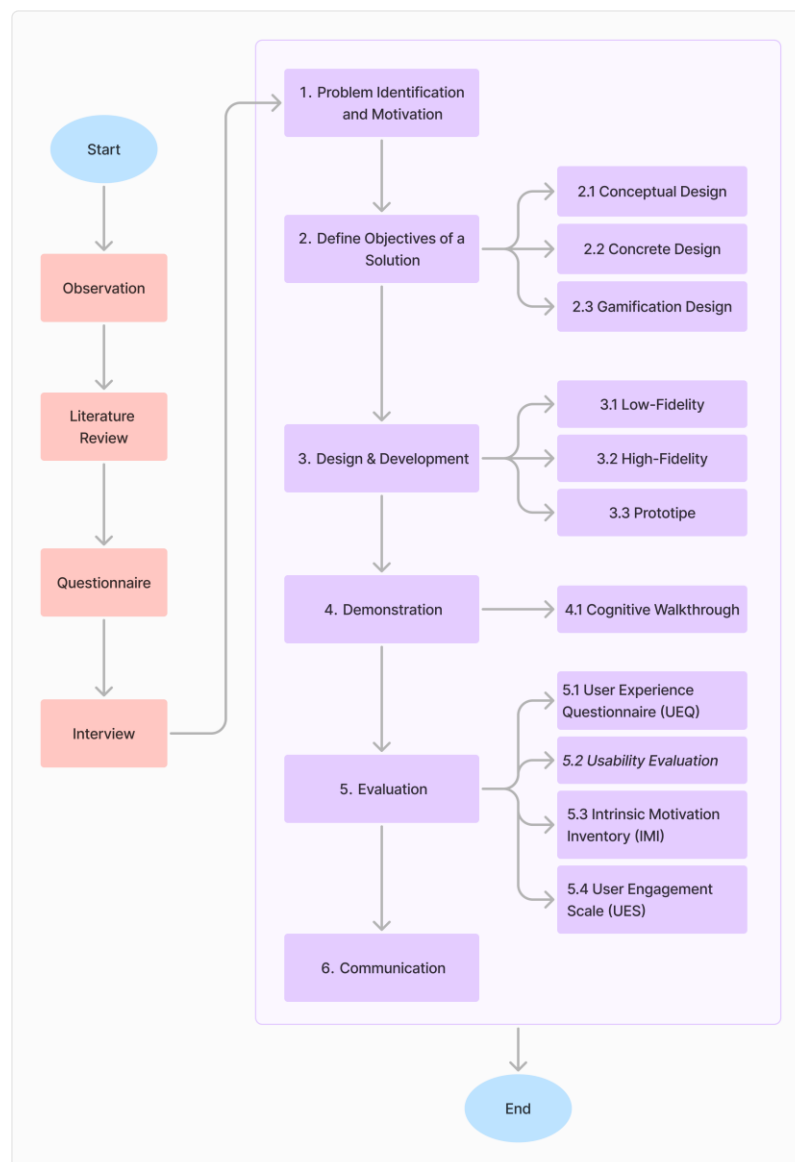

Figure 1. Research flow.

Collecting Data
Observation
The author observed Quran learning activities at Taman Pendidikan Al-Quran (TPQ) At-Taqwa Mosque in Kranggan, Banaran, Kalijambe, Sragen, Central Java. During these sessions, students and teachers engaged in conventional, face-to-face Quran lessons. The author also examined the Mengaji Online LMS to assess its features and identify user needs and challenges.

Literature Review
The literature review establishes a strong theoretical foundation and provides insights into trends and best practices. Data on e-learning, UI, UX, gamification, and similar studies were gathered from 4 e-books, 30 journals, and 9 websites.

Questionnaire
The author used questionnaires to identify respondent characteristics and the issues they faced. A total of 13 questions were developed, covering respondent demographics, ICT usage experience, and e-learning application experience. The questionnaire was completed by 30 respondents, including 24 TPQ students and 6 TPQ teachers. The research question is displayed in Table 1.

Interview
The author conducted semi-structured interviews with 10 participants (5 TPQ students and 5 TPQ teachers) in a focus group format. This method, which blends structure and flexibility, provided deeper insights into user profiles and their experiences with e-learning, offering diverse perspectives (Alamri, 2019).The interview explored user identities, ICT experience, and e-learning insights, including benefits, goals, needs, challenges, and expectations. The interview question is displayed in Table 2.

Analysis of Data
Design Science Research Methodology
The method used to develop this quranic application follows the Design Science Research Methodology (DSRM), which is a design-focused approach in information systems. DSRM involves six stages: (1) Identifying the Problem and Motivation, (2) Defining Objectives for the Solution, (3) Design and Development, (4) Demonstration, (5) Evaluation, and (6) Documentation (Venable et al., 2017).

RESULTS AND DISCUSSION
Results
Problem Identification and Motivation
At this stage, the author conducted questionnaires and interviews to understand the characteristics of Al-Quran application users with a total of 30 respondents according to the number in the study (Khumairah et al., 2022). The majority of respondents are students aged 9-11 years (53.3%) who use smartphones for learning (100%). Most learn the Quran at school or mosque several times a week (73.3%). A total of 60% of respondents have used e-learning apps, with a preference for Google Classroom (63.2%) and Zoom or Google Meet (31.6%). They liked the game features (89.5%), ease of use

(84.2%), and interesting videos (73.7%). Respondents want Quran recitation apps that are easy to use (93.3%), have game features (86.7%), and recitation sounds (60%). An attractive app interface is considered very important (60%), and 96.7% are interested in gamification elements such as points, challenges, and leaderboards.

