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Development of A Multimedia-Based English Vocabulary Learning Application Through Short Qur'anic Verses Using A Computer Based Instruction Approach

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Abstract *- This study aims to develop a multimedia-based English vocabulary learning application through short Qur'anic verses using a Computer-Based Instruction (CBI) approach. The application is designed to assist learners in improving their English vocabulary while simultaneously enhancing their understanding of selected Qur'anic verses. The learning materials are presented through various multimedia elements, including text, images, audio pronunciation, Qur'anic recitation, translations, explanations, quizzes, and progress-tracking features. The development process follows a systematic instructional design approach, integrating vocabulary learning with meaningful Qur'anic contexts to increase learner engagement and comprehension. The application consists of several main modules, namely Materials, Vocabulary, Qur'anic Verses, Quiz, Progress, and Achievements. These modules provide interactive learning experiences that encourage independent learning and continuous assessment. The resulting application offers an innovative learning environment that combines language acquisition, Islamic values, and educational technology. Through the implementation of multimedia and Computer-Based Instruction principles, the application is expected to improve learners' vocabulary mastery, motivation, and overall learning outcomes. The study contributes to the development of technology-enhanced language learning media that integrates religious content with modern educational approaches.*

Keywords*: English Vocabulary Learning, Multimedia Learning, Computer-Based Instruction, Qur'anic Verses, Educational Technology, Mobile Learning.*

I. INTRODUCTION

The rapid advancement of information and communication technology has significantly influenced various sectors, including education. The integration of technology into educational environments has encouraged the development of innovative learning tools designed to improve the quality of teaching and learning processes. Among these technological innovations, multimedia-based learning applications have gained considerable attention due to their ability to present educational content through various forms of media, such as text, graphics, audio, animation, and video. These multimedia elements can enhance learners' engagement, facilitate knowledge retention, and create more interactive learning experiences compared to traditional instructional methods (Mayer, 2021).

The increasing use of educational software has also transformed the way students access learning materials. Modern learners expect educational resources that are not only informative but also interactive and accessible through digital devices. Consequently, software engineering plays a crucial role in developing educational applications that meet users' needs while ensuring functionality, usability, reliability, and maintainability. According to Pressman and Maxim (2020), software engineering provides systematic methods, tools, and processes for developing high-quality software products capable of addressing specific user requirements. In educational contexts, software engineering principles are essential for ensuring that learning applications effectively support instructional objectives while providing positive user experiences.

One of the important areas of educational application development is language learning. English is widely recognized as the global language of communication, science, technology, and international collaboration. As a result, English language education has become a priority in many countries, including those where English is taught as a foreign language. Among the various language components, vocabulary is considered a fundamental element because it directly influences learners' ability to understand and produce language. Nation (2013) emphasizes that vocabulary knowledge serves as the foundation for the development of listening, speaking, reading, and writing skills. Without sufficient vocabulary, learners often experience difficulties in comprehending texts, expressing ideas, and participating effectively in communication.

Despite the importance of vocabulary acquisition, many learners continue to encounter challenges in mastering English vocabulary. Previous studies have identified several factors contributing to these difficulties, including limited exposure to English, lack of contextualized learning materials, low learning motivation, and insufficient opportunities for practice (Richards & Renandya, 2018). Traditional vocabulary instruction

frequently relies on memorization techniques that may not provide meaningful contexts for learners. As a result, students often struggle to retain newly learned words and apply them appropriately in real-life situations. These challenges highlight the need for innovative learning approaches that can facilitate vocabulary acquisition in engaging and meaningful ways.

The integration of multimedia technology into language learning has been recognized as an effective solution for addressing these challenges. Mayer's Cognitive Theory of Multimedia Learning suggests that learners process information more effectively when verbal and visual representations are presented together, allowing them to construct deeper mental connections between concepts (Mayer, 2021). Multimedia applications provide opportunities for learners to hear pronunciations, view illustrations, interact with exercises, and receive immediate feedback. Such features contribute to increased learner motivation, improved comprehension, and enhanced vocabulary retention. Therefore, multimedia-based learning applications have become increasingly popular in English language education.

