

**DAILY DU'A: 2D SHORT-STORY USING BONE ANIMATION
TECHNIQUE TO LEARN BASIC DU'A**

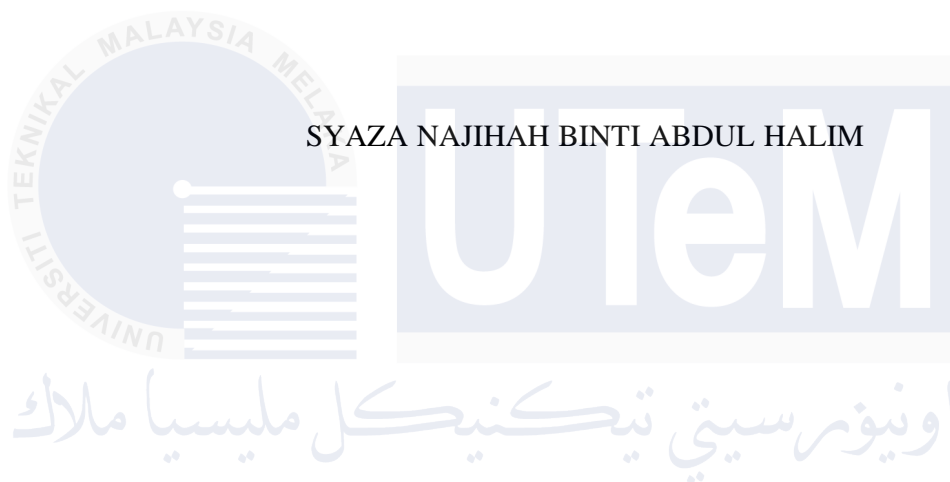


SYAZA NAJIAH BINTI ABDUL HALIM
اوينور سيني نيكسي كل مليسيا ملاك

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DAILY DU'A: 2D SHORT-STORY BASED ON BONE ANIMATION TO LEARN
BASIC DU'A



SYAZA NAJIHAH BINTI ABDUL HALIM

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2023

DECLARATION

I hereby declare that this project report entitled

**DAILY DU'A: 2D SHORT-STORY USING BONE ANIMATION TECHNIQUE TO
LEARN BASIC DU'A**

is written by me and is my own effort and that no part has been plagiarized

without citations.

STUDENT :


(SYAZA NAJIHAH BINTI ABDUL HALIM)

Date : 26/9/2023

اونيورسيتي تيكنيكل مليسيا ملاك
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

I hereby declare that I have read this project report and found
this project report is sufficient in term of the scope and quality for the award of
Bachelor of Computer Science (Interactive Media) with Honours.

SUPERVISOR :


(PROF. DR. SAZILAH BINTI SALAM)

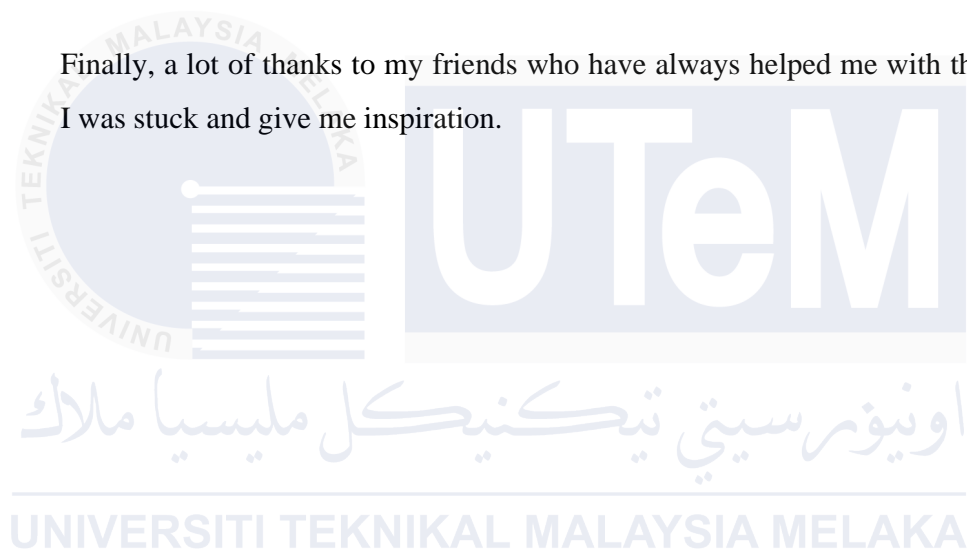
Date : 27/09/23

DEDICATION

This project is dedicated to my supervisor, Prof. Ts. Dr. Sazilah Salam, who has always encouraged, inspired, guided me to complete my final year project.

In addition to my parents, who have provided financial, ongoing support, advice when I am at my lowest phase and stuck.

Finally, a lot of thanks to my friends who have always helped me with the idea when I was stuck and give me inspiration.

