

TECHNOLOGICAL INNOVATION OF LEARNING MOBILE-BASED LEARNING

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Abstract. The purpose of this study is to develop a software application m-learning with a focus on the development of m-Learning application features to accommodate all teaching and learning activities in the classroom. Generally speaking, the study activities referred to in this study are virtual communication between faculty and students, award to student assessment, process of tasks by students in an interactive and feedback on student progress assessment by the lecturer, as well as view student assessment results and so forth. The method used is a method of research and development (research and development), with the design of the chosen development is a model of Dick and Carey. The primary outcome will be generated in this study a software product development, it is in the process of media development will be equipped with special methods of software development using the Software Development Life Cycle (SDLC) with Waterfall-based model. The research result is the development of SDLC design to determine the courses, Analysis needs functional and non-functional requirements, the development process of the draft with the analysis of learning conditions, descriptive qualitative analysis, as well as development steps. The design results in the form of development with Waterfall Model Testing media expert, content expert Testing, Testing small groups, field trials. Interface design results in the form of accommodation throughout the teaching and learning activities in the classroom include the presentation of the material, discussion, assessment processes and virtual communications faculty and students

Keyword: *Models, Applications, Mobile Learning, development, feature*

Introduction

Learning is a necessity of life "self-generating", that seeks itself, because since birth human has the urge establish their life. Human being learns continuously to be able to achieve independence and adapt to changes environment. (Semi-Cloud, 2007: 1-2) .To achieve an effective learning it can be applied various methods of learning that continues to grow today.

Implementation of Information and Communication Technology (ICT) in educational institutions nowadays has become imperative, because the application of ICT can be an indicator of an educational institution successful. Not a few teachers / lecturers who use technology advance by using the internet as online learning or regular with online learning. New trends in the world of e-Learning today is known as the term Mobile Learning, the use of portable media such as Smartphone, iPhone, PCTablet to access the online learning system is being crowded spoken and used in developed countries like the United States and developing countries, as well in Indonesia. The use of Mobile Learning as supporting the process teaching learning can add flexibility in learning activities.

Utilization of mobile phone technology has not only focused as a means of communication, or entertainment, but it has been used as a medium of learning. The evident from several studies that utilize mobile phone technology as a learning medium, such as Mobile School Research Service developed by (Zoran Vucetic, et al; 2010), where mobile phone technology is used as a means of learning media to students at the University of Novi Sad, Zrenjanin, Serbia. Besides, mobile phone technology is used also in education, such as research design Development of Mobile Phone

Based Learning to Content SQL Database Advanced Course at the Department of Information Engineering Education Undiksha (Wirawan; 2011). This research generates a mobile phone-based learning media as a learning tool for SQL matter. The response of students that learned of mobile phone showed a positive response.

Utilization of information and communication technology in education has been developing in a variety of strategies and patterns, which basically can be grouped into the system of e-Learning as a form of learning which uses electronic devices and digital media, and mobile learning (m-learning) as a learning form that specifically use the device and mobile technology. The level of communication development of mobile devices is very high, the level of use which is relative easy, and the price more affordable devices, the devices of personal computer, is the driving factor that increasingly expands opportunity the use of application of mobile learning as a new trend in learning, the learning paradigm can be found anywhere and anytime.

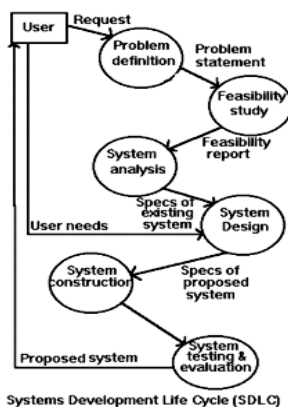
CONTENT AND METHOD

The method used in this research is the development of research methods (research and development), which is selected design development using Model Dick and Carey (quoted from Santyasa, 2009). Because the key output that will be generated in the form of a software research, then in the process of media development will be equipped with special methods of software development using the Software Development Life Cycle (SDLC) with Waterfall-based model.



