

Development of Android Digibook Project Learning– Based on Research Method Subject in Guidance and Counseling Department of UNIMED

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Abstract. This study aims to create a digital textbook based on project-based learning in research methods courses. Digital Book (Digibook) Android is a digital book in android format that can be accessed using a smartphone. The research method used is Research and Development (R&D) using the ADDIE model. The development stage is the stage of manufacture of digibook android based in accordance with the design plan. Media experts give excellent ratings for throughout the item with the total amount of 82.50 with an average value is 4.10 and the results of the calculation for the item throughout the expert assessment of as many as 20 items of material obtained a total of 86 ratings with an average value is 4.30 so that it can be concluded that the application and the material is very viable for use in learning English. This application is tested on 30 students of the 1st half of Guidance and Counseling Department of the Faculty of Education Unimed. The results of calculations throughout the student questionnaire responses obtained 87.15%% percentage of aspects of good feelings, 86.57% of the student's interest aspects of the use of the application, 85.85% of aspects of attention, and 88.24% of aspects of student involvement. Viewed from a fourth aspect of the students showed a very positive response, so it can be seen that the interest of students towards Digibook Android based on research methodology subject.

Keywords: Digital Book, Android, Research Methodology

1 Introduction

The development of technology in the world of education in the 4.0 revolution era has changed the conventional learning system into a modern learning system, demanding innovations in the delivery of learning. Then this challenge makes changes that occur in the learning environment and helps the movement of the learning process, especially in lessons. According to Akhbar Galang M, et al (2015) the use of Science and Technology (IPTEK) in the world of education is something that is considered very important for changes in the learning system. Science and technology have changed the conventional learning system into a modern learning system based on information and communication technology (Information and Communication Technology [ICT]). Some of the technologies used as learning media are computers and smartphones with internet.

Preliminary studies have been carried out by researchers through online interviews with students majoring in Guidance and Counseling, Faculty of Education, State University of Medan. The researchers conducted these interviews to find out the obstacles and difficulties

they experienced during the distance learning (online) they were undergoing during the covid 19 pandemic. Based on the interviews and observations that the researchers had conducted, several conclusions were drawn, namely, (1) In this era of the covid 19 pandemic, students find it difficult to find learning resources that match what they need because of the absence of activities in each library (2) Students need an interesting and easy textbook to carry whenever and wherever (3) Students need teaching materials that encourage them to learn independently.

In this digital era, technology is not only used as a medium for implementing learning but is also used as a medium for learning tools, one of which is the Digibook or digital book . Digibook is made using various android-based e-PUB maker software. One of them is the Sigil ePUB-Maker Software, which is software used to create android-based digital books. The advantage of Sigil ePUB-Maker compared to other software is that Sigil ePUB-Maker can be accessed without the internet and in it can be inserted images, videos, and audio and can be saved in apk format to be shared easily via android devices. This can facilitate the process of providing teaching materials to students for the smooth learning process.

There are several similar studies that have been carried out before including research conducted by Ebied and Rahman (2015) with the title "The Effect of Interactive Ebook on Students Achievement at Najran University in Computer in Education Course" which states that students who learn to use e-books interactive, can increase learning motivation and develop academic achievement compared to students who learn to use textbooks. Another study from Kwang and Raied (2012) entitled " The Design and Development of Mobile Collaborative Learning Application Using " which proves that learning using mobile phones provides convenience because learning can be done anywhere and anytime. Learning with mobile phones using android applications can make students actively build their own thinking in learning.

One approach to contextual learning is project-based learning (PBL). According to Loyens et al (2015) PBL is a distinctive form and is a research-based cooperative learning characterized by active student involvement and comparative learning. Kokotsaki et al., (2016) said that students who study through the PBL method usually work together to solve certain problems, develop products for certain targets, and then evaluate projects and also evaluate the development process.

Based on the background and explanation above, the researcher wants to conduct research entitled " Development of Android Digibook Based on Project Based Learning in Research Methods Course in the Guidance and Counseling Department of Unimed". Some of the questions that will be answered in this research are: (1) What is the form of the Android Digibook in the Developed Research Methods course based on the Project Based Learning Model ? and (2) What is the Student Interest in the Developed Android Digibook?.