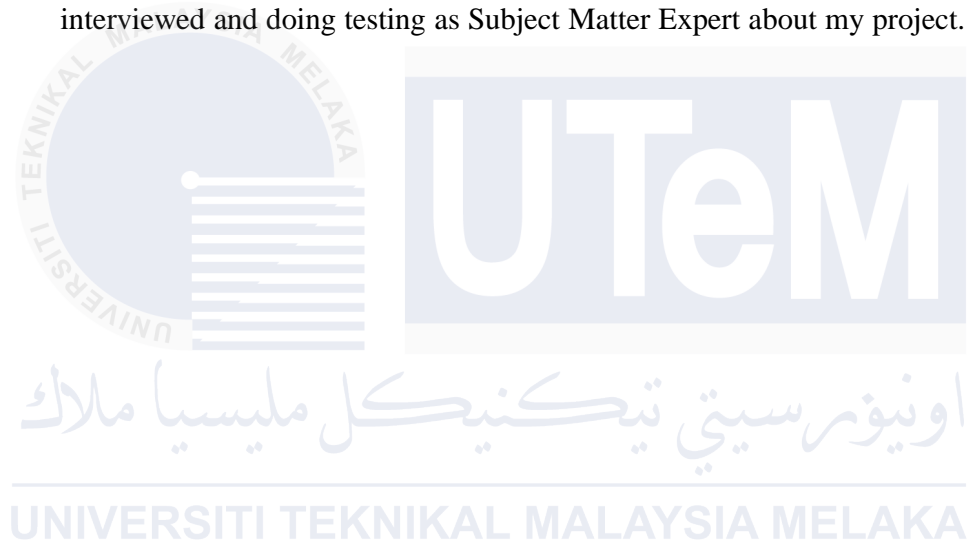


ACKNOWLEDGEMENTS

First and foremost, I would like to thank my dedicated supervisor, Prof. Dr. Sazilah Salam as she has helped me a lot in completing this project since choosing this topic until final presentation day.

Thank you to my voice actors, Nurdiana Syahirah and Nur Syafiqah for lending me some time just to complete my project. Their help are greatly appreciated.

I would also like to Puan Mashitah for being willing to give cooperation to be interviewed and doing testing as Subject Matter Expert about my project.



ABSTRACT

This project is developed for Projek Sarjana Muda (PSM). It is a 2D Animation of Learning Basic Du'a which will give some knowledge to kids about basic du'a as that can be applied to their daily routine. In this project, it contains three sets of du'a which are before and after sleep, before going to and leave toilet, and wake up and before going to sleep. These three sets of du'a are compulsory routine of all people. The purpose of this project is to attract kids in learning du'a and make their learning process more fun and attractive. This is because kids love bright color and they attract with cartoon. They are easy to learn when they watch the movement of the cartoon as they can relate with themselves. Teachers can use this animation video at kindergarten as a learning material to make the learning session fun and attract the kids to learn.

اونيورسيتي تيكنيكل مليسيا ملاك

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

ABSTRAK

Projek ini dibangunkan untuk Projek Sarjana Muda (PSM). Ia adalah Animasi 2D Pembelajaran Doa Asas yang akan memberi sedikit pengetahuan kepada kanak-kanak tentang doa asas kerana ia boleh diaplikasikan dalam rutin harian mereka. Dalam projek ini, ia mengandungi tiga set doa iaitu sebelum dan selepas tidur, sebelum pergi dan keluar tandas, dan bangun dan sebelum tidur. Tiga set doa ini adalah rutin yang wajib bagi semua orang. Tujuan projek ini adalah untuk menarik minat kanak-kanak dalam mempelajari doa dan menjadikan proses pembelajaran mereka lebih menyeronokkan dan menarik. Ini kerana kanak-kanak suka warna terang dan mereka menarik dengan kartun. Mereka mudah untuk belajar apabila mereka menonton pergerakan kartun kerana mereka boleh kaitkan dengan diri mereka sendiri. Guru boleh menggunakan video animasi di tadika sebagai bahan pembelajaran untuk menjadikan sesi pembelajaran menyeronokkan dan menarik minat kanak-kanak untuk belajar.

اونيورسيتي تيكنيكل مليسيا ملاك

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

TABLE OF CONTENTS

	PAGE
DECLARATION	II
DEDICATION	III
ACKNOWLEDGEMENTS	IV
ABSTRACT.....	V
ABSTRAK	VI
TABLE OF CONTENTS	VII
LIST OF TABLES	XIII
LIST OF FIGURES	XIV
LIST OF ABBREVIATIONS	XVII
LIST OF ATTACHMENTS	XVIII
Chapter 1: INTRODUCTION.....	1
1.1 Introduction	1
1.2 Project Background	1
1.3 Problem Statement	2
1.4 Objective	2
1.5 Scope	2
1.6 Project Significant	3
1.7 Conclusion.....	3
CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY .	4

2.1	Introduction	4
2.2	Domain	4
2.3	Existing System.....	6
2.3.1	Comparison of Existing System	8
2.4	Project Methodology	9
2.5	Project Requirements	10
2.6	Conclusion.....	11
CHAPTER 3: ANALYSIS		12
3.1	Introduction	12
3.2	Current Scenario Analysis	12
3.2.1	Comparison of Existing System	12
3.3	Requirement Analysis	13
3.3.1	Project Requirement.....	13
3.3.1.1	Requirement Gathering.....	13
3.3.1.2	Analysis of the System to be Develop.....	13
3.3.2	Software Requirement	14
3.3.3	Hardware Requirement	15
3.4	Project Schedule and Milestones	15
3.5	Conclusion.....	16
CHAPTER 4: DESIGN		17
4.1	Introduction	17
4.2	Preliminary Design.....	17
4.2.1	Storyboard Design.....	17
4.3	Conclusion.....	20

