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Design and Build a Child's Learning Room Application, in Increasing Learning Motivation Based on Android

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ABSTRACT

Millennials are often associated with the term “kids *zaman* now” or "children of today." If we associate today's children with previous habits, then we will find different things there. It affects their motivation to study at school. While teaching in schools still uses a conventional model, better known as Teacher-Centered Learning (TCL), the model is boring for today's students. As a result, many students today find it challenging to understand the lessons learned at school, and arriving at their homes is again preoccupied with their gadgets and forgetting the subject matter learned in school. Children's Learning Room application ranging from early childhood to elementary and junior high school students can provide a pleasant atmosphere in the child's learning process; besides, this App can be played without any difficulty by the child in its use. At the app creation stage, there are three stages of testing: functional testing, device testing, and user interest testing. From due diligence using questionnaires from 30 respondents from three professions, namely students, teachers, and parents of students with 12 questions asked on the questionnaire, most respondents agreed, or positive responses got 95.4% of the responses strongly agreed. It can be said that this Children's Learning Room Application is suitable for early childhood to elementary school children computer technology.

1. Introduction

The development of gadget technology, such as smartphones and laptops, makes it easier for people to use the internet to get all their needs online. The generation that utilizes ICT is often named after millennials. Wikipedia defines millennials as young people born between the 1980s and 2000s, where the modern world and advanced technology were introduced to the public. Millennials are often associated with the term “kids *zaman* now” or "children of today." In his writing, Fredy Manuareng stipulates that the word “kids *zaman* now” or "children of today" describes children's state today. If we associate today's children's habits with the previous one, we will find different things there.

This affects their learning motivation at school. Meanwhile, teaching in schools still uses a conventional model, better known as teacher-centered learning (TCL), so that the model is considered boring for today's students. As a result, many students today find it challenging to understand the lessons learned in school, and their homes are again busy with their gadgets and forget about the subject matter that has been known in school. So many parents enroll their children in well-known learning institutions or seek private tutoring from liaison agencies and spend a lot of money in hopes of boosting their children's motivation and learning outcomes.

Looking at the above phenomenon, an idea was created to create an innovative, creative, interactive Children's Learning Room learning media app that can be used anywhere and anytime. One of them is the development of android-based mobile android learning. Mobile learning is a creative and interactive step in the learning process to be happy and enthusiastic in learning. Android is an open-source operating system, which means it is free and free to use for app developers; this makes it easy for android app developers or app developers. Users are also so quick because of the ease of getting apps.

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Children's Learning Room application ranging from an early age to elementary and junior high school students who can provide a pleasant atmosphere in the learning process of children besides that this App can be played without any difficulty by the child in its use, but also able to improve children's memory and get used to children to know basic lessons, especially the introduction of letters of the alphabet, numbers, fruits, animals, counting, reading and training questions to test the learning skills of children both before and when the child is overriding the learning skills of the students in the school in addition to the ability of elementary and junior high school students in the compulsory subjects of the National Exam and also to know the improvement of the learning ability of the students. The purpose of this research is to produce a decent and useful android-based Children's Learning Room App for Millennials ranging from kindergarten, elementary, and junior high school.

The meaning of this writing is as follows:

A. To make it easier for early childhood children to know basic lessons such as the introduction of letters of the alphabet, numbers, fruits, animals, counting, and learning to read.
B. To find out the improved learning ability of elementary school students and schools first through the Application children Learning Room
C. Create an Android-based learning media app.
D. Transforming the way you learn conventionally into a way to learn simulation with the Children Learning Room App.

2. Literature Review

The research method that will be used in the creation of interactive defense media application is the multimedia development method conducted based on six stages [3], namely:

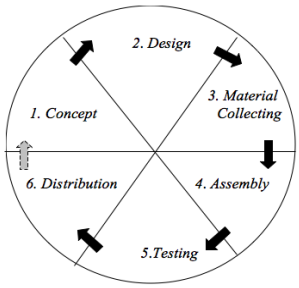

Fig 1. Multimedia Development Methodology

A. Concept

At this stage, determines the purpose of the App, the type of Application, and who will be targeted in creating this child's Learning Room application. Thee purpose of the Application in early childhood, elementary, and junior high school students. This type of Application is a 2D application. Knowing basic lessons such as introducing letters of the alphabet, numbers, fruits, animals, counting, and learning to read and practice exam questions are limited in time to answer the question.

B. Design

At this stage, researchers use a design or so-called storyboard to describe the description of each menu from one menu to another.

C. Material Collecting

It is the collection of materials to manufacture applications, including images, audio, and others. For material collection, researchers downloading for free over the internet also designed their objects using Coral Draws and Photoshop Cs3. For audio, authors download for free on the internet with *wave format. *wave.