In addition, based on interviews with five TPQ students and five TPQ teachers according to the minimum number of respondents in the study (Gentles et al., 2015), the majority use smartphones to access e-learning and often use applications such as Google Classroom, Zoom, Google Meet, and gamification-based applications such as Kahoot and Quizizz. The students and teachers chose e-learning due to its numerous benefits, significantly enhancing the educational experience for both groups. For students, e-learning provides flexibility in accessing learning materials at their convenience, allowing them to learn at their own pace and revisit complex topics as needed (Rawashdeh, 2021; Stecuła & Wolniak, 2022). This adaptability is particularly advantageous for accommodating diverse learning styles, as students can choose resources that best suit their preferences (Rawashdeh, 2021). Furthermore, e-learning platforms often incorporate interactive elements such as quizzes and multimedia content, which can increase student engagement and motivation (Armijo & Magaldi, 2024; Yahiaoui et al., 2022). However, they face difficulties related to understanding the application features, especially for young students and teachers who are not familiar with the teaching features. Their main expectations for gamification-based Quran apps are ease of use, engaging game elements and better interaction with teachers.

Furthermore, the author also benchmarked three popular gamification applications such as Quizizz (Arruan et al., 2024), Duolingo (Teske, 2017), and Kahoot (Maraza-Quispe et al., 2024) to evaluate the features and functionalities that fit the user's needs and support the learning process. This benchmark also highlights the gamification elements in each application to understand the elements applied in supporting the Quranic application.

Define the Objectives for a Solution
Conceptual Design
Conceptual design plays a crucial role in the development of application interfaces, as it lays the foundation for how users will interact with the system. At this stage, designers identify essential functionalities and user requirements, which guide the abstraction of ideas into a coherent structure (Arbeláez-Estrada & Osorio-Gómez, 2017). The data collected through questionnaires and interviews are mapped and categorized to organize information, opinions, and user expectations into insights for the next step. The collected data was then grouped based on several categories, such as goals & desires, tasks & needs, pain points, and applications used by respondents in teaching and learning activities. This process contributes to conceptual design, which involves creating an abstract representation of the system's structure and functionalities based on user needs and expectations, ensuring that the final design aligns closely with user requirements and objectives.
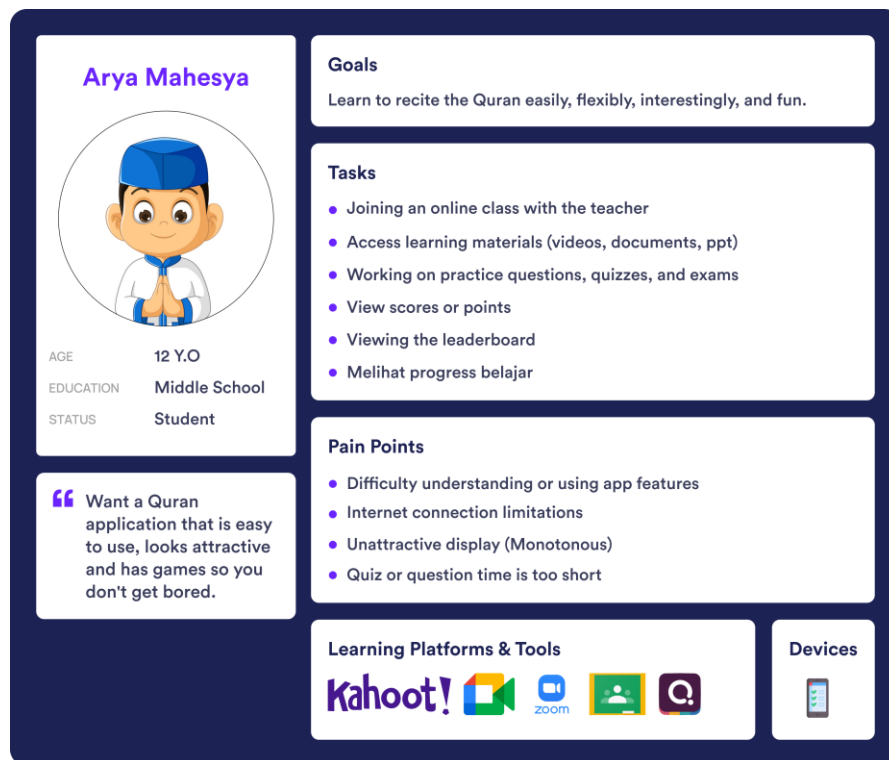
Figure 2. Student Persona

Based on the analysis from the previous stage, the author concluded the criteria for the Quran application that suits the needs, expectations, and solutions to user problems. From the existing data, an analysis was carried out which resulted in the user persona of the respondents consisting of students in Figure 2 and TPQ teachers in Figure 3.
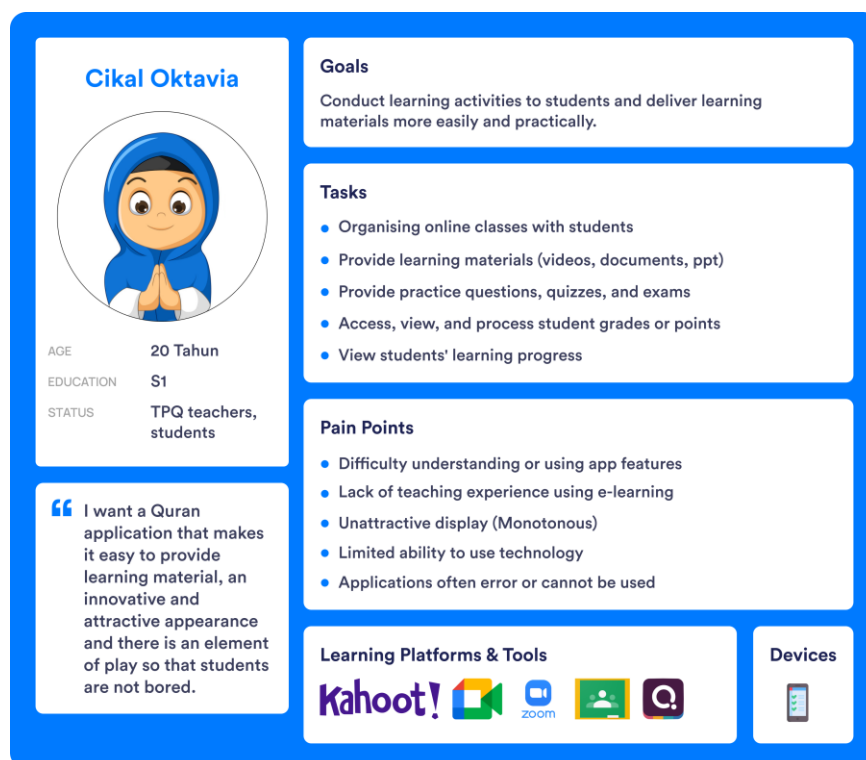

