

**MEMOJI AS A CHARACTER DEVELOPMENT IN DIGITAL COMIC
(DIGICOM)**



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**MEMOJI AS A CHARACTER DEVELOPMENT IN DIGITAL COMIC
(DIGICOM)**

NURULHANAN BINTI ABDUL HALIM



This report is submitted in partial fulfillment of the requirements for the
Bachelor of Computer Science (Media Interactive) with Honours.

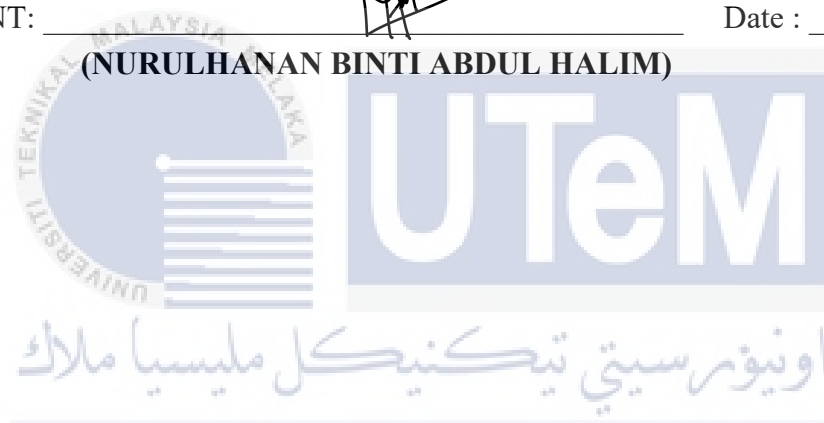
FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2021


DECLARATION

I hereby declare that this project report entitled
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is written by me and is my own effort and that no part has been plagiarized
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STUDENT:  Date : 26/7/2021
(NURULHANAN BINTI ABDUL HALIM)



I hereby declare that I have read this project report and found
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Bachelor of [Computer Science (Software Development)] with Honours.

SUPERVISOR :  Date : 3/7/2021
([NAME OF THE SUPERVISOR])

DEDICATION

To my beloved parents, family and friends, who have always encouraged and supported me through my educational journey. Also, to my supervisor Dr. Zulisman Maksom and all my friends who have guided, inspired and helped me to complete my project.



ACKNOWLEDGEMENTS

Special thanks to my supervisor Ts Dr. Zulisman Maksom for her guidance and encouragement to complete this project successfully. Thank you for always giving advice, opinion and supervised me until this project comes to end.

To my evaluator, Dr. Zulisman Maksom, thank you for evaluating and giving advice during my presentation of my PSM 1. To my beloved parents and family who have been giving me support and motivation throughout my final year project. Thank you for always encouraging and believing in me to finish my project. To my friends, thank you for always give encouragement and support for me to finish this project. Lastly, to anyone that indirectly involved in this project, thank you for help and cooperation.



ABSTRACT

Comics are a visual medium for expressing ideas, and they are often paired with text or other visual content. It usually takes the form of a series of picture panels. Speech bubbles, captions, and onomatopoeia are examples of textual devices that can be used to indicate dialogue, narration, sound effects, and more. Comic books communicate to children in a language they understand and can relate to. Even after children have developed enjoyable reading skills, comics allow them to read content that incorporates images and text to convey satire, symbolism, point of view, suspense, puns, and humor in ways that text alone cannot. Children prefer to read comic books over books in other genres. People today, however, do not purchase comic books. As a result of its time-consuming and inflexible nature, the paper and manual method have become almost obsolete. This project is developed for Projek Sarjana Muda (PSM). The project's main goal is to determine the effectiveness of Memoji as a digital comic feature. This digital comic can improve comic books, which have been overlooked by many because today's kids do not read them and using Memoji as the character development would instill positive attitudes in digital comics. Besides, by using Memoji as the character development in digital comics, the topic for this project which is COVID-19 Awareness for Kids was chosen because creating awareness of the dangers of COVID and precautions that should be taken among children is needed. Through this project, the goal of instilling some knowledge and encouraging society to learn about COVID-19 awareness, threat, symptoms, and prevention among Malaysians.

ABSTRAK

Komik adalah media visual untuk mengungkapkan idea, dan sering digandingkan dengan teks atau kandungan visual lain. Ia biasanya berbentuk siri panel gambar. Gelembung ucapan, kapsyen, dan onomatopoeia adalah contoh alat teks yang boleh digunakan untuk menunjukkan dialog, narasi, kesan bunyi, dan banyak lagi. Buku komik berkomunikasi dengan kanak-kanak dalam bahasa yang mereka fahami dan boleh dikaitkan dengannya. Walaupun kanak-kanak telah mengembangkan kemahiran membaca yang menyeronokkan, komik membolehkan mereka membaca kandungan yang menggabungkan gambar dan teks untuk menyampaikan satira, simbolisme, sudut pandang, ketegangan, kata-kata, dan humor dengan cara yang tidak dapat dilakukan oleh teks sahaja. Kanak-kanak lebih suka membaca buku komik berbanding buku dalam genre lain. Orang hari ini, bagaimanapun, tidak membeli buku komik. Akibat sifatnya yang memakan masa dan tidak fleksibel, kaedah kertas dan manual menjadi hampir usang. Projek ini dibangunkan untuk Projek Sarjana Muda (PSM). Matlamat utama projek ini adalah untuk menentukan keberkesanan Memoji sebagai ciri komik digital. Komik digital ini dapat meningkatkan buku-buku komik, yang sering diabaikan oleh banyak orang kerana anak-anak zaman sekarang tidak membacanya, dan menggunakan Memoji sebagai pengembangan watak akan menanamkan sikap positif dalam komik digital. Selain itu, dengan menggunakan Memoji sebagai pengembangan watak dalam komik digital, topik untuk projek ini iaitu Kesedaran COVID-19 untuk Anak-anak dipilih kerana kesedaran akan bahaya COVID dan langkah berjaga-jaga yang harus diambil di kalangan kanak-kanak sangat diperlukan. Melalui projek ini, tujuan menanamkan beberapa pengetahuan dan mendorong masyarakat untuk belajar mengenai kesedaran, ancaman, gejala, dan pencegahan COVID-19 dalam kalangan rakyat Malaysia.

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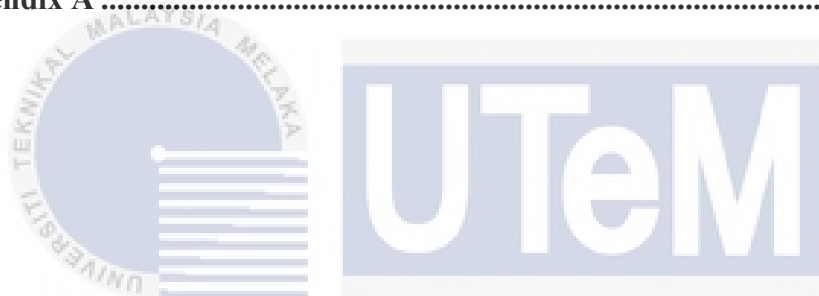
LIST OF ABBREVIATIONS

CBR	-	Comic Book Archive
CBZ	-	Comic Book Zip (CBZ) format
FPS	-	Frame per Second
JPEG	-	Joint Photographic Experts Group
PDF	-	Portable Document Format
PSM	-	Projek Saujana Muda
UTeM	-	Universiti Teknikal Malaysia Melaka

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CHAPTER 1: INTRODUCTION

1.1 Introduction

A digital comic is similar to self-published printed comics in that they can be generated by anyone with an Internet connection that is primarily viewed on an electronic device. This includes a webcomic which is comics viewed through a web browser, usually online, and eComics which are not viewed through a web browser, such as comics downloaded as pdf files, CBR files, or cbz files, etc. The number of people who read a book varies greatly; some are only read by the author's close friends and family, while others have audiences of over one million people. Animoji uses 3D emoji that map user face, allowing you to project user voice through an animated robot, alien, unicorn, or monkey that in turn opens its mouth, smiles, and moves when you do. Memoji lets users create 3D avatars of themselves that you can use in an equivalent way to Animoji. Memoji are personalized Animoji. It is Apple's version of Snapchat's Bitmoji or Samsung's AR Emoji. The comic will be hand-drawn or digitally drawn using suitable software.

Memoji was first introduced in the market by Apple as part of its messaging application, iMessage. In 2017, Apple added an 'Animoji' feature that used Apple's Face ID camera system to map popular emoji characters to the user's face. They appear to mimic the user's facial expressions. To create Memoji, we need Apple's Message apps, iOS 12 software or later, and an iOS device with the True Depth camera system. To study the effectiveness of Memoji in digital comics, Memoji technology will be used as the element in this project. This project will be user-friendly with a simple, easy way to use. Through this digital comic, users can get knowledge for the content and valuable information.

In this study, Memoji is a technology that combines with the digital comic to bring out and enhance the information that may be hidden or not immediately be understood. Studies were conducted to see how Memoji can improve comic books, which many overlook because today's kids do not read them. The research was undertaken to show that Memoji can instill positive attitudes in digital comics. According to (Wright, G. & Sherman R, 1999), the first step in developing a comic strip is the scripting of the story. Therefore, before designing the comic scenes, young learners are required to use their imagination and experiences in listening to stories to invent and write their own story. People can read the comic with high creativity and experience the character of themselves in the comic by using Memoji as the feature.

This research aims to design the effectiveness of Memoji as the main component of a digital comic in early childhood education. Aside from that, using an educational process that is both virtual and real-world could boost children's interest in learning. As a result, they feel more at ease, and the learning process becomes more enjoyable. Memoji, a digital comic feature, is a modern technology that can help children become more engaged with the content and learn faster.

1.2 Problem Statement

Nowadays, people do not buy comics; digital comics come to place. Like everything else in today's world of technology, even school has been moved to an electronic/computerized environment. Besides, people do not prefer comic because it is costly. Digital comic is easy to use and convenient where people can read it on their mobile phone anywhere and anytime. Furthermore, the comic has lacked interest for children to read because most digital comic does not have animation on it, most of them are developed in static form. Through this technology, a digital comic is created as a step on how to give knowledge by using Memoji as the character development, especially for children.

1.3 Objective

The objectives of developing this project are:

1. To study the Memoji as the main elements for digital comic.
2. To develop web-based digital storytelling using elements identified.
3. To evaluate the Memoji effectiveness on how successful this digital comic helps the young people in understanding about the Covid-19 awareness.

1.4 Project Scope

The scopes in developing this project are:

1.1.1 Target Audience

This project was designed to develop a web-based Digital Comic storytelling about Covid-19 awareness using Memoji/Animoji that the general public could easily access. The project's primary focus is on children or teens under the age of 15.

1.5 Project Significant

The purpose of this project is to determine the effectiveness of Memoji as a digital comic feature. Research was conducted to look at how Memoji can improve comic books, which many overlook because today's kids don't read them, and show that Memoji can instill positive attitudes in digital comics. In addition, this project will give a brand-new experience to the audience where they can read the comic with high imagination and experience the character of themselves in the comic by using Memoji as the feature. This research aims to design the effectiveness of Memoji as the main component of a digital comic in early childhood education. Aside from that, using an educational process that is both virtual and real-world could boost children's interest in learning. As a result, they feel more at ease, and the learning process becomes more enjoyable. Memoji, a digital comic feature, is a modern technology that can help children become more engaged with the content and learn faster.

1.6 Conclusion

From this project, the expectation is to develop a digital comic that aims at developing a fully functional computerized system by using Memoji/Animoji to maintain all day-to-day activity. The goal of the digital comic is to make learning fun and as accessible as possible for the learner. Besides, to foster a culture of reading among young people in addition to providing knowledge. The problem statements identify the situation from its current scenario and why it is necessary to develop this project. The objectives are clearly stated in the problem statement. The goals should be realistic and attainable. Research interests clarify the specific target user, framework, and usability.

This chapter consists of the introduction, project background, problem statement, objectives, research question, project scope, and project significance. To build this digital comic with Memoji/Animoji as the element, we must know the content, give measurable objectives, overcome the problem, and the most significant of this digital comic. Moreover, chapter 2 will discuss the methodology used for this project and literature review on previous articles regarding this project.

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CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

This chapter explains the literature review and project methodology conducted to complete this digital comic development. Previous studies and research from publishing materials like case studies, technical documents, and online libraries play an essential role in the literature review. Generally, the purpose of the review literature is to search, collect, analyze, and draw a conclusion from all the material read and studied. For this Memoji as character development in the digital comic project, the methodology used is a Multimedia Production Process. This methodology consists of three phases: preproduction, production, and postproduction model is a basic model that holds for every type of animation. This methodology is widespread, and the professional always uses this for multimedia purposes.

2.2 Domain

As time goes by, technology development as well as rapidly progressing, and this is including a comic book. Suppose before this, the comic is the only static 2D drawing that we can see only in the paper, in this modern era. In that case, there is a digital comic that is flexible where users can read it through their phone, tablet, or laptop and enjoy reading them in animated form. "Books are the quietest and most constant of friends; they are the most accessible and wisest of counselors, and the most patient of teachers."- Charles W.Eliot.

One of the critical roles to be played by parents is to deliver information to children. Every parent has a distinctive way of understanding children but must permanently be changed according to the requirements and needs. Reading books aloud to children stimulates their imagination and expands their

knowledge of the world. It helps them develop language and listening skills and prepares them to understand the written word. Even after children learn to read by themselves, it is still essential for you to read aloud together.

In Malaysia, many children are reading less than ever before. They instead play on their phone than spend their time reading books in their free time. It is found that fewer children enjoy reading and that this dwindled with age: nearly twice as many five to eight-year-olds as 14 to 16-year-olds said they took pleasure from reading. Overall, just 53% of children said they enjoyed reading "very much" or "quite a lot" – the lowest level since 2013. Most of the children found that reading book is boring, the comic is better. But nowadays, the comic is also hard to attract them to reading because they are easy to draw with other things such as their phone and television, which has colorful animation, compelling character, fun story, and humor. They find it more interesting than anything, especially books.

Strategies or approaches need to be used to attract people, especially the young generation, to reading. Digital comics must be creative and adjust children's paths depending on the learning and favors. The child must adapt the information submitted and the continuity of their knowledge in the family, society, and the mass media. Therefore, parents should take note and use a variety of multimedia technologies that aim to influence the development of children's knowledge.

