DESIGN AND DEVELOPMENT OF ANDROID-BASED LEARNING MEDIA TECHNOLOGY INFORMATION AND COMMUNICATION FOR SENIOR HIGH SCHOOL

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Abstract

This research is motivated by the problem of the limitations of ICT learning resources in Class Ten in the event of the academic year 2021/2022. This occurs because of the lack of learning media that attract student interest. Therefore the author seeks to design learning modules that appeal to students. This study aims to determine the validity, practicality, and effectiveness of the Design and Manufacture of learning Media based on Android of Information and Communication Technology Class Ten Even Academic Year 2021/2022. This research and development methods (R&D). The subject of the study amounted to40 people students of Class Ten. This research method using analysis (ADIIE), with design and its development steps, are as follows : (1) Analyze, (2) Design, (3) development, (4) Implementation (5) Evaluate. The validity of the test results by the experts as a whole votes validator test for learning Media based of android of Information and Communication Technology Class Ten Even amounted to 83.03%, so that the level of validity can be interpreted valid to use. Results of the assessment test the practicalities of the overall assessment of the practicalities of Learning Media based on android of Information and Communication Technology Class Ten by 85.94%, so the practical level is very practically used. Results of votes overall effectiveness trials assessing the effectiveness Learning Media based of android of Information and Communication Technology Class Ten by 82.24% so that their effectiveness can be interpreted good used. In conclusion, based on the assessment along with the input of experts and the results of field trials Learning Media based on Android as a learning medium has proven its feasibility, and advantages, and can be used in the learning process on the subjects of computers skills class ten.

Keywords: Android, Learning Media, ADDIE, Information and Communication Technology

1. INTRODUCTION

Education is not just about imparting knowledge, values , or training skills. Education functions to develop what is potential and actual that students already have. Students are not empty glasses that must be filled from the outside, they already have something that has more or less developed (actualized) or is still a bud (potential). Education according (Prasetio, I., & Musril, H. A., 2022) based on the results of the research and discussion described in the previous chapter, the researcher can conclude that these android-based physics learning media application has been designed and created using Smart Apps Creator 3 which produces output in the form of an application so that it can be run on an Android smartphone. These android-based physics learning media applications can help students, especially students of tenth-grade Bukittinggi Computer and Network Engineering who can assist in understanding physics learning material, and study anywhere without having to carry books and only using their smartphones. With this application, it is hoped that it can help teachers explain lessons, especially lessons related to calculations and simulations of motion and force, in physics so the application is expected to make it easier for teachers to teach and make it easier for students to learn so that the results of the learning process will be more valid, practical and effective.

Education according to (Setiawan, 2021) Android-based learning media on digital simulation subjects have been tested for their feasibility by media experts, with an overall average of 82.66% in the "Eligible" category. While the test results by material experts obtained an overall average of

90.97% in the "Eligible" category. The results of the feasibility test by the students were 85.17% which was included in the "Eligible" category. So it can be concluded that the learning media developed is suitable for use. Researchers designed instructional media based on the results at the analysis stage.

Education according to (Nurhayati, N., Yunus, Y., & Juwita, A. I. 2021) The results of the overall practicality test assessment of the practicality of Android-Based Learning Media Applications in the subject of Creative Products and Entrepreneurship Odd Semester is 90.79% so that the level of practicality can be interpreted as Very Practical to use. The results of the overall effectiveness test assessment of the effectiveness of the Android-Based Learning Media Application in the subject of Creative Products and Entrepreneurship Odd Semester is 84.91%, so the level of effectiveness

can be interpreted Effectively used. In conclusion, based on the assessment and expert input and the results of the field trial of the Android-Based Learning Media Application as a learning medium, it has been tested for feasibility, and excellence, and can be used in the learning process in Creative Products and Entrepreneurship subjects in class twelve.

The development and progress of a nation are strongly influenced by the quality of education. Education is a process to help humans develop so that they can face all the changes and problems they face. The world of education cannot be separated from the learning process which includes teachers, students, and the learning environment that influences each other to achieve learning objectives.

Education is a complex process, but its complexity goes hand in hand with human development. Through education, various aspects of life are developed through the learning and learning process. Various problems in the learning process need to be harmonized and stabilized so that learning conditions are created under the objectives to be achieved and can be obtained as optimally as possible. To complete the components of learning and learning in schools, teachers should use media or tools that can stimulate learning effectively and efficiently.

Media is one of the factors supporting the achievement of learning objectives. This is related to the use of appropriate and varied media in the learning process can increase learning motivation and can reduce the passive attitude of students. The development of learning media is inseparable from the rapid development of technology at this time which is very rapid and almost comprehensive in all fields, one of which is the field of education. the development of technology in the field of education will make education at this time more advanced and developed so that people can live more creatively and educated. However, the problem that often arises is how to take advantage of the technology that is around us to support the educational process.