Figure 3. Teacher Persona

The features developed are based on the needs and tasks that users have. The gamified features will draw on Carolina's research (Carolina et al., 2019), which identifies three categories of user behavior in e-learning systems—Interaction, Communication, and Performance—to facilitate user engagement with gamified e-learning platforms. After analyzing these three categories and user needs, the author formulates several features for the design of the Quranic application to be developed. For students, the features in the gamification version include registration and login, online classes, class schedules, leaderboards, access to learning materials, quizzes and exams, learning progress, feedback, attendance, badges, certificates, notifications, and logout. As for teachers, gamification features include login, online classes, list of classes taught, class details, learning progress, feedback, and badges. In the non-gamification version, the features for students include almost all the features in the gamification version, but without gamification elements such as leaderboards and badges. Teachers in the non-gamified version have similar features, but without gamification reward elements.

Concrete Design

Concrete design is the stage in the application development process that focuses on creating the visual interface, including essential elements such as typography, colors, icons, and illustrations. This phase plays a crucial role in transforming abstract concepts from conceptual design into tangible visual components that enhance user experience and engagement (Stephan et al., 2017). For typography in Figure 5, Nunito Sans font was chosen for its clean, modern and easy-to-read look, used for headlines and body text throughout the app.

The main colors of turquoise green and orange not only create a strong visual identity, but also create a positive and effective atmosphere for learning. Additional colors are used for status indicators, such as success and error indicators, as well as colors for the background and text to make the app easy to use. The icons used in the app are designed in a clean outline style, and active icons will change to a filled style with a primary color. These icons help ease navigation and understanding of the app's features. Gamification icons, such as leaderboards, badges, and points, were also added to strengthen the gamification element in the app.

Gamification Design

In this stage, the authors analyzed the application of gamification, its usage mechanisms, and interactions within Quranic applications. This analysis was conducted by referring to 10 studies on gamification in e-learning, benchmarking popular applications such as Quizizz, Duolingo, and Kahoot, and incorporating insights from (Carolina et al., 2019). By combining a literature review, questionnaires, and feature comparisons of these widely-used apps, the authors identified effective gamification elements and their impact.

Gamification design refers to the integration of game-like elements into non-gaming contexts to enhance user engagement, motivation, and overall experience. Key elements of gamification design include points, leaderboards, badges, challenges, progress bars, and feedback, each serving a specific purpose in motivating users (Nah et al., 2014; Sheffler et al., 2020). Points serve as a quantifiable measure of achievement, allowing users to track their progress and compete against themselves or others (Gajanova &

Radišić, 2021). Leaderboards provide a competitive aspect by displaying user rankings based on their accumulated points, fostering a sense of competition and community (Zhang & Hasim, 2023). Badges act as visual representations of accomplishments, rewarding users for reaching specific milestones and encouraging continued participation (Wu & Santana, 2022). For instance, research has shown that badges can significantly enhance intrinsic motivation when they are designed with appealing aesthetics (Johnson et al., 2016; Wu & Santana, 2022). Challenges are designed to motivate users by presenting them with tasks that require effort and skill to complete, thereby enhancing their engagement with the content (Rahmadhan et al., 2023). Progress bars visually indicate how far a user has come in completing a task or achieving a goal, providing a sense of accomplishment and encouraging persistence (Vermeir et al., 2020). Lastly, feedback is crucial in gamification design, as it informs users about their performance and progress, reinforcing positive behaviors and guiding them toward improvement (Johnson et al., 2016; Pakinee & Puritat, 2021). Overall, gamification design leverages these elements to create a more engaging and motivating experience, ultimately leading to improved user outcomes and satisfaction in various applications (Khuzzan et al., 2021).

Design and Development
Wireframe
After the concept and flow were determined in the previous stage, the author then created wireframes or low-fidelity prototypes for the gamified and non-gamified versions. These sketches were created based on the data that had been collected previously. Wireframes are simple visual representations of the user interface that show the basic layout of elements within the app, such as buttons, menus, and content. Wireframes serve as an initial guide that helps designers and developers understand how users will interact with the app (Lewis et al., 2024). At this stage, the emphasis is on structure and functionality, not on detailed visual elements such as color or typography. All wireframes designed below are tailored to the needs of the students and teachers in the context of the Quran application. The following are the student user interface wireframes shown in Figure 4 and the teachers for the gamified and non-gamified versions shown in Figure 5.
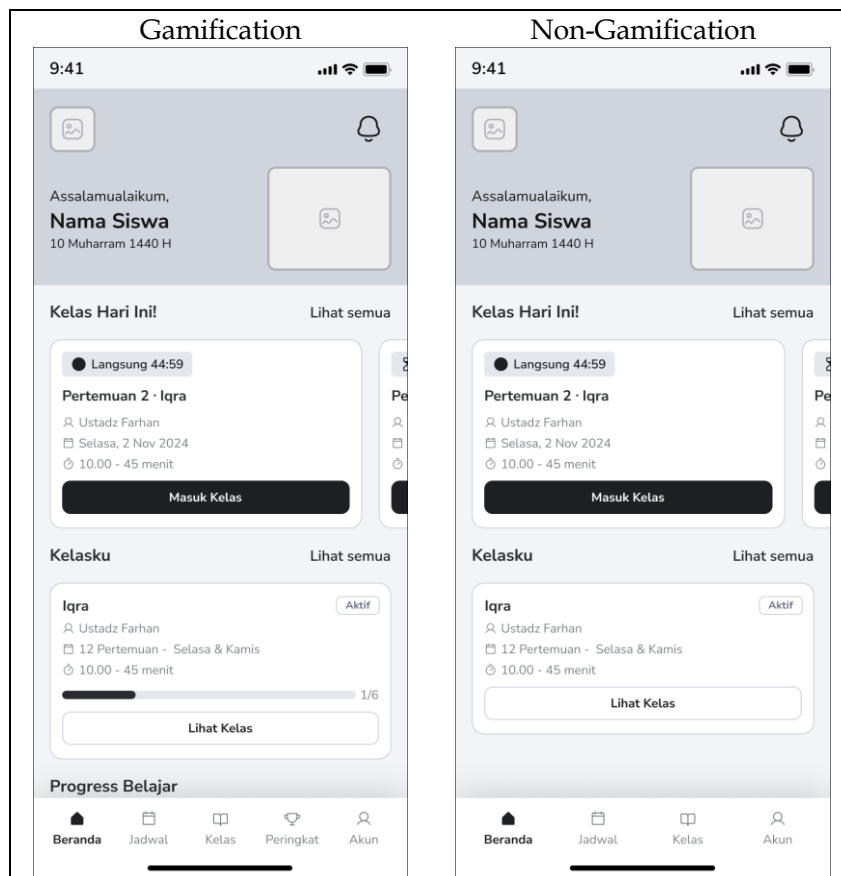
Figure 4. Wireframe for student.

