Designing 3d Animation For Dental Health Care Using Mdlc Method

Bayu Syahputra[1], Jimmy Pratama[2], Vinson[3]
bayu@uib.ac.id, jimmy.pratama@uib.ac.id, 2031162.vinson@uib.edu

[1]Information Systems, University International Batam, Batam , Indonesia
[2]Information Systems, University International Batam, Batam , Indonesia
[3]Information Systems, University International Batam, Batam , Indonesia

Abstract

Dental health is one of the important aspects in being healthy because healthy teeth have a lot of purpose such as chewing food, words pronounciation and reduce risk of health problems. but even though it have such purposes netizen in indonesia still ignore it because the lack of health education not being taught since early age. Because of that, animation 3D become a choice for this research to educate people in the community about dental health care.The method for this research is qualitative interview and MDLC. The result from this research is an animation 3D about dental health care.

Keywords:
Dental health, System information, MDLC, Animation 3D

Introduction

Dental health is one of the important aspects in being healthy because healthy teeth have a lot of purpose such as chewing food, words pronunciation and reduce risk of health problems. One of a few way 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. But sadly dental health is one of the things Indonesia netizen ignored even though our teeth have an important role in our life. The reason for that is the lack of health education not being taught to since early age.(Oktary et al., 2023)

Dental disease is the most common disease that is being faced by Indonesia netizen. 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 (Belinda & Surya, 2021).

Animation is a method where a picture or object is manipulate to create moving object manipulation. Animation can be use to convey information such as advertisement,

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announcement, and educational media. Animation is divided into two, 2D animation and 3D animation. the difference between 2D animation and 3D is 2D animation can only be move from x and y side only two coordinates, 3D animation on the other hand can be move on 3 side it makes the animation become more realistic and alive.(Zebua et al., 2020)

Animation have an ability to visualize material that cannot be seen and imagine by a person. It is also the perfect tool for a teacher to teach students about school subject because animation have a high effectiveness and the capability to convey material faster. Animation also very entertaining, easy to use and can change a students perception about a certain things.(Mashuri & Budiyono, 2020)

According to the statement above, researcher will create 3D animation with the purpose of educating netizens 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(Syazili, 2023).

Literature Review

According to the research that has been conducted using MDLC (Multimedia Development Life Cycle) by(Tjahyadi & Kelvin, 2022) , create 3D animation tutorial about a martial arts called taekwondo using MDLC as the method to develop 3D animation. The software which is used in creating animation 3D is Maya and Adobe Premiere Pro. the purpose of doing the research is to provide learning about taekwondo basic technique, especially for those who wants to learn more about the basic movement taekwondo technique.

Next is a research conducted by (Mertayasa & Pradnyana, 2022) created a learning media about 3 dimension mathematic using MDLC (Multimedia Development Life Cycle) method that consist of 6 stages, concept, design, material collecting, assembly, testing and distribution. When the covid 19 pandemic hit a lot of teachers came across a problem, they cant teach face to face with the student in fear of the virus. So researcher create 3 dimension learning media to find out the feasibility and see if its going to solve the problem the teachers are facing. After doing some test the researcher receive a positive feedbacks from both the students and teachers.

Another research that used MDLC method (Multimedia Development Life Cycle) is also conducted by (Syahputra, 2022) . Researcher create and develop videography about night market in Taipei. The purpose of this research is to solve a problem in searching for foods in Taiwan night market. The video that has been created is going to be promotional media for tourist coming to the night market. The video will be a reference for tourist to search information about the variety of food in Taiwan nightmarket.

Research conducted by (Wibowo et al., 2022) tried to promote a school called SMK Harapan Utama to student candidates and parents of student candidates. The research is using MDLC method (Multimedia Development Life Cycle). SMK Harapan Utama is not a popular school so researcher created a profile video in attempt to boost SMK Harapan Utama popularity. The finished profile video is uploaded to youtube and already collected 103 views and 30 likes.

Research conducted by (Nofiar, 2022)using MDLC (Multimedia Development Life Cycle) to create 3D animasion video about palm oil processing. The purpose of the video is to educate netizens that still dont know how palm oil processing.

Research Methods

The method that is used in this research is qualitative interview to get the data needed and MDLC (Multimedia Development Life Cycle) to create 3D animation. 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. 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 data required, researcher will continue to create animation 3D with MDLC (Multimedia Development Life Cycle) method. MDLC (Multimedia Development Life Cycle) have 6 stages which is :
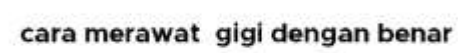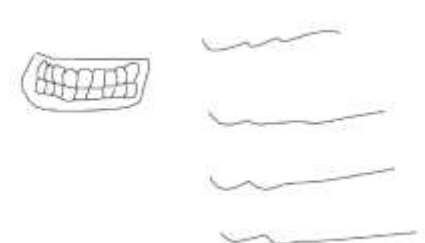
1.   Concept
On the first stage on creating 3D animation is to decide the concept that is going to be used. After deciding it researcher will create storyboard according to the data given by dental doctor. after getting the data needed researcher will create 3D animation with the purpose of educating 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 3D animation according to decided concept. Storyboard is shown in table 2
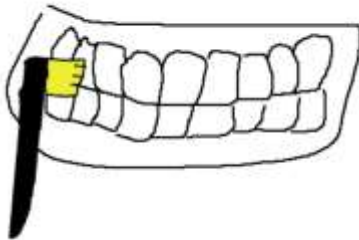
Table 2. Storyboard

