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Design of the Basic Learning Module Application for Android-Based Graphic

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One of the learning tools that students may utilise efficiently and independently is the usage of modules as learning media. An Android-based platform was used to create the learning module application. One of the subjects for class X (ten, senior high school) multimedia is basic graphic design. The creation of an Android-based learning module application for basic graphic design is the aim of this study. This application method was created utilising the Android Studio IDE and the Java programming language employing a prototyping model methodology. The construction of applications connected to student lessons with learning material and a selection of practise questions that students may work on is one of the features of the Android application for students and teachers. E-module applications, often known as electronic learning modules, are Android applications that may be created. The output of this research is a learning application with menus for syllabus, lesson plans, materials, learning videos, practise questions, search resources, and about that can be used to learn Basic Graphic Design courses. It is envisaged that the existence of this application would enhance students' comprehension of Basic Graphic Design and advance their academic progress.

Keywords: Module, Basic Graphic Design, Waterfall, Android, Learning.

1. Introduction

The fast development of the digital era in the present has actually benefited people worldwide by offering service ease and limitless coverage. It has aided many people in their employment in the digital age, especially those who utilise cellphones to promote sophisticated and high-quality education. The ability to study anywhere and at any time is made feasible by the current

advancements in information and communication technologies, such as Android-based learning [1]. The usage of smartphones with the Android operating system, which displays learning applications as electronic module apps, is one of the supporting technologies in the field of education.For smartphones and tablets, there is an operating system called Android. The operating system may be viewed as a conduit that connects the user and the device, enabling interaction and usage of the device's apps.[2]

For both students and teachers, using the Android app during the teaching and learning process is crucial. Making student learning applications with study materials and a selection of practise problems for students to work on is one of the tasks performed by the Android learning application. The e-module application, often known as a learning module, is one of the Android applications that may be created for learning.

The creation of instructional materials in the form of modules is currently a very urgent necessity, thus modules are one of the best ways to increase the calibre of student learning [3]. Therefore, the teachers intend to provide learning modules that are in line with the most recent curricula and are simple for anybody to access, wherever. In this instance, the Class X Multimedia Graphic Design Learning Module was developed and constructed as an Android application.

Research conducted by IDC in 2017 showed that the Android operating system dominates the global market. As a result, Android ranks first in the world with a market share of 83.4%. iOS is in second place with a percentage of 15.4% higher than the previous 11.6%. Windows Phone occupies the third position with a share of 0.8 % . Then other operating systems follow 0.4 %

For class X students, Basic graphic design is a required topic with a multimedia emphasis. Power Point and printed books are still employed as the primary teaching tools in this course. Thus, the instructor requires media support to help pupils understand and retain the abstract subject by making it concrete. The developer delivers a module application as a learning medium by mixing words, graphics, and sound videos, which are neatly packed in the hands of students, in order to make the learning process enjoyable.

2. Research Methodology

The research method used in this study is the waterfall method. The waterfall method is a systematic and sequential model in system development [4]. The waterfall method includes the following steps:

- User’s needs analysis

Services, restrictions, and system goals are established in cooperation with the user and serve as system requirements that will subsequently be described in detail.

- System and software design

Hardware and software are both necessary for system design in order to create the overall system architecture. Finding and describing the abstractions of the fundamental software systems and their interactions is the goal of software design.

- Implementation and Unit Testing

At this stage, programme lines or programme units are used to carry out the software design. The test involves making sure that each unit adheres to its standards.

- System testing and integration

To ascertain if this is the case in accordance with the software requirements or not, units or programmes are merged and tested as a whole system. The programme can be sent to the customer after testing.

- Operation and Maintenance

This phase lasts the longest, albeit not always. installed and regularly utilized system. As new requirements emerge, maintenance includes fixing problems that did not appear in the previous stage, expanding the deployment of system units, and enhancing system services. The waterfall approach may take the shape of a figure set up as in the illustration below:

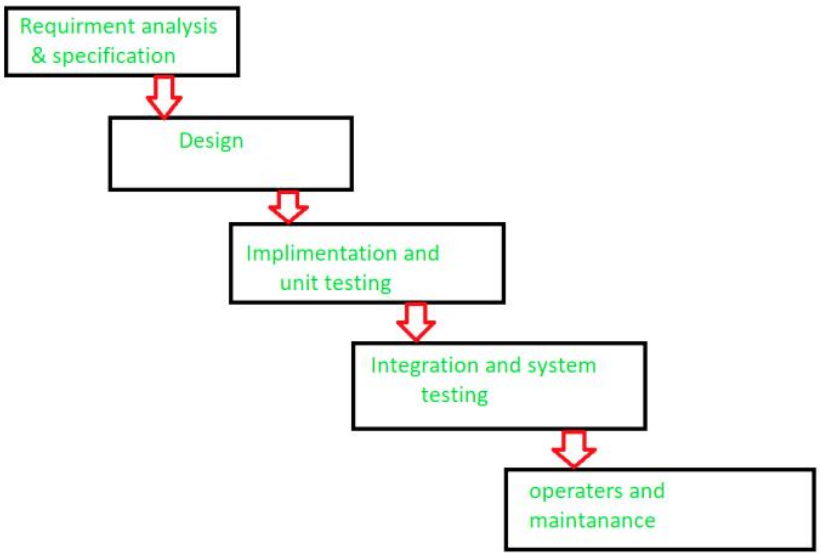

Figure 1. Waterfall Method Ilustration

3. Results and Discussion

Analysis System

Equations should be placed at the center of the line and provided consecutively with equation numbers in parentheses flushed to the right margin, as in (1). The use of Microsoft Equation Editor or MathType is preferred.

The analysis system consists of a collection of linked and communicative menus. Additionally, there is a relationship between objects that may be viewed as one whole and are intended to help a system [5] achieve its goals.

Preparation and step in analysis system are the same as those done in project definition system

and developed in stage planning system, respectively.

- Analysis system that is presently running

In the teaching and learning process Which First Teacher explain lesson with using power point media . The second is teacher give exercise daily to student And in checked by the teacher and students told to evaluate return lesson in House.

- Analysis system that suggested

A learning system for Basic Graphic Design class X can be suggested based on the problem analysis that was discovered in order to facilitate the learning process and provide resources and teaching modules. A system has been presented in which the author presents content based on the syllabus and plans for learning, planning, and creating module-based Android applications, each of which contains modules for the study of Basic Graphic Design and is also furnished with questions and the answers to those questions.

Charts with a flow that outlines the stages to solve an issue are called flowmaps. A flowmap is a visual representation of an algorithm [6] . System flowmaps, which display the order of system processes by displaying input, output media tools, and different types of storage media in data processing, and Programme flowmaps, which display the sequence of instructions to solve problems in a programme[7] , are the two types of flowmaps that describe computer processes. The system's planned appearance flow folder follows as shown in figure 2.

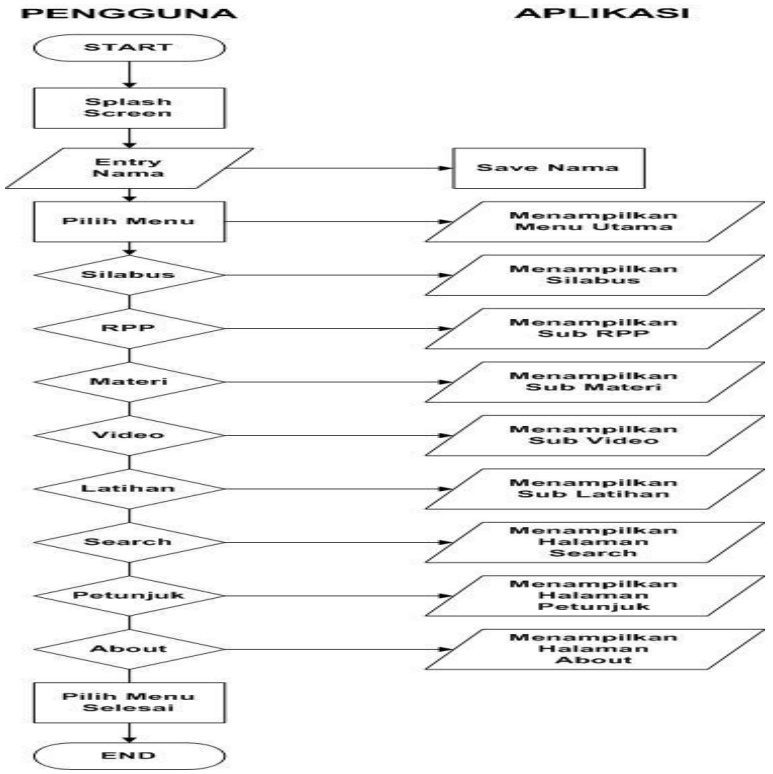

Figure 2. Waterfall Method Ilustration

Design System

Finished design system for describing, planning, and making a sketch or arrangement of some of its pieces into a unified and useful entity. System design results from the transfer of analysis into planning that will then be put into action. On the design of the system in the Java application that was created using IDEA Android Studio.