Digital comic is Digital comics (also known as electronic comics, eComics) are comics released digitally instead of in print. Digital comics commonly take the form of mobile comics. Webcomics may also fall under the "digital comics" umbrella. The digital comic is still developed using pencils, inks, brushes, and dyes, but everything is digital, meaning that we never have to buy a paper comic; many people exclusively read digital comics. The easiest way of making it is to start by selecting a frame or page layout for the user comic. Next, import images from the user phone's camera roll as the illustrations for the panels. After the user arranges the photos, apply filters that make them look like panels in a printed comic. Memoji is a character that a

user-created, or Apple's AR Animoji used modern AR Technology that looks just like us. Memoji are personalized Animoji. It is Apple's version of Snapchat's Bitmoji or Samsung's AR Emoji. These Animoji can look precisely like users (or a version of users with yellow skin, blue hair, a mohawk, a 'fro, man bun, or a cowboy hat). For this project, Memoji/Animoji will be used as the main element for this digital comic. There are few types of animation such as hand-drawn, stop-motion, characters, effect, and visual effect of live-action that will be added in this project.

For this project, Memoji or Animoji characters will combine with 2D or 2-Dimensional computer animation techniques. The development of moving pictures in a two-dimensional world, such as through traditional cell animation or computer animation software, is 2-Dimensional. Twining, morphing, onion skinning, and interpolated rotoscoping are digital computer versions of conventional animation techniques.

2.3 EXISTING SYSTEM

According to (Christophe Ponsard, Mar. 2009), the idea of reading comics on a computer screen is certainly not new. On the other side, the first digital comics already appeared in the mid-eighties. Furthermore, many young authors also actively use computer software for the creation process.

Besides, according to Jen Aggleton (2018), many print comics are now created using digital software. There are e-book versions of comics available and apps such as comiXology, which provide a digitally mediated reading experience. Some digital comics are created intentionally to be read in digital format (digital-born), while others are from print publications (print-born). Some of these comics make explicit digital technology through hyperlinks, animation, or sound, while others strongly resemble print comics but have been published on digital platforms.

According to Sayid Mataram, Deny Tri Ardianto (2018), research on comics, especially those discussing structure and constituent elements, has been widely carried out. One of them was about the comic visual language

carried out by Sayid Mataram (2015) entitled "The Visual Language of Wayang Comics by R.A. Kosasih." Moreover, Novi Kurnia, in her article entitled "The Development of Communication and New Media Technology: Implications for Communication Theory" (2005), discusses the influences and effects of new media presence in providing a fundamental change in society as a form of technological progress.

Research conducted by Santiana S.S. M.Pd., Asri Fatimah (2019) provides results showing that digital comics can be used as teaching aids to improve students' academic performance and can be a medium to give awareness and knowledge to the public, especially in developing countries such as Malaysia. We can see the multimedia elements such as text, graphics, sound, animation, video, and interactivity used in learning are beneficial to children because all things nowadays are online and easy to learn.

Moreover, they can remember what they have learned while using multimedia elements because graphic elements can help them remember the title or topic. The Memoji as character development in digital comic developed will serve to address children on how to learn awareness in society in a worry-free way. For instance, Busola Fadipe is creating COVID-19 awareness for children through animation.



Image Credit [Lara and Friends COVID-19 adventure](#)

Figure 2. 1: Animation of Covid-19 Awareness for Kids

Based on the observation, there are a few examples of digital comics in the market. The existing digital comic related to this project is Kids Gen Websites, A Comic for COVID-19 Awareness, and A Webtoon. First, the digital comic that is similar to this project is 'Kids Gen Websites.' This comic is developed to present some beautiful comics for kids, which they can read and enjoy. These comics have been customized for different geographies. Second, the digital comic that same as this project is 'A Comic for COVID-19 Awareness'.

This comic is to raise public awareness about Covid-19 and how they can protect themselves from the virus. Third, the digital comic that same as this project is 'Webtoon.' This comic is the most digital comic website, especially among teens and children. It has a lot of stories and exciting characters, which makes this website so popular. This comic is full of color, texture, and charm, and users can browse exclusive, all-new comics, webtoons and manhwa updated new every day.



Figure 2. 2: Screenshot of Kids Gen Websites (Children Comic)

<https://www.kidsgen.com/comics/>

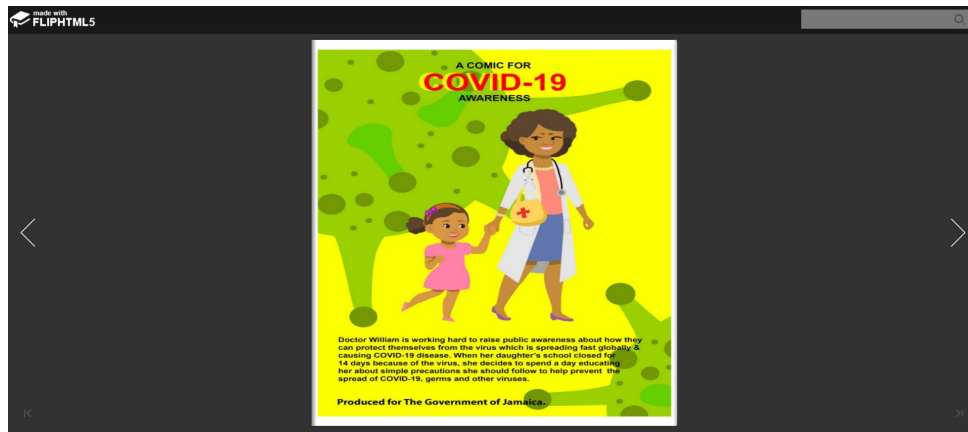


Figure 2. 3: Screenshot of A Comic for COVID-19 Awareness
<https://online.fliphtml5.com/xadfy/zhoo/?1585260768440#p=4>

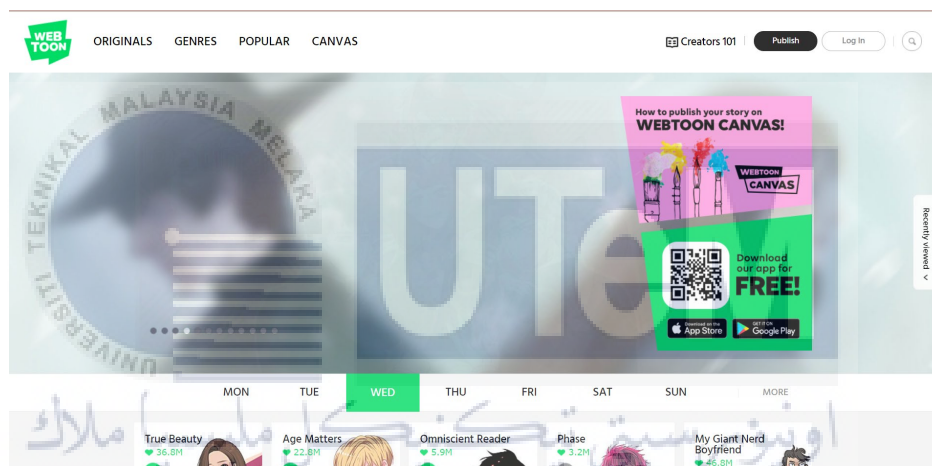


Figure 2. 4: Screenshot of Webtoon (<https://www.webtoons.com/en/>)

2.3.1 Comparison of Existing System

Kids Gen Websites, Tappytoon, and Webtoon use different styles and techniques to produce a high-quality product for each digital comic. Table 2.1 below shows what these existing systems use kind or method.

Table 2. 1: Comparison of Current Systems

System Specifications	Kids Gen Websites	Webtoon	A Comic for COVID-19 Awareness
Module/ Introduction	To present with some wonderful comics for kids, which they themselves can read and enjoys.	Digital comic that originated in South Korea. While webtoons were mostly unknown outside of the country during their inception, there has been a surge in popularity internationally thanks in great part to most manhwa being read on smartphones.	Step on how to protect ourselves from virus
Storyline	Not Interesting	Interesting	Not interesting
Page	Has a lot of stories	Has a lot of stories.	21
Characters	Refer stories in the comics	Refer stories in the comics	Eleven
Audio/sound language	English	English	English
Attractive character/ animation	No	Yes	No

2.4 Project Methodology

The development of this digital comic is based on the Multimedia Production Process. Three main stages in the multimedia production process start with Pre-production, Production and Post-production process and each step have their sub-phase. There are analysis and design phases for the Pre-production phase, while the Production phase comprises the development and testing phases. The last phase in the multimedia production process is the post-production phase that consists of three phases: testing, evaluation, and publishing or deliver. The diagram below shows the multimedia production process methodology. Figure 2.4 shows the multimedia production process methodology.

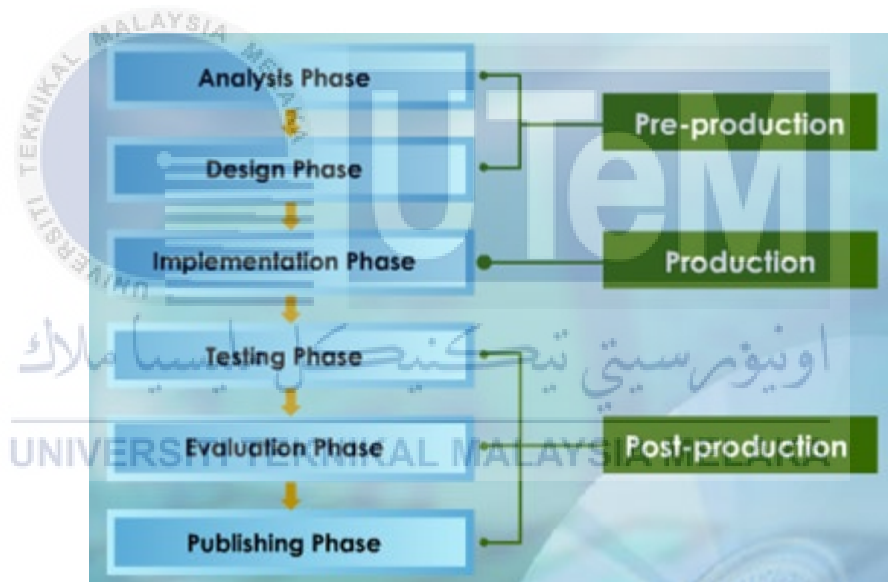


Figure 2. 5: Multimedia Production Process Methodology

2.4.1 Pre-production

In the pre-production process, the concept of the product is carried out. The basis for this conceptualization would be the blueprint procured from the design phase. This process is done by finalizing and completing pre-production documents such as storyboard, script, and audio plan. Then, Memoji/Animoji characters will be recorded using iMessage in iPhone XR. This process is connected with several steps. During this process, this project is at

the beginning stage where the storyboard is made, the design of the characters using Memoji, and the other related techniques. It is the process of intelligently mapping out a cohesive strategy for the multimedia project, including content and technical execution. In the pre-production process for this animation, the entire graphic, especially for the character, is used. For example, the character will be developed and re-recorded until the developer is satisfied with the character and suitable for the animation.

2.4.2 Production

Once all the pre-production phase has been completed, the multimedia application enters the production phase. In this phase, the Memoji character will develop the character and environment step by step in the module scene. In this process, the characters and scenes are modeled using the 2D and 3D authoring software. This phase is where the production starts with modeling the characters and the environment. Then, once the characters and scenes are completed, the characters will be animated, followed by rendering. Finally, all the audio, sound effect, or video already selected in the pre-production phase will be finalized whether it is suitable for the animation for the comic.

2.4.3 Post-production

Once the production phase has been completed, the multimedia application enters the last step, which is the post-production phase. In this phase, some activities have involved editing, adding audio, adding video and text in animation. Once the application is tested and revised, it enters the packaging stage. After that, it could be burned into CD-ROM or published on the internet.

2.5 Project Requirements

Project requirement involves software and hardware to develop animation projects. Software and hardware requirement is essential because it relates to each other. The combined use with software and hardware will produce a good and high-quality product.

2.5.1 Software Requirement

The software needed to develop this 2D animation project are as follows:

- i. Memoji/Animoji
- ii. Adobe XD
- iii. Adobe Illustrator
- iv. Adobe Premiere Pro Cc
- v. Adobe After Effects CC
- vi. Adobe Media Encore CC
- vii. Adobe Animate
- viii. Microsoft Word/ Powerpoint

2.5.2 Hardware Requirement

Besides software, hardware also is requirement that needs to develop the 2D animation project. The hardware requirement are as follows:

a) Personal Laptop

- **Processor:** 10th Generation Intel® Core™ i7 processor
- **Installed Memory (RAM):** 16.00 GB
- **System Type:** 64-bit Operating System, x64-based processor
- **Pen and Touch:** No pen or touch input is available for this display
- **External Hard Disk:** 1 TB

- b) iPad Mini, iPhone XR, Apple pen
- c) Printer
- d) Mouse
- e) Headphone/Earphone
- f) Microphone

2.6 Conclusion

For the closing stages, this chapter consists of the literature reviews and project methodology. First, this chapter describes the domain, the existing system, the methods used, and the project requirement. Then, the appropriate approaches and project requirements are stated to carry out the development of the project. For example, the Multimedia Production Process is selected for my digital comic development because it is not a typical digital comic for this project. Still, it also has animation in this project. The methodology is fundamental because they determine the progress flow of the project. Thus, it is crucial to select suitable ones to deliver the project according to the requirements specified earlier.

CHAPTER 3: ANALYSIS

3.1 Current Scenario Analysis

The purpose of the current system analysis is to identify shortcomings and issues with existing systems. In addition, it is used to assess the current systems' usefulness, usability, and overall user satisfaction to facilitate decision-making concerning the current systems' strategic and tactical viability.

Nowadays, many various kinds of digital comics have been produced in the market. Many different types of digital comics were developed for users, such as children, teenagers, and adults. However, some of the digital comics that had been produced did not get attention from society. This is because now video such as 3D or 2D animation is more popular than digital comics. However, digital comic such as Manga and Webcomic is popular among teenager in the mobile application market.

The existing digital comic related to this project is Kids Gen Websites, A Comic for COVID-19 Awareness, and Webtoon. Those digital comics that exist in the market are animated moral stories for kids. These animations have their unique style in their storyline to educate the children. What makes Digicom different from others existed animation is that this animation is a more exciting storyline, easy to understand, and attractive for kids. In addition, there are more characters to support the information given for this animation, making the animation more interactive and interesting.

Figure 3.1 describes the storyline of the digital comic in simple ways. The digital comic starts with introducing the Memoji character and the explanation of COVID-19 awareness showed in the animation in the digital comic. The text is clear and easy to read. The styles of animation also can attract the students to focus on the animation in the digital comic. This project will design the animation with the styles in mind.

