PROCEEDINGS OF THE

EDUCATION RESEARCH Colloquium 2018

BETWEEN

FACULTY OF EDUCATION, UNIVERSITI TEKNOLOGI MALAYSIA (UTM)

& UNIVERSITAS NEGERI MAKASSAR, INDONESIA

UTM
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Faculty of Education,
Universiti Teknologi Malaysia

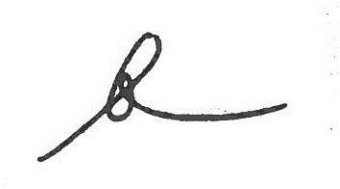
Foreword by the
Dean of Faculty of Education, UTM

Assalamualaikum w.b.t and Good Day

Ladies and gentlemen,

It is my pleasure to welcome you to the Education Research Colloquium between Faculty of Education, Universiti Teknologi Malaysia (UTM) & Universitas Negeri Makassar (UNM), Indonesia. This colloquium is a platform for both institutions to sustain a harmonious and stable global society and to promote international cooperation and exchange. As we know, UTM participated in a wide variety of collaborative relationships with universities, institutions and individuals in many countries. I am confident that through this colloquium, relationship and friendship between FP UTM and UNM will become stronger. I would like to take this opportunity to congratulate all presenters in this colloquium. I am sure that the variety and depth of the research presented at this colloquium will be appreciated by the audiences. In summary, I believe that this colloquium is just a start for a more fruitful and continuous collaboration between FP UTM and UNM.

Thank you



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CONTENT

Development of Android-Based Academic Information System

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Abstract:

Academic information system as a service for students and lecturers should be developed simultaneously. The ease and convenience of accessing are the goals of program development. This study is the development of an academic information system model based on previous information systems services. Model development using ADDIE that has five-steps process of model: analysis design, develop, implement, and evaluate. The analysis step resulted that academic information system can be accessed by using computer and smarthphone. However, the display on the smartphone is less interesting and difficult to be accepted by students. The design stages is to prepare the information system that can be accessed with smarthpone easily. The developing step, the feature and tools of system were created in application form. Implementation of the application in students by field testing for 30 students and 10 lecture resulted well response for system. Evaluating step resulted that the application can be accessed by smarthpone.

Keywords: Information system, developing and smartphone

1.0 Introduction

The development of information technology around the world makes human life easier. Currently, self-service can be generated by technological transformation and useful in the effectiveness of information services. (Park & Jayaraman, 2003). The benefits of information and communication technologies for the provision of services are able to expand the reach of services in widespread with the number of users. Smart service is a trend of information techonogy. (Jin, Gubbi, Marusic, & Palaniswami, 2014)(Robinson *et al*., 2014).

Internet network causes the communication becomes increasingly unlimited and without obstacles. Furthermore, utilization of information technology in data management has become a very important requirement and facilitate in getting information whenever and wherever. Its use is almost in all agencies that have very high data transactions. The technology is very instrumental in the utilization and management of data.

Universitas Negeri Makassar is one educational institution has implemented data management system of students using web-based online academic information system. However, complaints about the difficulty of accessing the system require continuous development. A more flexible and easy-to-access information system to guide users' needs. Students and lecturers highly expect information systems that can be accessed by smaller devices (mobile devices) both in terms of capability size and screen resolution. Therefore, the thought of developing web-based academic information system needs to be improved and developed into an academic information system application that can be accessed by mobile devices.

Android-based academic information system is one way problem solving where academic information system that will be designed this is devoted to mobile device application. The system is designed to provide data relating to academic information provided to students that includes student value information, course list information, lecturer list information and filling system of study plans. This effort becomes the answer to the needs of users in obtaining academic information anywhere and anytime.

2.0 Theoritical Review

2.1 Android

Android is the operating system for mobile phones based on Linux. The sytem provides an open platform for developers to create their own applications for use by various mobile devices. Linux-based operating system for mobile phones such as smart phones and tablet computers. Google along with OHA released a complete SDK software package to develop applications on mobile devices. As programmers and developers we can do everything from SMS application creation makers to just two lines of code, to change the event on Home Screen Android device. In addition, even easily we can create and customize the Operating System, or replace all default applications from google. (Arzt *et al*., 2014)
The superiority of android devices are:

a. Android strongly supports multitasking applications, or users can easily switch apps just by touching an icon on the system bar.
b. The technology has better capacity for widgets. For example, widgets for Gmail email are on display Google, users do not need to open the Gmail app to see the contents in it.
c. The device improved copy-paste ability. Some previous Android series are already able to copy-paste, but some users of text selection problems are rather difficult. Now it is trying to be solved, in addition to copy-paste Google also add share it on the selected text.
d. Andriod has the better performance by faster Crome Browser There is one missing feature in the Chrome browser laid out on previous Android, Tab capabilities. Chrome on Honeycomb can now do that. In addition users can also synchronize between the browser on the phone with Crome on the computer.
e. With a larger screen, it automatically makes Google more flexible to place notifications on the screen.
f. Improved Drag and Drop and Multitouch Larger screen size, demanding Google to increase multitouch capabilities within Android, not to mention the drag and drop feature. In a live demo, users can drag and drop to move email within the Gmail app.