The gamification version, as shown in Figure 4 (left), is designed specifically for student users, incorporating features like progress tracking, rewards, and achievements to create a more engaging and interactive learning experience. These elements aim to motivate students by fostering a sense of accomplishment, allowing them to visualize their progress and stay engaged with the learning process. In contrast, the non-gamification version, seen in Figure 4 (right), also targets student users but offers a simpler, more minimalist interface that prioritizes clarity and usability. This design provides a distraction-free environment, suitable for students who prefer straightforward access to their classes and learning materials. By addressing the needs of student users, both designs cater to different preferences: the gamified version enhances motivation and engagement, while the non-gamified version emphasizes focus and simplicity.
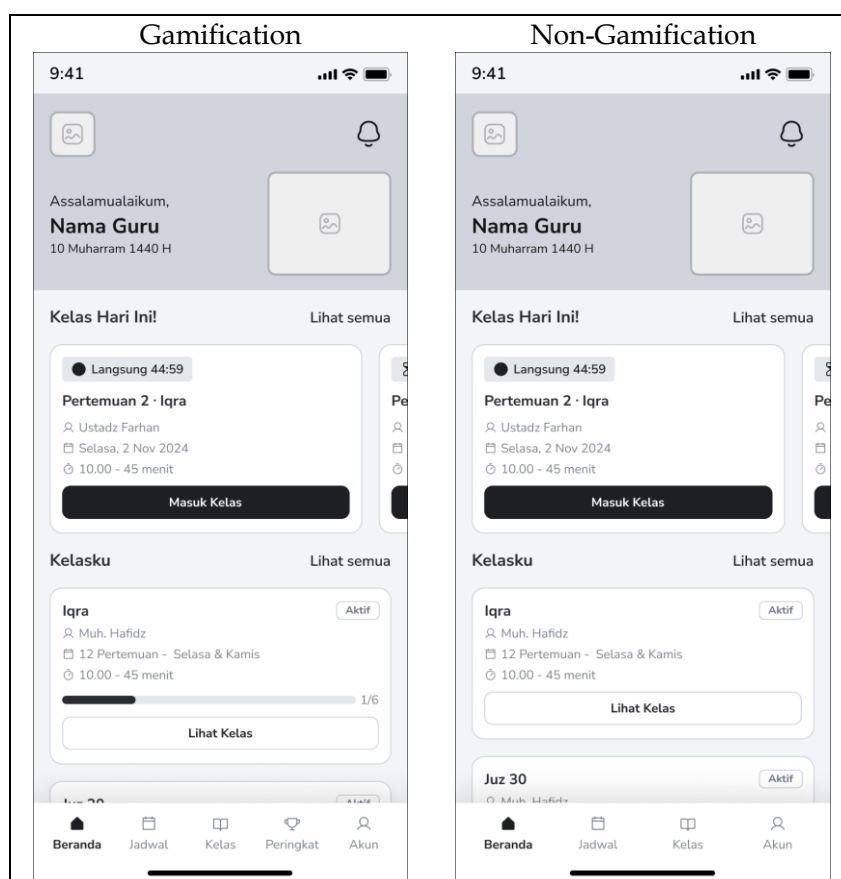
Figure 5. Wireframe for teacher.

The gamification version for teachers, as shown in Figure 5 (left), integrates features like progress tracking, gamified rewards, and visual indicators to enhance engagement and interactivity in managing classes, aiming to create a dynamic and motivating interface. In contrast, the non-gamification version, seen in Figure 5 (right), offers a minimalist design focusing on essential functionality, such as class schedules, student details, and lesson plans, without additional motivational elements or visual features. Both versions cater to different teacher preferences, with the Gamification version emphasizing motivation and engagement, while the Non-Gamification version prioritizes simplicity and efficiency.