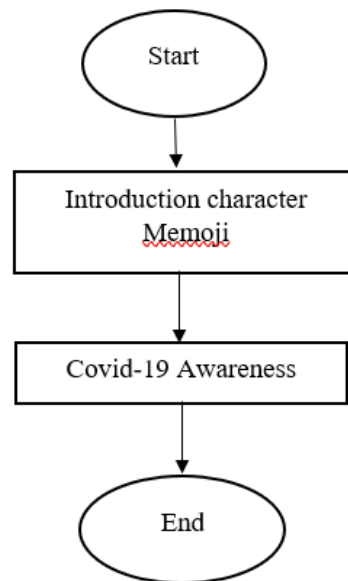


Figure 3.1 Digital Comic Storyline

3.1.1

Kids Gen Websites

This digital comic has many children's stories that kids can enjoy reading freely on their websites. The differences between these existing digital comics with this project are it is provided more interesting facts to be better understood by children. This fact will be used by a character created for the project. If we can see the digital comic, the characters are static, and there is no movement and reaction by the character. Other things that make DigiCom (Memoji as A Character Development in Digital Comic) is different from Kids Gen Websites. This digital comic shows more information and module to share about Covid-19 and more enjoyable will implement animation in the digital comic. In contrast, Kids Gen Websites only shows and stresses kid stories with no animation to be taken at each age. Figure 3.1 and Figure 3.2 show that some of the screenshots from websites of this digital comic.



Figure 3. 1: Screenshot of Kids Gen Websites

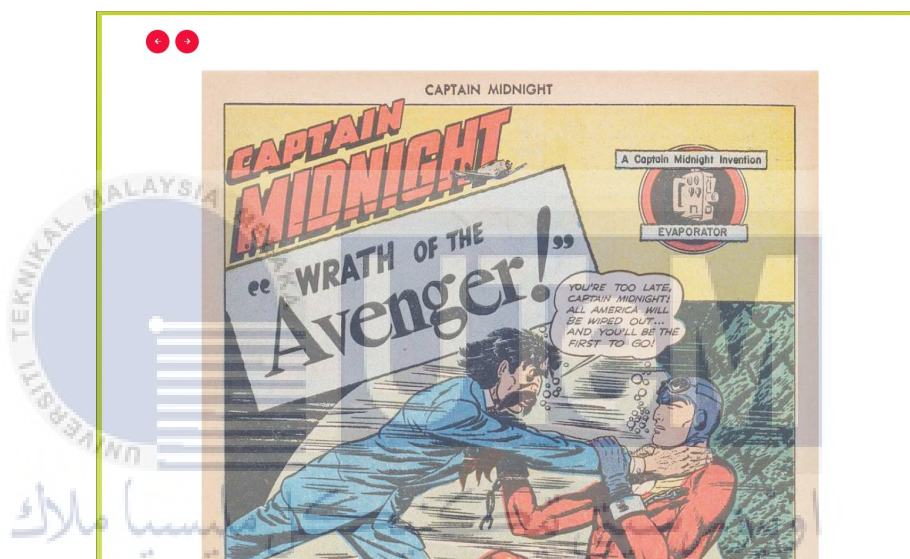


Figure 3. 2 : Screenshot of Kids Gen Websites

3.1.2 A Comic for COVID-19 Awareness

This digital comic is more to children's stories that kids below 12 years old can enjoy reading freely on their websites. The differences between these existing digital comics with this project are it is provided more interesting facts to be better understood by children. This fact will be used by a character created for the project. If we can see the digital comic, the characters are static, and there is no movement and reaction by the character. Other things that make DigiCom (Memoji as A Character Development in Digital Comic) different from A Comic for COVID-19 Awareness; this digital comic shows more information and module to share about Covid-19 more attractive will implement animation in the digital comic. In contrast, A Comic for COVID-19 Awareness only indicates and stresses kid stories with no animation to be taken at each age. Figure 3.3 shows that some of the screenshots from the websites of this digital comic.



Figure 3. 3: Screenshot of A Comic for COVID-19 Awareness

3.1.3 Webtoons

For this digital comic, it is the most digital comics between children and which they can enjoy reading on their websites with full of exciting stories, color, and character. The differences between these existing digital comics with this project are it is provided more interesting facts to be better understood by children. This fact will be used by a character created for the project. If we can see the digital comic, the characters are static, and there is no movement and reaction by the character. Other things that make DigiCom (Memoji as A Character Development in Digital Comic) is different from Webtoon; this digital comic is shown more information and module to share about Covid-19 and more engaging will implement animation in the digital comic. In contrast, Webtoon Websites only shows and stresses many stories with no animation to be taken at each age. Figure 3.4 shows that some of the screenshots from the websites of this digital comic.

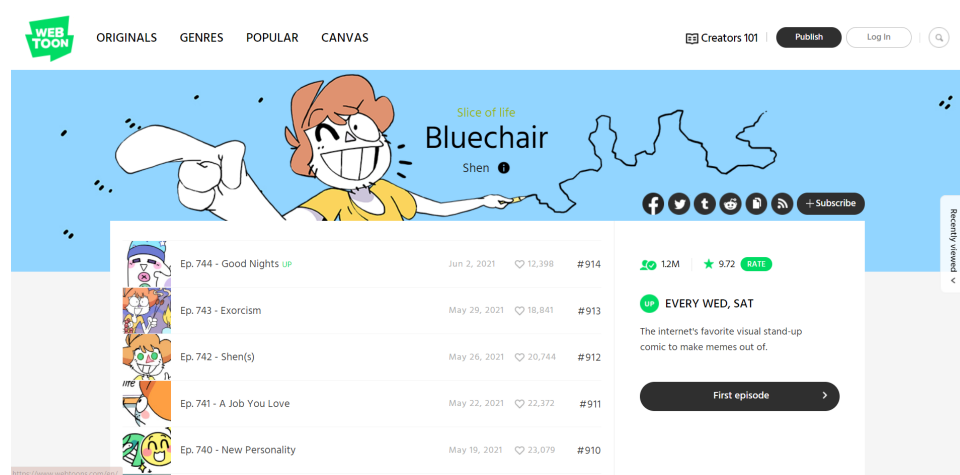


Figure 3. 4: Screenshot of Webtoon

3.2 Requirement analysis

3.2.1 Project Requirement - Analysis of system to be developed.

Many requirement analyses should consider while producing this, such as audiences and subject experts. Requirements and analysis phases focus on understanding the problem, and the software and hardware requirement have also been discussed in this project.

For project requirements, this system should be analyzed before it is developed. For example, it requires examining the element that must-have in the storyboard, the character of the animation, and the storyline. The same goes for the software requirement. Finally, it will discuss the software used to develop the system and documentation of the project.

3.2.1.1 Requirement Gathering

This interactive digital comic project was developed by using Memoji characters where each scene and environment are created using 2D and 3D animation software Blender, Adobe Premiere Pro, Canva and Adobe After Effects CS6. To produce an excellent digital comic, a prefix plan must have the characteristic to be developed. There are details about the digital comic project:

- i. **Module:**
 1. Introduction of Coronavirus?
 2. How to aware with the Covid-19
 3. How to keep yourself safe.
 4. Importance to follow the MCO.
- ii. **Title:** Memoji as A Character Development in Digital Comic
- iii. **Languages:** English
- iv. **Target user:** Under 15 years old
- v. **Aim:** Awareness of Covid-19

3.2.1.2 Module

The module for this project is based on frequently asked questions about Covid-19, which is essential to educate the audience to understand and be aware of Covid-19 to protect everyone, especially children. Besides, it ensures that the audience may know the implication of suffering if they do not act. This approach can be used by parents, teachers, and health institutions as an alternative way to educate children and the community about the importance of awareness of Covid-19. Content verification has been done to develop a substantial project with solid and accurate knowledge.

3.2.1.3 Character Details

To create a character, it needs to do some sketches of the ideas regarding the project. Digital comics essentially make a character sheet that shows every possible character viewpoint that represents what is required. For this animation, there are seven characters to support the story, making the animation more interesting. User can choose the character they want for the comic. The characters are representing the multiracial and ethnic in Malaysia. Character in this animation is:

- i. **Ana is the main character.**
- ii. **Afif is the main character and brother of Ana.**
- iii. **Opi is an octopus which is the main character's pet.**
- iv. **Mama is the mother of Ana and Afif.**
- v. **Wendy is the main character.**
- vi. **Izz is the main character and brother of Lily.**
- vii. **Lily is the main character.**

All characters represent the good attitudes and behavior in this animation, but only one essence with the disease infection to show to audiences about coronavirus. Characters are important in animation because they will deliver the message for audience perceptions.

3.2.1.4 Additional Ideas

The additional ideas are based on the questionnaires answered by the target users. Thirty-two respondents give their feedback about the main ideas. This feedback focuses on the first objective, which is to investigate the guidelines of the Memoji as character development in the digital comic (DIGICOM). The figures below show the result of the questionnaires.

Age

32 responses

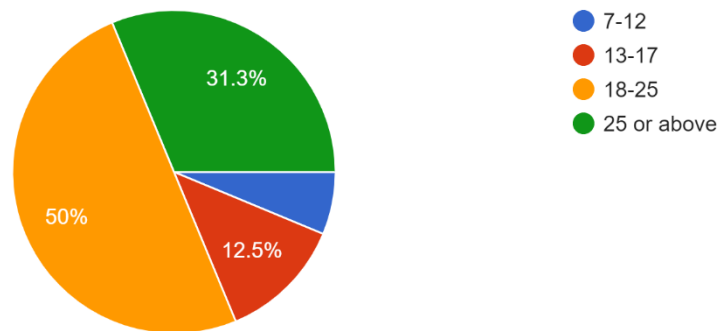


Figure 3. 5: Pie Chart of Question 1

Figure 3.5 shown that most of the respondent are between 18-25 years old which is 50%. There is 31.3% of respondent from 25 years old and above. There is 12.5% of respondent from 13-17 years old. The others of respondent are from 7-12 years old.

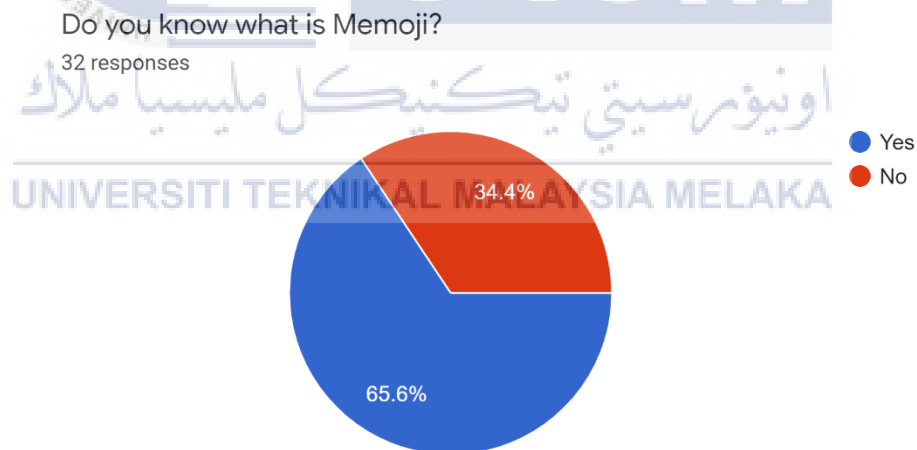


Figure 3. 6: Pie Chart of Question 2

Figure 3.6 shown that 65.6% of the respondent chose Yes that they know what is Memoji and there is 34.4% of the respondent chose No. Thus, the most the respondent know what is Memoji.

Do you love to read digital comic?
32 responses

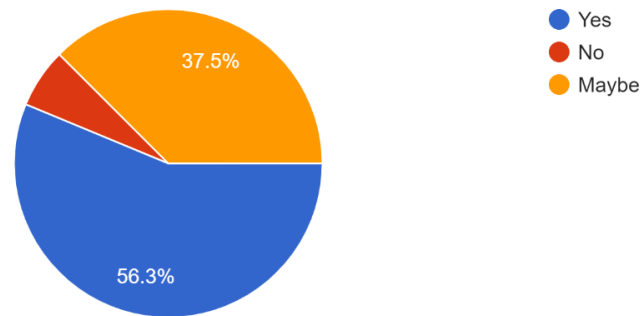


Figure 3. 7: Pie Chart of Question 3

Figure 3.7 shown that 56.3% of the respondent chose Yes that they love to read digital comic, there is 37.5% of the repondent said Maybe and there is others of the respondent chose No. Thus, the most the respondent love to read digital comic.

How much time do you spend to reading a digital comic in a day?
32 responses



Figure 3. 8: Pie Chart of Question 4

Figure 3.8 shown that 40.6% of the respondent rate 1 hours for how much time do they spend to reading a digital comic in a day, there is 12.5% of the repondent rate 6 hours, there is 9.4% of the repondent rate 2,4 and 7 hours, there is 6.3% of the repondent rate 8 hours and others of the respondent chose 3, 5, 9 and 10 hours. Thus, most of the respondent spend 1 hours on reading a digital comic in a day.

Do you think a digital comic that has animation is interesting?

32 responses

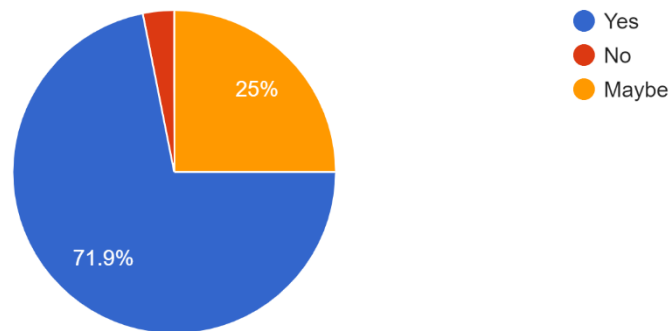


Figure 3. 9: Pie Chart of Question 5

Figure 3.9 shown that 71.9% of the respondent said Yes for do they think a digital comic that has animation is interesting, there is 25% of the repondent said Maybe and others of the respondent said No. Thus, most of the respondent think that digital comic that has animation is interesting.

How much do you rate for a digital comic that has animation and develop by using Memoji?

32 responses

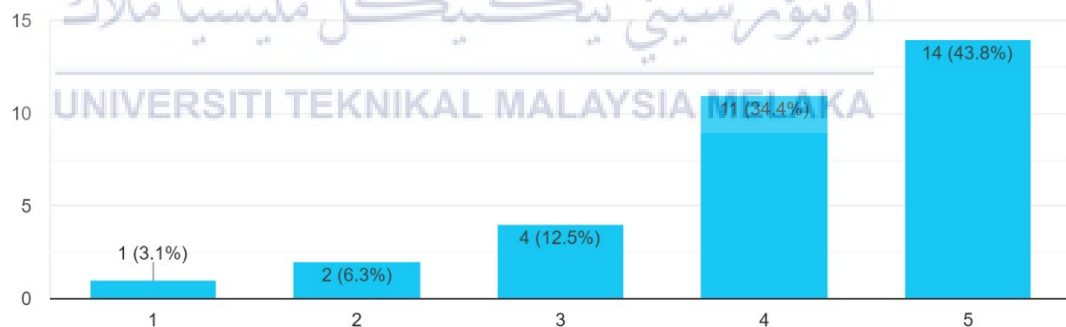


Figure 3. 10: Pie Chart of Question 6

Figure 3.10 shown that 43.8% of the respondent said rate 5 for a digital comic that has animation and develop by using Memoji as the character development, there is 34.4% of the repondent rate 4, there is 12.5% of the repondent rate 3, there is 6.3% of the repondent rate 2 and others of the respondent rate 1. Thus, most of the respondent rate 5 for a digital comic that has animation and develop by using Memoji as the character development.