2. Literature review

Digibook (Digital Book)

Digital book is a book published in digital form. Digital books come in many different formats. To be able to read digital books, an ebook reader is needed on a computer or smartphone. According to Margolin (2013) a digital book which is often known as an e-book is a publication consisting of text, images, and sound published in digital form that can be read on computers or other electronic devices. E-books or digital books have various types of file formats, including PDF (Portable Digital Format) created by Adobe, EPUB (Electronic Publication" which is a format formed by the Open Forum of the International Digital Publishing Forum (IDPF), (AZW (Amazon) Word), MOBI (MobiPocket) and PRC (Product Representation Compact)) which are used by Amazon for the ebooks it sells (Online Book: Fuad

Nur, 2016:5). The other formats are JPEG (Joint Photographic Expert Group) and HTML (Hypertext). Markup Language) (Hadi A, et al: 2015). So it can be concluded that the format of a digital book does not only have one format in use, but there are more than one format to be used according to the required needs.

Android Application

According to Nasrudin Safaat (2012) android is an operating system on mobile phones that is open and based on the Linux operating system. Android can be used by anyone who wants to use it on their device. Android provides an open platform for developers to create their own applications that will be used for various mobile devices. Android according to Satyaputra and Aritonang (2014) is an operating system for smartphones and tablets. The operating system can be illustrated as a bridge between the device and its use, so that users can interact and run applications available on the device.

Project Based Learning Learning Model .

One of the innovative learning models is project-based learning, where students are focused on an actual problem that adheres to the core concepts and principles of a discipline with various activities such as information seeking, problem solving, and product creation. There are several opinions regarding the understanding of project-based learning models. Project Based Learning according to Purnawan (2007) is a systematic teaching method that involves students in learning complex knowledge and skills, authentic questions and product and task design. Then Barron Kokotsaki et al., (2016) said that students who study through the PBL method usually work together to solve certain problems, develop products for certain targets, and then evaluate projects and also evaluate the development process.

Thomas (in Wena 2009) states that project-based learning is a learning model that provides opportunities for teachers to manage learning in the classroom by involving project work. According to Clegg & Berch in (in Wena, 2009) through learning project work, students' creativity and motivation will increase. Slightly different, the concept of project-based learning expressed by Thomas and Clegg & Berch emphasizes learning as a project work, to increase students' creativity and motivation in learning. Thus, a project designed directly requires students to be active in conducting research, collecting data and information, analyzing data to designing and manufacturing products that are solutions to the problems posed.

3 Research Methods

Types of research

The type of research used is research (R&D). Sugiyono (2007) states that the development method is a method used to produce certain products and test the effectiveness of these products. This research was synthesized to develop an Android digital book product for research method courses that can be used in online learning.

Development Model

This research is a Digital book android development. The research procedure for developing Digibook Android-based adapts the ADDIE development model, which is a model that includes 5 stages including analysis, design, development, implementation and evaluation (Mulyanta & Leong, 2009).

Research Instruments

Instruments that are used in research this is a questionnaire assessment of media by using questionnaires. A questionnaire based on three main criteria of learning media according to Walker and Hess (Arsyad, 2010), namely the quality of content and objectives, instructional quality, and technical quality.

3 Result and Discussion

3.1 Development Digibook-Based Android On Research Methodology Subject For Guidance And Counseling Students.

Based on the process of implementing development research, the results of the research carried out were carried out in the following way. The stages of this research use the stages of ADDIE development, namely Analysis, Design (design), Development (manufacture), Implementation and Evaluation.

Analysis Stage

The development of this media begins with analyzing some of the necessary needs. These needs include: the selection of materials and the determination of the user (user), to be used as a reference in the development digibook android based.

a. User (user)

The target users of the Digibook developed are students of the Guidance and Counseling Department at the Faculty of Education, State University of Medan. Based on interviews with several students, it is shown that learning using mobile devices (smartphones) is very interesting for them and can help students learn independently whenever and wherever. Based on a preliminary study conducted by researchers through observations and interviews, data obtained that the average student has an Android smartphone which of course can access the Digibook that will be developed.

b. Material Needs

The content referred to in this case is the learning material for the Research Methods course. Several learning topics that have been prepared by the researcher are then shown to students, then the researcher conducts interviews. Students were asked to rate how important these topics were to them based on the needs they encountered in the lectures. The question that the researcher asked was about how important the topics that had been prepared were studied to develop students' abilities in the student Research Methods course.