In addition to technological considerations, the relevance of learning content to learners' cultural and religious backgrounds is another important factor influencing learning effectiveness. Contextual learning theories suggest that students are more likely to understand and remember new information when it is connected to their prior knowledge and daily experiences (Tomlinson, 2013). For Muslim learners, the Holy Qur'an represents an essential source of knowledge, values, and guidance. Many Muslim students are introduced to Qur'anic verses from an early age through recitation, memorization, and religious education. Consequently, integrating Qur'anic content into English language learning may provide meaningful contexts that facilitate vocabulary acquisition while simultaneously reinforcing religious values.

The Holy Qur'an contains numerous references to natural phenomena, human behaviour, social interactions, and ethical principles. These concepts can serve as valuable sources for introducing English vocabulary. Words such as *sun*, *moon*, *star*, *earth*, *water*, *day*, *night*, *people*, and *knowledge* frequently appear in Qur'anic verses and can be incorporated into vocabulary learning activities. By associating English vocabulary with familiar Qur'anic concepts, learners may develop stronger cognitive connections that support vocabulary retention and comprehension. Furthermore, this approach can increase students' motivation by demonstrating the compatibility between English language learning and Islamic values (Yusuf, 2021).

The integration of Islamic values into educational technology has become an emerging area of research. Several scholars have emphasized the importance of designing learning resources that accommodate learners' cultural and religious identities while promoting academic achievement (Yusuf, 2021). In Islamic educational institutions, educational applications that combine language learning with religious content can support both cognitive and spiritual development. Such applications may also contribute to character education by encouraging learners to reflect on the moral messages contained within Qur'anic verses while acquiring new language skills.

From a software engineering perspective, developing an educational application requires more than simply digitizing instructional content. Educational software must be carefully designed to ensure usability, accessibility, functionality, and user satisfaction. According to Sommerville (2016), software development involves systematic processes including requirements analysis, system design, implementation, testing, deployment, and maintenance. These processes are particularly important in educational applications because learners and teachers rely on software systems to support learning activities effectively. Therefore, educational software should be developed based on clearly identified user requirements and evaluated through rigorous testing procedures.

One instructional approach that is highly suitable for multimedia learning applications is Computer Based Instruction (CBI). Computer Based Instruction refers to the use of computer technology to deliver instructional materials, provide learning activities, and assess learner performance through interactive digital environments (Alessi & Trollip, 2001). The CBI approach enables learners to progress at their own pace, receive immediate feedback, and engage in individualized learning experiences. Moreover, CBI supports the integration of multimedia components that enhance learner engagement and facilitate knowledge acquisition. Consequently, the implementation of CBI principles within educational software can improve both learning effectiveness and user experience.

Although numerous studies have investigated multimedia learning, English vocabulary acquisition, and Islamic education independently, research focusing on the development of multimedia-based English vocabulary learning applications using Qur'anic content and the Computer Based Instruction approach remains limited. Existing studies primarily emphasize instructional effectiveness without addressing the software development processes involved in creating educational applications. This gap indicates the need for research that combines software engineering principles, multimedia learning theory, and Islamic educational content within a single educational application.

Based on these considerations, this study aims to develop a multimedia-based English vocabulary learning application through short Qur'anic verses using a Computer Based Instruction approach. The study focuses on analysing user requirements, designing and implementing the

application, and evaluating its functionality and usability. Through the integration of multimedia technology, software engineering principles, and Qur'anic learning content, the developed application is expected to provide an innovative educational solution that supports English vocabulary acquisition while promoting meaningful learning experiences for Muslim learners.

II. RESEARCH METHODS

This study employed a Research and Development (R&D) methodology to design, develop, and evaluate a multimedia-based English vocabulary learning application through short Qur'anic verses using the Computer Based Instruction (CBI) approach. Research and Development is a systematic method used to produce educational products and evaluate their effectiveness, usability, and quality before implementation (Sugiyono, 2022). In this study, the resulting product was an interactive multimedia learning application designed to facilitate English vocabulary acquisition while integrating Islamic educational values.

The software development process adopted the Waterfall Software Development Life Cycle (SDLC) model. The Waterfall model was selected because it provides a structured and systematic framework consisting of sequential phases, including requirements analysis, system design, implementation, testing, and maintenance (Pressman & Maxim, 2020). This model is particularly suitable for educational software development because the system requirements can be clearly identified at the beginning of the project.