3.2.2 Software Requirements

This project needs the software to develop the digital comic such as software in development and documentation.

3.2.2.1 Software for Development

i. Adobe Illustrator

A vector-based software which mainly focuses on resolution independent graphic. Creating a character and environment of animation using this software.

ii. Adobe Premiere Pro CS6

A video editing software that is used to edit the video, add the audio and create an introduction scene.

iii. Adobe After Effects Pro CS6

A digital visual effect and compositing software that is used in the post-production process of animation making. It is used for keying, animation and adding special effect in the project. Also functions as non-linear editor, audio editor and media transcode.

iv. Autodesk Sketchbook Pro

A desktop and mobile application software product that referred to as SketchBook, is a raster graphics software app intended for expressive drawing and concept sketching. It was first developed by Alias Systems Corporation, before being acquired by Autodesk.

v. Blender

Blender is a free and open-source 3D computer graphics software toolset used for creating animated films, visual effects, art, 3D printed models, motion graphics, interactive 3D applications, virtual reality, and computer games.

vi. Adobe Media Encoder

A video and audio converter that support many formats and it is responsible for encoding video file to the proper format to ensure they can be played on different device.

vii. **Audacity**

An audio editor that can record live audio through microphone and mixer. Plus, it used to edit the audio and remove any unnecessary noise from the audio.

3.2.2.2 Software for documentation

i. **Microsoft Word 2016**

Microsoft Word is a word processor software that able the user to create, edit. Save and deliverable format for worldwide. Microsoft Word is a power software that complete every need in a documentation such as table, table of content, figures, pages and etc.

ii. **Microsoft Project 2016**

Microsoft Project is a software tool to create the project schedule and milestone. It is used for creating Gantt chart for development planning of this project.

3.2.3 Hardware Requirement

Besides software, hardware also is requirement that needs to develop the digital comic project. The hardware requirement are as follows:

i. **Set of Personal Laptop**

All the software for the requirements is installing in the personal computer. They are used to implement the project through that personal computer. To build this project, the minimum requirement of a personal Laptop Processor: 10th Generation Intel® Core™ i7 processor, installed Memory (RAM): 16.00 GB, system Type: 64-bit Operating System, x64-based processor, pen and Touch: No pen or touch input is available for this display, External Hard Disk: 1 TB.

ii. **iPhone XR**

This hardware is used to create the Memoji character.

iii. **iPad Pro**

This hardware is used to draw the storyboard, character and the animation.

iv. Mouse

To make sure the work is a lot easier than use touchpad personal computers.

v. Headphone/Earphone

To clearly listen the audio or sound of the voiceover and characters voice.

vi. Microphone

To record the audio of voiceover and characters voice.

3.3 Project Schedule and Milestones

3.3.1 Project Schedule

No	Task	Week														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Gather the information. and do the guidelines															
2	Movie marathon and brainstorming ideas															
3	Create storyboard															
4	Character design															
5	Development process															
6	Report chapter 1															
7	Report chapter 2															
8	Report chapter 3															
9	Integration process															
10	Correction															
11	Final Presentation and submission															

Table 3. 1: Gantt chart of Project Development

The Table 3.1 is the planning progress throughout the 15 weeks in semester 2 2019/2020 for PSM1.

No	Task	Week														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Report chapter 4															
2	Report chapter 5															
3	Alpha testing															
4	Beta Testing															
5	Report chapter 6															
6	Report chapter 7															
7	Final Presentation and submission															

Table 3. 2: Project Timeline PSM 2

Table 3.2 shows the project timeline for PSM2 during semester 1 2020/2021

3.4 Conclusion

In conclusion, the analysis phase is essential in analyzing the current system and the new project development. This chapter discusses the problem analysis in the existing system. The software, hardware, and user requirements are used to develop the project. The latest software and hardware are used to synchronize with the technology growth. Project schedule and milestones are essential to produce an animation project that can be run smoothly and orderly. The milestones are to show the project schedule information of the animation project. Besides that, requirement analysis is fundamental to identify user needs, which contains need analysis, user analysis, resources analysis, and requirement gathering. The next chapter will be discussed the design of the project.

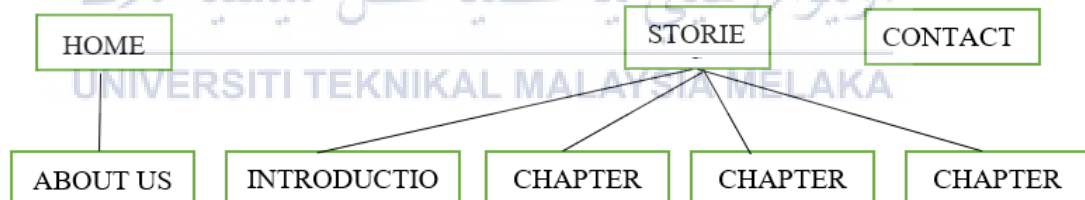
CHAPTER 4: DESIGN

4.1 Introduction

In this chapter, the project design will be discussed thoroughly. The previous chapter had been explained about the methodology which is consist of three phases. In this chapter, the discussion is about the process of the phases.

4.2 Scene Sequence Diagram

Figure 4.1 below shows the sequences that contain in the digital comic. This diagram shows the entire scene that user will experience. For examples, user the loading scene will be play and follow by the montage scene and resume to the next scene according to this sequence diagram.



**Figure 4. 1 Flow for DigiCom in websites
(Memoji as A Character Development in Digital Comic)**

4.2.1 Scene Description

The first phase is the introduction of the comic. The animation in the comic will show the character is introducing herself. Suddenly his brother come to her and asking what she's doing. Then, they started talk about the Covid-19 awareness. The phase indicates the exploration of the character in the comic. This is where the user will get the knowledge about Covid-19.

4.3 Preliminary Design

4.3.1 Storyboard & Character Design

PRODUCTION

STORYBOARD - ASPECT RATIO 1:77 - 16:9 PAGE#



Scene # 1

Shot #





PRODUCTION

STORYBOARD - ASPECT RATIO 1:77 - 16:9 PAGE#

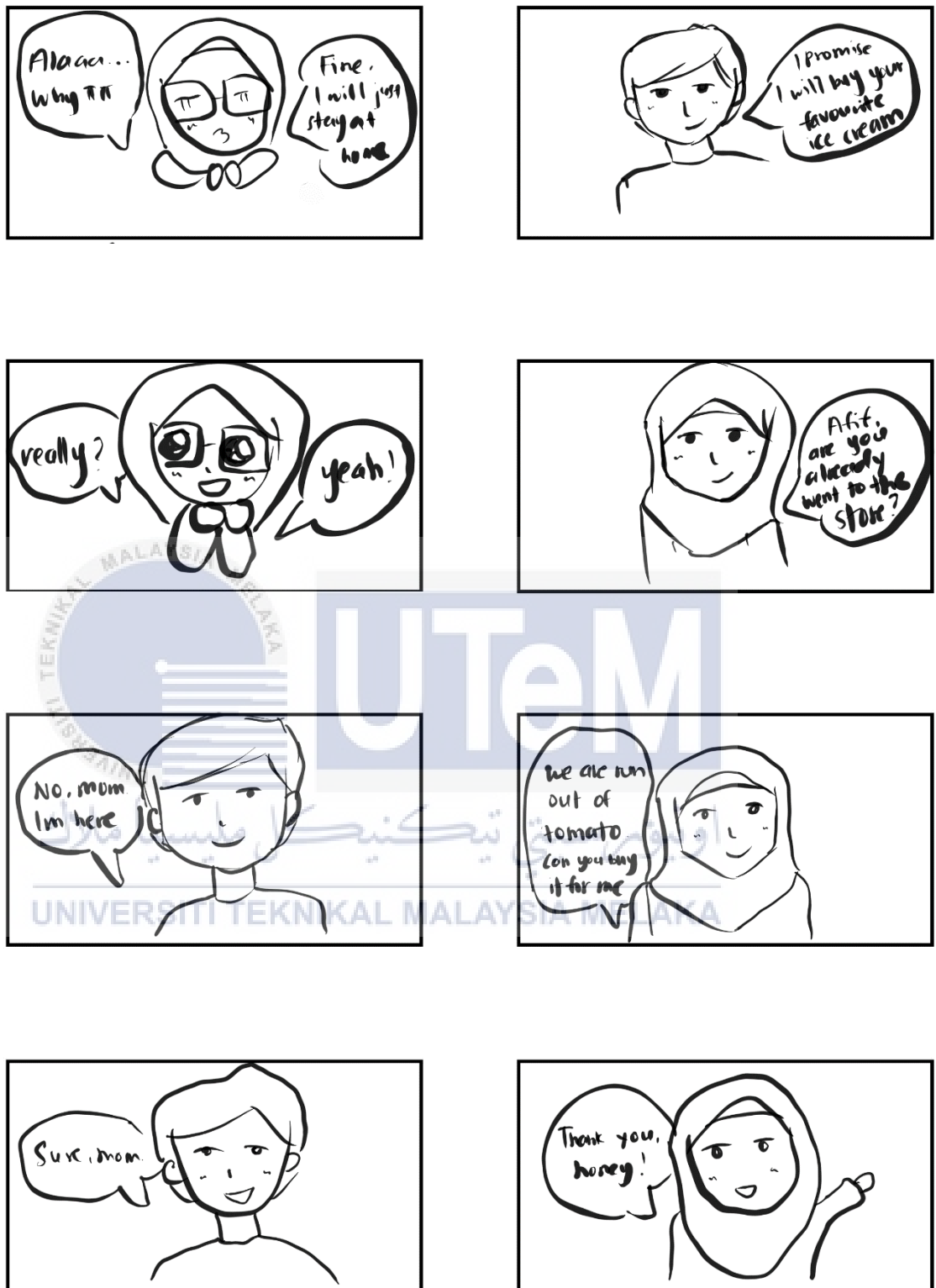
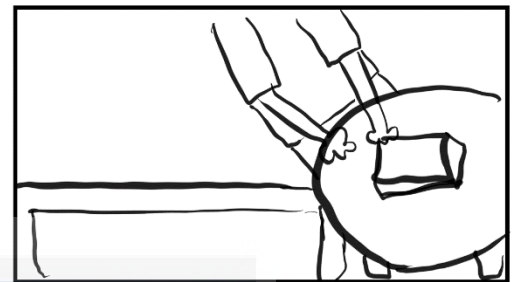


Figure 4. 2: Storyboard 4

PRODUCTION

STORYBOARD - ASPECT RATIO 1:77 - 16:9 PAGE#

Scene # **2** Shot #

PRODUCTION

STORYBOARD - ASPECT RATIO 1:77 - 16:9 PAGE#

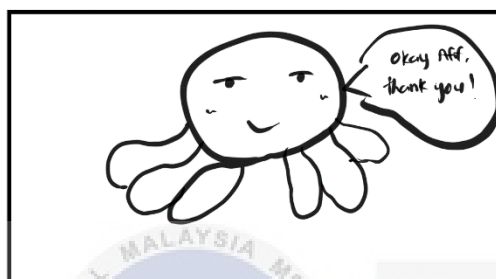


Figure 4. 3: Storyboard 2

PRODUCTION

STORYBOARD - ASPECT RATIO 1:77 - 16:9 PAGE#



Scene # 3

Shot #



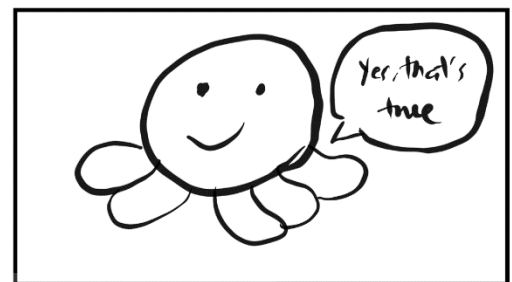
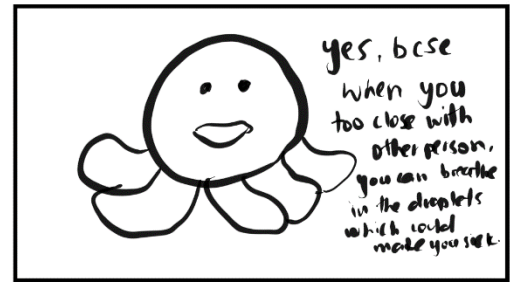
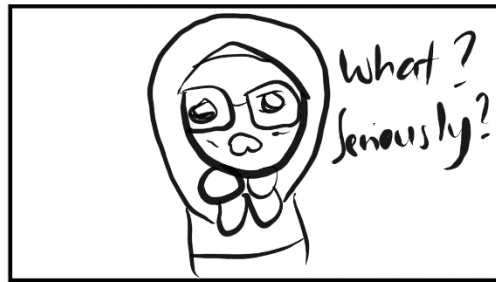
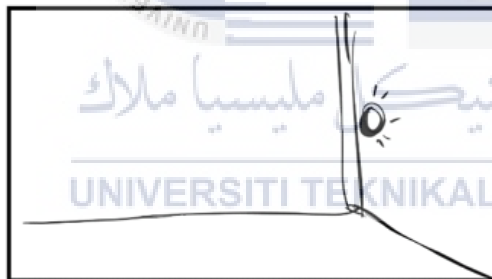


Figure 4. 4: Storyboard 3

PRODUCTION

STORYBOARD - ASPECT RATIO 1:77 - 16:9 PAGE#





PRODUCTION

STORYBOARD - ASPECT RATIO 1:77 - 16:9 PAGE#





Figure 4. 5: Storyboard 4

Figure 4.1, Figure 4.2 Figure 4.3, Figure 4.4 and Figure 4.5 is the next storyboard for the digital comic. The storyboard shows the storyline of the digital comic for this project.

4.4 Script (Narration)

PART 1 (Introduction)

In the living room

Ana: Hello, Hi guys! I am Ana. So how you guys doing?

Bla..blaa..blaa

Afif: What are you doing, Ana?

Ana: Well, I am talking with my friends, and follower.

Afif: huh??

Ana: I am talking with them in my there, want to join me, Abang?

Afif: Oh no, thank you. I am going out.

Ana: Where are you going? Mommy said that we cannot going out because of Coronavirus, and we are having MCO right now.

Afif: Yes, I know but we are run out of milk, so mom asking me to buy it.

Ana: Oh, like that, Can I follow you then ** making a cute face**

Afif: Sorry Ana, but no. Like you said just now our country are having MCO right now so only one person can go out to buy necessities all the time.