Based on the interviews conducted by the researchers, it was concluded that the core material that will be included in the Android-based Research Method Learning Digibook is as follows:

- Research paradigm
- Quantitative research
- Qualitative research
- Research and development, and
- Quotations and bibliography

Furthermore, for learning materials needed by students to be displayed on the digibook application. Researchers obtained data that on average students think that audio and video media are very important media in learning Research Methods. So to annul student needs, the researchers will include several additional features such as practice questions and videos related

to research methods courses. The video presented is a video about phenomena or symptoms related to the field of guidance and counseling which will then be used as material for student projects in these courses.

Product Design Phase (Design).

The Digibook product design in this study was divided into two parts, namely the development of project-based research method teaching materials and the development of the Android-based digibook research method teaching materials.

a. Teaching Development of Project Based Learning Research Methods

At this stage the researcher develops teaching materials based on the components contained in the project-based learning model, namely:

- **Authenticity.** The project that will be carried out by students in the teaching materials of the research method courses developed in this research is related to real-world problems which of course are related to the Guidance and Counseling field. In this component, students are guided to be able to overcome problems or questions that have meaning for students, involve problems or questions that are actually experienced by students in the real world, ask students to produce something that has personal and or social value.
- **Adherence to academic values (academic rigor).** In the developed teaching materials, students are challenged to work on a project using the inquiry method
- **Relationship with experts (expert relationship).** The power of project-based learning lies in the involvement of experts or experts outside the classroom. In the teaching materials developed there are items that require students to be able to get in touch with experts to discuss matters relating to the project to be completed,
- **Active research (active exploration).** Each material and sub-material contained in the teaching materials is designed to encourage students to be active in research, explore, analyze and present project results,

In making these teaching materials, the researchers conducted discussions and asked the opinion of their lecturers who were considered experts in the field of teaching materials and learning models.

• Initial Design of Digibook Products

After the stage of analysis and manufacture of project-based learning -based textbooks, the next stage is to design a product in the form of a digibook. The initial design of the Android -based Digibook application product is divided into 2 designs, namely the design for the front-end, namely the design for the user (students who take the Research Methods course) and the back-end design, namely the design for administrators, namely lecturers so that they can update their digibook at any time. developed.

• Digibook Display Design.

1) Initial View of the Application

The initial view of the application (login) is the display after the application is accessed by the user. In the display there are two fields that must be filled in by the user, namely the username and password . The form of the display is shown in Figure 1 below.

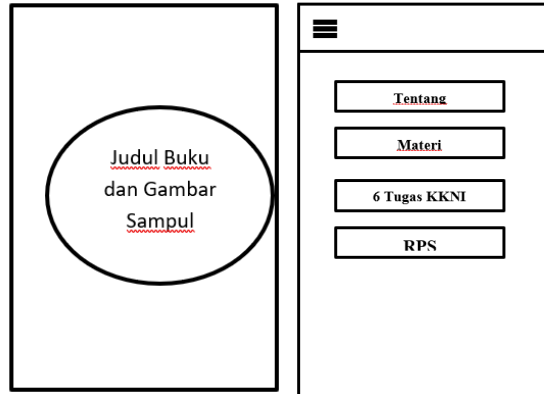


Fig 1. Initial Display Design (Login Menu) and Menu Display Design

Students who are registered as participants in the Research Methods course will be given a password by the lecturer who also acts as an admin on this Digibook.

2) Front View Design

The front screen is the display that appears after the student has passed the Login stage. On the front screen you will see a menu. In the first menu "About" is a menu that displays about Digibook products, the second menu "Materials" is a menu that contains materials and sub-materials that will be discussed in lecture activities, the third menu "6 assignments" is a menu that will display sub menu items 6 tasks of the KKNi. The fourth menu is the RPS menu. The initial design of the digibook menu display can be seen in Figure 1 above.

