MODELING ANDROID BASED TENSES LEARNING SYSTEM

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Abstract: In this study, it is intended to design and build a tenses learning application using Android-based smart phone media. This learning application will adopt several LTSA components which are one of the IEEE standards. The system built focuses on the delivery of tenses learning materials as part of the overall learning process. The method used in this research is the waterfall method. For modeling the system to be built, UML is used. After the system model is formed, it is then implemented into the Java programming language and exported into an apk that can be installed on Android-based smart phones. Tests were carried out on android version 5.0 using the AVD contained in the eclips application. In testing all systems can run well according to the UML modeling design.

Keywords: android; LTSA; modeling; tenses; UML

Abstrak: Dalam penelitian ini bermaksud untuk membuat rancangan dan membangun sebuah aplikasi pembelajaran tenses dengan menggunakan media smart phone berbasis android. Aplikasi pembelajaran ini akan mengadopsi bebearapa komponen LTSA yang merupakan salah satu standar IEEE. Sistem yang dibangun berfokus pada tersampainya materi pembelajaran tensis sebagai bagian dari proses belajar keseluruhan. Metode yang digunakan dalam penelitian ini adalah metode waterfall. Untuk pemodelan sistem yang akan dibangun digunakan UML. Setelah model sistem terbentuk, kemudian diimplementasikan ke dalam bahasa pemprograman java dan di export menjadi sebuah apk yang dapat diinstal pada smart phone berbasis android. Pengujian dilakukan pada android versi 5.0 dengan menggunakan AVD yang terdapat pada aplikasi eclips. Dalam pengujian semua sistem dapat berjalan dengan baik sesuai dengan rancangan pemodelan UML.

Kata kunci: android; LTSA; pemodelan; tenses; UML

INTRODUCTION

With the rapid development of technology, it is able to support various human jobs in all fields. One of the technological developments that has been widely used by humans is the smart phone. On smart phones there is an Android operating system that can help with many things such as processing documents, music, pictures and so on.

Modeling using UML has often been used in designing a flow and application system. UML's role is to specify, visualize and build artifacts from a system. UML is even able to show how business modeling and systems are not software [1].

The importance of mastering English at this time, makes the need for English language learning materials very much needed. Currently, English has begun to be learned from elementary to university levels. However, the busy school activities and the high cost of learning English outside of school are expensive, making not everyone able to learn this language. The very important thing in applying English is tenses. Tenses is a grammatical method in the formation of sentences in English [2].

UML is one of the standard modeling languages and is widely used in software modeling. In UML there are many diagrams that can be used to describe and provide an explanation of a system both statically and dynamically [3].

UML is a useful tool for modeling in developing an object-oriented system. UML also provides a blueprint description, which can contain the concept of an application's business processes, an overview of the classes to be used in a particular programming language, a schematic form of the database and the components in the system required [4]

The waterfall model is a model that is often used in the development of an application. The waterfall model is often interpreted as a linear sequential model or a classic life cycle. Software development using the waterfall model starts from the stages of analyzing, designing, coding, testing, and the stages that support the completion of a software. This waterfall method is used in the process flow of designing a system by implementing UML diagrams as a system modeling so that the system built is more precise and according to needs[5].

LTSA is a standard that serves as a guide in building electronic-based learning (e-learning). LTSA is included in the IEEE 1484 Learning Standards Committee (LTSC) by Farance Incorporational, the Edutool division, which is a high-level architecture focused on learning technology, computerized training and more. LTSA has 5 layers where 3 layers are normative. Each layer provides an overview of the system at different levels. The following is an overview of the layers in the LTSA standard [6].
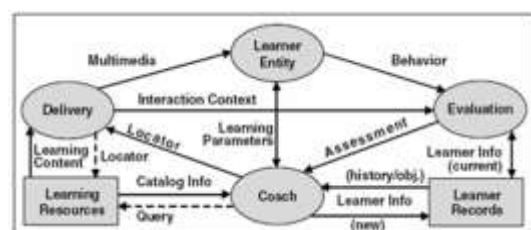