Mockup
In the previous stage, the author has designed wireframes or low-fidelity prototypes for gamification and non-gamification versions. Next, the author makes the final appearance of the previous design in the form of a mockup or high-fidelity prototype. A mockup is a detailed visual representation of an app's interface, showcasing elements like colors, typography, and images. It aids in gathering feedback and communicating design ideas to stakeholders before finalizing decisions (Suparmanto et al., 2024). Below are the mockup/high-fidelity prototypes of the student user interface shown in Figure 6 and the teacher shown in Figure 7.
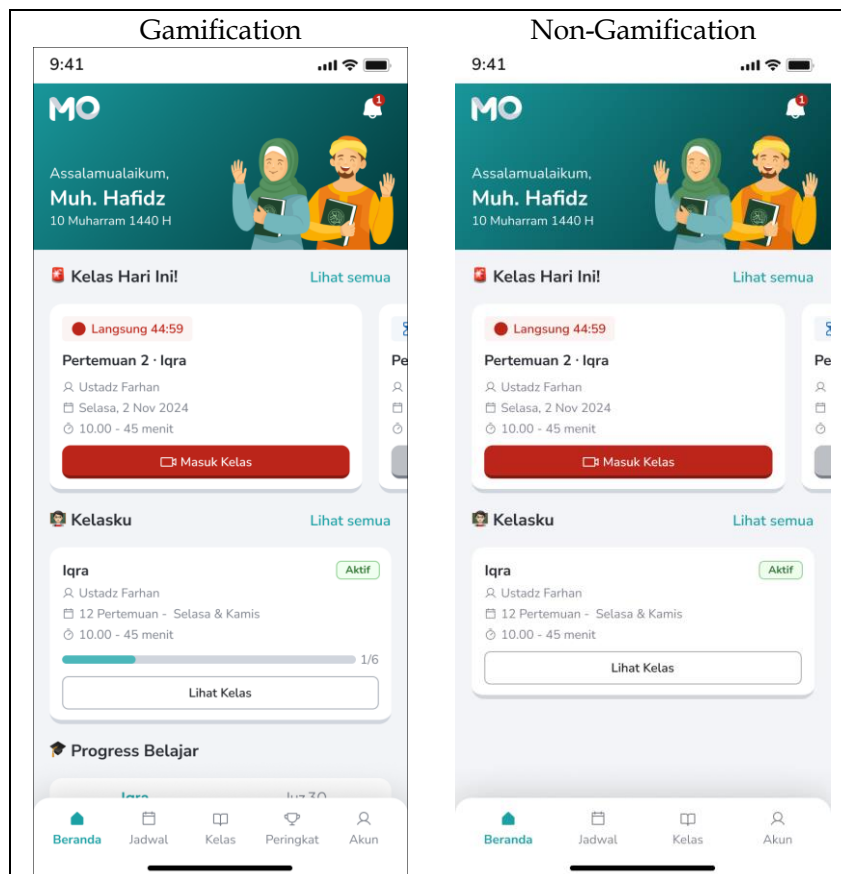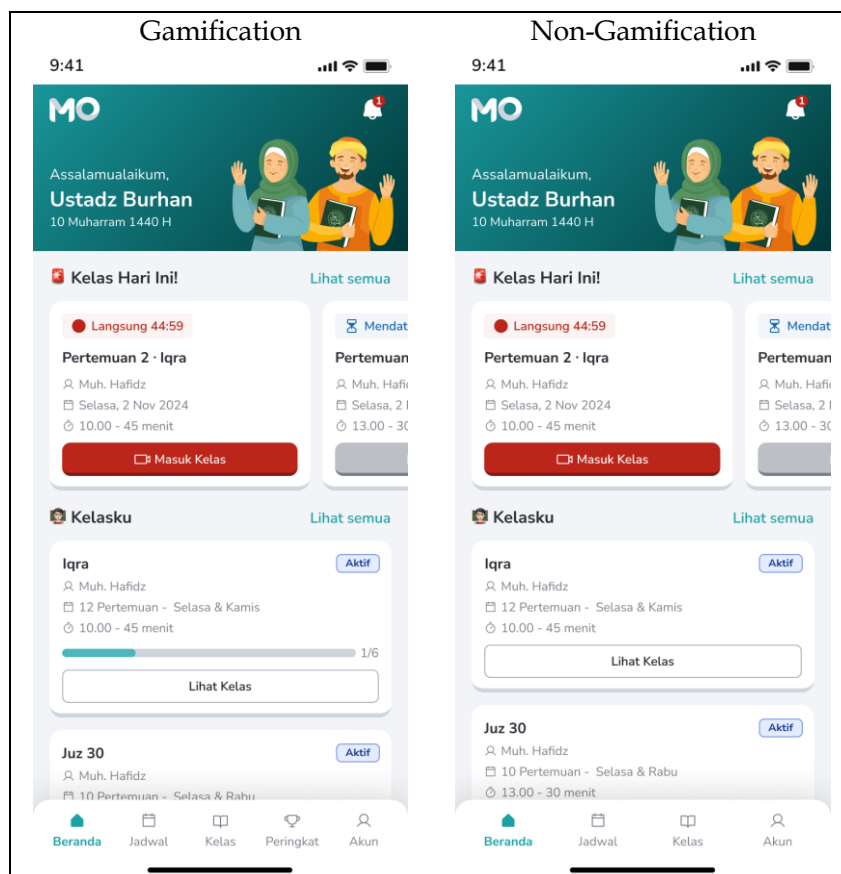
Figure 6. Mockup for student.

Figure 7. Mockup for Teacher.

Demonstration

At this stage, the author tested the gamified and non-gamified versions of the Quran application prototype on 33 students and 5 teachers, according to the minimum number of respondents in the study (Arrasyid et al., 2024). Respondents were asked to fill out a User Experience Questionnaire (UEQ) as well as questionnaires to measure engagement and motivation. Furthermore, Usability Evaluation was carried out using the Cognitive Walkthrough method. The evaluation was conducted at TPQ At-Taqwa Kranggan Mosque, with task scenarios for students and teachers. The results of both the IMI and UES questionnaires were analyzed using a t-test to compare the differences between the gamified and non-gamified versions.

Table 3. UEQ result.

