

Mobile Application for Student to Learn English Delivered in Malay Language

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Abstract: Mobile learning or we can simply refer to learning is a process of learning via the internet network using mobile devices like smartphones, tablets, laptops, and a lot more. M-learning has increasingly become a popular trend around the globe. Moreover, Learning English is skill-based learning that requires various approaches and techniques. So, the use of technology like mobile applications is the latest solution to solve the challenges of learning English. The study aims to develop a mobile application for students to learn English grammar but delivered in our mother tongue language which is the Malay language. The application helps students learn in their leisure time without the presence of their teacher. The software development methodology that will be used in this project is the incremental model.

Keywords: Duolingo, Learn English Grammar, Mobile Learning.



1. Introduction

Nowadays, mobile technology has developed at so fast speed. In only a few years mobile technology market has drastically changed. With the advent of smartphones like Android and Apple products and the growing number of people that own these kinds of devices, the technology can't be stopped from growing. There are 3.5 billion smartphone users worldwide. Considering the total number of people using phones globally is at 4.8 billion, that means that nearly 73 percent of them are users of smartphones [1].

The English language is widely used around the world and is commonly use in many fields as the primary language for communication. Many learners around the world have begun to learn and use the English language instead of their native speech [2]. Therefore, we can see how the English language is important for a developing country. So, by using mobile technologies for mobile learning can increase motivation and make the learning process more interesting and enjoy able while it helps the learners improve their skills positively. The use of mobile technology is becoming so prominent in our daily lives. There is a growing trend to use this mobile technology and one of the attractions in this technology is mobile learning. Mobile learning is often self-paced, untethered, and informal in its presentation. Mobile learning allows students to develop essential skills and competencies for the 21st century, such as digital literacy, good communication skills, creativity and innovation in their field of study, thinking skills, and the ability to learn independently.

With mobile technology, a new mobile application market has appeared and grown exponentially, including mobile learning. A user can easily get a software application online, either through Apple App Store for Apple users or Google Play for Android users. There are thousands of applications available online and there are a large number of applications relating to English learning. But from these thousands of available applications, throughout my search, there's only several mobile applications that offers to learn English grammar that is delivered in our mother tongue language, Malay. At present, there are many individuals especially students in Malaysia who want to learn and improve their English language as a second language. With the awareness in these students, they are open to learning the English language online. So, a mobile application to learn English is one of the solutions that can help them learn more thoroughly in English. But it's difficult to get an application that teaches the English language effectively for the local student.

The language used to deliver the knowledge in the other applications is limited to the English language and only several mobile applications that offer to learn in the local language. This needs to be improved by designing a mobile application that teaches the English language that is delivered in another language so that it's easier to be understood. In addition, there are many mobile applications that offer a learning English grammar function but there are not many choices from these applications that offer interactive learning of English grammar. The software that will be developed is "Smart English: Mobile Application for Student to Learn English Delivered in Malay Language". The classification of this software is a native application. A native application is an application that is developed for a specific platform and installed on the device. The multimedia that will be used in this product is text, sound, and images. Users can view and read the content based on the chapter. Other than that, there's a quiz in the application where users can practice their grammar skills. Users can collect badges as a reward for answering the quiz. The main content of the system is it will cover several chapters in the English grammar syllabus for example Nouns, Adjectives, Pronouns, etc. The target user for this software is secondary students. Secondary students will be categorized as the main users of the software. They were able to use the system to view the content and answer the available quizzes. This software can help the targeted user to understand more easily and clearly the English grammar when the learning process is delivered in the mother tongue language which is Malay. Mother tongue makes it easier for students to pick up and learn other languages. Learning in the Malay language also is crucial in enhancing other skills such as critical thinking, skills to learn a second language, and literacy skills. Other than that, this software to be build can help the user to practice independent learning. This software can support the learning process outside of the classroom if the students themselves are passionate to learn.

