The Used of E-learning Based on Android in Actuarial Courses

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Abstract. This research is advance research that built an android application for the lecture process in e-learning for actuarial courses. This research aims to produce the learning designs to apply the applications developed in Actuarial courses. The product developed is a compilation of Semester Lecture Plans, Lecture Program Units, teaching materials, and queries. This research produced an android application program for e-learning in Actuarial lectures at the Mathematics Education Study Program Department of Mathematics, Faculty of Mathematics and Natural Sciences, UNP Padang.

1. Introduction
The rapid development of technology has influenced human lifestyles. An example is the development of technology in cell phones, which have transformed cell phones into part of human life. This can be seen from the use of mobile phones in various human interests such as in business/work, leisure, capture various moments, and so forth. This development has an impact not only on adult humans but also on children. Nowadays, kids have used smartphones before they could even talk.

Various studies have been conducted in order to develop learning that can be carried out anywhere through an android device. Liu and He (2014) and Fodor and Covaci (2016) have developed android applications in order to learn English. According to Liu and He (2014) the effectiveness and results achieved by someone who learns independently through the applications they built are as good as someone who learns in class. While Fodor and Covaci (2016) revealed the application for learning English through high android. While Aseniero et al (2013) built e-Learning through an android application in learning programming languages. Based on the research of Aseniero et al, the results show that the use of android applications for e-Learning is more friendly, reliable, accurate, and faster than the use of e-Learning via the webpage. Based on the research that has been done, the writer will conduct research in other parts.

Based on the successful of mobile learning application in the research above, researchers developed an android application for e-Learning in a course. The e-Learning application developed uses the Android Studio and Android SDK applications, where Android Studio is used to build the application and the Android SDK to activate several plug-ins as needed. With the existence of the android application, this study will design a learning process by utilizing the android application.

The application of this application in learning will be carried out in the Actuarial course. The selection of this course is carried out with several considerations. Researchers are actuarial lec-turers,
and along with actuarial courses that contain various formulas that need repetition to understand them. In addition, actuarial courses are also routine subjects that the author is capable of. The research carried out aims to produce lecture designs to implement android applications for e-Learning in the Actuarial course. The output target of this research is to produce Android application for e-Learning on Actuarial subjects.

2. Methods
This research consists of two research categories, namely development research and descriptive research with one sample class. In this research, the product being developed is an android application that can be used to build e-Learning. Then the product is applied/tested on Actuarial class. So, it was compiled Semester Lecture Design, Lecture Program Unit, teaching materials and questions contained in the application. In addition, this study observed the activities that occur in the application and the grades achieved by students.

The research method in this research is design research. This study aims are First is to develop the theories and strategies design to support the learning. Researchers design an instructional theory for students in actuarial learning and its applications. Second is the intervention given is natural. The third feature is that the research design has a prospective and reflective component that cannot be separated from the experiment. The fourth feature is the cyclical process of the research design itself.

The research design that will be used consists of three parts: the preparation phase or the design phase, the implementation phase in the class, and Retrospective Analysis.

3. Results and Discussion
The results of the development carried out is the production of an Android-based e-Learning that can be used in Actuarial lectures in the January-June semester at the Mathematics Education Study Program, FMIPA UNP Padang. The resulting application can be seen at "www.elemathunp.net". If this address is opened in a browser that is typed in the address bar, it will produce the first page of the android application that is generated, as shown below. The picture below is the result of an update from the previous picture (figure 1).

![Figure 1. Front Page of Android Application](image)

Based on the picture above, it can be explained that the user can utilize the application in the process of learning an actuarial course. Both lecturers and students, to be able to use the application must create an account firstly by clicking on the word "sign up". After creating an account, users can log in either as a lecturer or as a student. At the bottom of the image, the user can also see that this application is used for actuarial courses.
For example, the researcher logs in as an actuarial lecturer. After logging in, it will bring up a section like the figure 2.

**Figure 2.** Lecturer Page

Based on the picture above, can be seen a section showing the actuarial course, which can be clicked on and entered into the Actuarial lecture. If we click on the actuarial course will produce as shown below.

**Figure 3.** Course Menu
Based on the picture above, can be seen the menu Course Description, Document, Learning Path, Link, Tests, Announcement, Assessment, Glossary, Chat and so on. If we click those menus respectively, then can be seen the content as follow,

3.1. **Course Description**  
Contained of courses synopsis, courses description, Standard of competency, and Learning plans.

![Figure 4. Courses Description](image)

3.2. **Document**  
Contained of the material, motivation video, SAP, and learning video.

![Figure 5. Document](image)

When you click the teaching material, it will appear as shown below. The contents of the teaching material menu are in the form of: Actuarial teaching materials (1st-16th meeting).
3.3. Tests and Assignments

Contained of the forms of tests given to students. In this case, what has been done is giving a User Questionnaire Sheet, Assignments, Test 1 and Test 2.
3.3.1. **Users Questionnaire Sheet.** This User Questionnaire Sheet has been given to every student who takes this Actuarial course. The filling out of the questionnaire can be done directly on this application.

3.3.2. **Examination.** For this Actuarial course, the exams are conducted online. Students directly take the exam through the application provided. Every student joins in this application at a time. From the test results obtained results as a quote. The average value is 64.43, with a maximum value is 94.12 and a minimum value is 35.29.

3.4. **Chat**

In this application the lecturers and students can doing chat. Like the picture below

![Figure 9. Chat Menu](image)

4. **Conclusion**

Based on the description of the results and the discussion above, it can be concluded: (1) An Android application program can be produced for e-Learning for Actuarial lectures in Mathematics Education Study Program, Faculty of Mathematics and Natural Sciences, FMIPA UNP Padang; (2) This application can be used by the Lecturer in Actuarial courses; (3) This application can also be used by students who enroll for Actuarial courses.

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