3) "Home" Display Design

The "Home" menu is a menu that contains things related to Digibooks, such as; 1) The name of the Digibook, 2) the purpose of the Digibook, 3) how to use the Digibook.

4) Material Display Design contained in the "Home" sub menu.

The material menu is a display in which there are various kinds of material that are in accordance with the teaching material in the online version of the Research Methods course, both in written form and in the form of images and videos. This menu also contains RPS (Lesson Plan) and PowerPoint. The material display design is shown in Figure 3 below.

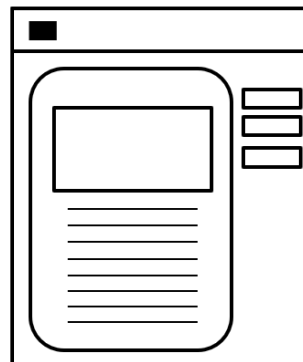


Fig 2. Material Display Design

5) Six Task View Design

In addition to supporting the blended learning model, this Digibook is also designed to support 6 tasks determined by the KKNi curriculum applicable at Medan State University. On the 6-task menu there is a detailed explanation display of 6 tasks that students must do. The display design is shown in Figure 4 below.

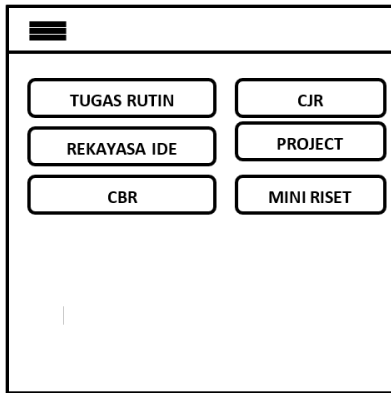


Fig 4. Menu Display Design 6 KKNi Tasks

Product Development Phase (Development).

The development stage is the stage of making Digibook. In making this Digibook, it is adjusted to the design. First, the materials used to fill the content in this Digibook are collected, such as images, videos, and animations. These materials are obtained by using electronic books, Google and YouTube. After all the materials have been collected, the next step is to make the Android version of the Digibook using the Sigli software. The display of Digibook android-based after developed is shown in Figure 5 below.

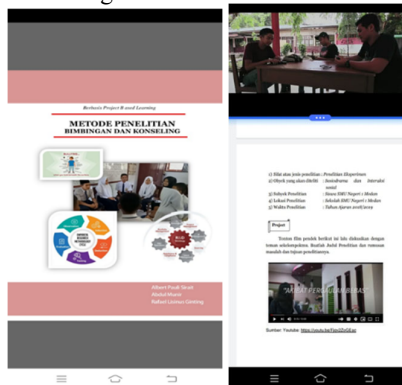


Fig 5. The Display of Digibook

Implementation Phase (Implementation)

The implementation phase contains product trials that have been developed to a number of respondents. In the implementation, the researcher makes a learning scenario with the Project Based Learning model. The implementation of Project Based Learning consists of 4 meetings, namely 2 face-to-face meetings and 2 online meetings using an android application for Research

Method lectures. During the trial, the researcher asked 2 experts, namely an expert on teaching materials, media and learning models and a material expert to provide an assessment of the Digibook product.

a. Expert Validation

Before the product was used, the researcher asked for the assessment of the Research Methods Material Expert and the Digital-based Learning Media Expert.

1) Media Expert Assessment Results

Media expert give excellent ratings for the item throughout the total number of 82.50 with an average value is 4.10. Based on the total and average values, it can be concluded that the Android Digibook "BK Research Method" is feasible to use in learning with the blended model.

2) Material Expert Assessment Results

Material experts are respondents who assess the feasibility of the material content contained in the developed digibook media. In this study, the material expert that the author appointed is an expert who really understands how to design interesting learning based on the material and sub-materials in the Research Methods course and has a scientific background related to learning Research Methods in the Guidance and Counseling field and understands models. learning model. The material expert also gave a very good assessment of the material that the researcher had displayed on the product. The results of the calculation for all items in the material assessment, namely as many as 20 assessment items, obtained a total of 86 with an average value of 4.30. Based on the total and average values, it can be concluded that the material contained in the android Digibook " Research Method for Guidance and Counselling" based on project based learning is feasible to use in learning.

