

Development of E-Module Based on Android Application in Physical Education Information Technology and Communications Course in PJKR FIK Unimed Program

1st Abdul Hakim Siregar¹, 2nd Muhammad Andri Fahrian²

{abdhakim@unimed.ac.id¹, argubisilwa@gmail.com² }

Physical Education, Health, and Recreation Department, Faculty of Sport Science,
Universitas Negeri Medan, Indonesia^{1,2}

Abstract. Producing a reliable Android application-based solution for the Physical Education Information Communication Technology Subject, PJKR FIK Unimed Study Program, is the main goal of the fundamental study. The Research and Development (R&D) research and development approach is employed in this study. The five steps of the ADDIE development paradigm are analysis, design, development, implementation, and evaluation. The Unimed PJKR Study Program served as the site of the research. Questionnaires are used in this study's data gathering method. A questionnaire from material and media specialists is the tool used to gather data during the Android Application-based E-Module Development process in the Physical Education Information Communication Technology Subject, PJKR FIK Unimed Study Program. Researchers conducted both qualitative and quantitative analyses of the data they had collected. The primary objective of the basic study is to provide a trustworthy Android application-based solution for the Physical Education Information Communication Technology Subject, PJKR FIK Unimed Study Program. This study makes use of the Research and Development (R&D) research and development strategy. The ADDIE development paradigm consists of five steps: analysis, design, development, implementation, and evaluation. The research was carried out at the Unimed PJKR Study Program. In order to collect data for this study, questionnaires were employed. The Physical Education Information Communication Technology Subject, PJKR FIK Unimed Study Program uses a questionnaire from material and media professionals as the instrument for data collection during the Android Application-based E-Module Development process. Researchers analyzed the data they had gathered in both qualitative and quantitative ways. We may draw the conclusion that the Android application-based product in the PJKR FIK Unimed Study Program's Physical Education Information Communication Technology Subject is valid.

Keywords: Android, Application, , E-Module, Information and Communication Technology, Physical Education.

1 Introduction

The global communication system has transformed as a result of the information revolution. The internet's ability to store and distribute information networks demonstrates how much smaller the globe has become since the advent of information technology. Global access has become incredibly simple, effective, and versatile. One advantage of globalization, which

entails integration in many areas, including technology and education, is this ease. The modernisation of all aspects of life in today's global society has been made possible by the intellectual contributions of the educational community. In this way, technology has enhanced the standard and effectiveness of education. as learning to know, learning to do, learning to be, and learning together are the four pillars of education established by Unesco (Mardia, 2011).

Information and communication technology advancements have significantly impacted human existence and are significant in many industries. The need for technical advancement is felt most strongly in the tertiary education sector. Utilizing technology in education aids in the creation, processing, and presentation of learning materials. In addition, it serves to foster an environment conducive to learning that might inspire motivation and curiosity. To meet learning objectives, technology utilization in the classroom must be tailored to the demands of the subject matter (Suryadi, 2015).

Currently, the usage of printed instructional resources is increasingly being replaced by digital (electronic) resources. As a result, it's probable that lecturers would be expected to be able to incorporate information and communication technology into the learning process in order to make it more engaging and remove the appearance of rigidity in instruction (Sumiharsono and Hasanah, 2017).

Learning media is a crucial tool in educational activities. Learning media is a kind of communication used to transmit educational ideas to pupils. So that the objectives of the content are more readily communicated and so that students can better comprehend the teaching material, engaging learning media will positively stimulate students' attention to the material provided. Print-based media, visual-based media, audio-visual-based media, and computer-based media are the four categories under which learning media are used and created as teaching resources. Media that may complement many types of information, such as symbols, sounds, and motions, make up interesting learning materials. (Fitria, 2014).

The Physical Education Information Communication Technology course covers strategies for learning physical education, sports, and health through theoretical and hands-on lectures as well as how to plan, develop, manage, utilize, and evaluate learning processes and resources in physical education learning. In order to succeed in this course, students must actively participate in the process of thinking about, seeking to comprehend, analyzing, and synthesizing existing information into new knowledge. The goal of this course is for students to acquire knowledge, abilities, and attitudes on how to plan lessons, build lesson plans, manage classes, and make use of and assess learning materials and procedures in physical education. (Suherman. 2018). The following types of Information Communication Technology devices are presented in Figure 1.