CHAPTER 5: IMPLEMENTATION	21
5.1 Introduction	21
5.2 Media Creation	21
5.2.1 Production of Text	21
5.2.2 Production of Graphic	22
5.2.3 Production of Animation.....	23
5.2.4 Production of Audio.....	24
5.3 Media Integration	25
5.3.1 Adobe Illustrator Integration.....	25
5.3.2 Adobe Animate Integration.....	26
5.4 Product Configuration Management	27
5.4.1 Configuration Environment Setup	27
5.4.2 Version Control Procedure.....	28
5.4.2.1 Version Before Release Animation.....	29
5.4.2.2 Version Animation Integration	29
5.4.2.3 Version After Release Testing	30
5.5 Implementation.....	30
5.6 Summary	32
CHAPTER 6: TESTING.....	34
6.1 Introduction	34
6.2 Test Plan	34
6.2.1 Test User	34
6.2.1.1 Target Audience	34
6.2.1.2 Subject Matter Expert	34

6.2.1.3	Multimedia Expert	35
6.2.2	Test Environment	35
6.2.3	Test Schedule	35
6.3	Test Strategy	36
6.3.1	Testing Question for Children (Kindergarteners)	36
6.3.2	Testing Question for Multimedia Expert	39
6.3.3	Testing Question for Subject Matter Expert	41
6.4	Test Implementation	45
6.4.1	Test Description	45
6.4.2	Test Data	45
6.5	Testing Result and Analysis	47
6.5.1.1	Testing Result for Children (Kindergarteners)	47
6.5.1.2	Testing Result for Subject Matter Expert	50
6.5.1.3	Testing Result for Multimedia Expert	53
6.6	Analysis Testing	56
6.6.1	Children (Kindergarteners)	56
6.6.1.1	Chart of Demography	56
6.6.1.2	Chart of Perceived Ease of Use	60
6.6.1.3	Chart of Perceived Usefulness	62
6.6.1.4	Attitude Towards Using	64
6.6.1.5	Intention to Use	67
6.6.1.6	Summary for The Result of Children (Kindergarteners)	68
6.6.2	Subject Matter Expert	68
6.6.2.1	Chart for Ease of Use	69

6.6.2.2	Chart for Perceived Usefulness.....	70
6.6.2.3	Chart for Intention to Use	71
6.6.2.4	Chart for Content Verification	72
6.6.2.5	Summary for the Result of Subject Matter Expert.....	77
6.6.3	Multimedia Expert	78
6.6.3.1	Chart for Evaluation of Bone Animation Technique.....	78
6.6.3.2	Chart for Evaluation of 2D Daily Du'as Animation.....	79
6.6.3.3	Chart for Usability Evaluation	82
6.6.3.4	Chart for Functionality.....	83
6.6.3.5	Summary Result for Multimedia Expert.....	85
6.7	Summary	85
CHAPTER 7: CONCLUSION		86
7.1	Introduction	86
7.2	Observation on Weaknesses and Strengths.....	86
7.2.1	Project Weaknesses.....	86
7.2.2	Project Strengths	86
7.3	Preposition for Improvement.....	87
7.4	Project Contribution	87
7.5	Summary	87
REFERENCES.....		88
APPENDIX A: SURVEY FORM FOR SUBJECT MATTER EXPERT		89
APPENDIX B: QUESTIONNAIRE FOR CHILDREN.....		90
APPENDIX C: PHOTOS TESTING WITH CHILDREN		93

APPENDIX D: QUESTIONNAIRE FOR SUBJECT MATTER EXPERT	94
APPENDIX E: PHOTO TESTING WITH SUBJECT MATTER EXPERT.....	98
APPENDIX F: QUESTIONNAIRE FOR MULTIMEDIA EXPERTS	99
APPENDIX G: PHOTOS TESTING WITH MULTIMEDIA EXPERTS.....	105



اونيورسيتي تيكنيكل مليسيا ملاك

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

LIST OF TABLES

	PAGE
Table 2.1 Comparison of Existing System with This Project	8
Table 3.1 Comparison Current Scenario Analysis with This Project	12
Table 3.2 Subject Matter Expert details	14
Table 4.1 Storyboard	17
Table 5.1 Sample of the fonts	22
Table 5.2 List of Audio	25
Table 5.3 Software Configuration	27
Table 5.4 Implementation Status.....	30
Table 6.1 Test Environment.....	35
Table 6.2 Test Schedule	35
Table 6.3 Likert Scale	36
Table 6.4 Test Data for User Testing	45
Table 6.5 Details of User Testing.....	46
Table 6.6 Testing Result for Children (Kindergarteners).....	47
Table 6.7 Testing Result for Subject Matter Expert	50
Table 6.8 Testing Result for Multimedia Experts.....	54
Table 6.9 Table of Summary for the Result of Children (Kindergarteners)	68
Table 6.10 Table of Summary for the Result of Subject Matter Expert	77
Table 6.11 Table of Summary Result for Multimedia Expert.....	85

LIST OF FIGURES

	PAGE
Figure 2.1 Super Simple Songs – Kids Songs (YouTube, 25 November 2017).....	6
Figure 2.2 Osratuna tv (YouTube, 6 May 2019).....	7
Figure 2.3 English Singing (YouTube, 28 April 2016)	8
Figure 2.4 Multimedia Production Process (Chloewallace, 2022)	10
Figure 3.1 Project's Milestone	16
Figure 5.1 Text Production Process.....	22
Figure 5.2 Graphic Production Process	22
Figure 5.3 Examples of Graphic	23
Figure 5.4 Example of Bone Created.....	23
Figure 5.5 Example of character movement.....	24
Figure 5.6 Audio Production Process	24
Figure 5.7 Adobe Illustrator Workspace.....	26
Figure 5.8 Adobe Animate Workspace.....	26
Figure 6.1 Questionnaire for Children (Kindergarteners).....	39
Figure 6.2 Questionnaire for Multimedia Experts.....	41
Figure 6.3 Questionnaire for Subject Matter Expert.....	44
Figure 6.4 Chart of Gender	56
Figure 6.5 Chart of Age.....	57
Figure 6.6 Chart of Been Exposed at Home.....	57
Figure 6.7 Chart of Memorized Daily Du'a	58
Figure 6.8 Chart of Du'a that have been memorized.....	59
Figure 6.9 Chart of Understand the meaning of du'a being read.....	59
Figure 6.10 Chart of reading du'a everyday	60
Figure 6.11 Chart of Easy to Understand Content	61
Figure 6.12 Chart of Clear Video.....	61
Figure 6.13 Chart of Understand Video without Assistance	62