Ana: No Abang, the new rules said 3 people in one car means that 3 people can go out to buy necessities all the time.

Afif: Oh, okay but I still will not let you come together, I just going to buy milk for mom. You just stay at home because it is safer than the outside.

Ana: Alaaaaa..why hoho okay fine I will just stay here **sulking face**

Afif: I promise I will buy you favorite ice cream, okay?

Ana: Really? Omg, I love you Abang, you are the best brother ever! **happy**

Mommy: **from far** Afif, are already went to the store?

Afif: No Mom, I'm here.

Mom: Alhamdulillah, we are run out of tomato too, can you buy it for me.

Afif: sure mom.

Mom: Thank you, honey.

Ana: Abang, before you go out, do not forget to wash your hand and wearing mask. Do not forget to sanitize your hand always and keep social distancing with other people at least 10meter.

Mom: Wow, Ana. You're so good.

Ana: Hihi, I remember what I already learn in online learning at school.

Afif: That is good. Thank you for remembering me.

****part 2** why should we wear mask.**

Afif: Mom, where is the new mask?

Mom: I think I put in the table in the living room.

Afif: Ok mom, thank you.

Opi: Do you really need to wearing mask?

Afif: Yes, of course. We must wear a mask whenever we leave the house! Doctor said that Coronavirus could be an airbourne disease. So to keep ourselves safe, we must wear a mask.

Opi: what do you means by airbourne disease?

Afif: Airbourne disease means we can catch the coronavirus disease by breathing in infected air. When someone with Covid-19 coughs, sneezes, or talks, they spray small droplets into the air. These small droplets contain the virus and it can survive up to 3 hours in the air. They can also land on people or surfaces.

Opi: I see now why it is so important to wear a mask so we can protect ourself and those around us.

Afif: yes, thats true. Dont forget to cover our nose and mouth with a bent elbow when coughing or sneezing and always wear a face mask in public.

Opi: Okay Afif, thank you.

**** part 3 Maintain social distancing****

Opi: Hey Ana, what's up with the long face? Why you look so sad?

Ana: Well, nothing. I just miss hanging out with my friends. I can't wait to go to school. We are always home; we can't go anywhere except to buy food.

Opi: Well, but still if you go back to school, you'll have to maintain social distancing between you and your friends. This means no touching or sharing of food or any other items such stationary with them.

Ana: What! Seriously?

Opi: Yes, I know it sucks right? But when someone talks, sneezes, coughs, they spray small droplets or particle from their noses or mouth which may contain the COVID19 virus, even if they do not feel or look sick. If you're too close to that person, you can breathe in the droplets which could make you sick.

Ana: Ouhh, hm now it all makes sense. Geez, I really need to keep my distance from other people.

Opi: Yep, we just need to make sure that we are standing at least 1.5 metres away from other people, even when you're at school.

Ana: Okay Opi, thank you for the information. Now I understand why keep social distancing at least 1.5 metres from other people in public is very important.

****part 4 disinfect frequently touched surfaces****

Slam door

Afif: Assalamualaikum, I'm home.

Ana: Waalaikumsalam, Abang is home.

Afif: Alhamdulillah, lucky you're not following me, Ana. There are so many people in the store.

Ana: Really? Why there are so many people Abang?

Afif: I don't know. Maybe they are panic buying because tomorrow the government will do the total lockdown in the whole country.

Ana: What? Really? That's mean I can't go to school againnn. No!

Afif: Be patient. People are not following the government protocols, and this is increasing the spread of coronavirus cases in Malaysia. That's why we always need to stay safe and following the PKP such as wear mask, keep the social distancing and there are so many ways to stay safe such as regularly disinfect all surfaces and most used objects.

Ana: But Abang, why we need to regularly disinfect all surfaces and most used objects? Is that will really protect us from catching COVID-19?

Afif: Good question Ana. Well, this virus can live for hours and even up to days on clothes and surfaces like countertops, doorknobs, phones, keys, cards, and even on your groceries. So, frequently cleaning all surfaces with common household disinfectants such as bleach, will kill the virus. And that's why we should always wash our hands with soap and water or use a 60% alcohol-based sanitizer after touching any surface, packaging or waste materials.

Ana: Oh, I have an idea! I need to record a video to tell all my friends and follower to remind them to wash their hands regularly and disinfect all their surfaces too.

Afif: Hey, hold you horses. Help me disinfect these groceries and then wash your hand when you're done. Then, you can record it, okay.

Ana: Okayyy!

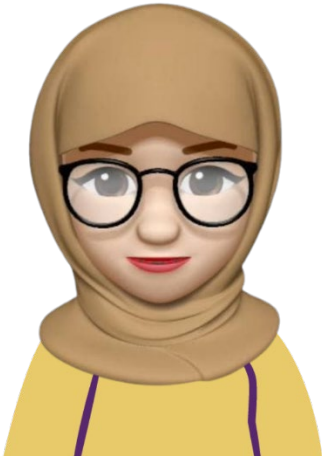
4.5 Character Profile

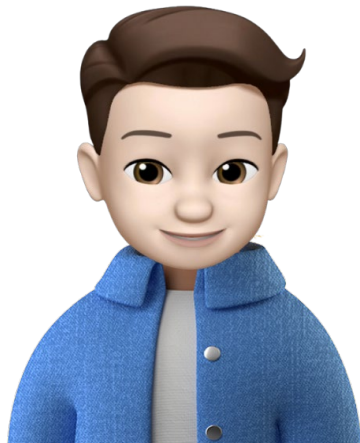
Character is important because this character will deliver the message from the digital comic. If the character failed to do so, the story will become dull and not practical. For this digital comic, seven characters are involved: Ana, Afif, Opi, Wendy, Lily, Izz, and Mama. In this digital comic, all characters show good characters and will give good messages to audiences. The following Figure 4.5.1. shows the character's profile of the digital comic.

4.5.1 Scene Description

The first phase is the introduction of the comic. The animation in the comic will show the character is introducing herself. Suddenly his brother come to her and asking what she's doing. Then, they started talk about the Covid-19 awareness. The phase indicates the exploration of the character in the comic. This is where the user will get the knowledge about Covid-19.

Table 4. 1: Description about Characters

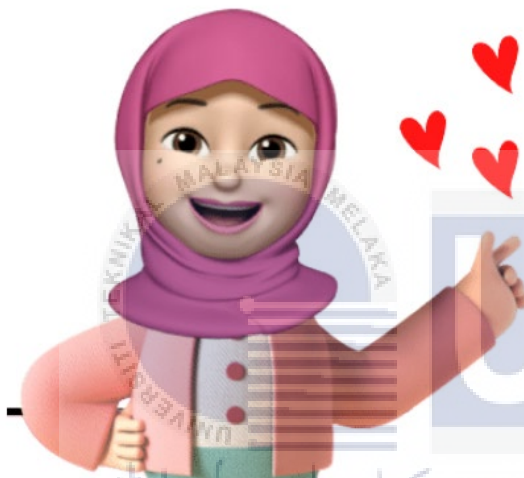
Characters	Description
	<p>Name: Ana (Main character 1)</p> <p>Age: 12 years old</p> <p>Gender: Female</p> <p>Feature: Kindness, a Spoiled, Caring Attitude: Good, Kind.</p>



Name: Afif (Main character 2)

Age: 20 years old Gender: Male

Feature: Kindness, Cool, Caring Attitude:
Good, Kind, Firm



Name: Lily (Main character 3)

Age: 13 years old

Gender: Female

Feature: Good, Kind, Cute, Pampered.


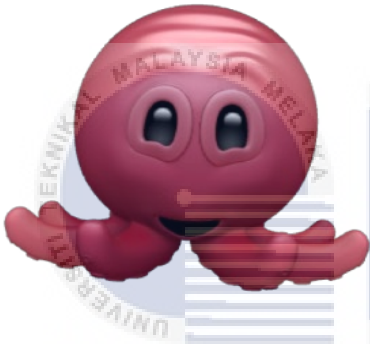



Name: Izz (Main character 4)

Age: 18 years old

Gender: Male

Feature: Good, Kind, Firm.

	<p>Name: Wendy (Main character 5)</p> <p>Age: 15 years old</p> <p>Gender: Female</p> <p>Feature: Good, Kind, Pretty.</p>
	<p>Name: Opi</p> <p>Age: 6 months Gender:</p> <p>Male Feature: Cute</p> <p>Attitude: Good, Curious pets.</p>
	<p>Name: Mama</p> <p>Age: 42 years old</p> <p>Gender: Female</p> <p>Feature: Kindness, Lovely, Caring</p> <p>Attitude: Good, Kind, Lovely.</p>

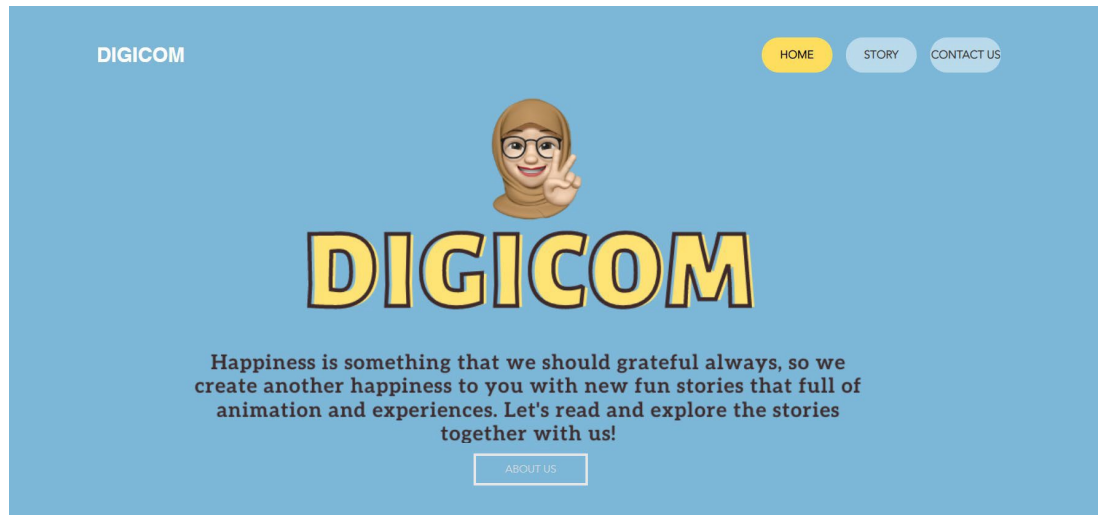


Figure 4. 6: Home Page (Digicom)

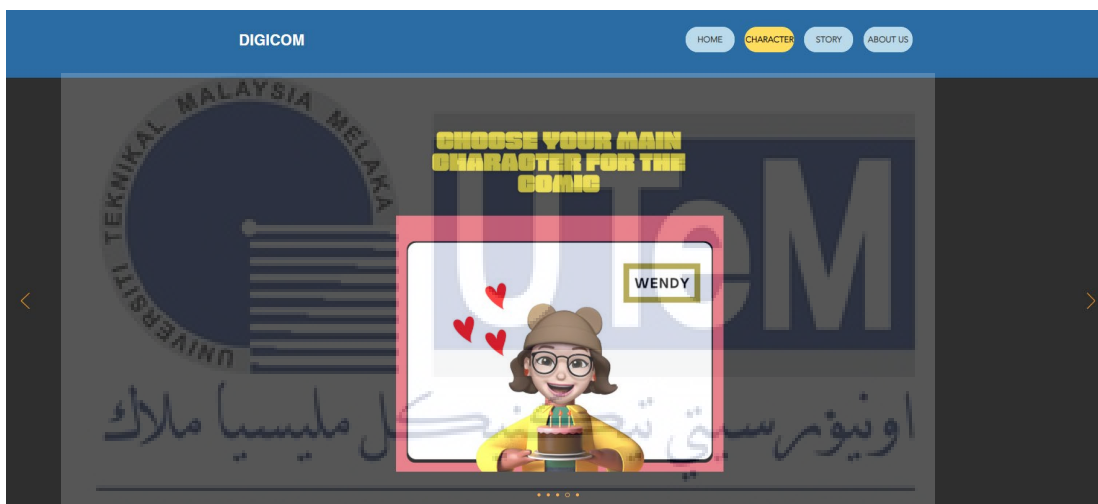


Figure 4. 7: Choose Character Page (Digicom)

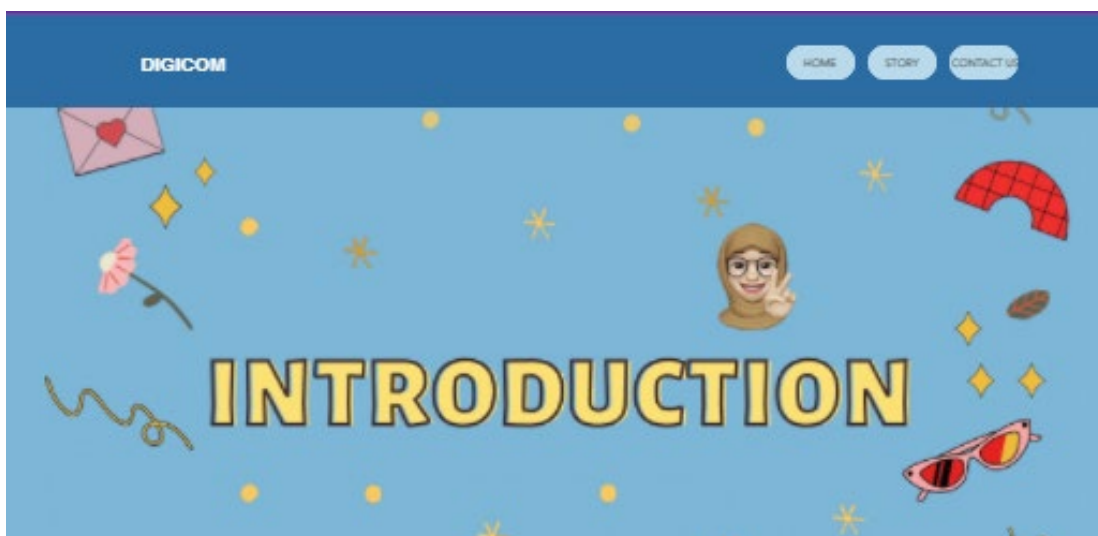


Figure 4. 8: Story Page (Digicom)

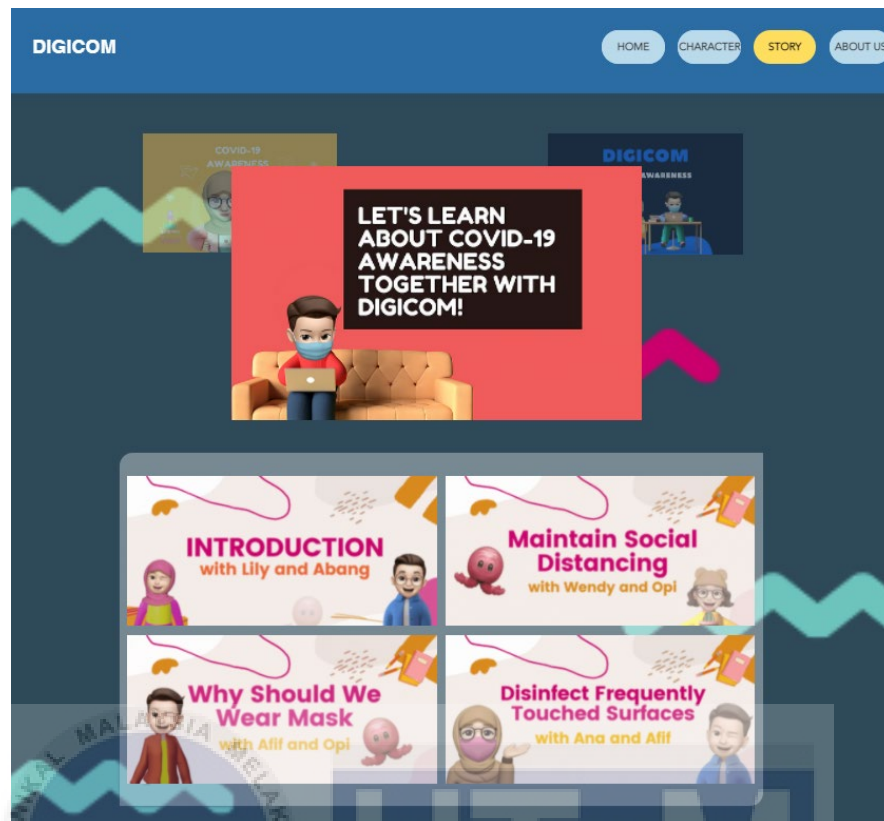


Figure 4. 9: Introduction Page (Digicom)

Figure 4.6, 4.7, 4.8, 4.9 and Figure 4.5.6 below shows the screenshot of Digicom websites for the project.