Image 1. LTSA Layer 3 components

The first layer is the learner and environment interaction. At this layer the focus is only on the acquisition, transfer, exchange, formulation and discovery of knowledge through interaction with the environment. At layer 2, namely learner related design features. In this second layer, the focus is only on the influence

that the learner has on the design of the learning system. Layer 3 describes the components that form the basis of the architecture that has been identified in layer 2. Layer 4 describes various perspectives with references in layer 3. Each stakeholder has a different perspective on the learning system. Analysis of perspectives can certainly produce verification and validation of LTSA components that need to be emphasized in the system and indication of various priorities at high and low levels.

E-Learning is a process for obtaining lessons that are carried out by utilizing electronic devices using both the internet and other computer networks [7]. This learning method can present learning media that is more innovative and fun for learners in the form of blended learning [8].

In UML, there are 14 types of diagrams that can be used to model software. In its application, only 4 types of diagrams are widely used, namely, Use Case Diagrams, Class Diagrams, Activity Diagrams and Sequence Diagrams [9] UML is often used in defining requirements, designing analysis and system design in the industrial world [10].

1) Use Case Diagram describes what interactions occur between actors and the system being built. In addition, this diagram also displays what functions are in the system and which actors can interact or use their functions [11], [12].

2) Class Diagram is a diagram that can be used in describing and describing the structure contained in the system database to be built. This diagram also explains the relationship that exists between classes, packages, and objects in the system database [13], [14].

3) Sequence Diagram describes the sequence of processes that occur in the system from time to time sequentially [15].

4) Activity Diagram is a diagram that is able to explain the processes that occur both from the point of view of the system and system users. This diagram describes the process from the start of the user accessing the system to the output of every function in the system [16].

METHOD

Image 2 is the steps taken in building an Android-based tenses learning application [17], [18].
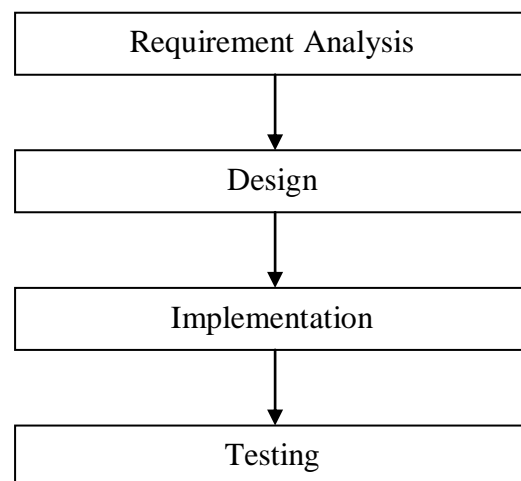

Image 2. Research Stages

Requirement Analysis

To help make it easier to learn tenses independently, an application is needed that can be used to learn tenses independently. In order for this application to be made, hardware and supporting software are collected for making Android-based applications as well as material on learning tenses. Tenses learning materials are collected from books and e-books.

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Design

After the materials for making the application are collected, then the design of the Android-based tenses learning application is made. To simplify the design of this application, the UML modeling language is used. From this design stage, an overview of the data structure of the application will be generated, the features available in the application, the interface display, and how the application flows.

Implementation

At the implementation stage, the design results that have been made are entered into the programming language and database. The result of this implementation is an android-based tenses learning program.

Testing

At this stage the finished application is tested whether it is running according to the desired plan and design.

RESULTS AND ANALYSIS

In studying tenses, generally everyone can study with a teacher, where the person conducts face-to-face learning activities, then the teacher will provide material about tenses to that person. Apart from studying with the teacher, studying tenses can also be done alone by studying through the tenses materials in the book. After studying the tenses material obtained from the teacher or book, the person can do questions from the teacher or book to test how far the person has understood the tenses material. But through the teacher, of course it is difficult to apply for someone who has very busy activities. In addition, for someone who feels that he is old, he will certainly feel embarrassed to study with a teacher.

