



Design Of Covid-19 Learning Media Based On 2D Video Using 3D Unity

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ABSTRACT

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Making of this application utilizes Unity 3D software and Visual Studio 2010 using the SDLC (Software Development Life Cycle) method which is applied in the prevention and management application of Covid-19, therefore making this application aims to provide education to the public regarding how to prevent and cope with Covid-19 which is also an example of animation to facilitate the public in understanding the education. And the results obtained by the community are quite helpful with the application in which there is an animated video

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1. Introduction

Coronavirus Disease 2019 or COVID-19 is a new disease that can cause respiratory problems and inflammation of the lungs. The disease is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection. Clinical symptoms that appear vary, ranging from like the symptoms of the common cold (cough, runny nose, sore throat, muscle aches, headache) to those with severe complications (pneumonia or sepsis).

Animation is a moving image that comes from a collection of various objects arranged specifically so that it moves according to a predetermined path at any time count. Animation in general can be said as a sequence of images that are displayed at certain time lines (timeline) so as to create an illusion of moving images.

Based on the explanation above, it is known that the formulation of this problem requires media or learning resource materials so that it can more easily understand the material, so that it does not get bored using it and is very interactive in the world of knowledge, therefore this research aims to make media about Covid-19. The software needed in making this application is Adobe Premier Pro for making animated videos, vuforia for image creation and targeting 3D unity images for programming and coding processes. This media is stored in .apk format and then installed on a smartphone so that it can be used at any time.

2. Methods

SDLC is short for Systems development life cycle or in Indonesian is called the system development life cycle. SDLC is used to build an information system so that it can run in accordance with what is expected. SDLC consists of several stages, which are generally taught in software engineering maps or systems analysts, it consists of 5 stages, namely Requirements Analysis, design, Development (collection of materials), Testing (testing) maintenance (storage) of these five stages do not have to be sequential in practice, the stages are exchanging positions.



A. Research Stage

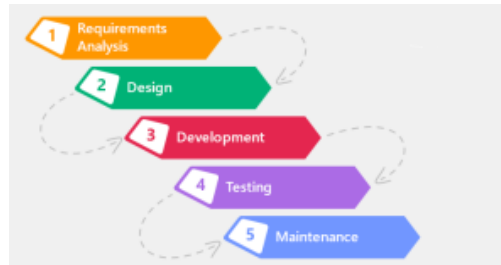


Fig 1. Stages of the SDLC (Software Development Life Cycle)

The description of several stages in the use of the Luther model method is as follows:

a) Requirements Analysis

The Requirement Engineering stage or also called Requirement Analysis is a way to determine user needs which can then be used as input in the product design analysis process. Requirements / Requirements resulting from this activity must be quantifiable, detailed, and relevant. Inquirement Engineering involves an intensive communication process with system users whose purpose is to explain / specify the specifications of their needs.

b) Design

The design phase is the stage of making specifications which include the program architecture, style, appearance, and material requirements for the program. Another task performed at this stage is to decide on all required material content. This stage is usually described using a storyboard or flowchart.

c) Development

Development Phase, which is developing facts / principles / products from an existing knowledge. For example through these studies a new technology was created which was finally known as R and D (Research and Development).

d) Testing

Testing phase or testing is a stage carried out after completing the manufacturing phase (assembly). This stage is done by running the application / program in order to find out whether there are errors that occur. This process is often referred to as debugging.

e) Maintenance

At this stage the application will be stored using a storage medium to be used or disseminated. Applications must be prepared and adapted to the actual environment. If there is not enough storage media to accommodate the application, compression will be performed on the application.

B. Algoritma Motion Planner

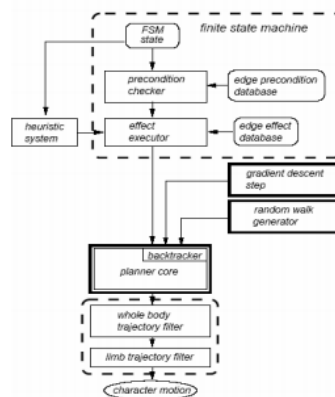


Fig 2. Motion Planner Algorithm



This time it is discussed is the backtracking method in 3D animation. Each motion in the animation has coordinates. These coordinates indicate that a character moves from one location to another. For example a character moves from coordinates (16, 5) to (18, 5), from (18.5) to (22.5), and so on will see moving characters (moving places).

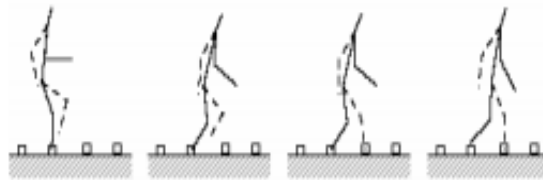


Fig 3. Example of a Motion Planner Algorithm

This is the basic principle of algorithm in animation. With the change in dimensions to length-width-height, 3D animation will form.

C. Application Flowchart Flow

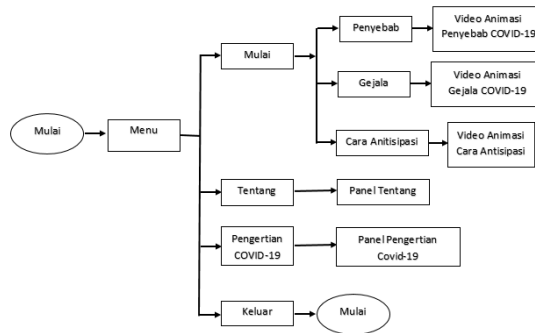


Fig 4. Flowchart Application Flow

In Figure 4 is a flowchart as an illustration to explain the operation of the corona virus application system. Starting from the beginning of entering the application the user will meet a menu with 4 buttons namely there are start button, about, understanding covid-19 and exit. If the user clicks the start button, the user will meet a menu with 3 button buttons, the cause button, the symptom button, and the anticipatory button. From the button there are 3 options, that's where there is media information in the form of 2D video.