4.6 Conclusion

The character is develop using Memoji character and the storyboard and character design are state in this chapter. These ideas will be used to create the digital comic in this project.

CHAPTER 5: IMPLEMENTATION

5.1 Introduction

Implementation phase is a process that involve in the project. This chapter will discuss further about how the animation be implemented.

5.2 Media Creation

To update List of Figures, place the cursor on the list that needs to be updated. Next, click on the icon “Update Table” under References tab to list down the updates, as shown in Figure 4.1.

5.2.1 Production of Graphics

The graphics involves in this project are develop using Memoji in iPhone XR. Besides, object of this project is drawn by iPad. The software and application that be used is Sketchbook, Canva and Blender. The first step is to create the character. Second step is creating the body of the character and object using Blender software. Third step is designing the background of each scene and the last step is combine all and render it to one video in mp4 format.

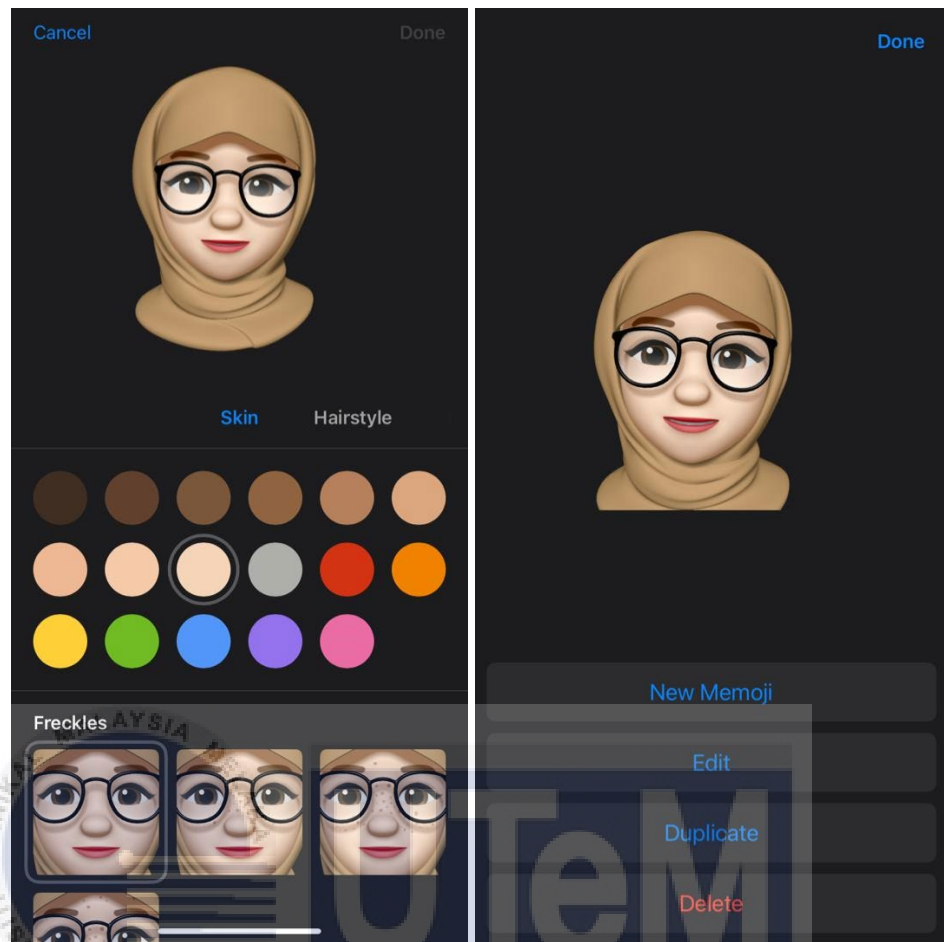


Figure 5. 1: Create Memoji Character



Figure 5. 2: Record the character that had been created

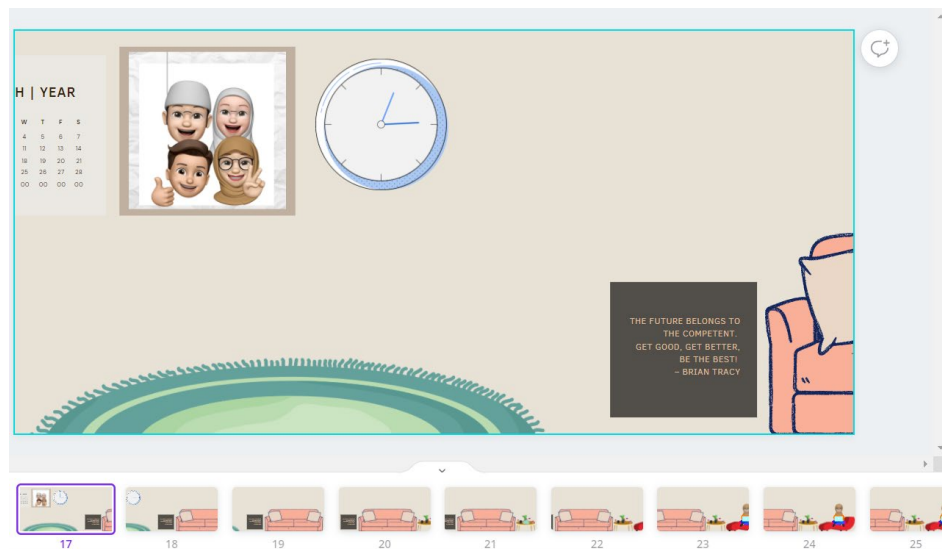


Figure 5.3 Background design

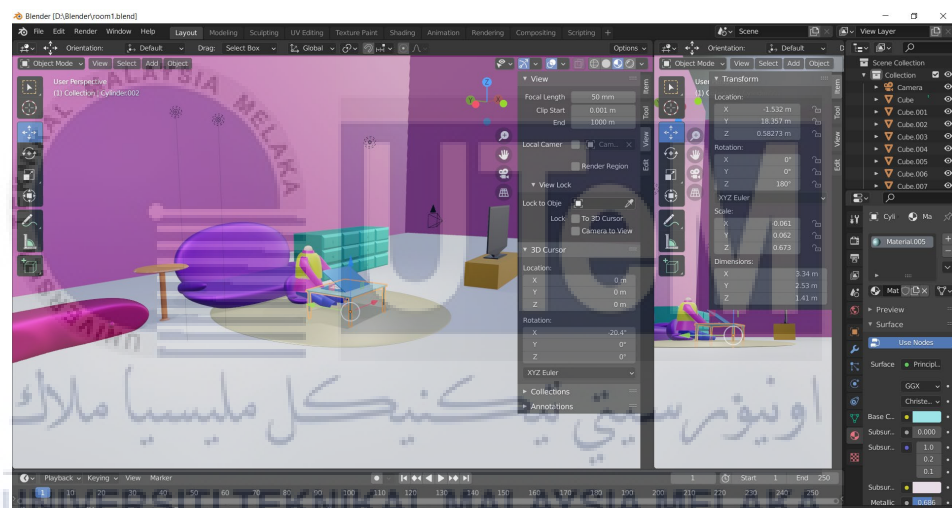


Figure 5.4 Create the body of the character, the background and the object

5.2.2 Production of Video

After each character is complete, scene by scene is recorded using iMessage using the Memoji character that has already been created. After each animation scene is done, all the settings will be compiled using iMovie then converted into Premiere Pro/Filmora. After that, the body and background of each scene will be drawing, design, and created using Blender, Adobe Illustrator, Sketchbook, and Canva. Finally, a particular part of the scene will be edited. Then the video will be rendered using format H.264.

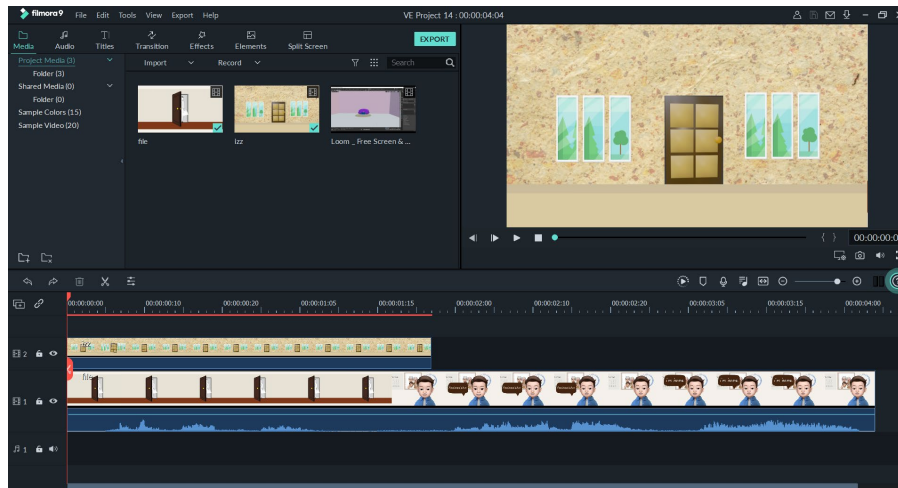


Figure 5. 5 Video Editing

Figure 5.5 shows the software to edit the final product of the animation.

5.3 Media Integration

The scene from the iMovie, Sketchbook, Canva, and Adobe Illustrator will render. Then, all the scenes will be compiled using Adobe Premier Pro. The background music and sound effect will be added later after all the scenes are complete. After editing the video, the video will be rendered in MP4 video format. Finally, the rendered video will upload on the websites. The primary audience for this animation is children under 15 years old.

5.4 Product Configuration Management

5.4.1 Configuration Environment Setup

Table 5. 1 Configuration Setup

Software	Configuration Setup
iMovie	Frame size: 1920 x 1080 Frame rate: 30 fps Format: MP4
Adobe Premier Pro	Frame size: 1920 x 1080 Frame rate: 30 fps Format: MP4

The table shown the environment setup for the software. The player for this animation can be played any kind of media player because the format of the video is MP4.

5.5 Conclusion

This chapter is discussed about the steps to make the animations for the digital comic and the implementation of the media. The detail of the configuration also being stated in this chapter.



CHAPTER 6: TESTING

6.1 Introduction

The testing phase will be the emphasis of this chapter. The purpose of the testing phase is to determine the project's effectiveness and value to the target user. There will be two sorts of testing for the animation: alpha testing and beta testing. Alpha testing is a step in which a multimedia expert evaluates the digital animation comic and makes suggestions for improvement. Meanwhile, beta testing is for the target users of this project. This group of people will be given a questionnaire and give their feedback about the finished project.

6.2 Test Plan

6.2.1 Test User

There will be two groups of users, which are an alpha tester and a beta tester. For the alpha tester, a multimedia expert had been chosen to review the finished project. The tester is the lecturer from UTeM. He or she will review and comment on the animation.

Beta tester is the main target for the digital comic. There will be 22 person that love to read digital comic and aware with the COVID-19. This group of people are from the WhatsApp and residential area of Taman Kasawari, Durian Tunggal. The table below is the web application for user to use.

6.2.2 Test Environment

The environment for testing phase is using online platform. All the testers had given the link to view the animation and after that they will answer the questionnaires given.

Table 6. 1: Web Application for testing

Web Application	Description
Websites	Application to watch the digital comic.
Google Form	Answer the question based on the animation

Table 6.1 shows the description of the web application that being used for the testing phase.

6.3 Test Implementation

6.3.1 Test Description

The question for the alpha tester is to focus more on the multimedia element. The discussion with the multimedia expert is via email and WhatsApp messenger. The tester will comment and give their opinion to improve the animation with their knowledge.

Besides, the questions for beta testers are focused on the effectiveness of the animation. The feedback from the tester will determine if the animation can achieve the project objectives. The tester will answer the questionnaire in Google Form that is attached in Appendix B.

6.3.2 Test Data

The analysis of data collected from the beta tester as shown as table below.

Table 6. 2 Tester's Data

Tester's data					
	10 – 15	16 -19	20 – 24	25 and above	Total
Male	1	2	3	1	7
Female	1	1	10	3	15
Total	2	3	13	4	22

The table is the data of the testers which is from the target user.

Table 6. 3: Questionnaire Part 1

Part 2					
Questions	Excellent	Good	Average	Fair	Poor
C1	9	10	3	0	0
C2	9	11	2	0	0
C3	9	10	3	0	0
C4	10	10	2	0	0
C5	9	11	2	0	0

Table 6.4 is the data for part 2 of the questionnaire. This data will be used for the next analysis.

Table 6. 4 Questionnaire Part 2

Part 3			
Questions	Excellent	Good	Bad
C1	Comment	Comment	-
C2	Comment	Comment	-
C3	12	10	0

Table 6.5 is the data for part 3 which is the user feedback of the questionnaire. The question number 1 and 2 is in form of short essay, which is the respondent opinion. This data will be used for the next analysis.