In the lesson that will be made, namely an Android-based tenses learning system, one can learn tenses without a teacher and can access tenses material without the limitations of time and place. The tenses learning system that will be made adopts the LTSA component in the layer 3.
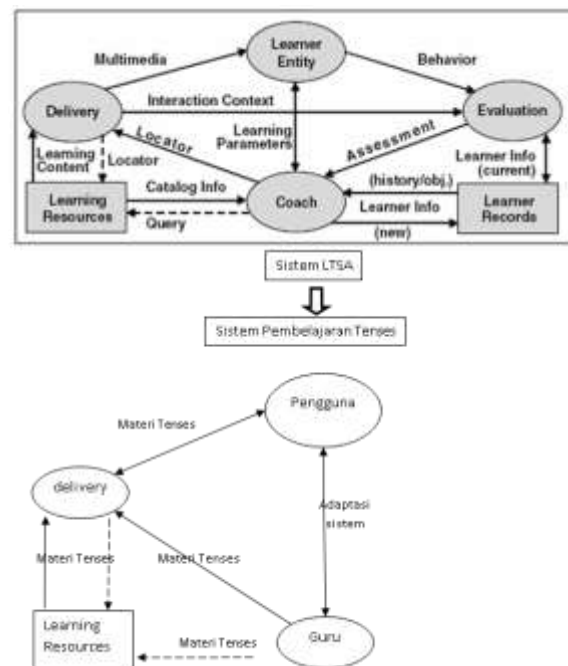

Image 3. Adoption of Tenses Learning System with LTSA Standards

From the analysis of the needs of the system to be built, the focus of teaching and learning that will be developed is the delivery of tenses learning material as part of the overall learning process. Therefore the LTSA components to be adopted in the system consist of coaches, learning resources, delivery, and learner entities.

The results of testing the tenses learning software system that has been installed on AVD and Android-based mobile phone devices found that the application can be opened and runs properly on AVD and Anroid version 5.0. After

testing, all material and audio features in the tenses learning application went well. Tens-es learning application has been made, according to the system design which is designed using UML diagrams.

Several page views of the Android-based tenses learning application that have been made. The application start page can be seen in Image 4. This start page will appear the first time the application is opened.

Image 4. Initial Page

Next is the menu page. The menu page displays a list of material in the Android-based tenses learning application. In this application there are three tenses learning materials to choose from. The first is the present tense, the second is the past tense and the last is the perfect tense. To start learning tenses, you can do it by clicking on one of the menus. After clicking, the material and sub-material will appear in accordance with the menu. On the material detail page there is a formula for writing tenses sentences, an explana-tion of its use, as well as example sentences. The menu page can be seen in Image 5.

Image 5. Learning Menu Page

In Image 6 you can see the material from the past tenses learning menu. In this matter, there are several sub-materials from past tenses. At the top there is the title of the past tenses sub-material. In the explanation box, there is a formula for the past tenses sub-material, an explanation of where the sentence is used and an example sentence. To access the next sub-material can be done by sliding the smart phone layer. At the end of the page of the past tenses material, there are several questions that can be done by the user to test their understanding of the material that has been studied.

Image 6. Past Tenses Material Page

The display in Image 7 is the display of the perfect tenses menu. This material will appear if the perfect tenses menu is selected on the menu page.

Image 7. Perfect Tenses Material Page

CONCLUSION

After analyzing, designing, developing and testing the system that has been implemented into an Android-based software, it can be concluded that learning tenses based on Android makes the learning process easier because it can overcome tenses learning which is physically impossible. make it possible and overcome the limitations of time, place and access. The use of UML is very suitable for use in designing a system model used in tenses learning applications.

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