2.2 Academic Information System

Academic Information System is a technology for managing, disseminating computer-based academic information. This system as a supporter in the storage of academic data. In addition, this system serves as an academic information media that provides information of each actor involved in the system.(Walls, Widmeyer, & El Sawy, 1992)

Android-based academic information system can be said is a replication of academic information systems applied to mobile devices.Mobile device itself is generally defined as a

device that has a small physical size, can be operated anywhere, mobile devices can provide voice and communication services can be a message exchange text or images, mobile devices can access information from the Internet network and display content from information systems, mobile devices can also store large amounts of information.

3.0 Research Method

This study uses a qualitative method to describe the process of development and the quality of learning model. Development process model refers to ADDIE model. There are five-step ADDIE processes, they are analysis, design, develop, implement, and evaluate. System development using Rapid Application Development (RAD). The stages of the developmental path are as follows (Clark, 1997)

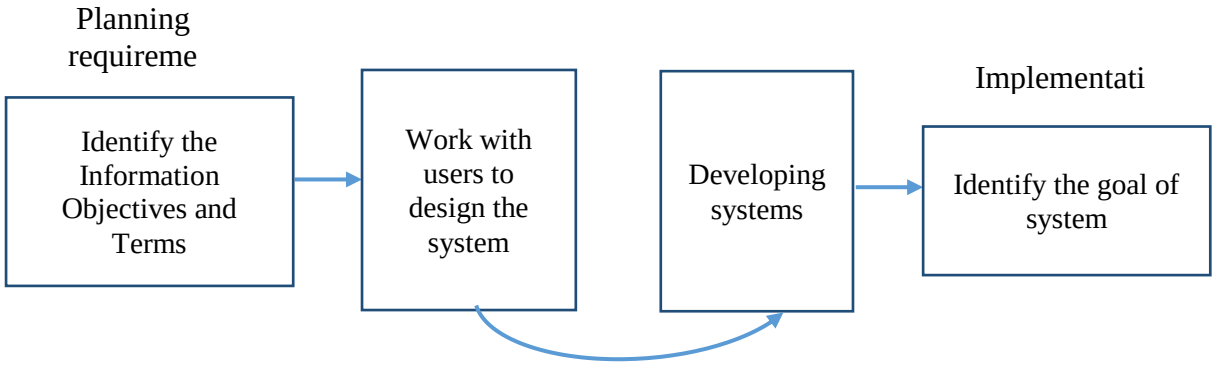

Figure 1: The Development Phase

The purpose of the design is the establish a system that can be implemented into a model of academic information system based on android.

4.0 Result

4.1 Analysis

The result of the need assesment indicated that the intensity of academic information system access by students and lecturers is increasingly high. The users also needed the system by using easy and lightweight devices. In addition, users required the intensive communication between students and lecturers based on academic information systems.

4.2 Design

The design of an academic-based information system application using UML (Unified Modeling Language). UML consists of Use Case Diagrams, Activity Diagrams, Class Diagrams and Sequence Diagrams. In addition to the spat with UML, there is a database interfaces.

a. Use Case Diagram

Preparation of *Use Case Diagram* based on the actor needed to build an academic system based on android. Actor related to academic information service is admin, lecturer

and student. Design use case diagram Use Case Diagram Admin based on the description of the actor. (Table 1).

Table 1. Description of actor

Actor	Description
Admin	Have rights over all access to the data that exist on the system as a whole.
Lecturer	Have the right of acess in entering grades and viewing course grades
Student	Have the right to see transcript of value, study result card, and completion of study plan

1) Use Case Diagram for lecturer

Menus was created for lecturers' services are lecturers' menus, courses, grades and students. Lecturers do login first by filling in the default username and password. After login, the lecturer can access the menu on the lecturer's page. Lecturer can change the username and password on lecturers edit menu (user). In addition, lecturers can see and print the schedule of courses that diampuh. Lecturers can also access the students' grades along with the names of students who program the courses taught.