6.4 Test Result and Analysis

6.4.1 Alpha Testing

The first testing is the alpha testing tested by Professor Madya Dr. Mohd Hafiz Bin Zakaria, Ts. Dr. Farah Nadia Binti Azman and Ts. Dr. Ibrahim Bin Ahmad is a multimedia lecturer at UTeM. They are being asked to review and give some comments about the digital comic.

Dr. Hafiz has reviewed the sequence of the scene, graphic, character, and storyline. The first comment is about the grammatical errors in the script and written dialogs. The following statement is about the contents of the animation in the digital comic. Contents are suitable for Covid prevention awareness. Moreover, the character expression is good; however, a variation of angle and shots are expected, similar to traditional comics.

Besides, Dr. Farah reviews and comments that the digital comic's color and graphic design are good. However, the following observation is about the storyline in the comic, which needs to be fixed. Lastly, Dr. Farah said that the video format is not suitable for the digital comic; everyone scene is presented in one video will be better.

Finally, Dr. Ibrahim comments that the video cannot be played simultaneously on one page. Therefore, it will be better if multiple videos can be played at the same time. Besides, if possible, Dr. Ibrahim said that include reinforcement activities such as quizzes or exercises to test users' understanding of advanced applications.

6.4.2 Beta Testing

There are three sections of the question. The first section is the information about the respondent and the second section is the question about the animation and the third question is feedback of the respondent. Based on Figure 6.1 shows the pie chart of the gender.

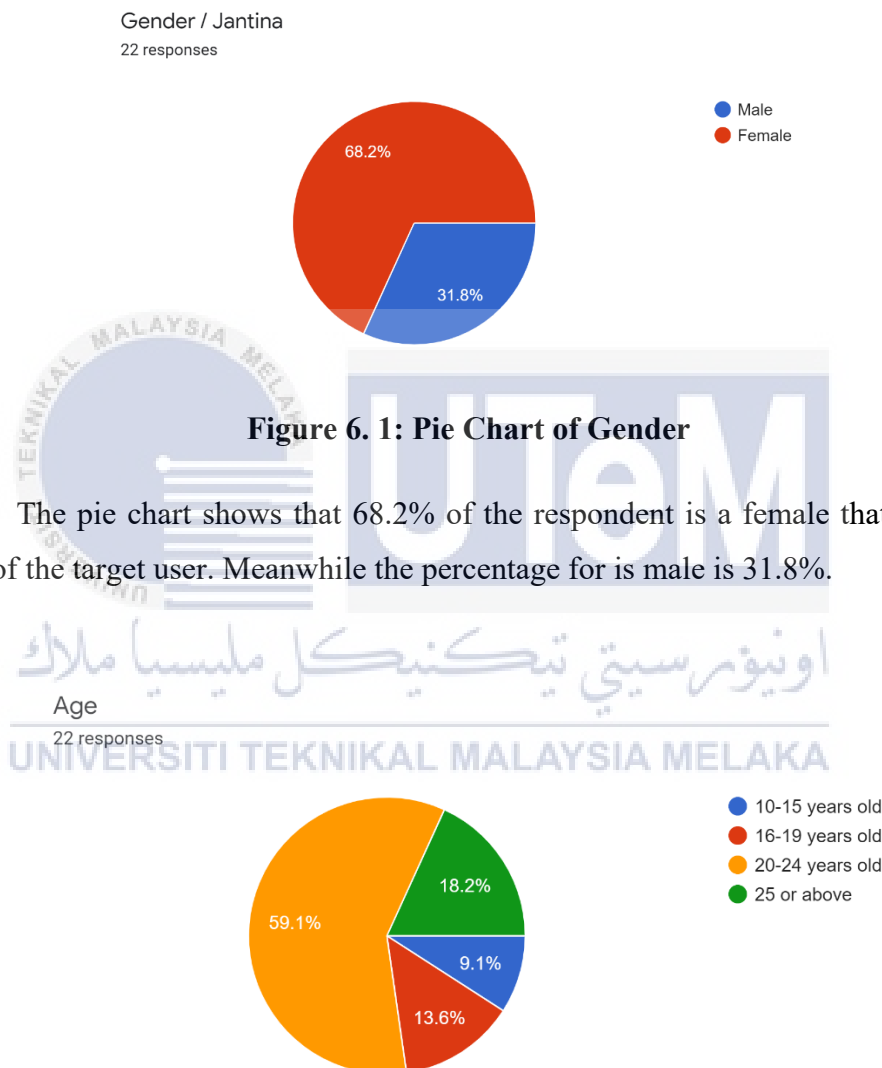


Figure 6. 2 Pie Chart of Age

The pie chart shows the age among the respondent. Figure 6.2 shown that most of the respondent are between 20-24 years old which is 59.1%. There is 18.2% of respondent from 25 years old and above. There is 13.6% of respondent from 16-19 years old. The others of respondent are from 10-15 years old.

Do you like to read animated digital comic stories? *

22 responses

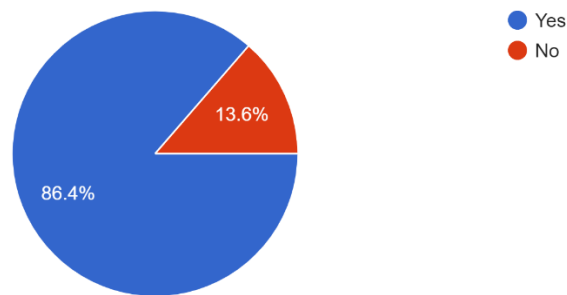


Figure 6. 3 Pie Chart of Question 1

The pie chart demonstrates that 86.4% said yes about the they love to read animated digital comic. Another 13.6% answered no for the questions. This result shows that many people prefer animated digital comic.

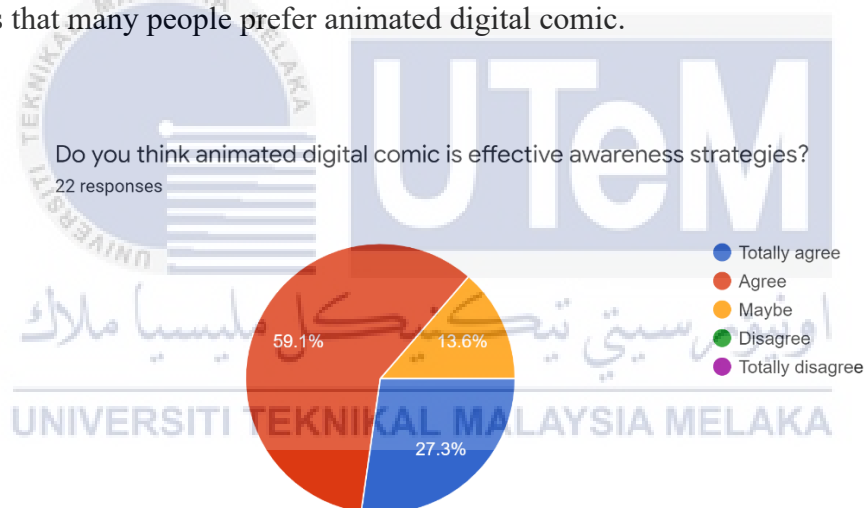


Figure 6. 4 Pie Chart of Question 2

The second question is about the effectiveness of animated digital comic to spread awareness about COVID-19. Majority of the respondent answered agree which is about 59.1% and totally agree which is about 27.3% while another 5% answered maybe. This is shown that animated digital comic using Memoji as the character development is one of the platforms to spread the awareness about COVID-19.

Do you understand the storyline and message in the digital comic?
22 responses

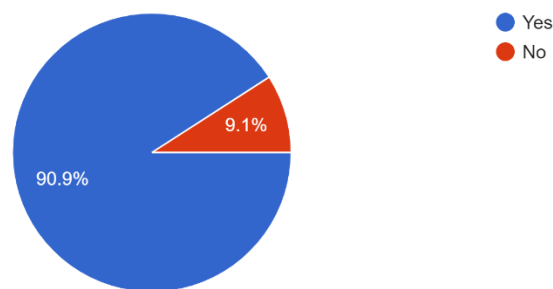


Figure 6. 5: Pie Chart of Question 3

The third question is about if the user gets the storyline and message in the digital comic. There are 90.9% of the respondents said Yes while others respondent which 9.1% said No. Thus, most of the user understand the storyline and message in the digital comic.

Do you think 3D or 2D animated digital comic using Memoji as the character development can be use as a platform to raise public interest?
22 responses

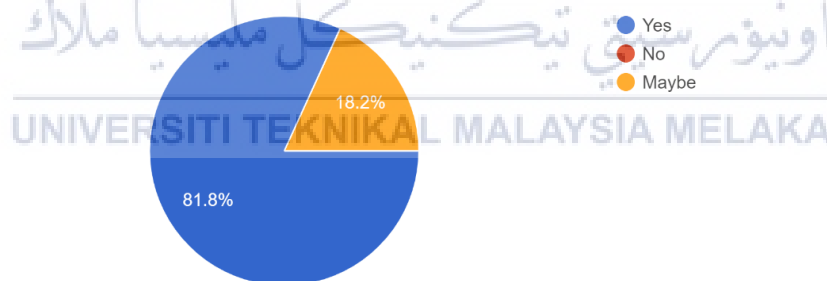


Figure 6. 6: Pie Chart of Question 4

The fourth question is to determine if 3D or 2D animated digital comic using Memoji as the character development can be use as a platform to raise public interest. The Pie chart showed that 81.8% of the respondents answered as Yes while 18.2% answered No. This pie chart shows that majority of the respondent chose yes which it can be concluded that the 3D or 2D animated digital comic using Memoji as the character development can be used as a platform to raise public interest.

On a scale of 1 to 5, how would you rate the character design?

22 responses

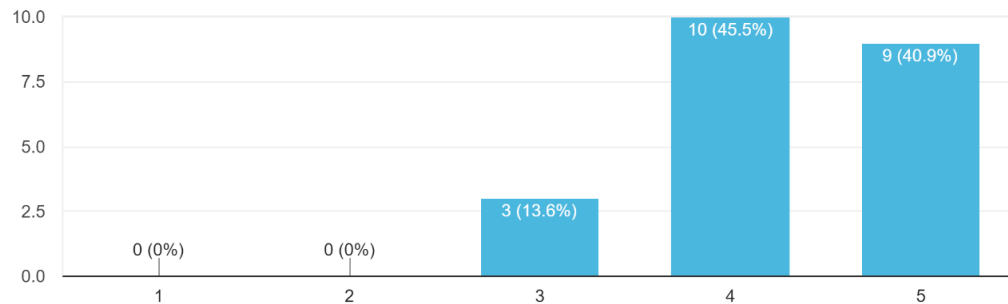


Figure 6. 7: Graph of Question 5

Question 5 is the started question for section 2 which is Multimedia Element Satisfaction part in the questionnaires. Figure 6.7 shows the satisfaction level of the respondent towards the character design in the digital comic. Most of the respondent rate 4 for the character design which is 45.5% of the respondent, 40.9% of the respondent rates 5 while 13.6% rate 3 for the character design. Thus, most of the user rate higher for the character design in the digital comic.

On a scale of 1 to 5, how would you rate the colorization of the character, background, and whole 3D/2D animation?

22 responses

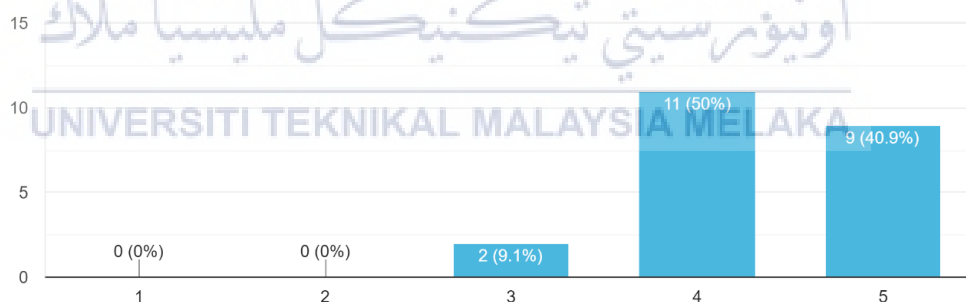


Figure 6. 8: Graph of Question 6

Figure 6.8 shows Question 6 which is the satisfaction level of the respondent towards the colorization of the character, background and whole the animation in the digital comic. Most of the respondent rate 4 for the colorization of the character, background and whole the animation in the digital comic which is 50% of the respondent, 40.9% of the respondent rates 5 while 9.1% rate 3. Thus, most of the user rate higher for the colorization of the character, background and whole the animation in the digital comic.

On a scale of 1 to 5, how would you rate the storyline?

22 responses

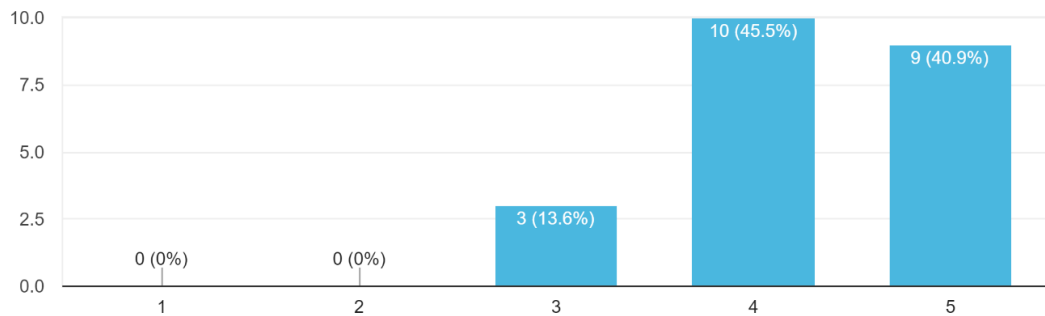


Figure 6. 9: Graph of Question 7

Figure 6.9 shows Question 7 which is the satisfaction level of the respondent towards the storyline in the digital comic. Most of the respondent rate 4 for the storyline which is 45.5% of the respondent, 40.9% of the respondent rates 5 while 13.6% rate 3 for the storyline. Thus, most of the user rate higher for the storyline in the digital comic.

On a scale of 1 to 5, how would you rate the script and sound design?