Figure 6.14 Chart of Understanding Video by Character's Movement	62
Figure 6.15 Chart of Helps learn at own pace.....	63
Figure 6.16 Chart of Engages attention	64
Figure 6.17 Chart of Useful for Learning Skill.....	64
Figure 6.18 Chart of Like the idea of video.....	65
Figure 6.19 Chart of have favourable attitude.....	65
Figure 6.20 Chart of video present refreshing change	66
Figure 6.21 Chart of Great idea for learning material.....	66
Figure 6.22 Chart of Use to help memories skill.....	67
Figure 6.23 Chart of Recommend to friends & family members.....	67
Figure 6.24 Chart of Easy to use	69
Figure 6.25 Chart of Easy to teach using video.....	69
Figure 6.26 Chart of Effective in teaching.....	70
Figure 6.27 Chart of Increase productivity in teaching	70
Figure 6.28 Chart of Useful for Teaching.....	71
Figure 6.29 Chart of Intend to use as teaching material.....	71
Figure 6.30 Chart of Use frequently.....	72
Figure 6.31 Chart of Verification Du'a waking up	73
Figure 6.32 Chart of Verification Du'a before going to toilet	73
Figure 6.33 Chart of Verification Du'a after going out from toilet	74
Figure 6.34 Chart of Verification Du'a before eating.....	75
Figure 6.35 Chart of Verification Du'a after eating	76
Figure 6.36 Chart of Verification Du'a before bed.....	76
Figure 6.37 Chart of Familiar with bone animation technique.....	78
Figure 6.38 Chart of Bone technique suitable as conveying educational content	79
Figure 6.39 Chart of Animation aligns with project's objective	80
Figure 6.40 Chart of Storyline & Characters enhance the learning.....	80
Figure 6.41 Chart of Suitable voice.....	81
Figure 6.42 Chart of Clear voice	81
Figure 6.43 Chart of Ease of use of the 2D daily du'a animation interface	82
Figure 6.44 Chart of useful as a tool for assisting children in memorizing	82
Figure 6.45 Chart of Suggest end users to continue using the animation	83
Figure 6.46 Chart of smooth animation.....	83

Figure 6.47 Chart of clear animation..... 84
Figure 6.48 Chart of clear narration..... 84



LIST OF ABBREVIATIONS

FYP - **Final Year Project**



LIST OF ATTACHMENTS

		PAGE
APPENDIX A	SURVEY FORM FOR SUBJECT MATTER EXPERT	89
APPENDIX B	QUESTIONNAIRE FOR CHILDREN	90
APPENDIX C	PHOTOS DURING END-USERS TESTING AT TADIKA PERMATA INTELEK	93
APPENDIX D	QUESTIONNAIRE FOR SUBJECT MATTER EXPERT	94
APPENDIX E	PHOTO DURING DOING TESTING WITH SUBJECT MATTER EXPERT	98
APPENDIX F	QUESTIONNAIRE FOR MULTIMEDIA EXPERTS	99
APPENDIX G	PHOTOS DURING DOING TESTING WITH MULTIMEDIA EXPERTS	105

Chapter 1: INTRODUCTION

1.1 Introduction

Basic du'a can also known as basic Islam. It needs to be taught and introduced to children from the age of around 2 years old. Basic of Islam need to be teach since early childhood as during that age is a highly important stage in the development of character, where they can learn a lot of information that will be useful to them in the future (Hambal, 2020).

1.2 Project Background

This project is developed on how the elements and techniques of animation are used to produce an interactive animation. The animation will tell a story about a kid who does daily chores in a house. She lives with her sister. Her sister teaches her a few basic daily dua with its' meaning that can be recite before and after doing something.

When using bone animation in this animation, it highlights the versatility of these technologies in creative fields beyond their typical applications. It also demonstrates how technology can be used to enhance religious practice and education.

The animation can be accessed online, making it easily accessible to viewers around the world. Its use of visual storytelling and engaging animation techniques make it appealing to viewers of all ages and backgrounds.

Overall, the Daily Du'a animation is an innovative and engaging way to promote learning and practice of basic Du'as in Islam. Its use of bone animation to demonstrate the creative possibilities of technology in the field of animation, while its focus on Islamic practice and spirituality makes it a unique and valuable resource for Muslims.

1.3 Problem Statement

Some children lack exposure about the basics of duas by their parents. Parents do not have time to teach about Islam to their children due to working. So that they have to send their children to Islamic kindergarten (Salim et al., 2017). There are also some children may find it difficult to memorize and understand basic Du'a due to traditional learning. Animation video with teachers' instructions and assessment received much more positive feedback from students instead of traditional system and only visual learning (Islam et al., 2014)

1.4 Objective

There are a few objectives that need to be achieved:

- i. To identify appropriate bone animation technique that can assist children in memorizing daily du'a.
- ii. To develop the 2D Daily Du'as animation using the bone animation technique.
- iii. To evaluate the usability of the 2D Daily Du'a animation in terms of ease of use, usefulness, attitude towards using, and intention to use by the end users.