The development of mobile devices is a very rapid technological development at this time, one of which is a mobile phone (mobile phone). At the beginning of their existence, mobile phones only had limited capabilities, namely to make and receive calls, and send and receive text messages, known as short message service (SMS). while at this time mobile phones have been very developed so that they have various kinds of capabilities such as internet access and also have an operating system like a computer so they are called smartphones. The utilization of smartphone capabilities for purposes in several fields is also developed with applications that can support its use. Including the use of smartphones for learning media.

2.   METHOD

Currently, the development model that can be used in research and development Research and development is quite diverse, one of the development models that can be used in development research is the ADDIE model (Analyze, Design, Development, Implementation, Evaluation). The ADDIE model is one of the systematic learning design models. The subjects in this study were taken from the tenth-grade students of information and communication technology subjects for the 2021/2022 academic year totaling 30 students. The ADDIE model learning design scheme forms a cycle consisting of 5 stages consisting analysis, design, development, implementation, and evaluation.
1.   Analysis (Analyze) The first step in making android-based learning media products using the ADDIE model is to analyze the required conditions and product specifications.

2. Design At this stage the researcher begins to design the product to be made. Android-based learning media is designed according to the analysis in the previous stage. Product specifications will be made in the form of learning media using Macromedia Flash Cs6 based on Android.

3. Development At this stage, a revised validity test is carried out based on the input that has been given by the validator.

4. Implementation After the validity test is carried out, the practicality test is carried out by students.

5. Evaluation (Evaluations) The last stage is to conduct an evaluation (Evaluation), from this stage is done by obtaining an assessment of the collected student learning outcomes tests. The test is and then can determine the feasibility level of the Android-based learning media product.

Currently, the development model that can be used in research and development (Research and Development) is quite diverse, one of the development models that can be used in development research is the ADDIE model (Analyze, Design, Development, Implementation, Evaluation). The ADDIE model is one of the systematic learning design models.

According to Sugiyono (2008, 407), this research method is a research method used to produce certain products, and test their effectiveness of these products. These products are not always in the form of objects or hardware (hardware), such as books, stationery, and other learning tools. However, it can also be in the form of software.

This study uses development research methods. According to (PURNAMASARI, 2019) This research is a type of development research. The right choice of development model will produce the right product. One of the characteristics of the accuracy of the product developed is that the product can be applied properly and provides benefits for its users. One of the media that pays attention to the basic stages of media development design that is simple and easy to understand is the ADDIE model. The ADDIE model is used to describe a systematic approach to learning development. The developer chooses the ADDIE research model. Because the product being developed is a learning medium, not software engineering, the ADDIE method is suitable for the product development process.

This type of research includes development research. Research according to (Mawarni, 2021) The development method used in developing interactive E-Module learning media in this Visual Programming course is ADDIE. There are 3 stages of ADDIE development used in the development of this learning media, namely the analysis, design, and design stages. The initial product resulting from this development will later be validated/tested by material experts and media experts. From suggestions and corrective comments obtained from validation by experts, improvements will be made to the learning media so that the learning media can be said to be feasible to use.

3. RESULTS AND DISCUSSION

The results of the design of android learning media using Adobe Flash CS6 on ICT materials are designed to facilitate teachers in the teaching and learning process and make it easier for students to understand learning material. This application is designed in such a way to support ICT learning. The components in the learning media.

The design of android learning media using Adobe Flash CS 6 requires a design, layout, and button icon that is attractive and easy to use, the background with writing must be adjusted so that the material contained is clear so that it is easy to read and see, and can be used anywhere and can support students in the study.

a. Validation Test

The validation of the android learning media from the validator is carried out to assess the media design. The validator provides an assessment of the feasibility of content, linguistic components, discussion components, and graphic components of android learning media using Adobe Flash CS6. As a learning media, can it facilitate the learning process? Expert validation in this android learning media was carried out by three experts by filling out a questionnaire on the learning media. The validation test of android learning media uses alearning resource in the form of content feasibility, language components, discussion components, and graphic components based on validation test sheets carried out with the following steps:

The validation test of android learning media uses as a learning resource in the form of content feasibility, linguistic components, discussion components, and graphic components based on the validation test sheet which is carried out with the following steps:

This study was processed using Microsoft excel. This research is about a validation questionnaire, it can be briefly stated that this data description will reveal information about the value obtained from each statement item, total weight, value, and criteria In Table 17 shows the assessment of the validator for Android-based learning media in terms of aspects (1) Content feasibility: 83.98%; (2) Language Component: 80%; (3) Presentation Component: 83.77%; (4) Graphical Component: 84.95%. Overall, the assessment of the validator test on Android-based learning media is 83.45%, so Android-based learning media can be said to be valid for students to use for learning, the level of attainment of the validator in calculating the distance or range (R) is 12 ranges, the number of classes (K)) is 3, and the length of the interval class is 4, in the range 87-90 there is 1 validator with a percentage of 66.66%, in the range 91-94 there is no validator with a percentage of 00.00%, in the range 95-98 there is no validator with a percentage of 00.00 % . and in the range 99-102 there is 1 validator with a percentage of 33.33% .