D. Assembly

According to the look designed in the previous stage, the application creation process, the Application used for the creation of this Application, is using Construct 2.

E. Testing

The Application will run the Application and see if there is an error or not, then do a black box test in testing some incorrect or missing essential functions, interface design, errors, or other.

F. Distribution (Distribution)

The Application will be Export exported using the Cord ova Library and stored in a Script Script File (.js) file. The next stage of the file that has been successfully exported will be uploaded again to Intel JDK to compile the project into APK. And will be installed on some Android smartphones.

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2.1 Definition of Application

The Application comes from an English word that has the basic meaning of the Application. The Application, in this case, refers to the notion of intellectual playability. The Application can also be interpreted as the arena of the player's decisions and actions; there are targets that his players want to achieve. An application is a system or program in which one or more players make decisions through controlling objects within the Application for a particular purpose [2]. Meanwhile, according to [5], the Application is generally a recreational activity to have fun, fill free time, or exercise lightly. Applications are usually made alone or together.

2.2 Android

Android is an operating system for Linux-based mobile devices that include operating systems, middleware, and applications. Application Nowadays, most smartphone vendors already produce Android-based smartphones, those vendors include HTC, Motorola, Samsung, LG, HCC, Huawei, Arc hos, Web station Campaign, Dell, Nexus, iPhone, Water, Sony Ericsson, Acer, Philips, T-Mobile, IMO, Asus and many more smartphone vendors in the world producing Android. Android

2.3 Storyboard

Storyboards are graphic organizers, for example, a series of illustrations or images displayed sequentially for the initial visualization of a file, animation, or interactive media sequence, including interactivity on the web" [1]. While according to [4], "Storyboard is a radiant area of a sketch drawing used as a planning tool to show how the action of a story takes place visually."
It broadly inferred in creating an application that previously made an image framework that describes the completed Application's storyline.

3. Research Methodology

In this section, the study results are explained and, at the same time, given a comprehensive discussion. Products can be presented in numbers, charts, tables, and others that quickly understand the reader. This section emphasized the new value of research containing innovation, as well as its implications. Discussions can be made in several sub-chapters.

3.1 Data Collection Techniques

A. Observation

Data collection through observation and recording of research objects directly through the internet or Play Store, looking at various types of applications, such as Smart Indonesia, Problem Elementary School Level National Examination, Try Out of Elementary School, and still many quiz-type Applications that the author observes that aim to get an idea of the research to be made and know what is in the quiz-type Application.

B. Interview

Holds a live question and answer to some School teachers to get a clear picture of the Application to be designed according to users' needs in the Children's Learning Room App, so that this App is appropriate to test students' ability to master national compulsory subjects.

C. Library Studies

Perform data collection by way of library study. In this method, the author seeks to complete the data obtained by reading and studying various books and references from the internet related to the title.

D. System Requirements Analysis

Analysis of system needs is used to make it easier to analyze the system and determine the overall to be used to create a system. The needs of the system are divided into two, namely functional needs and non-functional needs.

3.2 Functional Requirements

Functional is a type of need that contains what processes the system will then take. Practical needs also collect information that must exist and be generated by the system.

The following are the functional needs of the game to be created:

A. The Application can display the Splash screen.

B. In the main menu view, there are several menu buttons, namely:

A. The Start button serves to display options for age categories such as kindergarten, Elementary School, and junior high school.
B. The about Menu button serves to show info about this child's learning room app developed.
C. The sound button serves to activate the sound or music in the App played.
D. The mute button serves to disable sound or music in the App.
E. The exit button serves to close the Application.

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C. In the main menu view, there are several menu buttons, namely:

A. Kindergarten menu button serves to display basic introduction category menu options for early childhood, such as alphabet identifiers, numbers, letter identifiers, identifiers, fruits, animal identifiers, and prayers for children.

B. Elementary School menu button serves to display menu options of elementary school subject categories such as alphabet recognition, number recognition, counting exercises, reading exercises, and training on compulsory subjects of national exams.

C. Junior high school menu button serves to display the menu options of the national exam mandatory lesson category, and in answering questions is limited by time.

D. The App gets the final score in completing the quiz game and counting.

E. There is a time limit in answering questions.

F. The Application can display incorrect and correct amounts in answering questions.

3.3 Non-Functional Requirements

Non-functional requirement analysis is an analysis that contains what properties are used to support in-system creation. As a result of this Application, the specifications that the author uses to help smooth design and testing of Children's Learning Room Applications are as follows:

A. Software

The software required in this android-based Children's Learning Room Application for early childhood is as follows:

1) Microsoft Windows 10 (32-64 bit)
2) Construct 2
3) build.phonegap.com
4) Intel XDK
5) Other programs that support the completion of this game application.

