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# Development of Android-Based Multimedia Learning Media in Recognition 0f Human Body Anatomy (SI-MANTAN)

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## Abstract

The COVID-19 pandemic in the world since the beginning of 2020 until now is still a challenge for every aspect of life, including the world of education in the health sector. The use of technology is the main choice in the education system which is falsified in learning methods. There are many alternative learning methods by utilizing technology, one of which is multimedia-based learning. The use of multimedia today is more in demand than other methods. Health students have the opportunity to take advantage of the use of multimedia in the learning process to achieve competence while participating in learning in each course. One of the basic course study materials studied by health students is generally about the anatomy and physiology of the human body. Students experience obstacles in understanding the anatomy and physiology of the human body during the COVID-19 pandemic due to limited access to the laboratory as usual before the pandemic occurred.

***Keywords:*** *android, anatomy, multimedia, health, learning media*

## Introduction

Early in 2020, a new type of coronavirus (SARS-CoV-2) or the disease called Coronavirus disease 2019 (COVID-19) quickly became a global pandemic. The number of spread and death due to this disease is quite high, so WHO states that this condition is a global emergency, an important agenda for all countries. This condition caused the government through the Ministry of Education and Culture (KEMENDIKBUD) to issue a circular dated March 17, 2020, regarding the learning process from home/distance learning as a form of preventing COVID-19.

Responding to the circular letter, every educational institution is required to optimize the use of technology in the learning process. The College of Health Sciences (STIKes) is one form of educational institution that must be able to apply learning methods based on the use of technology. Health student competencies are generally achieved during classroom learning, practice in hospitals, and laboratory skills on campus, one of which is the anatomy and physiology of the human body, where humans are the main clients. Students experienced difficulties in understanding the anatomy and physiology of the human body during the COVID-19 pandemic due to limited access to the laboratory as usual before the pandemic occurred. There are many alternative learning methods in PJJ by utilizing technology, one of which is multimedia-based learning. The use of multimedia is currently more in demand than other methods because it is able to describe the material presented (2). Currently, there are many learning media applications that can be accessed freely by students, but very few are equipped with explanations and adapt to the learning competencies of their education level.

This study aims to develop multimedia-based learning media in increasing student competence in the introduction of human anatomy.

## Research Method

The method that the author uses is the waterfall method. Broadly speaking, the waterfall method has the following steps: analysis, design, writing, testing and implementation and maintenance (Pressman, 2010).

| Information on | Research Now (2022) | Efroliza dan Sukron (2021) | Bekti Sukoco, Widyandan a, Lutfan Lazuardi, dan Aris Setyawan (2020) | Guruh Wirasakti & Yunita Wahyu Wulansari (2020) |
|---|---|---|---|---|
| Topics Study | The Effect of Multimedia-Based Learning Media on the Achievement of Cognitive Competence of Health Students in Recognizing the Anatomy of the Human Body | The Effect of Learning Media Augmented Reality Application for Understanding Human Body Anatomy in Nursing Students | The Effect of Using Android-Based Media on Knowledge of Basic Life Support in Nursing Students | Effect of Cardiopulmonary Resuscitation (CPR) Multimedia Learning Method on High-Quality CPR |
| Design | Kualitatif: *Pre Eksperimental pretest* and *posttest one group design* | *Quasy Experiment one group pre and posttest* | *Pre Eksperimen tal pretest* and *posttest one group design* | *Quasy Experimental design pre and posttest without control group* |
| Variable | Multimedia Learning Media, Competency Achievement | Augmented Reality Application Learning Media, Understandingng Human Body Anatomy | Android-Based Media Basic Life Support Knowledge | CPR Learning Multimedia, High-Quality CPR |
| Subject | Health Student | Student of nursing | Student of nursing | Student |
| The Place | STIKes Hang Tuah Pekanbaru dan STIKes Awal Bros Pekanbaru | STIKes Muhammadi yah Palembang | STIKes Surya Global, Yogyakarta | STIKES dr. Soebandi Kabupaten Jember |
| Analysis | Bivariate | Bivariat | Bivariat | Bivariat |