Aspect	Gamification		Non-Gamification	
	Impression Value	Evaluation Value	Impression Value	Evaluation Value
Attractiveness	2.035	0.830	1.478	0.460
Perspicuity	1.895	0.790	1.645	0.480
Efficiency	1.934	1.040	1.724	0.590
Dependability	1.691	0.870	1.224	0.590
Stimulations	2.092	0.640	0.816	0.820
Novelty	1.684	0.770	0.941	0.770

The UEQ results in Table 3, show that the interface of gamified Quranic app outperforms the non-gamified version in most aspects. In attractiveness, gamification scored an impression of 2.035 and an evaluation of 0.83, higher than non-gamification's 1.478 and 0.46. Clarity also favored gamification (1.895 and 0.79) over non-gamification (1.645 and 0.48), as did efficiency (1.934 and 1.04 vs. 1.724 and 0.59). Reliability was similarly stronger in gamification (1.691 and 0.87 vs. 1.224 and 0.59). Gamification scored higher in stimulation (2.092), though non-gamification had a slightly better evaluation (0.82 vs. 0.64). Both versions showed similar novelty evaluations, with gamification's impression still higher (1.684 vs. 0.941). This is in line with the UEQ results of similar studies which showed good result (Naufal et al., 2024).
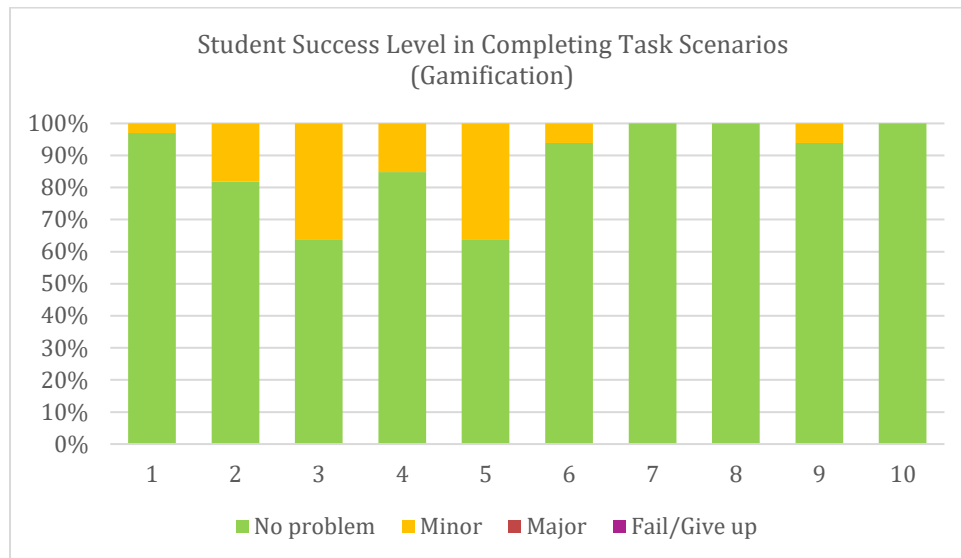
Figure 8. Student usability evaluation results (Gamification).

The results of student usability evaluation on the gamified (10 task scenarios) and non-gamified (7 task scenarios) versions as shown in Figure 8 and Figure 9, respectively, show that almost all students successfully completed the task scenarios in both gamified and non-gamified versions without any problems and only a few experienced minor difficulties. This is in line with the results of similar studies which showed good results (Fanani et al., 2021).
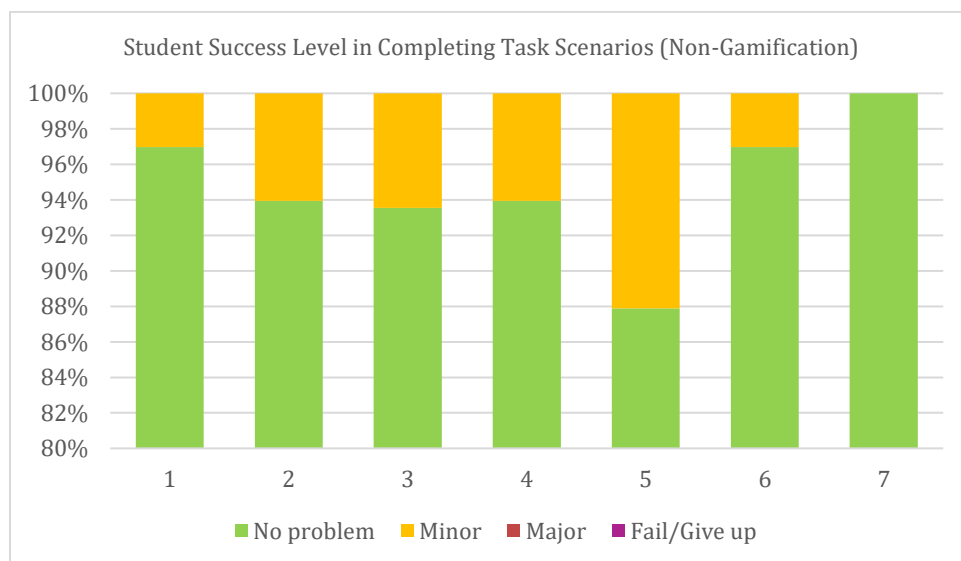

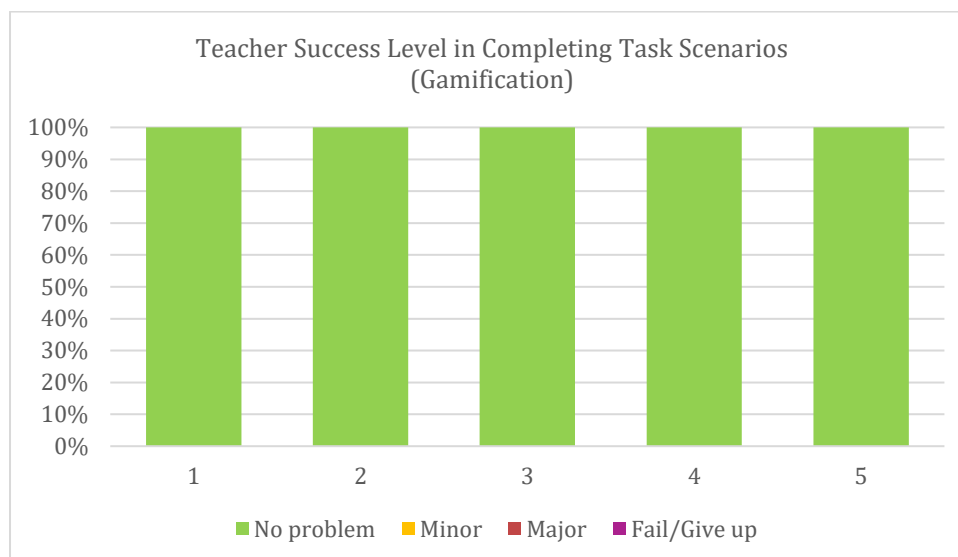**Figure 9.** Student usability evaluation results (Non-Gamification).