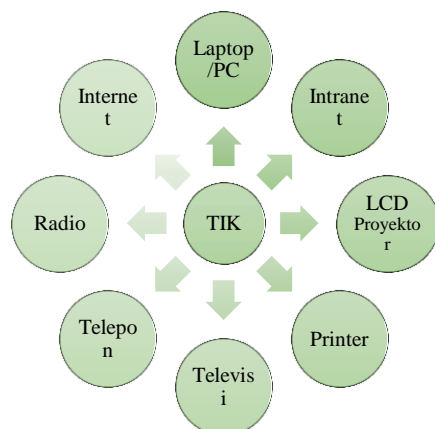


Fig.1. Types of ICT Devices (source: Ministry of Education and Culture, 2017)

Devices for information and communication technology come in a wide variety and serve numerous purposes. In the earlier era, it was thought that the fight for legitimacy may lead to conflicts between information and communication technology and physical education. The demand to incorporate new courses like information technology was a contributing factor in the identity and legitimacy crises that Physical Education experienced at the start of the twenty-first century (Ardiyanto, 2019). The function of lecturers in higher education may be seen in two ways with regard to technology and the training of future physical education instructors. They first help aspiring teachers comprehend the foundation for combining technology and instruction. The scientific corpus (a tenable body of knowledge) of physical education is strengthened by their use of technology itself to further knowledge (Zeigler, 2014).

E-modules are one type of educational resource that students might include. E-modules are a type of autonomous teaching resources that are methodically organized into the smallest learning units in simple language and presented electronically using animation, sound, and video to increase user interaction with the software. Because e-modules have the ability to boost student motivation, students must possess the features of these modules. An Android application is one tool that may be utilized to bridge the development of more intriguing e-modules to Murtiwiyati and Glen Lauren (2013).

Users and developers may construct whatever type of application they desire on the open platform offered by Android apps. This application may take the shape of information, entertainment, instruction, religion, and so on. On the basis of this viewpoint, it can be deduced that Android apps are programs in the Android system as a component of the operations design for mobile devices based on Linux, where Android applications comprise the operating system, programs, and middleware. Due to the tight connection between these three factors and smartphone use, one of the Android applications that will be employed in this study may be beneficial to students. This program serves as an accessible interactive platform for instructors and students. In the form of images, animations, and videos of the learning process, this application can combine the course material for the Physical Education Information Communication Technology course. These learning tools have implications for technological needs and advancements in the times according to the Era of Society 5.0, which

are still rarely used in Physical Education. Based on the various factors above, the author is interested in conducting research regarding "Development of an Android Application-Based E-module in the Physical Education Information Communication Technology Subject, PJKR FIK UNIMED Study Program". Based on the background of the problem above, the problem formulation in this research is: How is the expert test regarding Android Application-based e-module products in the Physical Education Information Communication Technology Subject, PJKR FIK Unimed Study Program?

2 Method

The research in question employs research and development techniques, sometimes known as R&D. According to Sugiyono (2015 : 407), R&D research is a research technique used to generate specific items and evaluate their efficacy. In order to create a product, we do research in the form of a requirements analysis to evaluate its usefulness for the larger community. Therefore, research is required to evaluate the product's usefulness. The design development model, or ADDIE development model, is the one employed in this study. It consists of five stages: analysis, design, development, implementation, and evaluation. (Sugiyono , 2015: 200).

Research on Android Application-based E-Module product development in the Physical Education Communication Information Technology Course using the ADDIE model. The ADDIE model consists of five interconnected, systematically organized components, which implies that from the first to the fifth stage, its application must be methodical and cannot be done in any particular sequence. The steps in doing research utilizing the ADDIE methodology are as follows:

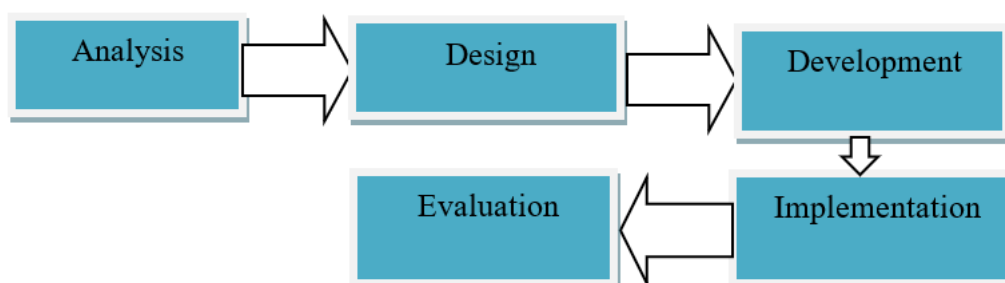


Fig.2. Steps in the ADDIE Development Model (Sugiyono, 2015: 200)

1. Analysis

The Physical Education Communication Information Technology Course carried out many analyses, including issue analysis and student requirements analysis, during the first stage of producing Android Application-based E-Module goods. The analysis that has been done results in observation data that is then used to create the instructional materials that are being created.

2. Design

Based on observational data during the analysis stage, E-Module products for the Physical Education Communication Information Technology Course were designed using Android applications. Physical Education Communication Information Technology Course Android

Application-based E-Module. Consequently, the E-module design created is based on an Android app. The content and learning flow that will be organized in the E-Module are also determined at this point.

3. Development

The development of an Android Application-based E-Module in the Physical Education Information Communication Technology Course was carried out in several stages, including the feasibility testing of teaching materials by design experts to assess presentation aspects, language aspects, and practicability, material experts to assess the suitability of materials in E-Android Application-based module in the Physical Education Communication Information Technol. Based on recommendations from the validator, a re-examination of the Android Application-based E-Module in the Physical Education Communication Information Technology Course was done. In order to improve the development of the Android Application-based E-Module in the Physical Education Communication Information Technology Course, the results of this test will thereafter be used as material for review. then go on to the implementation step, which is the following level.

4. Implementation

The instructional output is now prepared for use in the lecture process in the classroom. Introducing and utilizing Android Application-based E-Modules in the Physical Education Communication Information Technology Course during lecture activities are among the activities done during the implementation stage.

5. Evaluation (Evaluation)

The goal of the research's final phase is to evaluate the effectiveness of Android Application-based E-Modules in the Physical Education Communication Information Technology Course as well as the activity-planning and activity-implementation processes.

The location of the research was carried out at the PJKR FIK Unimed study program. The instrument used to collect data during the Android Application-based E-Module development process in the Physical Education Communication Information Technology Course is in the form of a questionnaire. Data collection in this research uses instruments that are divided based on the source of data acquisition consisting of validation instruments from material experts and design experts. The expert validation sheet is one of the research instruments used to measure the feasibility of the Android Application-based E-Module in the Physical Education Information Communication Technology Course. The validation sheet is given to design experts and material experts.

Table 1. Design Expert Validation Questionnaire Grid

No	Indicator	Item Number
1	Aspects of content or contents	1, 2, 3
2	Aspects of design or appearance	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21.
3	Aspects of use and presentation	22, 23, 24, 25, 26
4	Language Aspects	27, 28, 29, 30

The questionnaire grid for material expert validation is as follows:

Table 2. Material Expert Validation Questionnaire Grid

No	Indicator	Item Number
1	Aspects of material content	1, 2, 3
2	Aspects of material presentation	4, 5, 6, 7
3	Language Aspects	8, 9, 10

The acquired data analysis method for the e-module was then examined both subjectively and quantitatively. The research's qualitative data may take the form of criticism and recommendations made by professionals in the fields of materials and design. The information is then examined to establish a foundation for enhancing and assessing the appropriateness of the generated good.

Data for this quantitative study came from tests with a scoring system. Results of validation by media, design, and product usability specialists can be used to get this quantifiable data. The evaluation scale makes use of a Likert scale with five options (scale 5). The primary goal of the Likert scale, according to Widoyoko (2014: 104) is to pinpoint a person's position within a spectrum of attitudes toward an object, ranging from highly negative to very positive. By assigning a score, ranging from 1 to 5, the outcomes of expert validation of design, materials, and usability are carried out..