At this stage, it is carried out by studying the basic theory that supports research, searching and collecting the required data. To collect the required data, the author used several techniques. (1) Direct Observation, namely the researcher makes direct observations at the school to obtain data related to the research, (2) Interview, namely the researcher directly meets face to face with the school principal to obtain more complete data regarding Algorithm Implementation, (3) Sampling, namely the researcher selects data that is available and in accordance with the research, namely the application of previous research and previous research theses to be used as samples in this research.

This research will go through several stages. The stages in this research can be modeled on a Waterfall diagram. There are several stages used in this research:

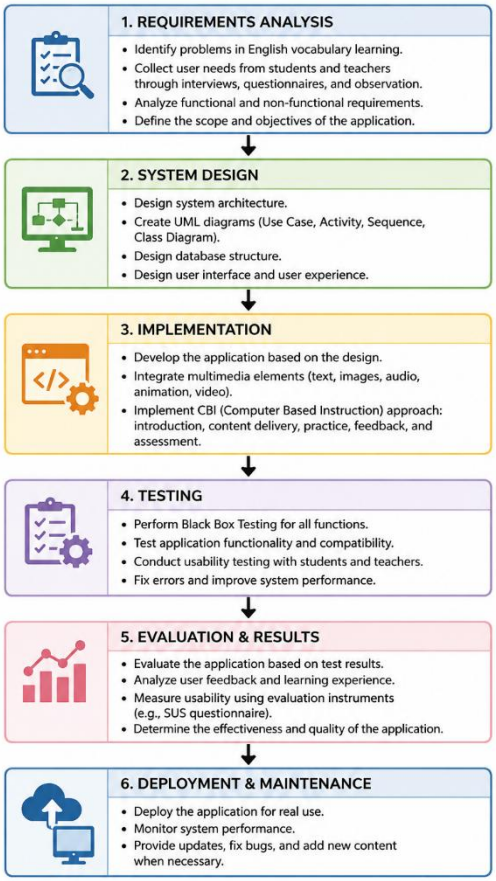

Figure 1. Research Framework for the Development of a Multimedia-Based English Vocabulary Learning Application Through Short Qur'anic Verses Using a Computer Based Instruction Approach.

III. RESULT AND ANALYSIS

The result of this research is a multimedia-based English vocabulary learning application developed using the Computer Based Instruction (CBI) approach. The application was designed to assist students in learning English vocabulary through short Qur'anic verses in an interactive and engaging environment.

The system consists of several main modules, namely the Home Menu, Learning Materials, Vocabulary Learning, Qur'anic Verses, Interactive Quiz, and Learning Evaluation modules. Each module was developed based on the functional requirements identified during the requirements analysis phase.

3.1 Main menu View

Figure 4.1 shows the main menu interface of the multimedia-based English vocabulary learning application. The interface provides easy access to the main features, including Materials, Vocabulary, Qur'anic Verses, Quiz, Progress, and Achievements. It also displays user information, learning statistics, and a featured Qur'anic verse. The user-friendly design and interactive navigation help learners access learning materials efficiently and enhance their learning experience.:

Figure 2. Main Menu Display

3.2 Login Menu View

The login screen is designed to provide users with easy access to the application "Development of a Multimedia-Based English Vocabulary Learning Application Through Short Qur'anic Verses Using a Computer-Based Instruction Approach."

The interface uses an Islamic-themed design with green colours, mosque illustrations, and Qur'anic elements to create a welcoming and educational atmosphere. The screen displays the application title and a brief description of its purpose, helping users understand the learning objectives.

The login section includes username/email and password fields, a login button, and options for account registration and password recovery. Additionally, a motivational Qur'anic verse is displayed at the bottom to encourage learners and emphasize the integration of language learning with Islamic values.

