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DESIGNING 3D ANIMATION FOR DENTAL HEALTH CARE USING MDLC METHOD

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ABSTRACT

Health education is one of the most important thing to be learn since early age like washing hands and brushing teeth. But because of the lack of education a lot of people in the community don't know the ways to take care of their own teeth. The consequence of lack of education create a problem for a a lot of people in the community which is tooth ache. The effort that could be done to fix the problem is to create a learning media that is easy to understand and have the capability to share information widely. Because of that, animation 3D become a choice for this research to educate people in the community about dental health and how to take care of it. The method that the researcher use in this research is qualitative interview, researcher will do an interview with a dentist to get information about how to take care of your teeth. After getting the information it will then be used to create animation 3D. the method that is being used to create animation 3D is MDLC (Multimedia Development Life Cycle) which has 6 stages, namely Concept, Design, Material Collecting, Assembly, Testing and Distribution after the animation is finished its being shared to social media such as Youtube and Instagram.

Keywords: MDLC, Animation 3D, Qualitative Interview

1. Introduction

Health education is one of the most important thing that is ignored but actually one of the important ducation need to be learn since early age. Health education can be said quite easy to be learn and taught to, two of the easiest way to keep our body healthy is wash your hand and brushing your teeth(1). But covid 19 shows that a lot of Indonesia citizens still could not take care of their own hygiene. Because of that, educational media is need to teach Indonesia citizens how to take care of their hygiene and to prevent catching any disease(2).

One of the most common disease that is being faced by Indonesia citizens is dental problems. According to Kemenkes 57,6% of Indonesia citizens faced dental problems and only 2.8% knows how to brush their teeth correctly which is 2 times per day minimum. From 57,6% of people that faced dental problems only 10.2% got treatment from dental doctor. This shows

that Indonesia citizens lacked the education and knowledge about how to take care of their teeth properly(3).

Dental health is the most important thing in a children growing phase. So because of that, parents should teach their own child about the importance of dental health for their own body and teach them how to take care of their teeth so its going to be healthy and can function(4). A few ways that can be used to take care of your dental health is to atleast brush your teeth 2 times a day every day, use mouth wash to clean tooth cavity and use dental floss. One of the educational media can be used by parents to teach their children about how to take care of dental health is animation(5).

Animation is a method where a picture or object is manipulate to create moving object manipulation. Animation is divide into two, animation 2D and animation 3D(6). the usage of animation 3D is a lot from education, entertainment, advertisement and others. Animation have 4 concepts movie, object, text and sound, these 4 objects have an important role in animation without these 4 concepts animation would not be as good to be watched and less entertaining. Animasion video is widely circulated around social media such as Youtube, Instagram and Facebook(7).

Animation is the most suitable form of educational media that is used to in learning because it is entertaining, easy to use and the learning materials is more easy to understand. Animation have background, character and event. This makes animation more interesting because it have sound and can be watch. So when student is learning they become more focused, happy and learn easily. According to (8) research it also shows animation can increase student motivation in studying.

According to the statement above, researcher will create animation 3D with the purpose of educating nitizens about how to take care of their dental health correctly. Before creating animation 3D, researcher will interview with a dental doctor to get valid information about how to take care of dental health. After getting the needed data for this research, researcher use create animation 3D using MDLC(Multimedia Development Life Cycle) method. MDLC (Multimedia Development Life Cycle) have 6 stages which is Concept, Design, Material Collecting, Assembly, Testing and Distribution(9).

2. Research Method

There is two research method that is used in this research that which is qualitative interview to get the data needed and MDLC (Multimedia Development Life Cycle) to create animation 3D. Researcher choose qualitative interview is to get a valid information about how to take care of dental health, the question that is used to ask dental doctor is in table below

Table 1. Interview Question

No	Question
1	Is brushing your teeth twice a day enough?
2	Is limiting how much you eat or drink with sugar content or sour is right?
3	What is the correct way to brushing teeth?

