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Developing of Learning Media Applications Based on Mobile Android Smartphones in the E-Learning System of PPs UNM

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Abstract. This study aims to develop an Android smartphone-based learning media application and to produce a valid, practical, and efficient Android smartphone-based learning media application. This study uses the ADDIE development model which consists of 5 stages, namely Analysis, Design, Development, Implementation, and Evaluation. The testing procedure in this study through three stages, namely peer testing, expert testing and implementation in the form of small group trials and field trials. The informants in this study were experts, peers, and students. Data collection techniques used in this were questionnaires, interviews, and observations. While the data analysis technique used is descriptive data analysis. The results showed that the Android smartphone-based learning media application developed after validation was declared valid. The product in the form of an Android smartphone-based mobile learning media application is stated to be practical and efficient so that it is suitable or use, this is based on the results of small group trials and field trials which are strengthened by the results of interviews which state that this learning media application is practical and efficient, because this application can be installed on any brand Android smartphone, so it can be used and accessed anywhere and anytime and the features and facilities in this application are very complete and very easy to use. Based on the results of the research obtained, it is concluded that the learning media application based on the Android smartphone mobile that has been developed has met the categories of validity, practicality, and efficiency so that it is suitable for use.

Keywords: Learning Media, Mobile Learning Android.

INTRODUCTION

Education plays a very important role in developing human resources into quality resources. The increasing demands of the times provide challenges to the world of education to continue to improve the quality and relevance of education in order to be able to face the challenges of changing local, national, and even global life. Therefore, it is necessary to renew education in a planned, directed and sustainable manner.

The world of education today is faced with the challenge of rapid and variable change as a result of growing scientific and technological progress. Development in

science and technology increasingly encourages efforts toward renewal in making use of the technological results in the performance of learning. As a teacher, it is expected to be able to use learning media as an aid in the learning process, from simple AIDS to sophisticated assistive devices such as smartphones as learning media.

Learning Media is a determining factor in the success of the learning process. By using media, the learning process will be more interesting and fun. Success in using media in the learning process cannot be separated from how the media is designed, good media is media that is able to attract the attention of learning participants and is able to convey messages effectively and efficiently. In line with the development of information and communication technology, one of the popular learning media today is E-Learning based learning media. The mobility of teachers and learning participants is one of the factors in the development of electronic learning media, especially those that are online.

Lifestyles with increasing human mobility have led to a shift in the use of electronic devices. Currently, humans are more likely to use mobile devices such as smartphones to access information, especially smartphones based on the Android operating system. Android-based mobile devices are the choice of many people because they have good performance with complete connectivity availability and very many applications support but at an affordable price.

Smartphone Android can be a very interesting opportunity to be used in the world of education as an alternative learning medium to balance a lifestyle with high mobility, so that learning content can be accessed via smartphones anywhere and anytime, otherwise known as Mobile Learning. Based on the foregoing, an Android smartphone-based learning media application development was carried out on the PPs UNM E-Learning System Course.

RESEARCH METHODS

The research approach used in this research is research and development, with reference to the steps and procedures that use the ADDIE development model (Analysis, design, development, implementation, and evaluation). According to Czaja & Sharit (2013: 178) that "ADDIE (Analysis, Design, Development, Implementation, and Evaluation) represents large scale systematic framework for providing instruction", namely ADDIE (Analysis, Design, Development, Implementation, and Evaluation). Large scale systematic to provide instructions". The ADDIE development model was chosen because of its generic and simple nature but its implementation is systematically structured, besides that the ADDIE development model provides the opportunity to carry out continuous evaluation and revision at each phase passed.

The stages followed in this research are as follows, analysis Phase:
(1) Preliminary study or need assessment; Design Phase:
(2) Planning of instructional media applications,
(3) Initial production,

(4) Black box testing,
(5) peer testing,
(6) Analysis and first revision; Development Stage,
(7) Expert validation,
(8) Analysis and second revision; Implementation Stage,
(9) Small group trials,
(10) Third analysis and revision,
(11) Field trials,
(12) Analysis and fourth revision,
(13) Final product; Evaluation Phase.

RESULTS AND DISCUSSION

The development of learning media carried out in this study resulted in a product in the form of a learning media application that could run on an Android mobile smartphone. This learning media is the result of the development of the Moodle site-based E-Learning which is packaged in the form of an application that runs on an Android smartphone.