- Use case

Use case diagrams depict the system from the perspective of the system's user, hence they are more focused on the functionality that is present in the system than they are on the flow or order of events [8]. In order to define functional requirements for systems or applications, use case diagrams are frequently utilised in software or application development methodologies. On Figure. 3, you can view use case diagrams for the Graphic Design Basic study module.

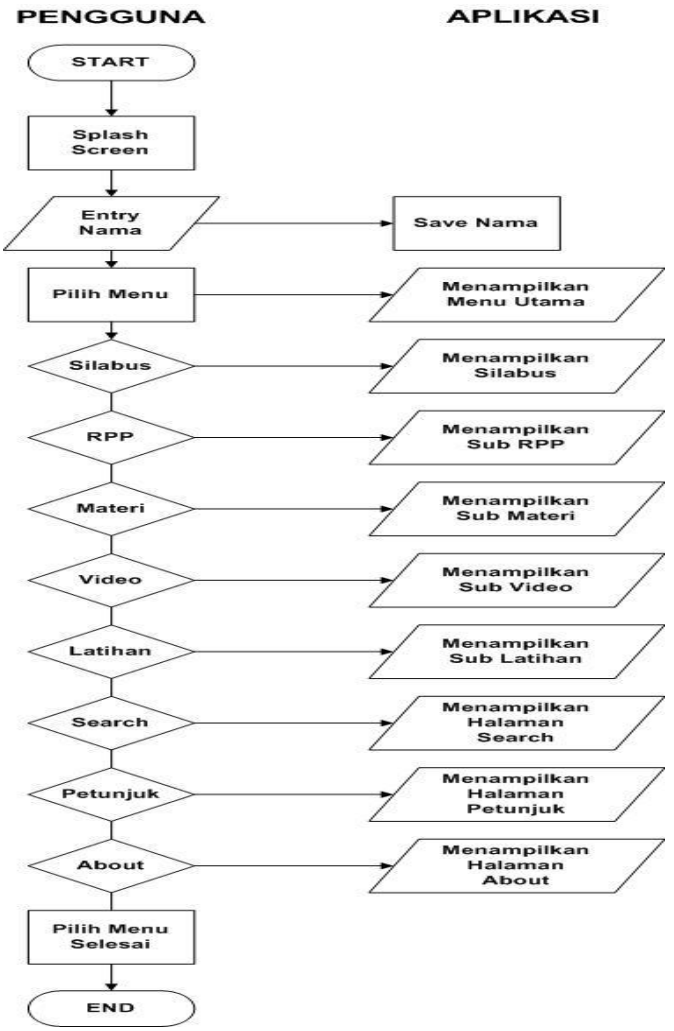

Figure 3. Waterfall Method Illustration

- Activity Diagram

A workflow or activity diagram for a system or program is one in which the user accesses the material menu at the beginning, in particular, before being led to the next menu that the user must understand.

A sequence of flows and activities that explain additional activities, such as use cases, are described in activity Figure 4 [9].