 After getting the needed data, researcher will continue to create animation 3D with MDLC (Multimedia Development Life Cycle) method. MDLC (Multimedia Development Life Cycle) have 6 stages which is :

1.   Concept

On the first stage on creating animation 3D is to decide the concept that is going to be used. After deciding it researcher will create storyboard according to the data given by dental doctor. after getting the data needed researcher will create animation 3D with the purpose of educating netizens about how to take care of dental health.

2. Design
On the second stage researcher will design a storyboard, storyboard is made with a purpose to explain the storyline of animation 3D according to decided concept.

3. Material Collecting
On the third stage, researcher will collect material that is needed to create animation 3D. the material will be collected from various sources.

4. Assembly
On the fourth stage, researcher will create animation 3D using the data from qualitative interview and then edit the animation using a certain software.

5. Testing
On this stage, animation 3D is already been created so researcher will test animation 3D before distributing it. Researcher will give the animation to supervisor to see if there are any mistake or error in the animation 3D.

6. Distribution
The last stage is going to be deciding where to distribute the final product of animation 3D.
Pada tahap ini.

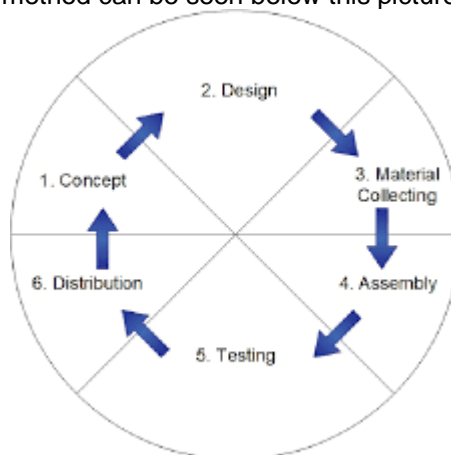The research flow of MDLC method can be seen below this picture

Image 1. MDLC
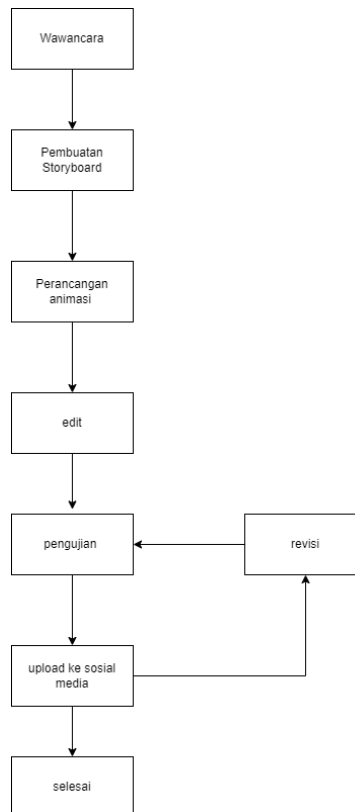
3. Results and Analysis

3.1. Concept

Image 2. Flowchart of creating animation 3D

Concept in creating animation 3D with the purpose of educating netizens to taking care of their dental health. Concept of creating animation 3D can be seen on picture no 1. The concept flowchart of creating animation 3D is started with doing interview with a dental doctor. the data received from the interview will be used in creating the storyboard and animation 3D. after interview researcher will create a storyboard using the data received from the interview. Storyboard is made so the storyline can be easily understand. The next step is creating animation 3D with a certain software. After creating it researcher will edit the animation 3D adding sound background, font, voice over and cutting out the part that is not needed. When the editing part is done researcher will do rewatch the animation 3D to see if there are anything wrong. If researcher rewatch the animation and there is nothing wrong, animation 3D will be uploaded to social media.