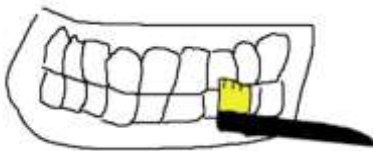| NO	Storyboard	Description
1	cara merawat gigi dengan benar	The video is started with a title cara merawat gigi dengan benar and ended with a fade out, The intro will last about 3 seconds.
2		In this scene it will shown a pair of teeth with an explanation about how to take care of dental health.
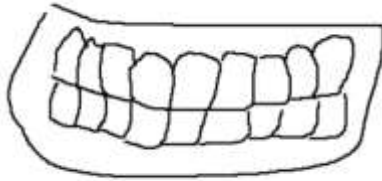
3		The video will zoom in on the teeth and showing the prohibited food and drinks if consumed too much.
4		This scene will show audience the correct technique to brush your teeth starting from left.
5		This scene also shows how to correctly brush your teeth from the right

3.   Material Collecting

In the material collecting stage, researcher will collect material that is needed to create animation 3D. Among them are fonts and background music. Fonts is founded in a free website named Dafont, no copyright music is founded in youtube. Fonts and music will later be edited in After Effect.

4.   Assembly

The assembly stage is the stage researcher create 3D animation according to storyboard.
The animation will be animated in Blender and assemblying the animation and editing researcher is using Adobe After Effects. Any editing will follow the flow of storyboard below here are the figures of creating animation and editing in after effects.
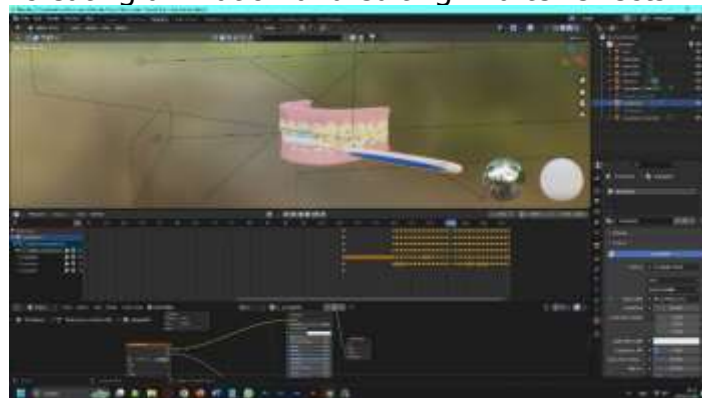

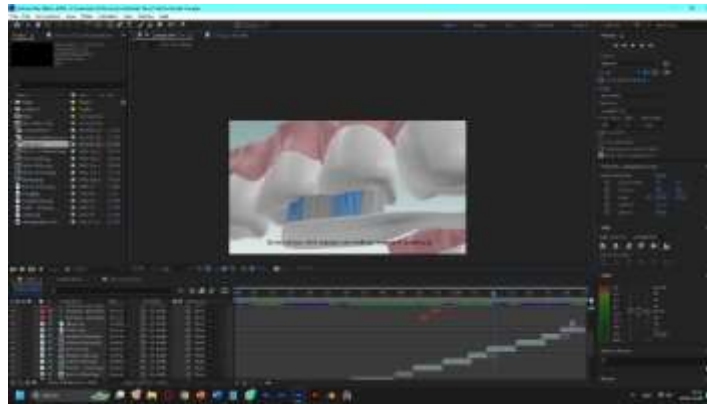**Figure 1. Animation process in Blender**

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Figure 2. Editing process in After Effect

5.   Testing
In Testing stage, researcher will run the 3D animation and will be watched until the animation is finished. Researcher will search for errors in the animation and decide if the animation is in accordance with the storyboard.

6.   Distribution
The final result is a 3D animation video with a duration of 01:35 minutes. The 3d animation will be uploaded to youtube platform so that everyone can watched it.

Figure 3. Distribution

Results and Discussion
Implementation
The final result from this research is a 3D animation video about dental health care The 3D animation have a duration of minutes. All of the scene in the 3D animation is in accordance with the storyboard. The scene is shown below this following list :

Scene 1
        The first scene starts with a title intro "cara merawat gigi" the intro last about 6 seconds.