b. Practical Test

Practicality trials were used to determine the level of practicality of Android learning media, practicality trials were carried out by 40 students. Aspects assessed consisted of state of use, the effectiveness of learning time, and benefits consisting of 18 statement items. Practicality test data for the use of Android learning media were analyzed using a modified formula from Purwanto (2010: 102) Aspects assessed in the practicality test consisted of 18 statement items. namely 8 statement items for the state of use, 5 statement items for the effectiveness of learning time, and 5 statement items for benefits. In this study, it was processed using Microsoft Excel. This research is about practical questionnaires. In short, it can be stated that the description of this data will reveal information about the value obtained from each statement item, total weight, value, and criteria.

Table 20 shows the assessment of 40 students for Android Learning Media in terms of (1) Condition of Use: 81.53%; (2) Effectiveness of Learning Time: 79.5%; (3) Benefit: 82.7%. Overall, the practicality test assessment of Android Learning Media is 87,27%, so the media can be said to be very practical for students to use for ICT learning.

To obtain a clear picture of the distribution of Practicality questionnaire scores. Based on table 21, it can be explained the frequency distribution and level of practical achievement in calculating distance or range (R) which is 23 range, the number of classes (K) is 6, and class interval length is 4, in the range of values 62-65 there are 2 students with a percentage of 5.00%, in the range of values 66-69 there is 1 student with a percentage of 2.50%, in the range 70-73 there are 20 students with a percentage of 50.00%, in the range of 74-77 there are 15 students with a percentage of 37.50%, in the range 78-81 there is 1 student with a percentage of 2.50%, and in the range 82-85 there is 1 student with a percentage of 2.50%. Data on the practicality of Android-based Learning Media through practical trials of 40 students with a total of 18 statements seen an average value of 87.27%. It can be said that the practicality level of Android-based Learning Media is Practically used for class ten in the 2021/2022 academic year, following the theory put forward by Purwanto (in Yanti, et al 2014: 140)

c. Effectivity Test

At this stage, activities are focused on evaluating whether the Android-based Learning Media used is effective in improving learning activities. The data were analyzed using the percentage technique stated by Purwanto (2010:102) The aspects assessed in the effectiveness test consist of 12 statement items, namely 7 items for happy learning, and 5 statement items for the existence of interesting teaching materials in learning. In this study, it was processed using Microsoft Excel. This research is about the effectiveness questionnaire. In short, it can be stated that the description of this data will reveal information about the value obtained from each statement item, total weight, value, and criteria. Table 23 shows that the assessment of 40 students for Android-based learning media in terms of each item with an average overall score of 82.24, so the Android-based learning media can be said to be good for students to use for learning, Based on table 24, it can be

explained that the frequency distribution and the level of effectiveness in calculating the distance or range (R) are 20 ranges, the number of classes (K) is 6, and the interval class length is 4, in the range of values 70-73 there are 5 students with percentage 12.5%, in the range of values 74-77 there are 13 students with a percentage of 32.5%, in the range 78-81 there are 4 students with a percentage of 10%, in the range 82-85 there are 10 students with a percentage of 25%, in the range 86-89 there are 2 students with a percentage of 5%, and in the range 90-93 there are 5 students with a percentage of 12.5%.

4. CONCLUSIONS

The design and manufacture of android-based learning media applications for class ten of the academic year 2021/2022 is valid because it has been tested by 3 validators with the average result of validator testing being 83.45%, compared to the relevant research by the researcher, namely Hafizil Ziko S (2012) which is equal to 82.00% so that the level of validity is said to be valid, therefore the research that the researchers conducted is the same as the level of validity. For practicality in the use of Android-based learning media applications, it is said to be practical for use by class ten students, which is 87.27%, compared to research conducted by Hafizil Ziko S (2012) as relevant research, the practicality level is 83.06. % so that the level of practicality is said to be practical, therefore the research carried out by relevant researchers is the same level of practicality. In terms of usage conditions, the effectiveness of learning time and benefits by conducting research tests on students of class ten with an average result of 82.24% already being used for class ten students, compared to research conducted by Hafizil Ziko S This android-based learning media application is an application made for android smartphones with features that have been provided in the ICT learning media application. This application is equipped with many features that are needed by students starting from material that is following the 2013 curriculum, an evaluation that can measure the abilities and knowledge of students, and videos that are measured according to the size that fits the display.

This android-based learning media uses the theory or ADDIE development method that uses the MADE TEGUH development model, et al. This Android-based Learning Media is presented with an attractive appearance by combining attractive colors and images. Android-based learning media applications are very easy and practical to use and easy to carry anywhere.

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