3.2. Design

In creating this animation 3D, storyboard is needed for making the storyline easy to understand. In this storyboard there are some scenes such as taking care of your dental health, food/drinks prohibited and how to brush your teeth correctly. Storyboard will be shown in the picture below

cara merawat gigi dengan benar

Image 3. Scene 1

The video is started with a title cara merawat gigi dengan benar and ended with a fade out, The intro will last about 3 seconds.
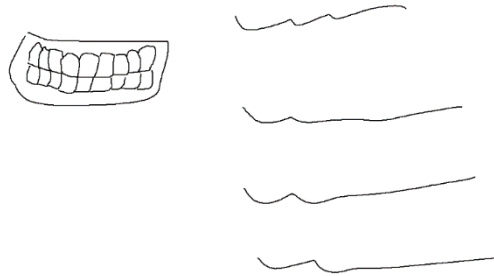

Image 4. Scene 2

On this scene it will shown a pair of teeth with an explanation about how to take care of dental health.
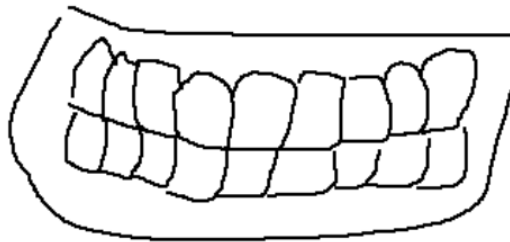

Image 5. Scene 3

The video will zoom in on the teeth and showing the prohibited food and drinks if consumed too much.
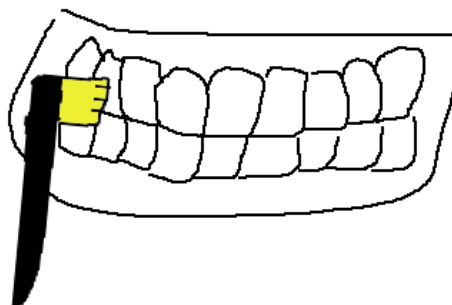

Image 6. Scene 4

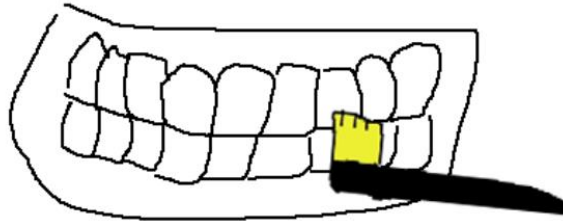This scene will show audience the correct technique to brush your teeth starting from left.

Image 7. Scene 5

This scene also shows how to correctly brush your teeth from the right

3.3. Material Collecting

On this stage, researcher will collect material that is needed for creating animation 3D.
Researcher obtained free font from a website called Dafont and free sound effect from Pixabay.
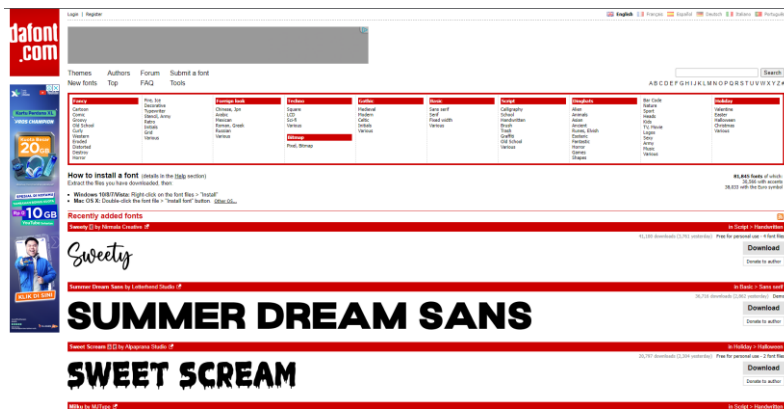Dafont and pixabay website will be shown in the image below
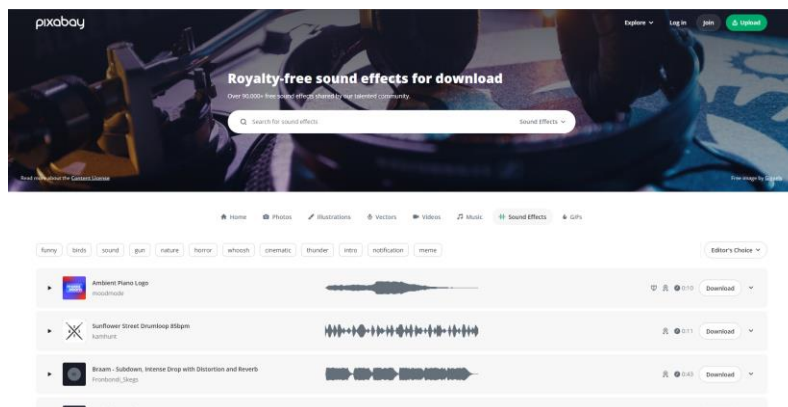