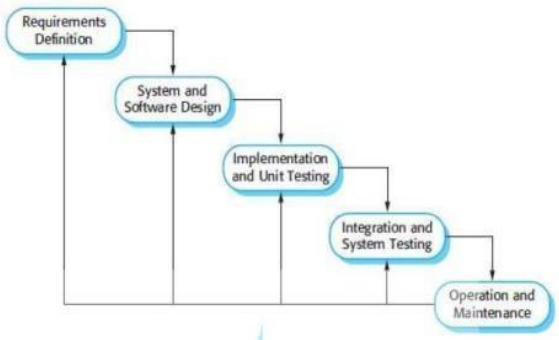


***Fig 1:*** Waterfall stages

The following are the stages of the development of the Waterfall Development Model:

Software requirements analysis

In this process, the writer builds an android-based application. One alternative to help learning is to use an android smartphone which is currently growing rapidly. The android-based learning system is designed by applying interactive 3D so that it is very varied and interesting. This application has 3 main menus, namely Explanation of Body Anatomy, interactive 3D Anatomy of the Body and Multiple-Choice Quiz with existing materials and content to support learning for users who use it.

System design

In this Body Anatomy Learning Application Design process, the researcher uses Eclipse in making the program.

Coding

Coding is the process of translating the design into a form that can be understood by the machine, using a programming language. After all the designs are made, then an Android-based application is created. Making this program using Java applications and the eclipse editor.

Test

After the coding process is complete, it is continued with the testing process on the program. And check whether the results of the development are in accordance with the desired results.

Program Implementation

The program's implementation is the stage where the application is ready to operate in a state that is actually in accordance with early childhood education, so that it will be known that the application made can produce the goals to be achieved.

Analysis and Design

In analyzing the system, a complete information system can be decomposed into component parts that aim to identify and evaluate problems so that they are determined to determine the weaknesses, opportunities and obstacles that occur as well as the expected needs so that they are implemented according to with expectations.

Problem analysis

The problem that must be discussed is the placement and terms and descriptions of body anatomy data obtained from various sources.

Si-Former Program Hierarchy

The following is the program hierarchy for the Si-Former application login page for users.

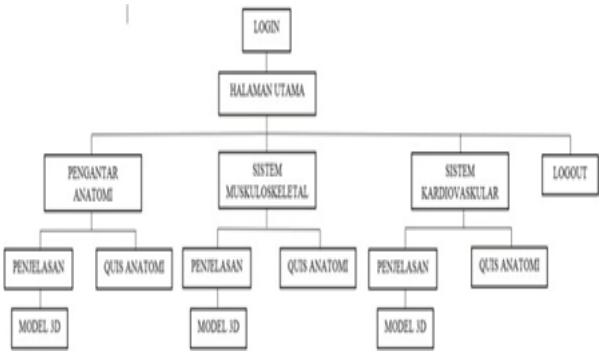


***Fig 2:*** Si-Mantan Program Hierarchy for Users

Administrator Si-Mantan ProgramHierarchy

The following is the program hierarchy for the Si- Former application login page for users.

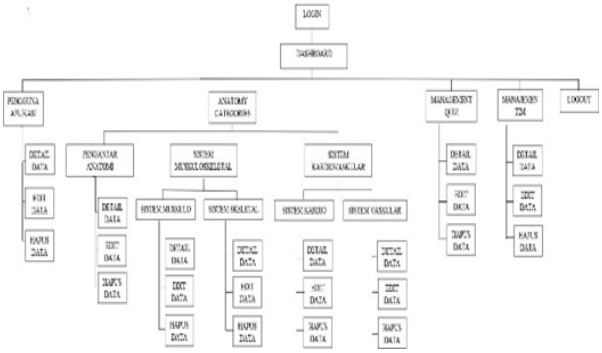

***Fig 3:*** Admin Program Hierarchy

## Result

The results of the SI-MANTAN design are implemented using the PHP programming language:

Login page

The login page functions for Lecturers and Students to gain access to enter the system. Users are required to fill in the username and password that have been registered in the database.