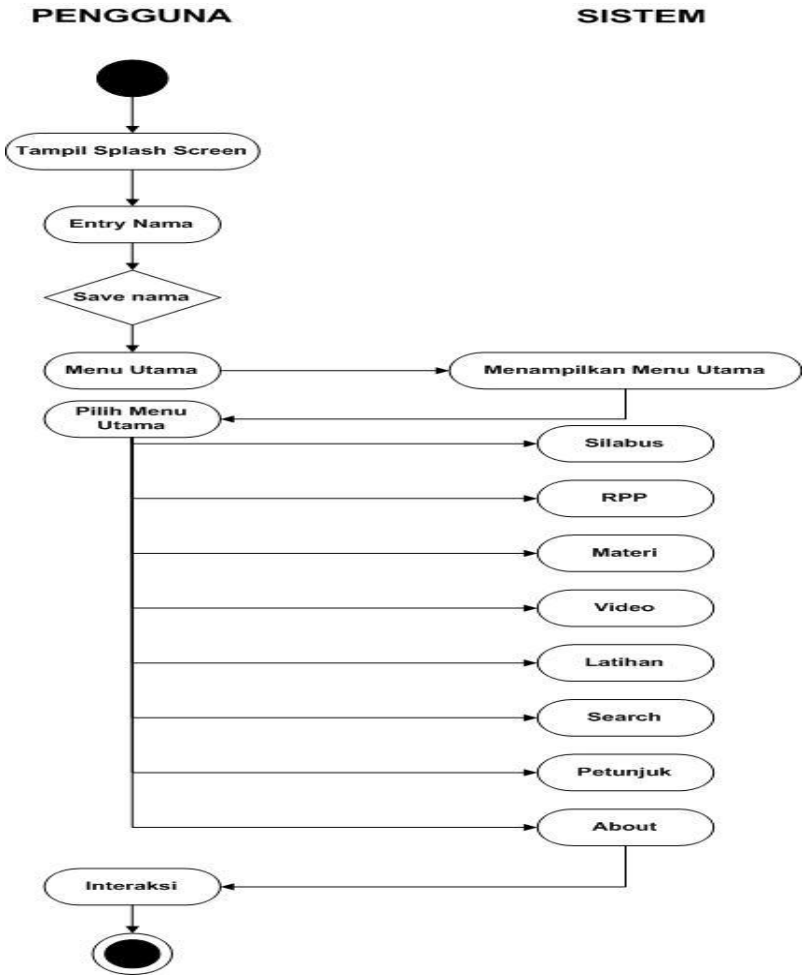

Figure.4. Activity Diagram

On application on diagram activity Beginning with the user entering their name, the Basic Graphic Design learning module continues with the user being able to utilize menus on apps that are organized systematically and clearly for learning.

Unit Testing and Implementation

Implementation and unit testing are used in the form of the Results application design appearance, which is created as a learning module application interface. Here is the appearance

design that realizes the process planning system. The user and application interact during the application design stage. The following explanation may be used to describe how interactive multimedia learning mobile applications seem in terms of results design.

- Splashscreen Page

When an application is opened, the splashscreen, which displays the application's logo before the user enters the main page, appears. Short-term design completed during application installation. Process of incorporating coding into display design using online programmes and configurable splash intervals. The data type integer[10] is used to set the splash interval variable. The splash screen display is seen in the following figura 5:

Figura. 5. Splashscreen Display

- Name Input Display

When prompted, ‘Enter Your Name’ the user's name has to be entered specifically before the application can begin to run. The application's name will display at the top of the main menu if the user uses the function from inputs, and another function while performing exercises. To know, the user's name will appear. How many points were earned while exercising?

Figura 6. ‘Enter Your Name' Display

- Home Display

The appearance that follows the ‘Enter your name’ display is the ‘Home’ page. This page serves as the primary window through which the application's menus may be seen, and it features the user's name previously entered. ‘home'display can bee seen on figura 7 below:

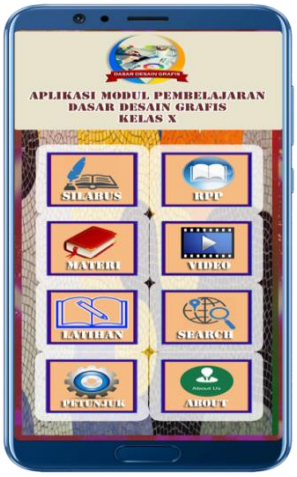

Figura. 7. Home Display

- Syllabus Display

The syllabus page serves as a lesson plan for a subject and lists learning objectives, competence standards, fundamental competencies, learning topics, and indications of competency success for assessment. This syllabus serves as a roadmap before the lesson plan. Therefore, there must be a syllabus before there is a lesson plan and learning material. To make things simpler, the syllabus page is coloured blue because the computer system is the same shade of blue. As seen in figure 8.

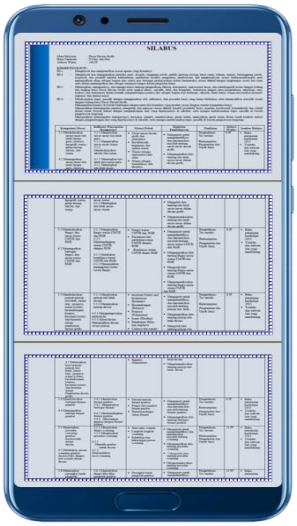

Figure 8. Syllabus Displas

- Lesson Plan (RPP) display

The RPP menu display is a screen that appears when the RRP menu is clicked. This is the main displays 'RPP' menu.

Figure 9. RPP Menu Display.