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Figure 4. Scene 1

Scene 2

The second scene starts with a pair of teeth and description text about the right of taking care of dental health is to brush teeth at least two times a day

cara merawat gigi yang benar yaitu dengan menggosok gigi dua kali sehari

Figure 5. Scene 2

Scene 3

In the third scene, a pair of text come up from below written " to brush your teeth in the morning but brush it after you have a breakfast not before breakfast.

Karena menggosok gigi sebelum sarapan itu salah

Figure 6. Scene 3

Scene 4

İn the fourth scene, a pair of text will pop up and moon circling the text. The text is written " to brush your teeth in the evening before you sleep, but if you eat again you need to brush your teeth again"

Figure 7. Scene 4

Scene 5

In this scene, it is show a pair of teeth decaying and beside it is a text written " the reason for tooth decay is because acid can scrape outer layer enamel on teeth"

Figure 8. Scene 5

Scene 6

In this scene, it will show how to brush teeth properly with a text written below " point tooth brush 45 degrees at direction of gum.
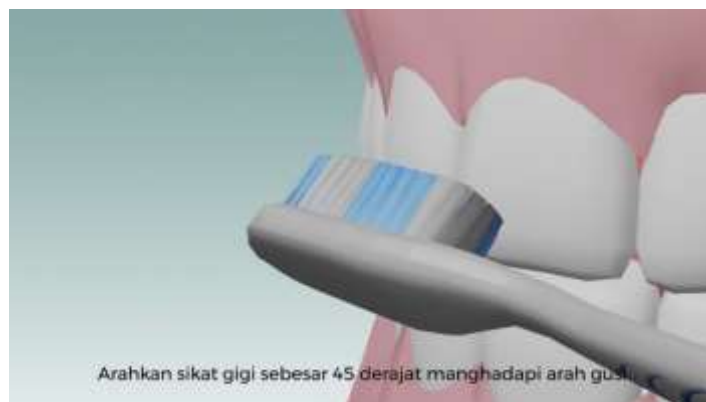

Figure 9. Scene 6

Scene 7
In this scene, it will show the toothbrush brushing outer layer of teeth

Figure 10. Scene 7

Scene 8
In this scene, it will show the tooth brush brushing back teeth

Figure 11. Scene 8

Scene 9
In this scene, it will show the tooth brush brushing on the chewing surface

Figure 12. Scene 9

Scene 10

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In this scene, it will show tooth brush brushing vertically but slowly on the back of the teeth
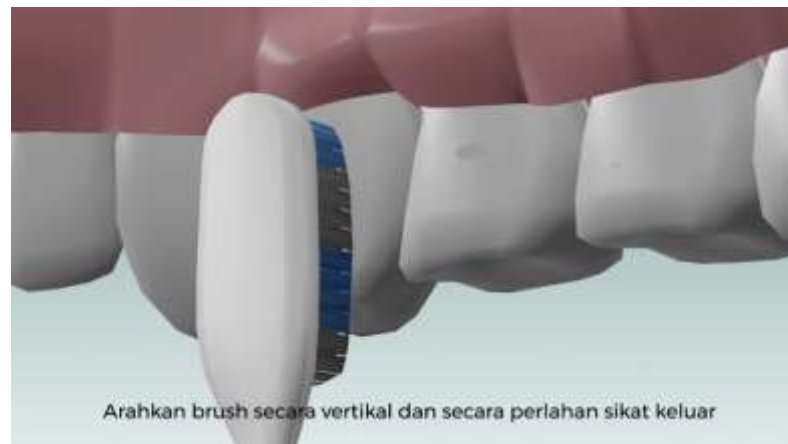

Figure 13. Scene 10

Scene 11
   In this scene, a pair of clean and healthy teeth will show up and showing the result of brushing the right way.

Figure 14. Scene 11

The purpose of this 3D animation is to educate netizens about dental health and how to take care of it. Animation is designed as accurately as possible so not to spread any misinformation. Because of the danger of spreading misinformation author do an interview with a dental doctor to collect valid data about dental health and how to take care of it. After doing the interview author designed 3D animation using blender 3D and After Effect for editing. The total duration of the animation is 01:35 minutes, with a title " animasi tentang cara merawat gigi" uploaded to Youtube. The method in designing this animation is MDLC (Multimedia Development Life Cycle).

Conclusions

The conclusion from this research of "DESIGNING 3D ANIMATION FOR DENTAL HEALTH CARE USING MDLC METHOD" are shown below
1. The result of this 3D animation can be used as a educational learning media for dental health care

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2. The process of developing and designing this research uses MDLC (Multimedia Development Life Cycle) which have 6 stages which is Concept, Design, Material Collecting, Assembly, Testing and Distribution.
3. The process of creating and editing this 3D animation are by using Blender and Adobe After Effect
4. The result of this research is a 3D animation about dental health care with a duration of 01:35 minutes.

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