22 responses

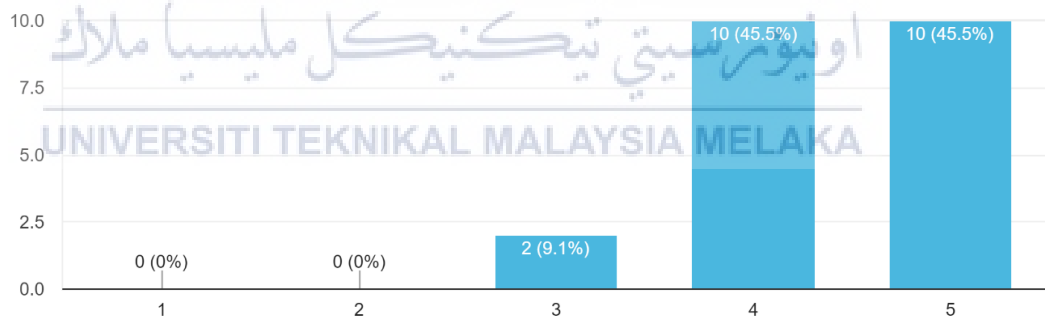


Figure 6. 10: Graph of Question 8

Figure 6.10 shows Question 8 which is the satisfaction level of the respondent towards the script and sound design in the digital comic. Most of the respondent rate 4 and 5 for the script and sound design which is 45.5% of the respondent while 9.1% rate 3 for the script and sound design. Thus, most of the user rate higher for the script and sound design in the digital comic.

On a scale of 1 to 5, how would you rate the website and graphic design?

22 responses

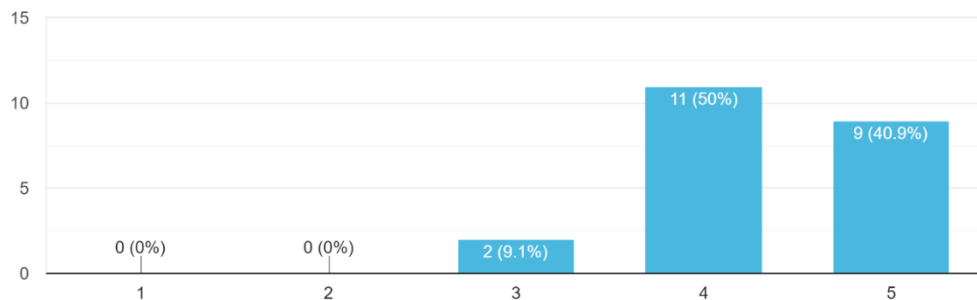


Figure 6. 11: Graph of Question 9

Figure 6.11 shows Question 9 which is the satisfaction level of the respondent towards the website and graphic design in the digital comic. Most of the respondent rate 4 for the website and graphic design which is 50% of the respondent, 40.9% of the respondent rates 5 while 9.1% rate 3 for the website and graphic design. Thus, most of the user rate higher for the website and graphic design in the digital comic.

User Feedback

Do you have any comment(s) for this animated digital comic? If YES, please state your answer.

22 responses

Overall is good

good idea

so far nope

The animation and color is good

nope

goood

nice storyline

Better if the body of the character can move

Figure 6. 12: Question 10

Question 10 is the started question for section 3 which is User Feedback in the questionnaires. The question is about the comment of the user towards the digital comic. The respondents can give their answer in form of short essay for this question. Most of the respondents said No comment for this question, and about 10 of the respondents said it is 'Good' and 'Good idea' and other of the respondent said, 'Better if the body of the character can move'.

Do you have any opinion/suggestion(s) for this Digicom- digital comic? If YES, please state your answer.

22 responses

NO
nice
nope
Very2 good
make some animation to characters to make it looks less stiff
i think two characters in one video looks more interesting and engaging. but overall, nice design and character!
It will be better if developer can improve the animation of the character more alive.
nothing

Figure 6. 13: Question 11

Question 11 is about the suggestion or opinion of the user towards the digital comic. The respondents can give their answer in form of short essay for this question. Most of the respondents said 'No' for this question, and about 10 of the respondents said it is 'Good' and 'Nice' and other of the respondent said, 'make some animation to characters to make it looks less stiff', 'I think two characters in one video looks more interesting and engaging. but overall, nice design and character!' and 'It will be better if developer can improve the animation of the character more alive'.

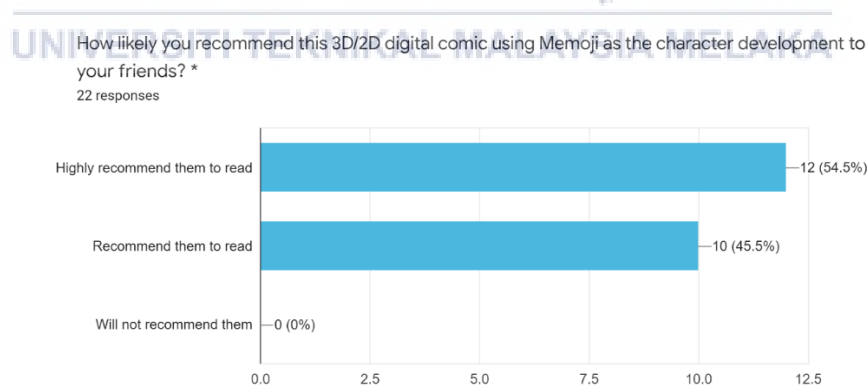


Figure 6. 14: Graph of the Question 12

Figure 6.14 shows Question 12 which how much the user wants to recommend this digital comic using Memoji as the character development to their friends. Most of the respondent choose highly to recommend which is 54.5% of the respondent and 45.5% of the respondent choose recommended. Thus, most of the user love to recommend and share this digital comic to their friends.

6.5 Conclusion

Based on the analysis of the target audience's question, the result showed that Memoji as the character development in digital comic could be one of the awareness especially for children and teens. Moreover, it can be one of the effectiveness in delivering information about COVID-19. Thus, the project has met all the objectives.



CHAPTER 7: PROJECT CONCLUSION

7.1 Observation on Weaknesses and Strengths

Based on the testing, it is shown that the digital comic has some weaknesses and strengths.

This project's weakness is the message in the digital comic cannot be understood by all target users. However, some of them can get a little understanding of the animation. Thus, the animation in the digital comic needs to show a clear message for the audience. Apart from that, the background graphics and characters have different qualities in each video. For example, the character is stiff, which lead the character look awkward, and the background has a 2D and 3D object which makes the video not look so lovely.

The strength of this project is that many people show their interest in this new idea, which is Memoji as the character development in the digital comic. Using the latest technology, Memoji as the character development in the digital comic makes it suitable for the reader, especially children, to learn a new thing. Next is the storyline of the animation in the digital comic. The animation in the digital comic has an excellent storyline to portray the awareness of Covid-19.

7.2 Proposition for Improvement

Several improvements can be made to this project. The first improvement is to animate the character smoothly. Several frames between the keyframe of the animation need to be added to produce smoother animation. Apart from that, the 3D character and the background graphics need to be improved to grab more viewers to watch it.

The next suggestion is to add more scenes to the animation. The additional scene may deliver the actual message to the viewer. From the analysis in the chapter before, some of the respondents have a nuanced understanding of the animation. By adding more scenes, maybe they can understand the message in the animation in the comic more than before.

Finally, a variation of angle and shots are expected not similar to traditional comics. Hence, adding a 3D background with different angles and shots in every scene can improve the animation in the digital comic.

7.3 Project Contribution

The digital comic using Memoji as the character development is developed to investigate the effectiveness of new technology, which is Memoji as the element in the comic as the medium of learning. There are several ways of awareness, and the animated digital comic is one of them. Covid-19 is one of the illnesses that can affect different ages of human beings. Nowadays, many people suffer from coronavirus illness, and people need to take care of themselves and the people they love. Thus, this digital comic helps give awareness and knowledge about Covid-19, especially to children.

7.4 Conclusion

In conclusion, the project has met all the objectives stated in chapter 1. First, the first objective is to study the Memoji as the main element for a digital comic. Memoji is an expression 3D character of human which it's Apple's version of Snapchat's Bitmoji or Samsung's AR Emoji. Therefore, using the Memoji as the main element in the digital comics made the comic more interesting.

Next is to develop web-based digital storytelling using elements identified. For this project, a website named Digicom is developed using Wix software to publish the comic. Every scene rendered had been uploaded to the Digicom websites for public view. The feedback of the digital comic is quite good.

The last objective is to evaluate the Memoji effectiveness on how successful this digital comic helps the young people understand the Covid-19 awareness. Based on the testing phase in chapter six, the analysis showed the users' response towards the digital comic using Memoji as the main element of character development for digital comics is positive. Thus, the digital comic can positively affect the target user. In summary, Memoji as character development in the digital comic (DIGICOM) can be an awareness for the Covid-19.



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APPENDIX A



DIGICOM

Survey Analysis of Final Year Project (Digital Comic)

Assalamualaikum and have a nice day! I am third year of BITM FTMK Student need to conduct a project for subject BITU3973 which is my Final Year Project regarding Memoji As A Character Development In Digital Comic. I would like you to help me answering a few questions for my project analysis purpose. Thank you for your time, hope you have a nice day!

 nrlhanan27@gmail.com (not shared) [Switch account](#)

* Required


Age *

☐ 7-12

☐ 13-17

☐ 18-25

☐ 25 or above



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Do you know what is Memoji? *

☐ Yes

☐ No

Do you love to read digital comic? *

☐ Yes

☐ No

☐ Maybe

How much time do you spend to reading a digital comic in a day? *

1 2 3 4 5 6 7 8 9 10

1 hours ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10 hours

How much do you love spend your time to reading a digital comic everyday? *

1 2 3 4 5 6 7 8 9 10

Not really love ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Really Love

Do you think a digital comic that has animation is interesting?


- ☐ Yes
- ☐ No
- ☐ Maybe

How much do you rate for a digital comic that has animation and develop by using Memoji? *

1 2 3 4 5

☐ ☐ ☐ ☐ ☐

APPENDIX B



DIGICOM


Survey Analysis of Final Year Project (Digital Comic)

Assalamualaikum and have a nice day! I am a third-year BITM FTMK Student who needs to conduct a project for subject BITU3973 which is my Final Year Project regarding Memoji As A Character Development In Digital comics. I would like you to help me answering a few questions for my project analysis purpose - Product Testing.

Here are the link: <https://nrlhanan27.wixsite.com/digicom>

Thank you for watching and reading my digital comic. It is a 3D and 2D animated digital comic which the character is develop using Memoji and where user can choose the character they want and reading the story based on what they choose before. This digital comic is created by Nurulhanan Binti Abdul Halim.

*Please go to Digicom sites first before answer the question.

 nrlhanan27@gmail.com (not shared) [Switch account](#)

* Required

Gender / Jantina *

☐ Male

☐ Female

Age *

☐ 10-15 years old

☐ 16-19 years old

☐ 20-24 years old

☐ 25 or above

Do you like to read animated digital comic stories? * *

- ☐ Yes
- ☐ No

Do you think animated digital comic is effective awareness strategies? *

- ☐ Totally agree
- ☐ Agree
- ☐ Maybe
- ☐ Disagree
- ☐ Totally disagree

Do you understand the storyline and message in the digital comic? *

- ☐ Yes
- ☐ No

Do you think 3D or 2D animated digital comic using Memoji as the character development can be use as a platform to raise public interest?

- ☐ Yes
- ☐ No
- ☐ Maybe

Multimedia Element Satisfaction

This part will ask about your feedback of the level satisfaction for each component of the digital comic stories.

On a scale of 1 to 5, how would you rate the character design? *

	1	2	3	4	5	
Terrible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very good

On a scale of 1 to 5, how would you rate the colorization of the character, background, and whole 3D/2D animation? *

	1	2	3	4	5	
Terrible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Good

On a scale of 1 to 5, how would you rate the storyline? *

	1	2	3	4	5	
Terrible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Good

On a scale of 1 to 5, how would you rate the script and sound design? *

	1	2	3	4	5	
Terrible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very good

On a scale of 1 to 5, how would you rate the website and graphic design? *

	1	2	3	4	5	
Terrible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Good

User Feedback

Do you have any comment(s) for this animated digital comic? If YES, please state your answer. *

Your answer

Do you have any opinion/suggestion(s) for this Digicom- digital comic? If YES, please state your answer. *

Your answer

How likely you recommend this 3D/2D digital comic using Memoji as the character development to your friends? **

- ☐ Highly recommend them to read
- ☐ Recommend them to read
- ☐ Will not recommend them

اوتیورسیتی تکنیکل مالیزیا ملاک

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

APPENDIX C



Saya PM Dr. Mohd Hafiz Zakaria, No Kad Pengenalan _____

Jawatan Pensyarah mengaku telah melihat dan menyemak digital komik animasi yg telah dihasilkan oleh Nurulhanan Binti Abdul Halim.

Komen dan cadangan:

1. There are plenty of grammatical errors in the script and written dialogs. Please proofread.
2. Contents are suitable for Covid prevention awareness.
3. Character expression is good however a variation of angle and shots are expected similar to traditional comics.

Tandatangan:

mohdhafiz

Nama: **PROF. Madya DR. MOHD HAFIZ ZAKARIA**
Timbalan Dekan (Pembangunan Pelajar)

Tarikh: **FTMK, UTeM**



Saya Farah Nadia Azman, No Kad Pengenalan _____

Jawatan Pensyarah mengaku telah melihat dan menyemak digital komik animasi yg telah dihasilkan oleh **Nurulhanan Binti Abdul Halim**.

Komen dan cadangan:

1. Rekabentuk & penggunaan warna yang baik.
2. Jalan cerita boleh dibaiki lagi, bukan sekadar soal jawab.
3. Panel komik dipersembah secara video adalah tidak sesuai. Sebaik-baiknya kumpulkan semua babak dalam 1 video sahaja utk penyampaian mesej yang lebih berkesan.

Tandatangan:

Nama: Farah Nadia Azman

Tarikh: 24 Ogos 2021



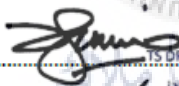
Saya IBRAHIM BIN AHMAD, No Kad Pengenalan -

Jawatan PENSYARAH KANAN mengaku telah melihat dan menyemak digital komik animasi yg telah dihasilkan oleh Nurulhanan Binti Abdul Halim.

Komen dan cadangan:

1. Video yang dipaparkan dalam sesuatu pagi ada beberapa buah video. Jika dapat kawalan video dibuat, hanya satu video sahaja yang berfungsi dalam satu-satu masa. Jika video A sedang dipasang, apabila video B dipasang, video A secara automatik akan terhenti.
2. Jika dapat disertakan aktiviti pengukuhan seperti kuiz atau latihan untuk menguji pemahaman pengguna terhadap aplikasi yang dibangunkan.
3. Apakah aplikasi ini menggunakan kemudahan template sedia ada di dalam WIX ? Jika jawapannya YA, pelajar seharusnya membangunkan aplikasi dengan kreativiti sendiri.

Tandatangan:


 TS DR IBRAHIM BIN AHMAD
 Pensyarah Kanan
 Jabatan Media Interaktif
 Nama: Fakulti Teknologi Maklumat Komunikasi
Universiti Teknikal Malaysia Melaka (UTeM)
Durian Tunggal, Melaka.

Tarikh: 24 Ogos 2021