Picture 1: Media Development Design

Because the media developed in the research of this development will produce the end product is a software simulation program, the third phase will be followed by the fourth phase of design development that are adapted to the method is a method of software development Software Development Life Cycle (SDLC) with Waterfall Model. SDLC methodology is a methodology for analyzing and designing a system is structured. SDLC methodology consists of the following phases:



Picture 2: Diagram SDLC

Results and Discussion

1. Design Application Development Media M-Learning

a. Development of Software Development Life Cycle (SDLC)

The method used is the development of research and development with design development using Model Dick and Carey. Target research outcomes produced in the form of software applications, then in the process of media development application comes with a special method of software development using Life Cycle software development (SDLC).

Stages of Development of Software Development Life Cycle are described as follows:

1). Determination of subjects

Informatics Engineering at the School of Information Management & Computer (STMIK) Handayani Makassar, is a subject that is in demand is evidenced by the number of students most in Informatics Engineering. Therefore, Informatics Engineering became the object of research is the students on the second semester. Determination of the courses taken prerequisite courses is algorithms and program subject. The lecture was chosen for the course is introductory programming courses with practicum.

2). Analysis of needs

Needs analysis has been done by observation of the environment where the system will be built. Here are the detailed requirements of the system.

(1). Functional Requirements

- a. The division of users into two groups in M-Learning as follows: students and lecturers
- b. Lecturers can upload their facilities at M-Learning material.
- c. Facility, lecturers can add classes and lectures on M-Learning
- d. The existence of the facility in order students can be downloaded through mobile devices.
- e. Applications can display material, assignments and files that can be downloaded.
- f. Lecturers can make a good evaluation of multiple choice questions and an essay on the M-Learning.
- g. Students facility can do the evaluation using mobile devices.
- h. Lecturers can correct answers that have been done by students.
- i. Administrator for maintenance eLearning.

(2). Non-Functional Requirement

- a. Operations are accessible from various client browser which supports Javascript. Accessible on Android and Blackberry smartphones.
 - b. The existence of the use of security password in the login form to distinguish the type of user including their respective access rights.
- #### 3). The process of developing draft

a). Analysis of Learning Conditions

Based on the observation that has been made in the course of programming algorithms and Informatics Engineering STMIK Handayani Makassar as the study sample, the data obtained in the qualitative descriptive. Analysis research using descriptive qualitative analysis showed the characteristics of the learning model that performed on the learning activities in engineering informatics STMIK Handayani Makassar.

The results of descriptive qualitative analysis for learning model implemented in the course of programming algorithms and Informatics Engineering STMIK Handayani Makassar, is as follows:

- (1). The learning activities are still using the traditional learning model of conventional on certain material theoretical;
- (2). Using learning applications such as: interactive CD, tutorials, instructional media audio-visual, multimedia learning, all of which are operated by using a PC computer.
- (3). Using the medium of learning electronic learning (e-learning), and other media such as www.edmodo.com
- (4). Lack of development of learning technology using a mobile phone
- (5). in general, both lecturers and students use hand phones for communications, social media, social networks, browsing and searching, not for the purpose of learning activities.
- (6). in certain circumstances students recommended not active-clicking the phone, because they interfere with classroom learning activities. The activities in question are circumstances when quizzes, midterms, final exams and other assessment activities.

4). Step Development

a). The results of descriptive qualitative analysis of the prospects and development opportunities of learning technology with mobile learning.

Observations indicate that the students in Informatics Engineering, everything has to have and use hand phone. Even there are some students have more than one phone with varied kinds and types. In general, the students, use it as a communication tool, social media, music and use it as a camera in photos and so forth. Based on these data, the chances of the use and development of mobile learning in the learning technology is very precise.

b). The results of descriptive qualitative analysis for the development of learning technology with mobile learning.