The learning media application based on the Android smartphone mobile based on the analysis of needs is then tested in several stages, namely:

1. *Black Box Testing*

Black According to Mustaqbal, et al (2015:34) "Black box testing focuses on functional specifications, while according to Hamdani (2015:181) "Black box is a test that is carried out to find out feature functionality errors in an application". "Black box testing focuses on whether the unit of software", the program meets the requirements(requirements) mentioned specifications" (Al Fatta, 2017:172). So, Black box testing is a test to find out whether all software functions have been running properly according to functional requirements. The black box testing results show that the aspects tasted are running according to the expected function. Therefore, the learning media application is feasible to use and can be continued to the trial stage.

2. Peer Trials

Peer trials are given to peers who have expertise in a related field. Testing to determine the feasibility of learning media based on the results of assessments, responses, and suggestions from peers, peer ratings based on several criteria. The level of achievement of test results is included in good qualification so that it is suitable to use.

3. Expert Validation

Expert validation is a test conducted by instructional media design experts and learning material experts. Tests were carried out to determine the validity and feasibility of the resulting learning media application. Based on the validation results of design experts and instructional media material experts, it can be concluded that

the learning media application that has been produced meets the validity criteria and is feasible to use.

4. The small group trials

The small group trial was conducted on 15 students of the Technology and Vocational Education and Vocational Education Program for the UNM Postgraduate Program that had programmed the e-learning system course. The results of the assessment obtained in small group trials are included in the qualifications both and do not need to be revised, then the application of learning media that is produced is feasible to go to the next test level.

5. Field trials

The results of the small group trials previously showed that there was no aspect that needed to be revised so that the application of learning media was feasible to use, but as the developer continued to carry out analysis and development in the hope of producing better learning media applications before conducting field trials.

Field trials were conducted to 25 students of the Technology and Vocational Education and Vocational Education Program of the UNM Postgraduate Program that had programmed the e-learning system course. The trial results included in the qualifications very well and do not need to be revised, so it is feasible to use.

Observations are also carried out during the field trials, observation is carried out to determine the compatibility of learning media applications on the Android operating system version and on the Android smartphone brand. In addition, observations are also conducted to find out the experience of respondents in using learning media applications.

6. Evaluation

The evaluation stage is the last stage in the process of developing this learning media application, where in this stage it will be seen to what extent the results achieved in the development of learning media applications based on Android phones in the PPs UNM E-Learning System course. The type of evaluation used in this research is summative evaluation, which is "evaluation that is carried out to provide the final result of a product" (Priyanto, 2009: 7).

Summative evaluation is carried out at the end of the development process to know the feasibility of the resulting media and the extent to which students can use the learning media application that has been produced. At this stage it only uses summative evaluation because this research focuses more on the feasibility of the resulting application to be used as a learning media, the resulting application testing is more focused on functional testing to ensure that the facilities in this application function properly and are feasible for used as a learning medium.

Based on the results of the implementation of the learning media application that has been done, it can be concluded that the learning media application based on the Android smartphone mobile is feasible to use, this is confirmed by the results of interviews with respondents. Looking at the excerpt from the interviews that have

been conducted, it can be concluded that users do not find it difficulty to use the learning media application, the learning media application that runs on an Android smartphone is considered an innovative, practical, and efficient learning media, and is able to keep up with developments in information technology and communication today, where smartphones have gradually been able to shift computer functions in terms of accessing information online.

CONCLUSION

Based on the research that has been done regarding the development of learning media applications based on mobile Android smartphones in the PPs UNM E-Learning System course, so it can be concluded that this research was conducted to produce the products in the form of learning media applications based on mobile Android smartphones that are valid, practical, and efficient and worth using.

The results of the validation of the instructional media design experts which produced an average score in the very great category, and the results of the validation of the learning material experts which produced an average score in the great category. While the results of the implementation show that the small group trial results in an average score with great categories, and the results of field trials produce an average value in very great categories. Especially, the results of observations indicate that the resulting of learning media application has excellent compatibility and there are no significant obstacles in using application. Accordingly, this android smartphone-based mobile learning media application has been tasted in terms of validity, practicality and efficiency.

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