B. Hardware

1) Computer

The hardware specifications that the author uses to create the Children's Learning Room application are as follows:

a. Processor: Intel(R) Celeron(R) CPU 1007U @1.50GHz 1.50GHz.
b. RAM: 8 GB
c. HDD: 500 GB
d. VGA: Intel(R) HD Graphics

2) Android-based

The minimum specifications of Android devices required to run this game are as follows:

a. Mobile: Android-based phones
b. OS: OS 4.0 Android (Jellybean), Ice Cream Sandwich (Crosswalk), Kit kat, and Lollipop.
c. Processor: 528 MHz, Qualcomm MSM 7225 chipset.
d. Memory: 512 MB ROM, 256 MB RAM.

3) Windows-based

The specifications of the Windows device that the author uses to run this game are as follows:

a. Laptop: Windows OS.
b. OS: Windows OS 32-64 bit (Windows 7, 8, and Windows 10). Application Browser Google Chrome.

4. Discussion

4.1 Implementation

This stage displays in the form of a Children's Studies Room app from a design that will be seen by the user. This look has been made attractive and comfortable for children to use and happy to use.

A. Splash Screen Menu

The Splash screen displays a few seconds when opening the Application to enter the main menu.

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Fig 2. Splash Screen

B. Main menu

The main menu display contains several buttons, namely the Start Button, which displays the menu of options for age categories such as kindergarten, Elementary School, and junior high school. The About Menu button serves to indicate info about this child's learning room app developed. Sound button, Function to activate sound or music on the playable App. The mute button serves to disable sound or music in the App. The exit button helps to close the Application.

Fig 3. Main Menu

C. Category Drop-Down Menu

This menu display has several vital options, namely the kindergarten button, to display a menu of basic recognition categories for early childhood, such as alphabet identifiers, numbers, letter identifiers, identifiers, fruits, animal identifiers, and prayers children. Elementary School button serves to display elementary school lessons such as alphabet recognition, number recognition, counting exercises, reading exercises, and training on compulsory national exam subjects. Junior high school button, to display the mandatory lessons' menu of national exams and in answering questions, is limited by time.

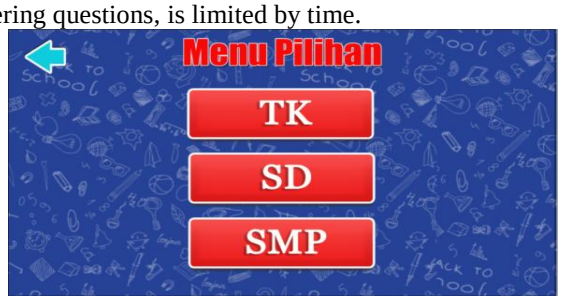

Fig 4. Category Drop-Down Menu

D. Kindergarten Drop-Down Menu

The kindergarten category selection menu display has several buttons, namely ABC Button, which displays the letter recognition menu. Controller 123 serves to indicate the number recognition menu. The switch does say the letter recognition menu and prayers. The fruit button serves to show the fruit recognition menu and guess the fruit picture exercise. The animal button serves to display the animal recognition menu and animal picture guessing exercise.

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Fig 5. Kindergarten Drop-Down Menu

E. Elementary School Drop-Down Menu

The Elementary School category drop-down menu display has several buttons, namely. ABC button serves to display the alphabet letter recognition menu. Controller 123 operates to indicate the number recognition menu. Control 1+2=3 demonstrates a counting exercise menu of summation, subtraction, multiplication, division, and practice questions. The red button does display a reading exercise menu from basic introductions and question exercises. The practice-question button serves to display a menu of options for mandatory national subjects.

Fig 6. S D Drop-Down Menu

F. Junior High School Drop-Down Menu

The Junior high school category selection menu displays several buttons, namely Button Bahasa, which serves to display the menu of Indonesian language questions, IPA Button, does to display the menu about IPA, mathematics button, and displays mathematics question menu. English button serves to display a menu about English.

Fig 7. Junior High School Drop-Down Menu

G. Alphabetic Letter Identifier Menu

The display of the alphabet font menu, the introduction of the Letter of the alphabet from A to Z, and the sound when the Letter is clicked. The back button works to return to the previous menu.

Fig 8. Alphabetic Letter Identifier Menu

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H. Number Recognition Menu

Number menu view, number recognition from 1 to 10, and accompanied by a sound when the number is clicked. The back button works to return to the previous menu.

Fig 9. Number Recognition Menu

I. Fruit Introduction Menu

The fruit recognition menu display serves to display the fruit recognition menu accompanied by each fruit button's sound, whether pressed or clicked, will emit the sound of the name of the fruit. The back button works to return to the previous menu.