2. Literature Review

2.1. Interactive Mobile Application

Interactive and personalized learning are the assets that students get from mobile apps. For students, education-based apps provide convenience by helping them to achieve more in less time. According to

Zakaria, et. al. [3], mobile learning offers a lot of benefits such as sinteractive learning, 24/7 availability, portability, individually focused learning, and leisure hour utilization. Various mobile apps have been designed and developed to be run on these devices. This approach makes learning faster, easier, and more attractive by creating a student-centered learning environment and by offering newer methods of teaching [4]. As for the software that will be developed in this study, the interactive features that will be developed in the software is quizzes. For the quizzes, user can answer available quiz in the software and they can see their score after finish answering the quiz. Other than that, if the users answer wrong, the software will display the correct answer.

2.2. Mobile Learning and MALL

Mobile learning is a new way to access learning content via mobile devices. Mobile learning allows learners to study using their own personal electronic devices and it's possible to learn whenever and wherever the learners want as long as they have a mobile device that connected to the internet. Besides, Mobile-Assisted Language Learning (MALL) is a sub area of the growing field of mobile learning which deals with the use of mobile technology in language learning. Abdullah, Hussin, and Zakaria [5] stated that with MALL, the learners are able to access language materials and to communicate with their teachers and peers at any time and anywhere.

2.3. Review on Existing System

This section is mainly to review several related and existing learn English grammar application to identify the features and flow of the existing application. Below is the example of similar application that available in the market.

2.3.1. Duolingo

Duolingo is an American language learning that offers users to surf through websites and mobile applications. Duolingo is a free system. This system is initiated by Professor Luis von Ahn and his post-graduate student, Severin Hacker. Duolingo has a lot of languages that users can choose to learn. English, Arabic, Spanish, French, Dutch, and other languages are available to select [6]. An English speaker can choose out of 15 complete courses and four beta courses [7]. Duolingo application provides a reward system where users can acquire gems, an in-game currency. Users can spend this reward on features such as character customizations or bonus levels. On the public leader board, users can compete against their friends and see how they stack up against the rest of the world, randomly selected groupings. According to Agca and Özdemir [8], Duolingo is a very straight forward application and simple to use. Users can use the applications without the need to register for the course. However, Duolingo does not provide any grammatical explanations. It only immerses the users in the target language by offering exercises centered on new vocabulary [9].

2.3.2. Hello English

Hello English is an English language learning application. This application allows users to learn the English language through interactive modules. Hello English is initiated by Nishant Patni and Pranshu Patni from Culture Alley company. This application consists of interactive lessons and games associated which include reading, writing, speaking, and listening. Hello English also has a bilingual dictionary that available in 22 languages. Hello English is equipped with various languages such as Hindi, Indonesian, Thai, Arabic, Malay, etc. This application has exercise features to facilitate English. Some of the exercise features are conversations, reading articles, games, audio, books, and an English-language dictionary [10].

2.3.3. Learn English Grammar

Learn English Grammar is a free grammar practice application that is designed to help improve English grammar accuracy. Learn English Grammar is a free application. The application offers 1000s of questions to help practice and reinforce user's English grammar skills. Learn English Grammar is initiated by British Council. This application is suitable for users from all levels. It offers grammar activities for beginner, elementary, intermediate, and advanced levels. Each level contains over 600 grammar activities that are split into about 25 grammar topics such as simple past, continuous past, prepositions, etc. The grammar questions use 10 unique activity types such as fill in the blanks, multiple choice, and matching centered on new vocabulary [11].

2.3.4. Comparison on Existing System

This section is mainly to review several related and existing English learning application to identify the features and flow of the existing application. A summarized comparison table of various mobile applications is shown in Table 1.

Table 1. Comparison of Existing Applications

Items	Duolingo	Hello English	Learn English Grammar	Smart English
Cost	Free / In app purchase	Free / In app purchase	Free / In app purchase	Free
Needed to login	No	Yes	No	Yes
User interface	Easy to understand	Complex	Easy to understand	Easy to understand
Provides learning in Malay	No	Yes	No	Yes
Provides practices	Yes	Yes	Yes	Yes
Interactive audio	Yes	Yes	No	No

3. Methodology

3.1. Software Development Life Cycles

According to Deepti et.al [12], Software Development Life Cycles (SDLC) is a method by which the software can be developed in a systematic manner and which will increase the probability of completing the software project within the time deadline and maintaining the quality of the software product according to the standard. There exist different life cycle models, some of them are the waterfall model, v-model, and prototyping model.

