

UTILIZATION OF ANDROID TECHNOLOGY AS AN ALTERNATIVE MEDIA INFORMATION SYSTEM FOR HYBRID-BASED SCHOOL EXAMS

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Abstract

The rapid development of information technology on smartphones supported by Android technology can make it easier for users to access all information anywhere and anytime. Currently, many educational institutions use Android as a learning tool and information media as well as various implementations of online student assessments. One of them is the use of CBT (Computer Based Test) facilities. SMK Ma'arif 1 Sendangagung is located in the countryside far from the city centre or district. Implementing student exams/assessments at these school are still manual using paper which has many shortcomings. For example, the leakage of questions in the preparation of exam questions, duplicating and distributing question texts, cheating during the exam, and needing a lot of time to scan answer sheets, require a lot of money, energy, and time. Therefore, an android-based exam application system is needed to make it easier for teachers and students to carry out school exams and semester assessments in a hybrid manner. This research aims to design an Android-based exam application system to make it easier for teachers and students to take grades on students. The use of this technology also aims to make Ma'arif 1 Sendangagung Vocational School more advanced with the application of Android technology. The stages of the research method are first data collection, second data analysis, third application design, and fourth result report. The results of this study are an Android School Examination Application at Maarif 1 Sendangagung Vocational School. The application was built using Delphi EMBARCADERO, Android SDK (Software Development Kit), Android Developer Tools (ADT), and Android Operating System: Froyo 2.2 with Google API SDK 25.2.5, Java, XML. This School Exam Android application can save time in the process of assessing student exam results and make it easier to check student scores.

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INTRODUCTION

Information technology has supported various life activities in the economic, educational, entertainment, and other fields. In the era of globalization 4.0, the government must be demanded to be able to keep abreast of developments in technology according to the times[1]. The rapid development of information technology on mobile phones, especially smartphones that are supported by Internet connections and Android technology, can make it easier for users to access all information anywhere and anytime. An

example of the development of information technology on smartphones is the Hybrid Application.

Hybrid apps are mobile apps built using web programming languages with the help of native SDKs from Android, iOS, and other platforms. If we want to create a mobile application that can later run on various platforms, then we can choose a hybrid application currently, several educational institutions have used applications on Android as a learning tool and information media as well as various online student

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assessments. One of them is the use of the CBT (Computer Based Test) facility, which is a test application that is carried out using a computer via the internet or intranet access with scoring carried out automatically by the computer. CBT is designed to facilitate student assessment and correcting of student work by teachers online[2].

The hybrid learning model is a combination of face-to-face learning with online learning or e-learning. This combination learning aims to combine the characteristics of internet-based learning models, namely time efficiency, low cost, and the ease of students accessing learning materials anytime. Then the nature of the face-to-face learning model or conventional model, namely helping students to learn the learning material that has just been presented, as well as interacting with other students and teachers in the classroom.

SMK Ma'arif 1 Sendang Agung is a Vocational High School which is located at Jln. Purawijaya No. 5 Sendangasri, Sendangagung District, Central Lampung Regency, this school has areas of expertise, namely Office Automation and Governance (OTKP) and Computer and Network Engineering (TKJ). Ma'arif 1 Sendangagung Vocational School is located in the countryside far from the city or district centre, the implementation of student exams/assessments is still manual using paper which has many deficiencies, including the risk of leaks in preparing exam questions, duplicating and distributing questions papers, cheating during exam implementation, steps need to be taken answer sheet scanning, requires a lot of money, effort and time.

Therefore, an Android-based exam application system is needed to make it easier for teachers and students to carry out school exams and semester assessments. This study aims to design an application system by utilizing Android technology as an alternative to Hybrid Learning-based school exams to make it easier for teachers and students to take grades for students in the New Normal period and supporting government regulations in limiting face-to-face activities to avoid the current spread of Covid-19, has developed into other variants.

The use of this technology also aims to make Ma'arif 1 Sendangagung Vocational

School more advanced so that it can realize the motto of Ma'arif 1 Sendangagung Vocational School as a Capable Vocational School and Great Vocational School.

Application

The application is a ready-to-use program that can be used to execute commands from the user of the application to get more accurate results according to the purpose of making the application. According to Syamsu Rizal, et al (2014) Application is the use in a computer device, instructions (instructions) or statements (statements) that are arranged in such a way that the computer can process input (input) into output (output)[3]. According to Jogiyanto, (2001) Application is a program that contains commands to perform data processing. Jogiyanto also explained that the notion of application, in general, is a process from a manual method that is transformed into a computer by creating a system or program so that data is processed more efficiently and optimally"[4].

School exams

School exams are activities to measure the achievement of student competencies carried out by educational units to gain recognition for learning achievements and are one of the graduation requirements from educational units.

School exams can take the form of:

1. Portfolio
2. Assignment
3. Written or online tests, and
4. Other forms of activity determined by the Education Unit are by the competencies measured based on the National Education Standards[5].

Android

Android is the name of the operating system used on many smartphones and tablets that are open and everyone can use them easily. Ariyanto (2018) states Android is a collection of software for mobile devices that includes an operating system, middleware, and the main mobile applications[6]. According to Agus Wahadyo (2013), Android is an operating system embedded in gadgets, be it cellphones, or

tablets, also now reaching digital cameras and watches[7].