Data observation results obtained, both lecturers and students urgently need a development of teaching methods are more varied, innovative and interesting by using application-based mobile learning.

b. Design development of the Waterfall Model

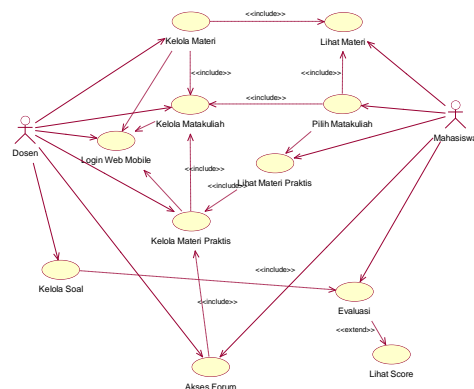
After the design development of the SDLC models, it will be followed by an adaptation of application software development methods \rightarrow m-learning with Waterfall Model to analyze designed the software in a structured and systematic described as follows:

- a. Testing media expert
- b. Testing content expert
- c. Small group testing
- d. The field trials

2. Development Planning Model With the Uniform Modeling Language (UML)

Design of mobile learning application system design in this study is using a model of the Unified Modeling Language (UML). Unified Modeling Language is a "language" which has become the industry standard for visualizing, designing and documenting software systems. Development of modeling with UML is the 2nd year is focused on the development of m-Learning application features to accommodate all teaching and learning activities in the classroom. In general, it is meant a learning activity: virtual communication between faculty and students; Award to student assessment; process of tasks by students in an interactive and feedback on student progress assessment by the lecturer; as well as student assessment results view.

Design of the system design model is described as follows:

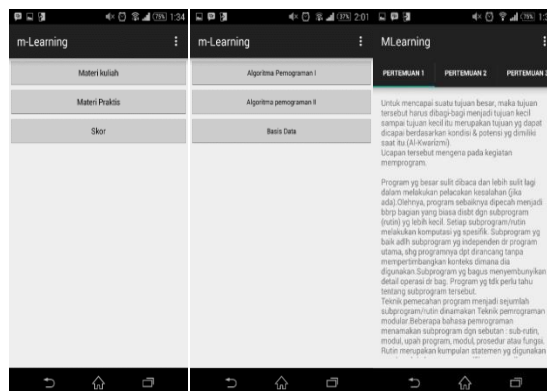


Picture 3: use case diagram

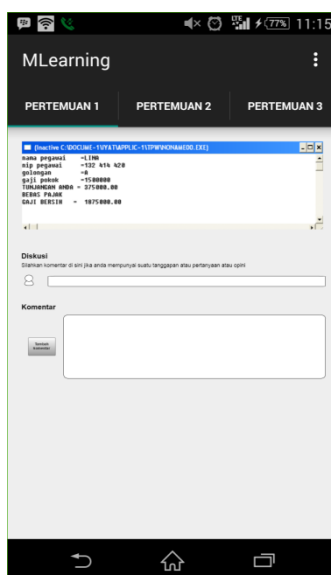
3. Application Interface Design Development M-Learning

Based on the results of design methodology and design modeling with UML, and then created an m-learning application interface. Design view m-Learning is built on the basis of user friendly (friendly to the user). So that the m-learning applications easily to operate. Beside that user friendly m-learning application is easy to use by anyone. User friendly also makes a beginner no difficulty in operating software and application programs.

Interface design can be seen in the following figure:



Picture 4: Desain Interface



Picture 5: interface development

Conclusion

Based on the research that has been done in the first stage, it can be concluded as follows:

1. The result of m-Learning helps students in learning activities outside the classroom. They can access learning materials anytime and anywhere. M-Learning Applications can also accommodate all teaching and learning activities in the classroom
2. M-Learning which has produced works on all smart phones with android 2.4 operation system minimum. It can also work on a PC or laptop computer with operation system windows / linux / mac using BlueStacks app.

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