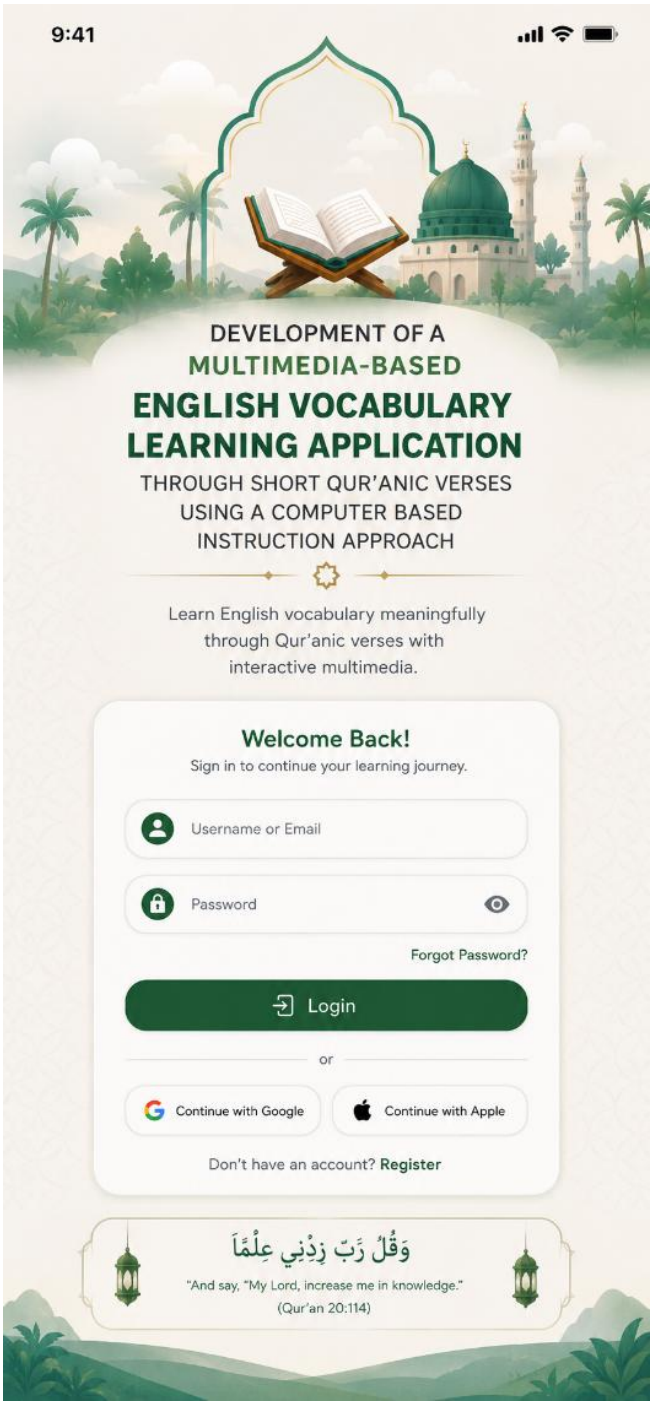

Figure 3. Login Menu View

3.3 Main Form View

The main menu serves as the central dashboard of the application "Development of a Multimedia-Based English Vocabulary Learning Application Through Short Qur'anic

Verses Using a Computer-Based Instruction Approach." It is designed to provide easy navigation and quick access to all learning features.

The interface adopts an Islamic-themed design, featuring mosque illustrations, Qur'anic elements, and a green colour scheme that represents knowledge, growth, and spirituality. A welcome section at the top displays the learner's profile information, creating a personalized learning experience. For more details, the main form display can be seen in Figure 4. below.

Figure 4. Login Menu View

3.4 Vocabulary menu View

The Vocabulary Menu is designed to help learners acquire English vocabulary through short Qur'anic verses in an interactive and organized way. This menu serves as the main vocabulary learning section within the application.

The interface includes **a** search bar that allows users to quickly find specific words. Vocabulary items are also grouped into categories such as Nouns, Verbs, Adjectives, and Others, making it easier for learners to explore words based on their grammatical functions.

The following is a display of the subject data form which can be seen in Figure 5.