Fig 10. Fruit Introduction Menu

J. Introduction to animals' menu

The animal recognition menu display serves to display the animal recognition menu accompanied by each animal's sound button, whether pressed or clicked, will emit the animal's name sound. The back button works to return to the previous menu.

Fig 11. Introduction to animals menu

K. Spell menu

In this menu view, there are three reading menu buttons, which are the Spell Button serves to display the letter spelling menu, The word button does to say the word menu, The sentence button serves to show the sentence menu, the Practice button serves to display the play menu. The back button works to return to the previous menu.

Fig 12. Spell menu

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L. Counting Menu

This menu view serves to display the count menu. In this menu, there are three buttons. The summing button displays a summing calculated explanation. The deduction button displays a subtraction-counting description. The practice question button displays the question of summing and subtraction exercises. The back button to return to the previous menu.

Fig 13. Counting Menu

M. Value Menu

This menu view serves to display the value menu. The back button to return to the previous menu.

Fig 14. Value Menu

4.2 Level of User Satisfaction with Children's Learning Room Application

A. Questionnaire Graph View

Data from the quality variables of the Children's Learning Room application process was taken with observation. In contrast, data from the child learning room application satisfaction variables were taken from the questionnaire results. The data obtained is processed with inference analysis. The Children's Learning Room App's level of user satisfaction analysis is excellent and effective if it has met user satisfaction analysis measurement stability.

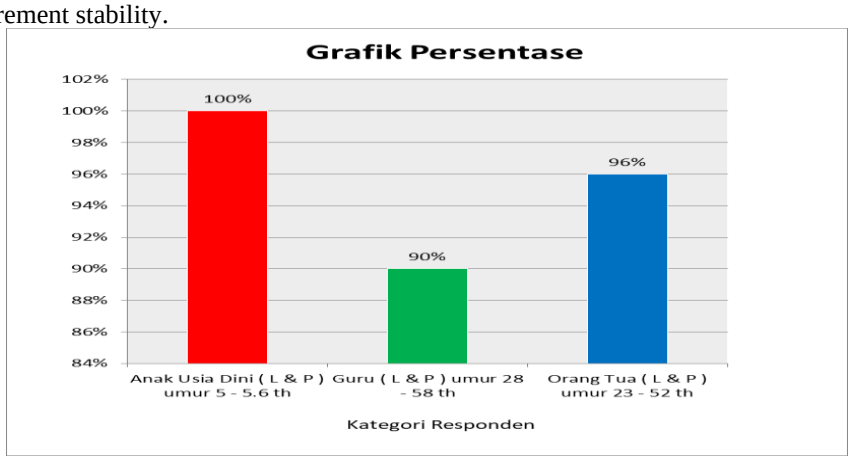

Fig 15. Questionnaire Graph

The percentage of the chart above obtained from the previous calculation and can be summed up, in the category of Early Childhood men and women (age 5 – 5.6 years) there are ten respondents, professions Male and female Teachers (age 28 – 58 years) 10 respondents, the category of Male and female Parents (age 23 – 52 years) 10 respondents, each panelist numbered ten people into a total respondent of 30 people. Judging from the graph above the percentage of questionnaires at the highest 100% in early childhood, this is a very positive response because these Children's Learning Room Application is created and intended for

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early childhood, ranging from appearance, purpose and ease, which can make it easier for children to learn to read, count and get to know that attracts children's attention to more diligent learning, so that necessary recognition learning materials can be introduced as early as possible, then the second positive response from the teacher profession is that 90% strongly agree with these Children's Learning Room Application from the display, purpose and ease, then the positive response 96% that is from parents the answer is very agreeable and very supportive with these Children's Learning Room Application starting from the look, purpose and ease, so can draw conclusions from three positive responses in can be a number 95.4% response strongly agree, and it can be stated that these Children's Learning Room App is very feasible to play for early childhood to elementary school children.

5. Conclusions

Based on the results of the research that has been done, the authors can draw the following conclusions:

A. It has been successfully created a Children's Learning Room application that was created as a learning facility to facilitate the children's process of learning to read and count because in addition to being entertainment and a means to learn.
B. This App can develop thoughts and increase children's learning interests to be more diligent in learning to read and count.
C. From the due diligence using questionnaire tests from 30 respondents from three professions ranging from students, teachers, and parents of students with 12 questions asked on the questionnaire, most respondents expressed agree or positive response in the number of 95.4% responses strongly agreed. These Children's Learning Room Application can be stated very feasibly to play for early childhood to elementary school children.
D. The creation of this Application using construct two application is created gradually starting from the design of objects/images of each menu, Splash Screen, main selection menu, introduction settings, setting counting menu settings, reading menus, fruit menus, animal menus, audio settings, to export into android apps.

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