3. Results and discussion

The research requires some hardware and software. The following are the devices used:

Table 1. Spesification hardware

Perangkat	Spesifikasi
Processor	Intel coleron 1.50 ghz
Vga	789 mb
Harddisk	300 gb
Ram	2048 mb

The table above is a hardware specification used in building a covid -19 prevention application.

A. Spesifikasi software

Table 2. Spesification Software

Perangkat
Unity 3D 5.6.7f1
Adobe Premier Pro
Vuforia



In building an application that contains 2D videos, it certainly requires some software used to design the design and other parts. In this study the authors used Adobe Premier Pro software to build 2D animation and a few other details, while vuforia was used to obtain the license key needed to make augmented reality and to set the image as the target image needed. Unity 3D is used by the writer to design most of his programs, starting from the storyline, the background design, to the function coding stage.





B. Application Concepts.

In this stage the author will explain what applications will be made and the purpose of this application made.

First of all the author makes an application that contains learning media via 2D animation video, this animation discusses the corona virus and how to anticipate this virus. The author's goal to make this application is to provide information and to package learning media to make it more interesting so that users can more easily understand it.

VISUAL	SKETSA	AUDIO
When the program is first run 4 button options will appear	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">Start</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">About</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">Definition of Covid-19</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">Exit</div>	Instrumen.mp3
When clicking on the start section the user will be brought to the next page, the following page contains 3 covid-19 buttons in the form (Causes, Symptoms, and How to Anticipate)	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">start</div> <div style="text-align: center; margin-bottom: 2px;">↓</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">Cause</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">Thesymptomsm</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">Cara Antisipasi</div>	Instrumen.mp3
Then when pressing the button that says (Cause), then the user will be taken to the next page which is a video page (Cause covid-19)	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">Cause</div> <div style="text-align: center; margin-bottom: 2px;">↓</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; text-align: center;">Video About Covid-19</div>	Instrumen.mp3 Sound Effect



<p>And when pressing the button that says (Symptoms), the user will be taken to the next page, which is a video page (Symptoms covid-19)</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;">The symptoms</div> <div style="text-align: center; margin: 10px 0;">  </div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Video of Covid-19</div>	<p>Instrumen. mp3 Sound Effect</p>
<p>And the last time when pressing the button that says (How to Anticipate), then the user will be taken to the next page which is a video page (Cara Antisipasicovid-19)</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;">How to Anticipate</div> <div style="text-align: center; margin: 10px 0;">  </div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Video on How to Anticipate Covid-19</div>	<p>Instrumen. mp3 Sound effect</p>
<p>Instrumen.mp3</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;">About</div> <div style="text-align: center; margin: 10px 0;">  </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <div style="border: 1px solid black; padding: 2px; text-align: center; margin-bottom: 5px;">Photo</div> Personal data </div>	<p>Instrumen. mp3</p>
<p>The button section (Understanding Covid - 19) is a definition of covid and the number of cases</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;">Definition of Covid-19</div> <div style="text-align: center; margin: 10px 0;">  </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> Definition of Covid-19 WHAT IS COVID </div>	<p>Instrumen. mp3</p>
<p>The last button is the Exit button, which means ending the application</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;">Exit</div>	<p>Instrumen. mp3</p>

C. Application Testing

This stage is the stage of testing applications into a program before and after it is built, but not yet published, this stage covers a variety of devices (mobile). From this test, it can be concluded that this 2D Video Application is running well or not.

D. Device Testing

In the testing phase, installation is carried out on 5 devices to find out the application runs on all smartphones.

Table 3.
Device Testing

Smartphone	Criteria Testing	
	Aplikasi	Video Animasi 2D
Oppo F1	√	√
Samsung A50S	√	√
Xiaomi Redmi 2	√	√
Xiaomi Redmi Note 5	√	√
Xiaomi Redmi 4x	√	√

Application testing is done from several different smartphone devices and the results can run.

1) Main Menu Display



Fig 5. Display the Main Menu

Main Menu Display is the initial display contained in the CoronaVirus Application, in this view there are several buttons with different functions.

2) Display Contents Start



Fig 6. Display Contents Start

Start Content Display is a display that contains 3 buttons that have 2D video contents. Among them there are button causes, button symptoms and ways of anticipation.

3) Display Button Cause



Fig 8 Display of Cause Button

The contents of this button contain 2D animated videos that explain the causes of the corona virus.

4) Display Button Symtoms



Figure 9 Display of Symptoms Button

The contents of this button contain 2D animated videos that explain various symptoms of the corona virus.

5) Display Button How to Anticipate



Figure 10 Display Button How to Anticipate

On the contents of this button contains a 2D animated video that explains how to anticipate so it is not easily infected with the corona virus.

6) Display Contents About



Figure 11 Display Contents About

Display Contents About this displays an author CoronaVirus application identity.

7) Display Contents Definition of Covid-19



Figure 12 Display Contents Definition of Covid-19

Display Contents Understanding Covid-19 is the understanding of this Corona Virus, In addition to having 2D animated videos, this writer also makes a button understanding so that he can better understand what is covid-19 .

4. Conclusion

Conclusion the results of the discussion above, it can be concluded as follows:

- a. The CoronaVirus application can be developed with Unity, Adobe Premier Pro and Vuforia software by using the SDLC (Software Development Life Cycle) method.
- b. The application can display 2D animated videos with attractive designs.
- c. Users can better understand the meaning of this virus and can learn via 2D animated videos in this application easily understood.

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