3.2. Waterfall Model

The waterfall model was easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process. The waterfall model is suitable for smaller projects where all the requirements are very well understood. Even the model is lowcost but it's impossible to have an overlapping process. The waterfall model also takes a long time to finish because the whole process of software development is divided into separate phases. By using an incremental model, the system can be put into production when the first increment is delivered. The requirements in this model will be divided into multiple stand-alone modules. It can have an overlapping process and easy to manage changes and risks in the system. Agile is based on adaptive software development methods. There is no detailed planning in the agile model and there is clarity on future tasks only in respect of what features need to be developed. In the agile method, user involvement was high and that's why there requirements needed will be well understood.

3.3. Incremental Model

The methodology that had been chosen to be used in the process of development of this project is the incremental model. An incremental model is a process of software development where requirements are broken down into multiple stand-alone modules of the software development cycle. So, it might be helpful in finding all the needs and improvements that need to be done throughout the process of developing the project. This model constructs a partial implementation of a total system. Then, it slowly adds increased functionality [13]. The advantages of implementing this method are the errors are easy to be recognized, easier to run tests, and debug. The incremental model is also flexible and more simple to manage risk because it is handled during its iteration. The client also can get important functionality earlier.

There are also disadvantages to implementing the incremental model. Some of the disadvantages are these model needs good planning in order to complete the system in time. Other than that, well-defined module interfaces are needed and problems might cause due to system architecture as such not all requirements are collected up front for the entire software life cycle.

3.4. Incremental Methodology Phases

In the incremental model, the processes involved in software development are divided into multiple individual modules. When the module is divided, the process of incremental development will begin in stages. These stages will cover all there requirement analysis, design and development, testing, and implementation. This model applies linear sequences in are required pattern.

- a. Requirement Analysis Phase: In this phase, the basic requirements are being identified. This phase involves to identify and analysis all there quirement needed to be develop in each increment. After completely understanding the user requirement, the developer needs to get ready there quirement tools documents and categorized the functionality of the system. In this phase the supporting document such as Software Requirement Specification (SRS) document is written.
- b. Design and Development Phase: During this phase, the design of the system functionality and the development process is finished. The incremental model uses the design and development phase each time when the new functionality of the product has to be developed. The prototype will be design based on the interface design and system design in Software Design Document (SDD). The exact development begins, and the programming is built. The prototype is developed using Visual Studio Code editor.
- c. Increment 1: In the first increment, the function that will be focused on is building the login and sign-up interfaces. The users of the prototype are required to login or sign up first in order to use the prototype.
- d. Increment 2: During second increment, the main function of the prototype which is the content function is being developed. This function is divided into several chapters or syllabus. For example, Nouns, Adjectives, and Pronouns.
- e. Increment 3: In the third increment phase, the quiz function with calculation score will be developed. Along with that the prototype let th euser to view their result and allow user to collect reward at the end of answering the quiz.
- f. Testing Phase: The testing phase of the incremental model checks the behavior of each existing function in the system under development as well as the additional functionality. Several testing methods are used under this phase to check the behavior of each categorized function and system response.
- g. Implementation Phase: This implementation phase enables the coding phase of the underdeveloped system. This phase includes the final coding of the system that design in the design and development phase and tested the functionality under the testing phase. After completion of this phase, the product working is enhanced and upgraded up to the final system product and is released.