3) Application of Digibook in Research Method Learning .

Project Based Learning Research Methods course learning is a model used by researchers to find out how to apply Android-based English for Counseling application products in the teaching and learning process. The scenario determined by the researcher is that there are 2 face - to - face learning and 2 online learning sessions. At meetings 1 and 2 (face-to-face learning) the material studied includes the use of to be and subjects and objects in the Research Method. Then at the 3rd and 4th meetings (online learning) the material studied is present tenses and past tenses in research methods. There are 30 students who take part in this lesson. The android application has been installed on the cellphones of the 30 students.

b. Student Interest in Learning Using Digibook,

Students are asked to fill a questionnaire responses to pass judgment on each indicator by affixing a check mark (√) in the range of answers to figures that are considered appropriate. There are 20 statement items that must be filled out by students. The results of the student response questionnaire obtained a percentage of 87.15% on aspects of feeling happy, 86.57% on aspects of student interest in using applications, 85.85% on aspects of attention, and 88.24% on aspects of student involvement. Looking at the four aspects, it shows a very positive student response, so it can be seen that students' interest in learning Research Methods using Android Digibooks is based on project bases learning.

Evaluation Stage

The evaluation was carried out in order to improve the appearance and menu of the Android Digibook. In this study, suggestions and criticisms from respondents are summarized which are divided into 3 aspects, namely, software engineering, learning design and visual communication.

The researcher conducted a preliminary study through online interviews with students majoring in Guidance and Counseling, Faculty of Education, State University of Medan. The researchers conducted these interviews to find out the obstacles and difficulties they experienced during the distance learning (online) they were undergoing during the covid 19 pandemic. Based on the interviews and observations that the researchers had conducted, several conclusions were drawn, namely; (1) In this era of the covid 19 pandemic, students find it difficult to find learning resources that match what they need because of the absence of activities in each library (2) Students need an interesting and easy textbook to carry whenever and wherever (3) Students need teaching materials that encourage them to learn independently.

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Some of the questions that will be answered in this research are: (1) What is the form of the Android Digibook in the Developed Research Methods course based on the Project Based Learning Model and (2) What is the Student Interest in the Developed Android Digibook?.

The development of this Digibook material begins with analyzing some of the necessary requirements. These needs include: the selection of materials and the determination of the user. The target users of the Digibook developed are students of the Guidance and Counseling Department at the Faculty of Education, State University of Medan.

After the analysis stage, the next stage is to make a product design in the form of an Android Digibook. The next step is product development where the initial design of the display that has been determined is then visualized in the form of an image using Sigil ePUB-Maker.

The implementation phase contains product trials that have been developed to a number of respondents. In the implementation, the researcher makes a learning scenario with the Project Based Learning model . The learning implementation consists of 4 online meetings using the Zoom web meeting for Research Method lectures and Digibook as teaching materials. During the trial, the researcher asked 2 experts, namely a media expert and a material expert to provide an assessment of the application product.

Media experts gave a very good rating for all items with a total of 82.50 with an average score of 4.10 so that it was concluded that the application was very feasible to use.

The results of calculations for all items in the assessment of material experts, namely as many as 20 assessment items, obtained a total of 86 with an average value of 4.30. Based on the total and average scores, it can be concluded that the material contained in the Digibook is suitable for use in teaching Research Methods courses.

To find out the interest of the students towards learning is most students are asked to fill a questionnaire interest. The results of the calculation of the response questionnaire for all students obtained a percentage of 87.15% on aspects of feeling happy, 86.57% on aspects of student interest in using applications, 85.85% on aspects of attention, and 88.24% on aspects of student involvement. Looking at the four aspects, the students' responses are very positive, so it can be seen that students' interest in learning Research Methods using Project based learning Android-based Digibooks is very high.

4 Conclusion

Lecturers should develop portable and attractive teaching materials and it is necessary to innovate in online learning (M-Learning) which is guided by techniques and teaching approaches in the subjects taught and lecturers should carry out learning with the Project Based Learning model because it is based on the observations of researchers. The Project Based Learning model and the use of online learning media are very effective and good for increasing student motivation and learning outcomes, especially in learning during the COVID-19 pandemic.

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