1.5 Scope

The scope in developing this project are:

- i. **Target user**

This animation is specially designed for kids from three to six years old.

- ii. **Theme**

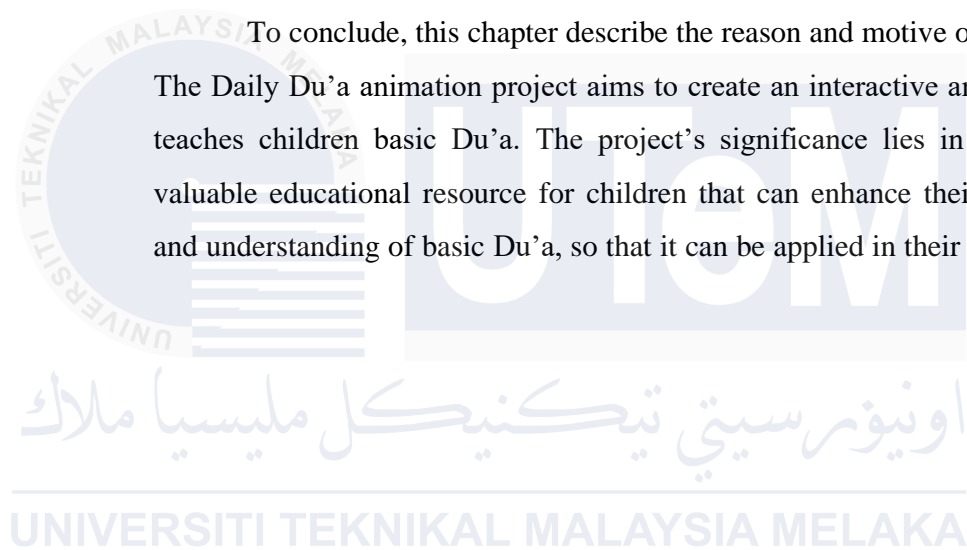
This animation is specifically for educational purpose for kids.

1.6 Project Significant

This project delivers a useful content to the audience especially the target audience, children about basic daily du'as. The expected outcome from the development of the animation is to produce an e-learning animation for kids that can attract them to watch again and again. Thus, they will learn, remember, and apply in their daily life.

1.7 Conclusion

To conclude, this chapter describe the reason and motive of the project. The Daily Du'a animation project aims to create an interactive animation that teaches children basic Du'a. The project's significance lies in providing a valuable educational resource for children that can enhance their knowledge and understanding of basic Du'a, so that it can be applied in their daily life.



CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

Daily Du'a is an innovative e-learning platform that utilizes bone animation to help users memorize basic Islamic prayers or Du'as. The platform features a 2D short-story format, which presents the Du'as in captivating and engaging way, making it easier for learners to internalize them.

According to research, the use of animation in e-learning can enhance engagement and learning outcomes. A study published in the International Journal of Educational Technology in Higher Education found that the use of animated videos was associated with higher learning outcomes compared to traditional instruction (Soman & Shukla, 2016). Furthermore, animation can help to simplify complex concept and make learning more accessible to a wider audience.

2.2 Domain

Most of individuals enjoyed cartoon, either 2D animation or 3D animation. 2D animation is a form of animation that involves creating the illusion of movement using sequential images or frames displayed in a rapid sequence. It is a form of animation that has been used for decades in various forms of media, including television shows, movies, video games, and online content.

Animation can be applied in a lot of range. The domain of 2D animation encompasses a wide range of areas and applications, including:

i. Education and E-learning

2D animation is also utilized in educational settings, including e-learning platforms, educational apps, and interactive learning materials. The learning process is made more entertaining and humorous through animations. They also increase the interaction and engagement of learning. Moreover,

animation provides bite-sized learning. Online students have the option to watch the e-learning animation again, pause it, and then resume it at a later time, such as when commuting or just relaxing at home.

Learners learn more using computer-based instruction in comparison to traditional classroom methods (Wlodkowski, 2019).

ii. Entertainment industry

2D animation has been widely used in the entertainment industry, including animated movies, television shows, web series video games, and commercials. It is a popular form of storytelling that offers a visually appealing and engaging medium for conveying stories, characters, and emotions.

iii. Advertising and marketing

Advertising and marketing campaigns frequently use 2D animation to provide eye-catching and memorable messages. It can be used to create animated advertisements, explainer videos, and promotional videos. This can help to convey brand messages in a creative and engaging way.

iv. Social media and digital content

2D animation is increasingly being used in social media platforms, digital content creation, and online multimedia. It is used in creation of animated gifts, memes, short animations, and other forms of digital content that are widely shared and enjoyed on various online platforms.

v. Training and simulations

Various industries used 2D animation in training and simulations, including healthcare, aviation, military, and engineering. It really helpful in in creating interactive training modules, simulations, and virtual environments to enhance learning and skill development.

To conclude, animation in education and e-learning would be chose for this project as it is an effective tool for enhancing the learning experience in

that area. Moreover, its use is likely to continue to grow as technology advances and educators seek innovative and engaging ways to deliver content to learners.