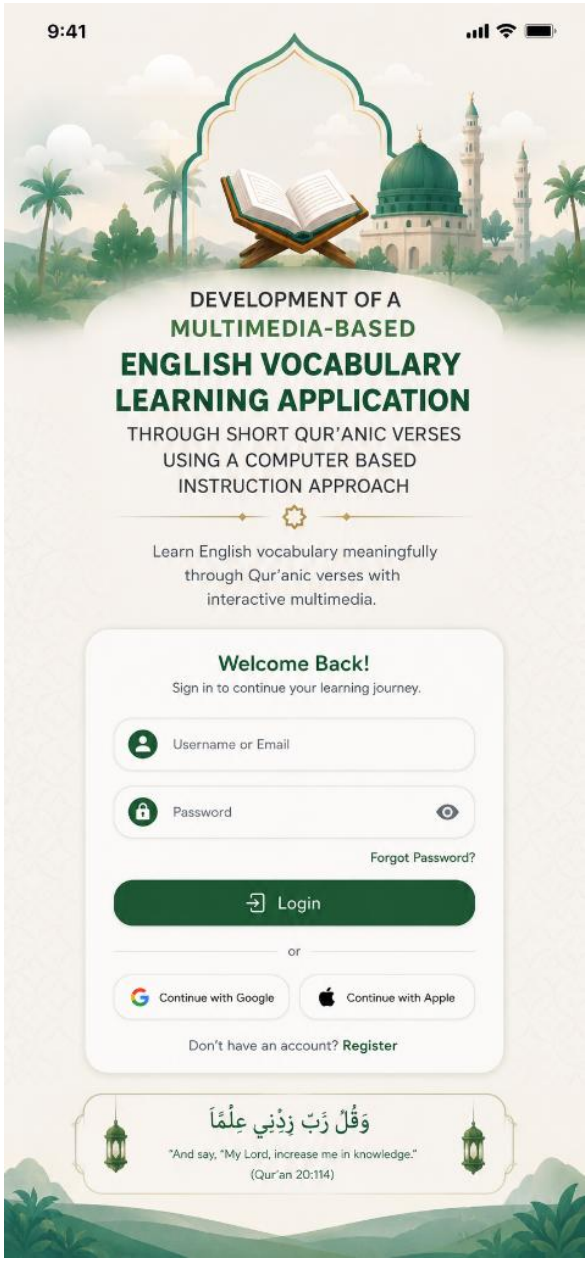

Figure 5. Vocabulary Menu View

3.5 Material Menu View

The Material View Menu is designed to present learning content in a structured and interactive format based on short Qur'anic verses. This menu serves as the main learning page where students study the selected lesson and understand the vocabulary and concepts contained in the verse. The interface displays the material title, lesson number, Qur'anic reference, and estimated study time. The selected Qur'anic verse is presented in Arabic text, accompanied by its transliteration, English translation, and an audio feature that allows learners to listen to the correct recitation and pronunciation. The following is a display of the class data form which can be seen in Figure 6. below:

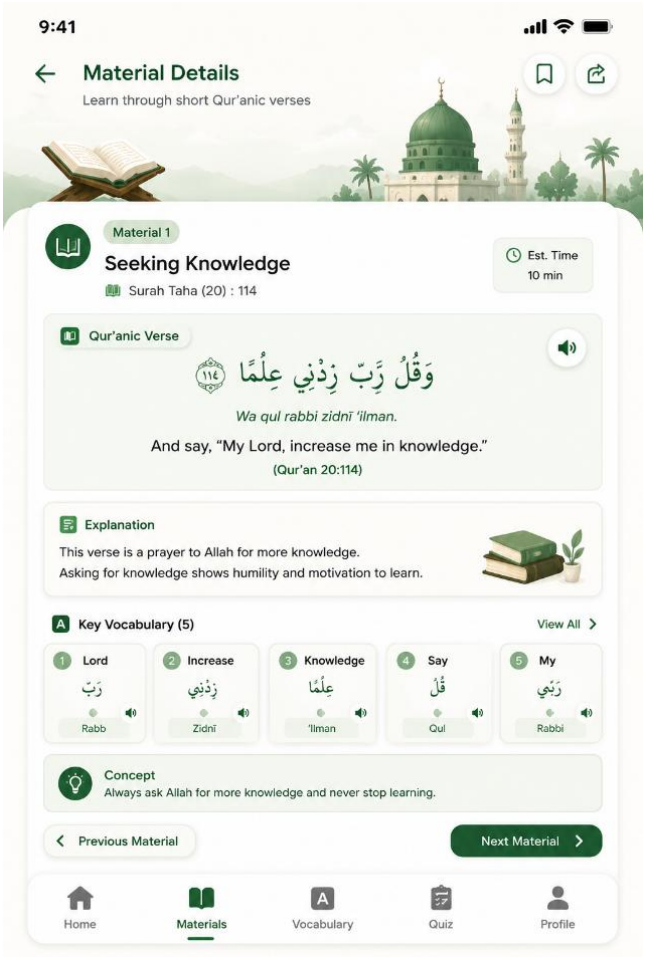

Figure 6. Material Menu View

3.6 Quranic Verses Menu View

The Quranic Verses Menu View are used to designed to help learners read, listen to, and understand selected short Qur'anic verses that serve as the foundation for English vocabulary learning.. The following is a display of the student data form which can be seen in Figure III.6 below:

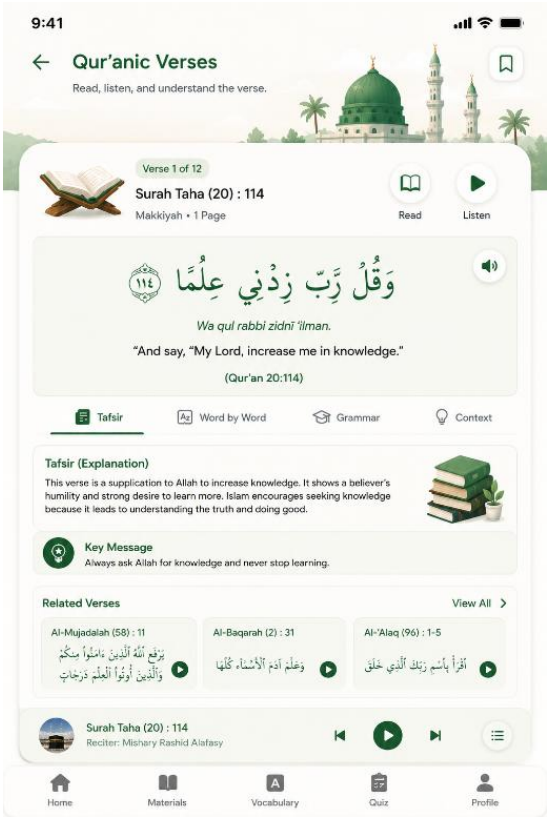

Figure 7. Quranic Verses Menu View

3.7 Quiz Menu View

The Quiz Menu View is designed to evaluate learners' understanding of English vocabulary learned through short Qur'anic verses. It contains various interactive questions, such as multiple-choice, matching, and fill-in-the-blank exercises. At the end of the quiz, learners receive a score and feedback on their performance.

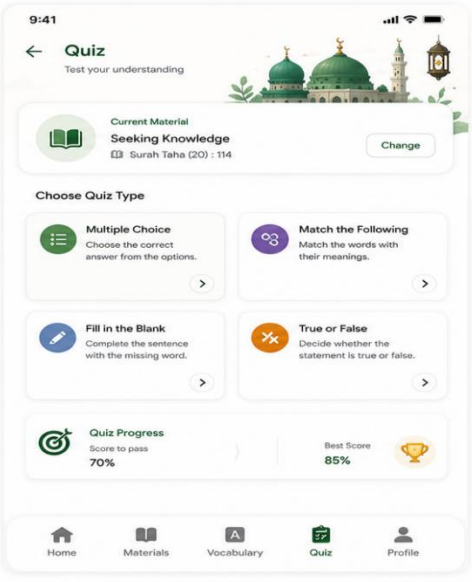

Figure 8. Quiz Application

3.8 Achievement Menu View

The Achievement Menu View is designed to reward learners for their accomplishments. It displays badges, certificates, and milestones earned after completing lessons, achieving high quiz scores, or reaching specific learning goals. This feature encourages motivation and continuous engagement in the learning process.