***Fig 4:*** Login Page

### Account Registration Page

This page serves for Lecturers and Students to register personal data, be it NIM, Full Name, College, Study Program, Email, Password as a Si-Former account submission to gain access to enter the system.


***Fig 5:*** Account Registration

### Dashboard Page

The Home Page (Dashboard) is the view that appears after the user logs into the application. Where you can directly choose what Anatomy Section you want to study. The results of the main menu display can be seen in the image below.


***Fig 6:*** Dashboard Page

### Setting page

This page serves to update Account Data, Quiz History Results that have been undertaken, Research

Team Profiles, Application Updates and Application Info

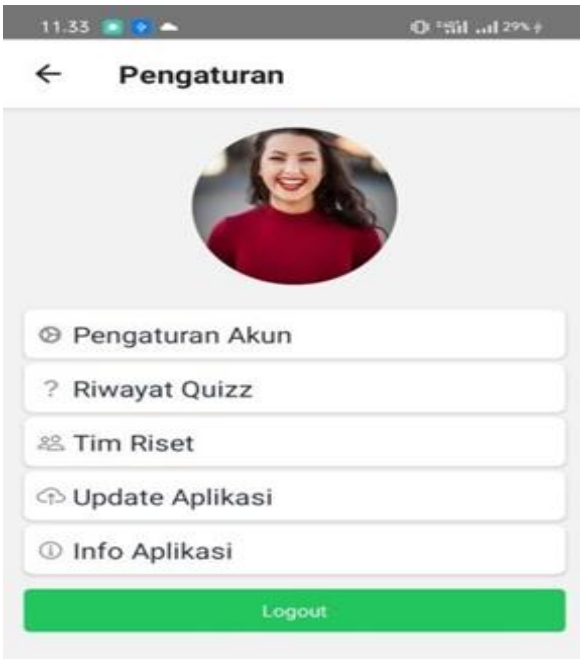


***Fig 7:*** Setting Page

### Anatomy Explanation Page

Anatomy Learning Pages with Narrative and Image


***Fig 8:*** Anatomy Explanation Page

Interactive 3D Anatomy Learning Page where students can find out parts, Latin names, positions and brief explanations.


***Fig 9:*** Anatomy Drawing Page


***Fig 10:*** Skeletal Page

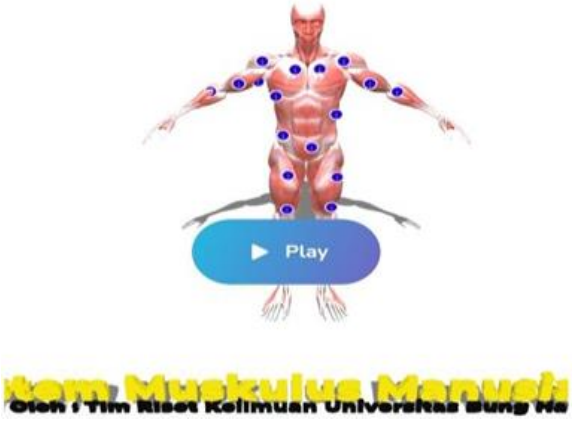


***Fig 11:*** Muskulus Page


***Fig 12:*** Internal Antung Page


***Fig 13:*** Vaskular Page

### Quiz page

Quiz page where students
can test their ability in understanding the material th at has been given.


***Fig 14:*** Quiz Page

### Quiz History Results Page

Anatomy Learning Pages in 3D Interactive where students can find out parts, Latin names, positions and brief explanations.


***Fig 11:*** Anatomy Drawing Page

## Discussion

The application of interactive 3D using assembler is sufficient and capable of dis-playing human anatomy images/images stably for novice users, where in appearance the placement of the location of the information is quite detailed in providing information on every part of the human body anatomy.

## Conclusion

From the discussion that can be described, the author tries to make conclusions and suggestions as follows:

1. With the SI-Mantan application, it will provide a new experience in learning body anatomy.
2. With the SI-Mantan, Health Students and Lecturers will have more convenience and efficiency in doing learning in the introduction of the Anatomy of the Human Body.

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