2.3 Existing System

This topic will be discussed with reference to systems that have characteristics in common with this project.

i. Our Favorite Numbers Songs

Our Favorite Numbers Songs is a YouTube video that produced educational video about learning numbers. This video may be beneficial to kids from two to five years old. This video teaches kids to learn numbers using hands and fingers as bone techniques. From this video, deaf people can also learn from it. Bone techniques can also be classified as sign language and interactive animation can improve the mathematical abilities for deaf people (Adamo-Villani et al., 2005).



Figure 2.1 Super Simple Songs – Kids Songs (YouTube, 25 November 2017)

ii. Learn How To Pray with Rami

Learn How to Pray with Rami includes animation that can show the character's activities during salah. The video shows details the movement of salah that using bone animation technique. It shows a full body of character where kids can easily understand step by step about salah. The movement of the character is smooth and easy to understand by the audiences. One of the effective method is pose-to-pose, which can produce a good movement and makes the work more effective or faster, that may give big impact to audiences (Apriliyanti et al., 2023).

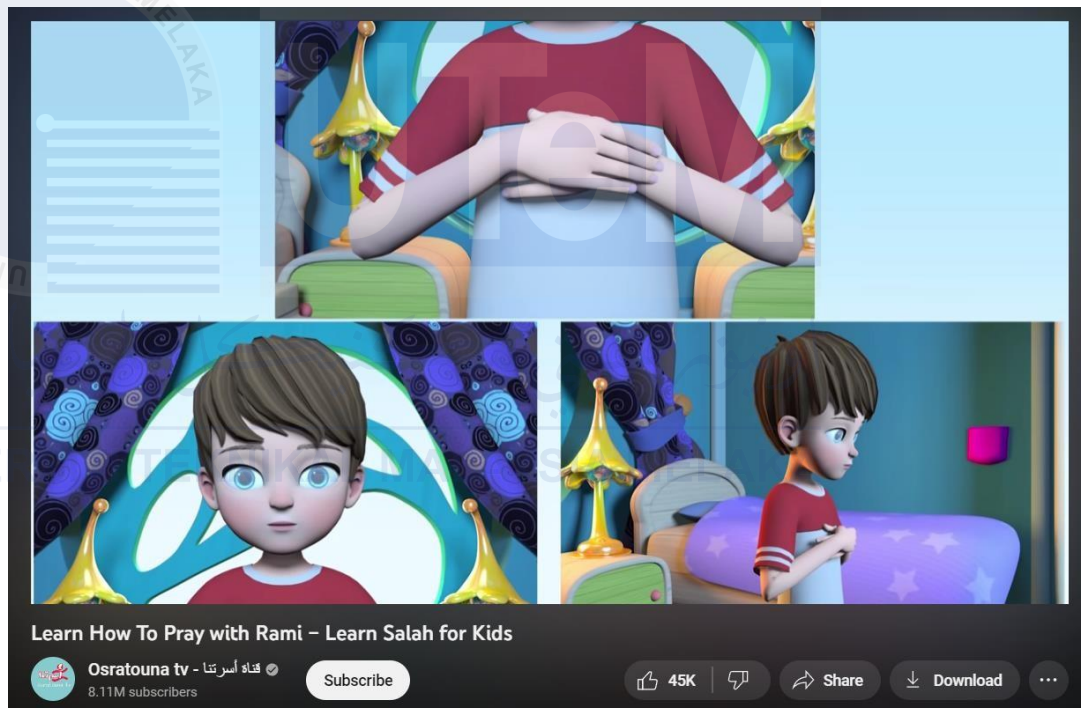


Figure 2.2 Osratouna tv (YouTube, 6 May 2019)

iii. Kids Vocabulary

This channel is creative in doing animation. The video shows actions of character while mentioned the verbs on what she is doing. Bone animation technique is applied to teach kids about verbs, like walking, waddle, standing, running, climbing and many more. There is research said that create a series of

movements that will cause a human skeleton to move in a way that is credible and lifelike (Calatayud et al., 2018). Through this video, kids can apply the movement that they are doing most of the time to remember the verbs.



Figure 2.3 English Singing (YouTube, 28 April 2016)

2.3.1 Comparison of Existing System

Table 2.1 Comparison of Existing System with This Project

Comparison / Existing Systems	Our Favorite Numbers Songs	Learn How to Pray with Rami	Kids Vocabulary
Types of Visualisations	2D animation	3D animation	2D animation
Interface	Simple hand-drawn animation with	Presents a visual feast with lively characters,	Interactive hand-drawn animation

	plain colour background	colourful backgrounds.	with bright colour background.
Character movement	Only move front-side of the characters	Character move smoothly and natural	Character is flexible and show the correct movement of walk, run, etc

2.4 Project Methodology

The suitable project methodology to develop this project would be Multimedia Production Process. This methodology has been chosen as this project has combinations of text, audio and graphics.

The project's goals, objectives and target audience must be decided upon during development. Goals, objectives and an activity matrix should be constructed after choosing a theme for the project. In multimedia projects, specific targets and general declarations of the expected outcomes tend to be more global in scope, whereas project objective's targets are to increase client association created using a digital animation technique.

The following stage is the production phase, where the storyboard is built and integrated into a multimedia project. During this phase, all hardware and software will be set up. Every multimedia component utilised in this project will be used to generate project flow charts and storyboards that will help in identifying the technology to be used, an analysis of the current system, and the lack of a current system that is part of the demand.

Pre-production is referring to the stage that precede the multimedia stage. This occurs earlier in the process than when every scene in a video is illustrated, the voiceover is recorded and before any form of movement is created. Storyboarding, scriptwriting, strategy, and style creation are all parts of it.