Image 8. Dafont Website

Image 9. Pixabay Website

3.4. Assembly

Creating animation 3D will need adequate device to run Maya and Adobe Premiere Pro software. Researcher is using PC to run both software, researcher is using maya to create animation 3D and the 3D model. For the editing researcher use Adobe Premiere Pro to edit sound effect, font, background music and others. The computer specifications and 3D model will be shown in table and image below.

Table 2. Computer Specification

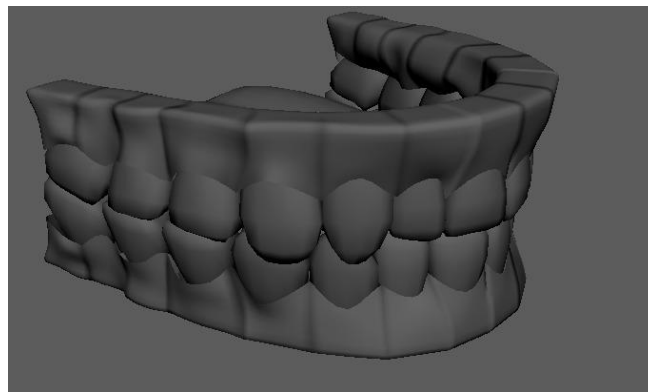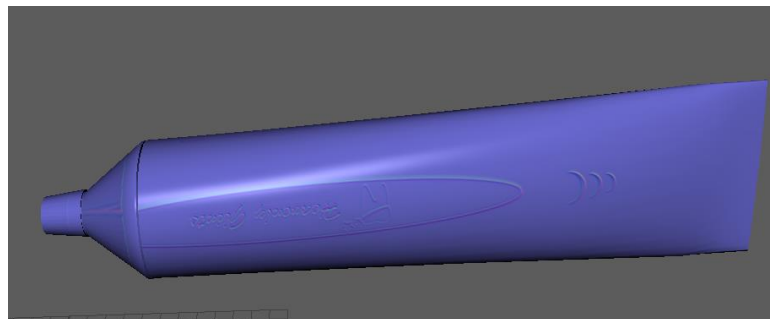| Nama	Spesifikasi
Sistem Operasi	*Windows* 10
Prosesor	I5 9400f
VGA	GTX 1060 6gb
RAM	8GB

Image 10. Teeth 3D model

Image 11. Toothpaste 3D model

Image 12. Toothbrush 3D model

3.5. Testing
On testing stage, researcher will show the finished animation 3D to the supervisor to do some testing to see if there are any mistakes or not on the animation. Supervisor will also check if the animation is the same as the storyboard.

3.6. Distribution
After the testing stage, researcher will ask supervisor on which social media to upload the animation 3D. after doing some discussing with supervisor, researcher decided on uploading to Youtube and Instagram.

4. Conclusion
Based on the research done, designing animation 3D can be achieved because it followed the stages in MDLC (multimedia development life cycle). from this research it proved that animation 3D can provide effective education source. Animation 3D also improve netizens understanding about how important is dental health and how to take care of their own teeth.

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