Figure 10. Teacher usability evaluation results (Gamification).

The usability evaluation results for teachers on the gamified and non-gamified versions, each of which has 4 task scenarios as shown in Figure 10 and Figure 11, show that all teachers successfully completed the task scenarios on both versions without any problems. From the results of this usability evaluation, the authors made recommendations for improvements to some of the problems faced by users, both students and teachers.
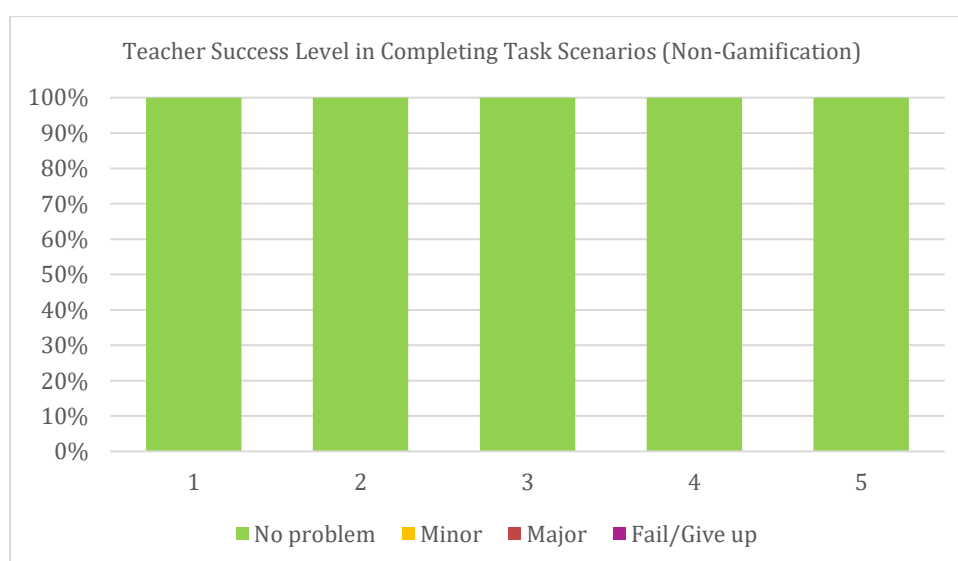
Figure 11. Teacher usability evaluation results (Non-Gamification).

Based on the results of the Intrinsic Motivation Inventory (IMI) on 33 students for the gamified and non-gamified versions of the Quranic application interface, there is a difference in the average scores across several aspects. In the interest/enjoyment aspect, the gamified version obtained an average score of 3.97, surpassing the non-gamified version which only reached 2.77, with a t-statistic of 5.110 and a p-value of 0.000, indicating a significant difference. In the perceived choice aspect, non-gamification had a higher average score (3.7) than gamification (3.07), with a t-statistic of -3.210 and a p-value of 0.002, also showing a statistically significant difference. On perceived

competence, the gamified version came out ahead with a score of 4.19 compared to the non-gamified version, which scored 3.46, with a t-statistic of 5.223 and a p-value of 0.000, indicating a significant difference. Finally, for pressure/tension, the gamified version was slightly lower (2.82) than the non-gamified version (2.91), with a t-statistic of -1.015 and a p-value of 0.316, indicating no significant difference in the level of pressure felt by students. The Intrinsic Motivation Inventory (IMI) results are presented in Table 4.

Table 4. IMI questionnaire average comparison results.

Aspect	Version	Total Respondents	Mean Score	t-Statistic	p-Value
Interest/Enjoyment	Gamification	33	3.97	5.110	0.000
	Non-Gamification	33	2.77		
Perceived Choice	Gamification	33	3.07	-3.210	0.002
	Non-Gamification	33	3.7		
Perceived Competence	Gamification	33	4.19	5.223	0.000
	Non-Gamification	33	3.46		
Pressure/Tension	Gamification	33	2.82	-1.015	0.316
	Non-Gamification	33	2.91		

Based on the results the User Engagement Scale-Short Form (UES-SF) show that the gamified version of the Quranic application interface is superior in several aspects compared to the non-gamified version. Table 5 compares user experience between the gamification and non-gamification versions across different aspects. For focus attention, the gamification version (3.38) significantly outperforms non-gamification (2.45) with a p-value of 0.000. Perceived usability also shows a higher score for gamification (2.02) compared to non-gamification (1.76), with a significant p-value of 0.039. In aesthetic appeal, gamification (4.15) scores slightly higher than non-gamification (3.95), but the difference is not significant (p-value 0.109). Lastly, reward shows a significant difference, with gamification (4.22) outperforming non-gamification (3.59) and a p-value of 0.000.

Table 5. UES questionnaire average comparison results.