2) Use Case Diagram for Student

The menu display for students includes students, lecturers, courses and grades. Students login first by filling the default username and password. After login, students can access the menu on the faculty page. Lecturer can change the username and password in the student edit menu (user). In addition, students can view and print course schedules, faculty pengampuh, and transcripts of value. And do inpur the Card Study Plan.

b. Activity Diagram

Activity diagram is a technique to describe procedural logic, business process, and work path. In some cases, the activity diagram is almost identical to a data stream. The principle difference between the activity diagram with flow chart notation that activity diagram more support to behavior parallel.

4.3 Develop

Based on user needs and requirements of the development of information system model, the researcher develops a system model with the following description:

a. The system consists of three user levels, admin, lecturer, and student. Each user obtains the user account along with the default password used in accessing the application in the form of an android based information system.
b. The system displays the menu according to the needs of each user
c. Admin has full access rights in managing admin data, student data, lecturer data, value data, etc.
d. The lecturer has access to input, edit, and delete values.
e. Students have access in the form of charging KRS, download Transcript and Card Study

4.4 Result Implementation

Implementation is a test of system view on smartphone. This system consists of various forms of pages. Various forms of display are presented in the figure 2.

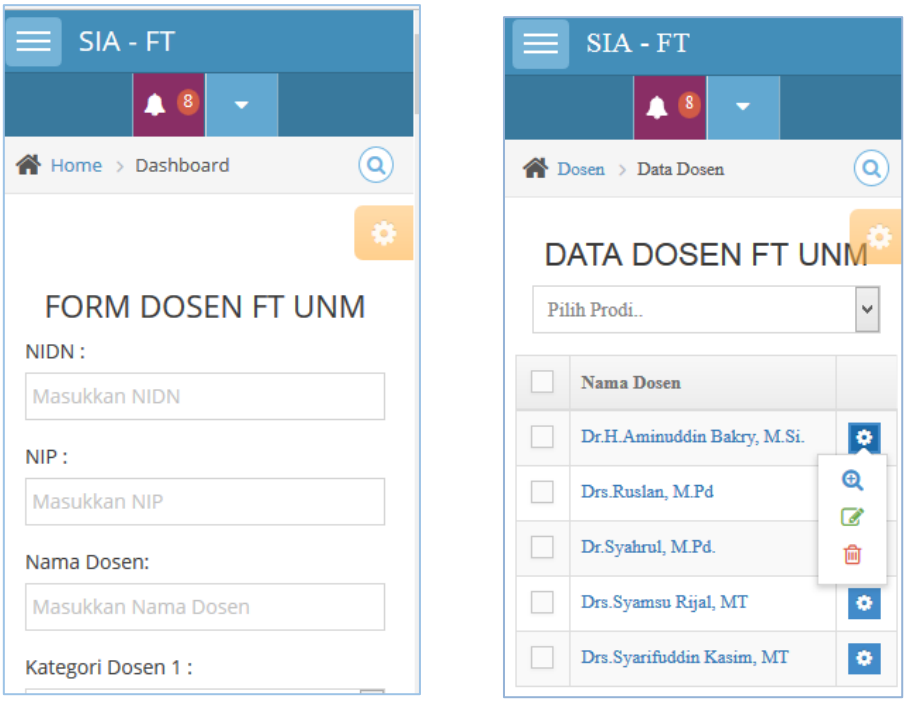

Figure 2: Display of System

4.5 Evaluation

Black Box testing method with Equivalence Partitioning method to find out whether the system or application can run properly. Selection of this method is done to be able to find fault on application function, application interface, and application data structure error. Thus the input and response received accordingly, resulting in a match between the user and the application. Table 2 presents the model test instrument

Tabel 2: The testing of Model

Focus	Testing	Scenario	Expected Result	Result
Versi Android	Test compatibility version of android operating system	Testing on android version 5.0 (Lollipop)	Compatible with android operating system version 5.0 (Lollipop)	Suitable
		Testing on android version 6.0 (Marshmallow)	Compatible with android operating system version 6.0 (Marshmallow)	Suitable

The results of testing the implementation of academic-based information systems involving 30 students and 10 lecturers at the Faculty of Engineering UNM result that this

system is very effective, accessible with smartphones and attractive presentation. Thus, it can be concluded that the built system shows high effectiveness.

5.0 Conclusion

Based on the results of discussion and analysis, it can be taken some conclusions as follows:

1. The design of academic android based information system is done through the steps are: 1) preliminary study / needs analysis done to obtain various academic information faculty of engineering and other information required 2) Analysis of information systems that are running and 3) Analysis of design as well database design.
2. System of academic-based information android Faculty of Engineering Universitas Negeri Makassar is feasible to be used based on black box testing.

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