3.5. Functional and Non-Functional Requirements

3.5.1. Functional Requirements

Functional requirements are the way users interact with a system. The development of this application involves several key functions or models that can provide useful information to users. The functional requirements found in the system areas follows:

- a. Register user account: For new users, they are required to register the application first by entering their username, password, and full name. The application is designed users need to register before they can use it so it can help facilitate the storage of user data. In addition, users can also recover old data if the user has uninstalled the application.
- b. Login: Users accessing the login to the Smart English application will need to enter the same username and password when registering.
- c. Main page: The main page of this application contains Youtube videos about English grammar and at the bottom, it provides a navigation menu for notes interface and user profile interface.
- d. Display note's function: This function displays all English grammar notes according to the syllabus. Users can simply select which topic they want to read.
- e. Play quiz function: Users can play quizzes to enhance their knowledge after studying the selected topic. After finish answering all the quiz questions, users can view their score and collect badges as a reward.

- f. User profile: Users can view their profile by clicking the icon at the bottom navigation. In the user profile interface, users can view their account, view their collected badges from answering quizzes, and click the logout button if they wish to logout from the application.

3.5.2. Non-Functional Requirements

The following are non-functional requirements according to product software quality attributes:

- a. Security: For security purposes the Smart English application must not contain any possible loss, danger or anything that could damage the smartphone hardware or software. The application must also be user friendly. To prevent any data loss or corruption, this application system must have the ability to save or update automatically in the even to any changes to the application.
- b. Availability: The Smart English application requires memory storage in database to store user information.
- c. Robustness: The Smart English application is robust because it contains accurate information and is comfortable for users to use.
- d. Testability: This application should be tested to detect any problems or errors in the system before the product is released.
- e. Usability: Before using this Application, users must know how to use this application and what are there requirements.
- f. Reusability: Users use their same username and password every time they want to log in to the application.

4. Finding and Discussion

4.1. Interface Design

For the interfaces of the application to be developed, a simple and easy-to-understand application interface design is a key aspect in the design of this application development. All the pages and menus were linked using buttons to make it easier for users to access each page. The appropriate color option has been selected as the theme to present the application.



Figure 1. First Time User Registration Interaction Interface

In Interface Design, the discussion of application design that being used in the Smart English application is done. This will help and facilitate the application development process during the implementation of this project. Detailed design will result in quality and effective applications. This

covers two document development designs namely Software Specification Requirements (SRS) and Software Design Document (SDD).