Post-production is the final stage of multimedia process. The production will go through the alpha and beta testing phase. It might be published online and posted to a free video sharing service like YouTube or any social media platform or it could be burned to a CD-ROM or DVD.

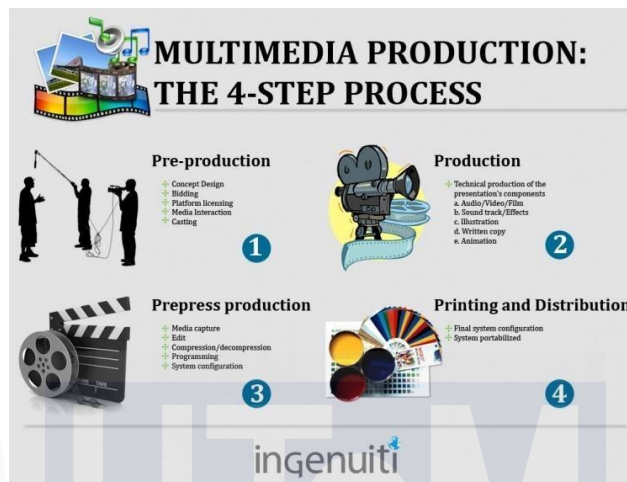


Figure 2.4 Multimedia Production Process (Chloewallace, 2022)

2.5 Project Requirements

- Adobe Animate** - Adobe Animate is a multimedia authoring tool that allows users to create interactive animations and multimedia content for various platforms including web, desktop, television and mobile devices. For this project, Adobe Animate will be used to create 2D animation with bone animation technique.
- Adobe Illustrator** – Adobe Illustrator is a vector graphics editing software that is used to create and edit graphics and illustrations. This project will use it to design character, scenery and many more.
- Microsoft Word** – Microsoft Word is a word processing software. It will be used to create, edit, and format text documents which is this project's report.

2.1.1 Hardware Requirement

The hardware requirement that will be used to develop this project are:

i. Computer

The details about the computer are:

- Operating System: Microsoft Windows 11
- Memory: 8GB RAM
- Processor: Intel Core i5 10th Gen
- Graphics Processor: Nvidia GeForce GTX 1650

2.6 Conclusion

This chapter has mentioned and explained about the project's literature review and methodology of the project. There are a few domains in animation and from all the domains, education and e-learning have been chosen for this project. This chapter also explain about current existing systems and existing bone animation technique that can be compared and give inspiration to implement this project. To implement this project, agile project management have been chosen for the project methodology. While for project requirement, it mentions about software and hardware requirement.

CHAPTER 3: ANALYSIS

3.1 Introduction

Analysis phase is the basic stage in most of existing methodology. Basically, analysis requires a current scenario analysis in the analysis technique used, requirement analysis, resources and delivery platform. This chapter will review the current scenario and requirement analysis of the project. The process of identifying problem in the current scenario is the process of defining differences, so the process of solving the problem in the current scenario is the process of finding a way to reduce the differences.

3.2 Current Scenario Analysis

A YouTube channel Ana Muslim will be the inspiration to construct this project. This is because each animation and content that will be delivered to audience is very simple and attractive.

3.2.1 Comparison of Existing System

Table 3.1 Comparison Current Scenario Analysis with This Project

Comparison	Doa Harian untuk Anak-anak	Kumpulan Doa Sehari-hari untuk Anak Muslim	Lagu Doa Harian Anak Kecil
Types of Visualization	2D with Spatial Memory	2D with infographics	2D with visual metaphors
Interface	Simple	Simple	Simple and attractive
Sound	Only actor's voice over	Good sound quality	Good sound quality
Limitation	Did not have title of each du'a.	The font is not clear	Du'a is only wrote in malay.

Strength	The content and font are clear also good graphical design.	The content can teach the kids the effect of not du'a.	Good graphical design
-----------------	--	--	-----------------------

3.3 Requirement Analysis

Requirement analysis is one of the ways to discover the demands that influenced the development of the project's requirements.

3.3.1 Project Requirement

3.3.1.1 Requirement Gathering

Requirement gathering is unquestionably the most important step in the data transfer and organization process. Qualitative and quantitative requirements gathering are the two types of requirements gathering. Phrases or relative characteristics that describe danger, cost and effect are used in subject evaluations. When there is not sufficient time, money or information to conduct a quantitative review, a quality evaluation is the best possible substitute. Most of the time, a qualitative evaluation is conducted during an interview.

Methods that have been used in carrying out this project is distributing survey forms to kindergarten teacher at Tadika Islam (TASMIK) Masjid As Salam Tambak Bunga and do some interview. The interview was made to get more details on how kids can remember quickly. From the interview, it can be concluded that kindergarten easy to remember when the teachers teach with movement and use repetition technique.

3.3.1.2 Analysis of the System to be Develop

This total project duration is 7 minutes long. The video of the project is about a story in a day. There are 6 sets of du'a which is 1 set contains 2 du'a, before and after doing something. The storyline of the project is there would be a sister who always remind her little sister to read du'a before and after do something. All the characters and objects have been uniquely developed.

Therefore, while carrying out the analysis procedure, the researcher should carry out a requirement review. The research could be conducted by interviewing consumers, target users and stakeholders. So, in conducting this project, the researcher do an interview with a kindergarten teacher in Tadika Islam (TASMIK) Masjid As Salam Tambak Bunga. Below are the interviewee's details:

Table 3.2 Subject Matter Expert details

Component	Details
Name	Mashitah binti Hj Mohd Hassan
Kindergarten Name	Tadika Islam (TASMIK) Masjid As Salam Tambak Bunga
Position	Headmaster and teacher
Type of Information Gathering	Interview
Module	<ol style="list-style-type: none"> 1. Du'a before and after going to toilet 2. Du'a before and after waking up from sleep 3. Du'a before and after eating

After the interview, a survey form has been given to get a few information. Please Appendix A for completed survey form.