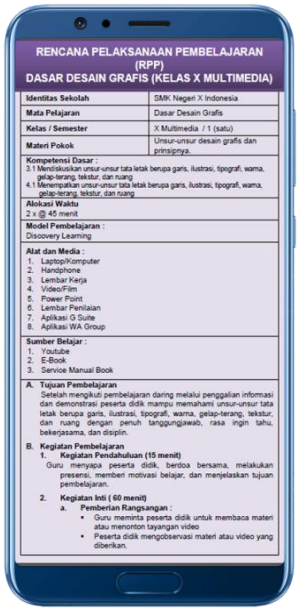

Figure 10. RPP Details Menu

A logical if is triggered when the user hits the menu button, and its goal is to verify the boolean value that is used as the access key to open the menu. The chosen menu can be executed and details can be seen if key access is received.

- Material and Module Menu Diplay

When a user clicks on a module menu, the current view is displayed. There are a number of module menus on the module menu, and each KD has a separate submenu that is divided by the material chapter and its subsequent module menu display.

There are four buttons or chapters in the Display menu of this module, and each chapter has a variety of materials.

Figure 11. Sub Menu Module.

Figure 12. Material Display

When a user presses a button, a logical if checks the boolean value that is used as the access key to open the module submenu. Upon key access acceptance, the selected menu can be run.

- Videos Menu Display

The video menu is shown as a page that appears on stage when you click it. The primary way to navigate through all of the system's videos is on this page. Figure 13 shows a display of videos menu:

Figura 13 Videos Menu

After the user chooses one of the menu options from the video menu, a page called the video detail view will emerge. The following image, figura 14, shows the video detail display:

Figura 14. Videos Details Display

- Exercise Menu

The display menu for exercise is the page that appears when the user selects the 'exercise' menu from the home menu. The principal view to access all exercises featured in the system application is the display of exercise menu. There are also four menu options for the exercise display. The exercise menu display is seen in figura 15 below:

Figure 15. Exercise Menu.

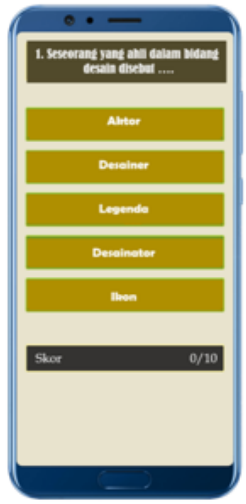

Figure 16. Exercise Details Display

After the user chooses one menu item from the exercise menu, the appearance details of the exercise will be displayed. There are 10 thread questions for each KD.

- After the user has done answering all of the questions in the exercise, a page displaying the results will appear. Page This will show the score and keep track of it. rating scale The system will keep the greatest score, and if every single answer is accurate, it will be worth 1 (one).

System Testing and Integration

The system testing and integration step is conducted to make sure that each function is completely functional, produces the desired outputs, and checks for system problems [1].

Based on the outcomes of black box testing performed on 15 smartphones, it was determined that the proposed application's functionalities operate with a 100% success rate. The table below contains the test results that were performed:

Table 1. Results of Black Box Testing for Smartphone Applications

No	Respondents	Level of success
1	**Smartphone 1**	**100%**
2	**Smartphone 2**	**100%**
3	**Smartphone 3**	**100%**
4	**Smartphone 4**	**100%**
5	**Smartphone 5**	**100%**
6	**Smartphone 6**	**100%**
7	**Smartphone 7**	**100%**
8	**Smartphone 8**	**100%**
9	**Smartphone 9**	**100%**
10	**Smartphone 10**	**100%**
	Average	**100%**

Android-based graphic design basic module application tests can be done in two ways :

- Android smartphones

Android smartphone is used because it is currently widely used. The Android version used is version 5.0 (lollipop).

- Emulators

The emulator or software used to run this application is the same as Android. The emulator used in the test is Android Studio's default AVD.

Operation and Maintenance

In order to maintain the Android-based graphic design basic module application, defects that were not discovered in the previous stage must be fixed, the system unit's implementation must be improved, and the service system must be improved in response to new needs. The way the fundamental Android visual design module application functions demonstrates how well and how easily this module application functions.

4. Conclusion

Learning Basic Graphic Design on Android-based devices may be concluded as follows based on the design of media applications:

- Instructional Design Get Up Application Media-based mobile applications may be created using Java programming with IDEA Android Studio.

- Using libraries Share Preferences to process and store data on design start up learning module applications for Android is possible.

- The learning module application was created for SMK students for their basic graphic design course.

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