SMK Ma'arif 1 Sendangagung

SMK Ma'arif 1 Sendangagung is a Vocational High School that was established on March 4, 1991, under the auspices of the Mafatikhuul Huda Islamic Boarding School Sendangasri which is located at Jln. Purawijaya No. 5 Sendangasri, Sendangagung District, Central Lampung Regency. It has two competency skills, namely Computer and Network Engineering (TKJ) and Office Automation and Governance (OTKP) with more than 400 students and 40 Educators who are competent in their respective fields.

Hybrid Application (Apk)

The internet can offer information acquisition quickly. Hybrid apps combine the advantages of web apps and native apps. Hybrid app intuition is to embed HTML5 mobile apps in native app content. Hybrid apps convert HTML5 mobile web apps into custom smartphone apps. Converting mobile web apps to native apps requires software support, such as a mobile app development framework. The advantage of hybrid applications is that the development stage is relatively easy because it uses Web technology standards. The web is a solution to the information system too[8].

Hybrid apps can run on almost any target mobile platform, which means hybrid apps can be delivered natively on the developer's target mobile platform. Distributing apps natively allows hybrid apps to access hardware features such as cameras, Wi-Fi, calendar, and files[9].

METHOD

The method of this research is developing and solving problems with Prototype. Prototype is The prototype architecture is composed of 5 modules, namely Analysis, Design, Development, Implementation, Formative Evaluation as shown in [10].

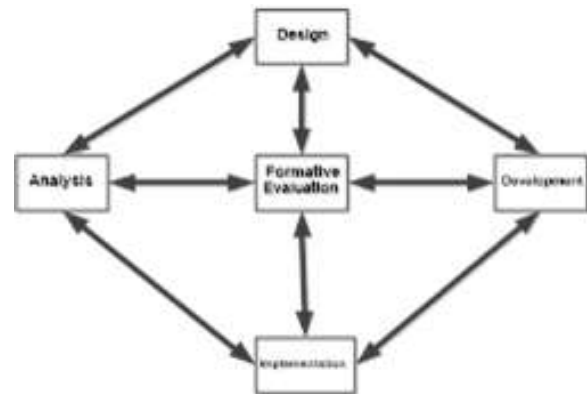


Figure 1. Prototype Stage

Note: According to the picture above, the flow of the Prototype stage is as follows:

Explanation of the research flow using the Rapid Prototyping Model:

1. The analysis is carried out to determine what components are needed to build a school exam system.
2. Then the next step is to design at this stage what is done is to design the input, process, and output systems that will be used and produced in the system.
3. The development will be carried out if the system that has been designed is following what is desired the development process can be carried out.
4. The implementation process can be carried out if the system created is running well.
5. Formative Evaluation aims to determine what must be improved from the system being built so that the system being built is more effective and efficient

RESULTS AND DISCUSSION

Currently, many educational institutions use Android as a learning tool and information media as well as various implementations of online student assessments. One of them is the use of CBT (Computer Based Test) facilities. SMK Ma'arif 1 Sendangagung is located in the countryside far from the city centre or district. Implementing student exams/assessments at these school are still manual using paper which has many shortcomings. For example, the leakage of questions in the preparation of exam questions, duplicating and distributing question texts, cheating during the exam, and needing a lot of time to scan answer sheets, require a lot of money, energy, and time. Therefore, an android-based exam application system is needed to make it easier for teachers

and students to carry out school exams and semester assessments in a hybrid manner.

System Overview

An overview of the Android-based school exam application system can be seen in the following figure:

1. Main Page



Figure 2. Main page view

2. Identity menu page



Figure 3. Identity menu display

3. Identity input page



Figure 4. Display of the identity input page

4. School exam token input page



Figure 5. Display of exam token input page

5. School exam start on page



Figure 6. Display of exam start page

6. Pages of school exam questions and answers



Figure 7. Display of exam questions and answer choices

7. Page finished



Figure 8. Display of the page finished taking the exam

8. Value status page



Figure 9. Display of value status check page

This research aims to design an Android-based exam application system to make it easier for teachers and students to take grades on students. The use of this technology also aims to make Ma'arif 1 Sendangagung Vocational School more advanced with the application of Android technology. The stages of the research method are first data collection, second data analysis, third application design, and fourth result report. The results of this study are an Android School Examination Application at Maarif 1 Sendangagung Vocational School. The application was built using Delphi EMBARCADERO, Android SDK (Software Development Kit), Android Developer Tools (ADT), and Android Operating System: Froyo 2.2 with Google API SDK 25.2.5, Java, XML. This School Exam Android application can save time in the process of assessing student exam results and make it easier to check student scores.

Discussion

This android-based school exam application uses three entities, namely:

1. Super Admin: Super admin is responsible for performing maintenance and accessing the back-end website. The maintenance in question is to add data to the system database. The data added are admin login data, question data, question

package data, admin profile data, and exam data. Procurement of schedules and joint exams can only be done through the website back-end by the super admin and admin. The Super admin can only view user data, and cannot add new user data. The super admin has the authority to add new system admins[11].

2. Administrator or admin: Administrators have the task of adding data to the system database. The data added are admin login data, question data, question package data, admin profile data, and exam data, question and answer data. Admin can only view user data, and cannot add new user data. Admin added by super admin. An admin cannot add a new system admin.

CONCLUSION

The Android School Exam application at SMK Maarif 1 Sendangagung was built using Dhelphi EBARCODERO, Android SDK (Software Development Kit), Android Developer Tools (ADT), Android Operating System: Froyo 2.2 with Google API SDK 25.2.5, Java, XML. This School Exam Android application can save time in the process of assessing student test results and make it easier when checking student scores on the server[12].

This School Exam Android application can save time in the process of assessing student test results and make it easier when checking student scores on the server.

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