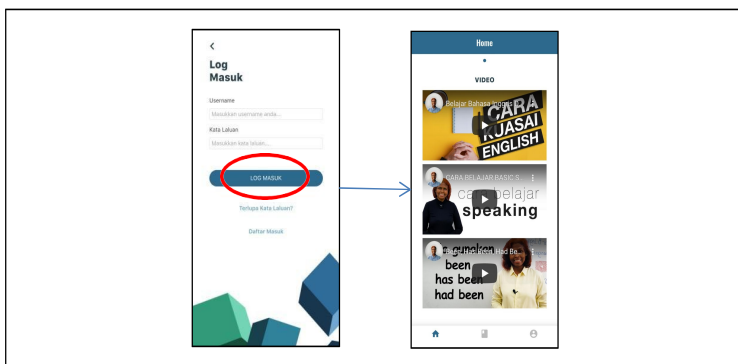


Figure 2. User Login Interaction Interface



Figure 3. Interface Interaction of View Notes

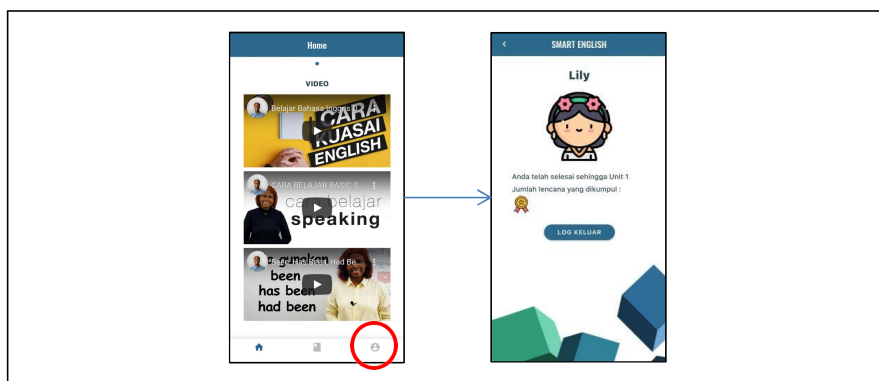


Figure 5. Interface Interaction of View User Profile

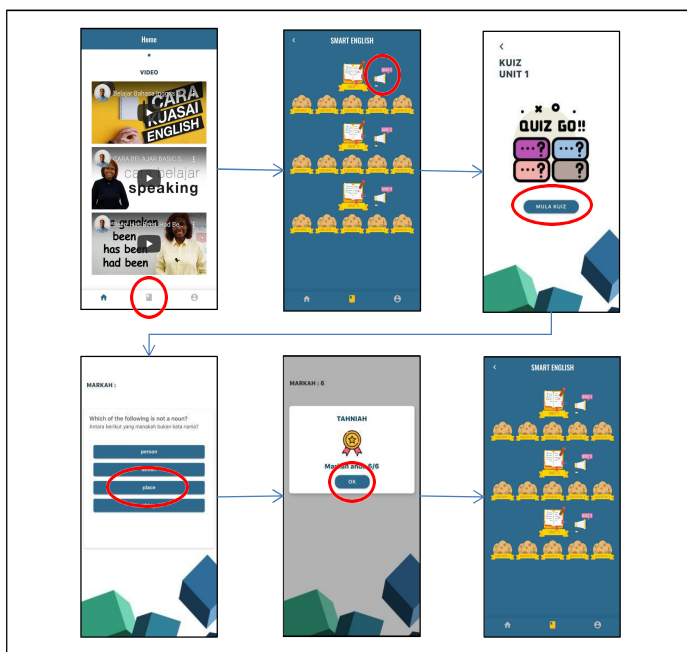


Figure 4. Interface Interaction of Answering Quiz

4.2. Test Cases

Test cases were used to verify and confirm the functionality of the Smart English application whether it works properly and in accordance with the requirements of the specifications or not. There are several sets of test cases that have been prepared according to the scenario and use case specifications in the Software Testing Document (STD). This document has been attached in the appendix section.

4.3. User Evaluation Process

During the evaluation process, end users will test and evaluate the Smart English application. Users will be given out the questionnaires form that contains all required questions about the application's functionality and usability. The procedure of the questionnaire survey is by using the Likert scale method [14].

The original Likert scale is actually a set of statements or also called items that were offered for a real or hypothetical situation. On a metric scale, participants are asked to show their level of agreement from strongly disagree to strongly agree with the given statement or items (Singh, 2006, as cited in Joshi et. al., [15]. Sometimes, an even point scale is used where this called a forced choice method which the neutral option was removed. Even point is them idle option of either disagree or agree. There are five scales provided namely strongly disagree, disagree, not sure, agree, and strongly agree. The targeted respondents for this evaluation are 20 people aged 15 years and above.

Table 2. Analysis Descriptive Statistic

Items	Mean	Standard Deviation
I think that I would like to use this application frequently	4.15	0.671
I found this application unnecessarily complex	4.65	0.489
I thought this application was easy to use.	4.60	0.503
I think that I would need assistance to be able to use this application.	2.15	0.988
I found the various functions in this application were well integrated.	4.15	0.489
I thought there was too much in consistency in this application.	1.45	0.605
I would imagine that most people would learn to use this application very quickly.	4.30	0.657
I found this application very cumbersome / awkward to use.	1.60	0.681
I felt very confident using this application.	4.55	0.510

5. Conclusion

Based on the literature review, study findings and results of discussions, evaluation on the development of learning English application, Smart English as a whole is able to achieve the objectives that have been targeted in the initial phase of development of this system. It is hoped that this application developed is able to help secondary school students to learn English and understand in an easier way. The findings of the study analyzed, the evaluation of this Smart English application can successfully meet the satisfaction and desires of users. Finally, it is hoped that this application can be further improved in the future by expanding the scope of the study in accordance with the situation and technology at that time.

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