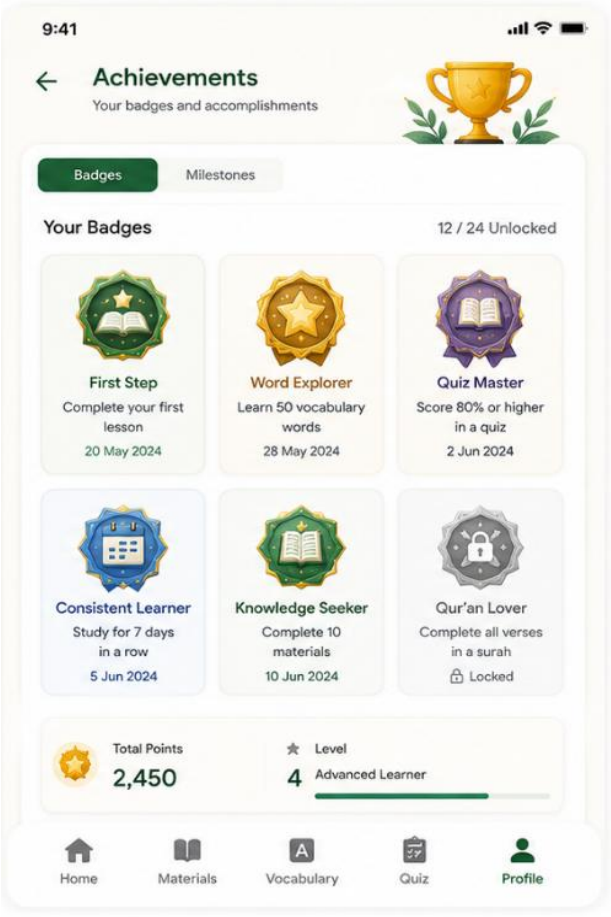

Figure 9. Achievements System

3.9 Progress Menu View

The Progress Menu View allows learners to track their learning achievements and development. It displays information such as completed lessons, quiz scores, vocabulary mastery, and overall learning progress. This feature helps learners monitor their performance and stay motivated.

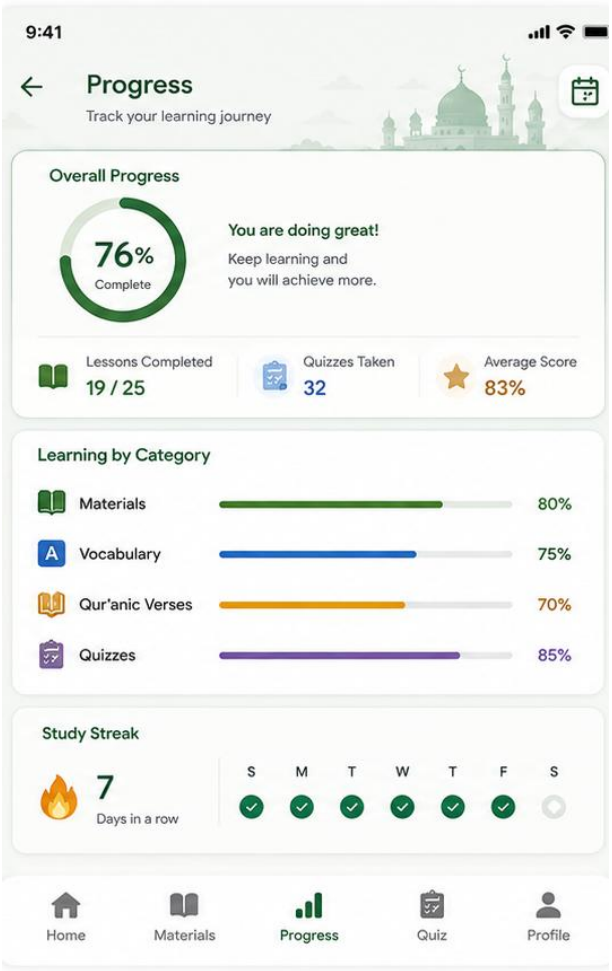

Figure 10. Progress System

VI. CONCLUSION

1. The multimedia-based English vocabulary learning application was successfully developed by integrating short Qur'anic verses with the Computer -Based Instruction (CBI) approach, providing an innovative platform for vocabulary acquisition.
2. The application effectively combines language learning and Islamic values through the use of selected Qur'anic verses, enabling learners to improve their English vocabulary while understanding the meanings and messages of the verses.
3. The integration of multimedia elements, such as text, images, audio pronunciation, Qur'anic recitation, translations, quizzes, and interactive features, enhances learner engagement and creates a more meaningful learning experience.
4. The application supports self-paced and independent learning through its Materials, Vocabulary, Qur'anic Verses, Quiz, Progress, and Achievement modules, allowing learners to monitor and evaluate their learning performance continuously.

5. The implementation of the Computer-Based Instruction (CBI) approach demonstrates the potential of educational technology to improve vocabulary mastery, learning motivation, and overall learning outcomes in English language education while maintaining relevance to learners' religious and cultural contexts.

THANK-YOU NOTE

Titles for thanks and references are not numbered. Thank you to the IJCIS Team for taking the time to create this template.

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