3 Results

The research in question employs research and development techniques, sometimes known as R&D. The process of generating and evaluating items through research and development is used in the field of education. This study is used to find new understanding about fundamental phenomena as well as educational procedures, in addition to creating and evaluating research products. Based on the findings of the analysis of research activities, the findings of the research activity "Development of E-Modules Based on Android Applications in the Physical Education Information Communication Technology Subject, PJKR FIK UNIMED Study Program" are detailed below.

Results of learning tools that have undergone validation and revisions: The validator evaluates the appropriateness of the content, as well as the presentation, look, and language of the information. The researcher makes adjustments by using the discussion's findings and according to the validator's recommendations and guidelines. For the Android application-based E-Modules in the Information Technology Communication Physical Education Subject of the PJKR Study Program, the following are the findings of the material expert and media expert validators:

Table 3. Validation Results of Android Application-Based E-Module Material Experts in Information Technology Communication Physical Education Courses PJKR Study Program

Assessment Criteria	Number	Amount Max Score	Score Achieved	Criteria
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Material Load	1,2,3	15	10	Worthy
Presentation of Material	4,5,6,7	20	15	Worthy
Language	8,9,10	15	15	Worthy
Total Score		50	40	40/50 = 80 %

Table 4. Expert Validation Results of E-Module Media Based On Android Application In Information Technology and Physical Education Communication Courses PJKR Study Program

Assessment Criteria	Number	Amount Max Score	Score Achieved	Criteria
Content	1,2,3	15	15	Very Worth It
Design	4,5,6,7,8,9,10,11,12,13,14	55	50	Worthy
Use/Presentation	15,16	10	10	Very Worth It
Language	17,18,19,20	20	20	Very Worth It
Total Score		100	95	95/100 = 95%

Table 5. Results Of Media Experts and Material Experts Validation

No.	Validator	Skor	Category
1	Materials Expert	80	Worthy
2	Media Expert	95	Very Worth It
	Amount	175	
	Average	87,5%	Very Worth It

According to table 5, the overall average for the Android Application-Based E-Module's validation in the subject area of physical education information communication technology for the PJKR study program is 87.5%. By using these standards, it can be determined that the PJKR study program designed Android Application-Based E-Module in the Physical Education Information Communication Technology Subject satisfies the validity standards in the "valid" category.

3 Discussion

The objective of the study is to create a functional Android application for the legitimate Physical Education Information Communication Technology Subject in the PJKR FIK Unimed Study Program. The Research and Development (R&D) research and development approach is employed in this study. The five steps of the ADDIE development paradigm are analysis, design, development, implementation, and evaluation. The Unimed PJKR Study Program served as the site of the research. Questionnaires are used in this study's data gathering method. A questionnaire from material and media specialists is the tool used to gather data during the Android Application-based E-Module Development process in the Physical Education Information Communication Technology Subject, PJKR FIK Unimed Study Program. Researchers conducted both qualitative and quantitative analyses of the data they had

collected. The research's qualitative data may take the form of criticism and recommendations made by professionals in the fields of materials and design.

The product was deemed appropriate for use without modification according to the 80% feasibility findings from the material specialists. 95% of the product input was eligible for use without change, according to the results of media expert evaluation. Using an Android application makes one program that may be used to bridge the implementation of e-modules more appealing, in the view of Murtiwiayati and Glen Lauren (2013).

The overall average for the Android Application-Based E-Module validation in the Physical Education Information Communication Technology Subject of the PJKR study program is 87.5%. According to Suherman (2018), the physical education information communication technology course necessitates student participation in the process of thinking and looking for an understanding of things, analyzing and constructing knowledge into new knowledge for students. The goal of this course is for students to acquire knowledge, abilities, and attitudes about how to plan lessons, develop, manage classes, utilize, and assess learning processes and resources in physical education learning..

4 Conclusion

The validation of Android application-based products in the Physical Education Information Communication Technology Subject, PJKR FIK Unimed Study Program is valid and appropriate for use in lectures, according to the research's findings and analysis. 80% of the findings of the material experts' feasibility studies indicated that the product could be used without modification. Results of the validation by media experts indicated that 95% of the product input may be used without modification. The overall average for the Android Application-Based E-Module's validation in the PJKR study program's Physical Education Information Communication Technology Subject is 87.5%. We may draw the conclusion that the Android application-based product in the PJKR FIK Unimed Study Program's Physical Education Information Communication Technology Subject is valid.

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