Aspect	Version	Total Respondents	Mean Score	t-Statistic	p-Value
Focus Attention	Gamification	33	3.38	7.555	0.000
	Non-Gamification	33	2.45		
Perceived Usability	Gamification	33	2.02	2.112	0.039
	Non-Gamification	33	1.76		
Aesthetic Appeal	Gamification	33	4.15	1.625	0.109
	Non-Gamification	33	3.95		
Reward	Gamification	33	4.22	5.118	0.000
	Non-Gamification	33	3.59		

Discussion
The evaluation of the interface of the Quranic application revealed a significant comparison between the gamified and non-gamified versions based on three instruments: User Experience Questionnaire (UEQ), Intrinsic Motivation Inventory (IMI), and User Engagement Scale (UES). The IMI and UES were selected based on their proven

effectiveness in measuring motivation and engagement based on existing research (Chernbumroong et al., 2024). These instruments provided valuable insights into how the different interface designs impacted user experience, engagement, and intrinsic motivation, highlighting the strengths and weaknesses of each approach in the context of Quranic learning.

Comparing the Impact of Gamified and Non-Gamified Interface Designs on User Engagement and Motivation in Quranic Learning

In the User Experience Questionnaire (UEQ), the gamification application interface excels in six main aspects: stimulation, attractiveness, efficiency, clarity, accuracy, and novelty. Stimulation on the gamified version of the interface scored 2.092, indicating that users felt more motivated and enjoyed interacting with the interface thanks to elements such as challenges and feedback. Attractiveness on gamification is also high with a score of 2.035, meaning the interface design is more attractive to users to engage in learning. Efficiency with a score of 1.934 indicates that users are quicker to complete tasks thanks to features such as progress bars, while clarity with a score of 1.895 indicates information is easy to understand. Fidelity and novelty recorded scores of 1,691 and 1,684 respectively, indicating that the gamified app interface matched user expectations and delivered a novel experience. Non-gamified apps scored highest on efficiency (1.724), but relatively lower on attractiveness (1.478) and novelty (0.941), reflecting that interfaces without the game elements are perceived as monotonous and less interactive.

The Intrinsic Motivation Inventory (IMI) results revealed that gamification had a greater positive impact on students' intrinsic motivation in various aspects. In the interest/enjoyment aspect, the gamified version scored an average of 3.97, significantly higher than the non-gamified version, which scored 2.77, with a t-statistic of 5.110 and a p-value of 0.000, indicating a highly engaging experience in the gamified version. For perceived competence, the gamified interface also outperformed the non-gamified version, scoring 4.19 compared to 3.46, with a t-statistic of 5.223 and a p-value of 0.000, showing that students felt more confident using the gamified app. In the perceived choice aspect, the non-gamified version scored higher (3.7) than the gamified version (3.07), with a t-statistic of -3.210 and a p-value of 0.002, suggesting that students felt they had more control in selecting activities without the gamification elements. Lastly, in pressure/tension, the difference between gamified (2.82) and non-gamified (2.91) versions was minimal, with a t-statistic of -1.015 and a p-value of 0.316, indicating no significant difference in the perceived pressure between the two versions.

Based on the results of the UES, in the focused attention aspect, the gamified interface scored 3.38, significantly higher than the non-gamified version, which scored 2.45, with a t-statistic of 7.555 and a p-value of 0.000, indicating that the gamification elements effectively held students' attention longer. In perceived usability, the gamified interface scored 2.02, slightly higher than the non-gamified version (1.76), with a t-statistic of 2.112 and a p-value of 0.039, suggesting both versions were easy to use, but the gamified version was perceived as slightly more usable. The aesthetic appeal aspect recorded a score of 4.15 for gamification, indicating that students found the gamified interface more visually appealing than the non-gamified version (3.95), though the difference was not statistically significant, as reflected in the t-statistic of 1.625 and a p-value of 0.109. Finally, in the reward aspect, the gamified interface scored 4.22, showing a strong positive

response from students regarding the rewards in the form of points or badges, while the non-gamified version scored 3.59, with a t-statistic of 5.118 and a p-value of 0.000, indicating a significant preference for the gamified rewards. The UES results are in line with similar research which measured that gamification had positive results on all aspects (Brian et al., 2024).

Overall, the results of these three evaluation instruments confirm that the gamification-based Quranic app interface provides a more positive and motivating student experience in terms of convenience, engagement and enjoyment of learning. Higher scores on key aspects indicate that gamification is able to create a more interactive and attractive learning environment, while non-gamified versions tend to offer a more monotonous and less motivating experience. These findings reinforce the view that implementing gamification elements in educational application interfaces can be an effective strategy to increase student motivation and engagement.

CONCLUSION

Fundamental Finding : The study highlights significant findings from the comparative analysis of gamified and non-gamified interfaces of Quranic learning applications. The gamified version outperformed the non-gamified one across various measurements of user satisfaction and engagement, confirmed through the User Experience Questionnaire (UEQ), Intrinsic Motivation Inventory (IMI), and User Engagement Scale (UES). Key outcomes included higher scores in attractiveness, stimulation, and novelty in the gamified version, demonstrating its effectiveness in enhancing motivation and maintaining student interest. Gamified interfaces also led to greater student engagement, with positive results in focused attention and perceived usability. **Implication :** The study underscores the value of integrating gamification elements — such as challenges, feedback, and rewards — into educational apps to foster a more interactive and stimulating learning environment. These findings are critical for designers and educators aiming to improve the effectiveness of digital learning tools. By incorporating gamification, educational applications can better captivate users, drive motivation, and create enjoyable learning experiences. **Limitation :** The study primarily focused on measuring user experience for both teachers and students, along with student engagement and motivation by comparing gamified and non-gamified interface designs. This limited scope may not capture all aspects of the learning process, such as the pedagogical effectiveness or the broader educational outcomes. Additionally, the findings are centered on immediate reactions and may not reflect long-term impacts on learning retention or behavior changes. **Future Research :** Future studies should focus on enhancing the design based on the recommendations from the evaluation phase to improve the interface further. Additionally, this research was limited to beginners at the Iqra stage; subsequent studies are encouraged for the more advanced stages, including the introduction of Tajweed and Quranic studies. Long-term evaluations are also needed to assess whether the positive effects of gamification on student satisfaction, engagement, and motivation can be maintained over an extended period.

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