3.3.2 Software Requirement

i. Adobe Animate

Adobe Animate is a multimedia authoring tool that allows users to create interactive animations and multimedia content for various platforms including web, desktop, television and mobile devices. For

this project, Adobe Animate will be used to create 2D animation with bone animation technique.

ii. Adobe Illustrator

Adobe Illustrator is a vector graphics editing software that is used to create and edit graphics and illustrations. This project will use it to design character, scenery and many more.

iii. Microsoft Word

Microsoft Word is a word processing software. It will be used to create, edit, and format text documents which is this project's report.

3.3.3 Hardware Requirement

The hardware requirement that will be used to develop this project are:

i. Computer

The details about the computer are:

- Operating System: Microsoft Windows 11
- Memory: 8GB RAM
- Processor: Intel Core i5 10th Gen
- Graphics Processor: Nvidia GeForce GTX 1650

3.4 Project Schedule and Milestones

This section will explain the project's timeline. This project has been completed in one long semester, which is 14 weeks. Below is the project's milestone.

Week (W) / Activity	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15
Select suitable project topic and potential Supervisor															
Proposal Discussion						M									
Proposal Assessment & Verification						I									
Proposal Correction / Improvement						D									
Proposal Approval															
Proposal Submission (PRJ - 1)						S									
List of student with project title						E									
Chapter 1						M									
Chapter 1 (Progress) (PRJ - 3)															
Chapter 2						B									
Chapter 2 (Progress) (PRJ - 3)						R									
Project Progress 1 (PRJ - 2)						E									
Chapter 3						A									
Chapter 3 (Progress 1) (PRJ - 3)						K									
Chapter 4															
Chapter 4 (Progress 2) (PRJ -4)															
Chapter 4 (Progress 2) (PRJ -5)															
PSM 1 Draft Report Preparation															
PSM 1 Draft Report Preparation															
PSM 1 Draft Report Preparation to SV & Evaluator															
Final Presentation															

Figure 3.1 Project's Milestone

3.5 Conclusion

It is critical to gather and analyse requirements to ensure that the system under consideration satisfies all necessary criteria. Each requirement has been compiled and examined. The data will be employed in the 2d animation development and design.

More details on the design are provided in the following chapter.

CHAPTER 4: DESIGN


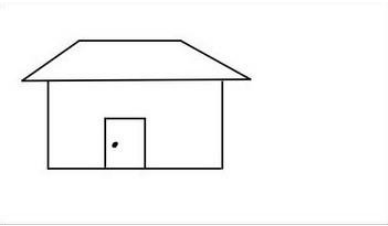
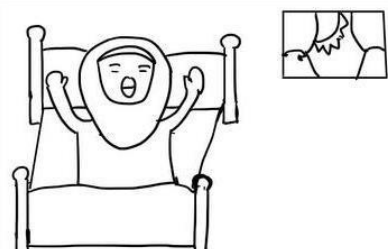
4.1 Introduction

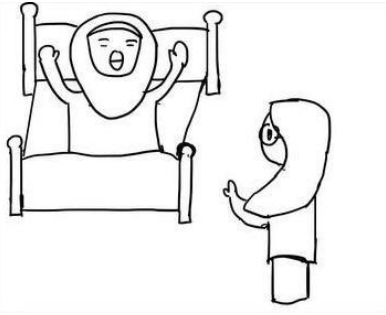


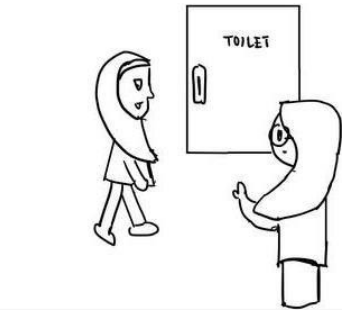
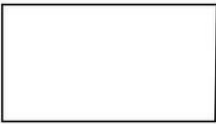
This chapter will explain about pre-production, production, and design steps to conduct a short story 2D animation.

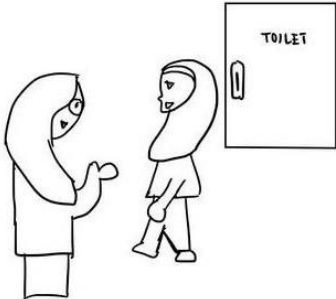


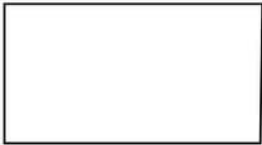
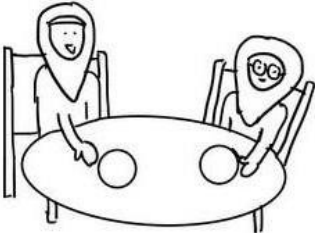
4.2 Preliminary Design


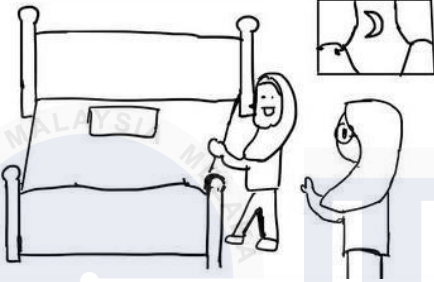

4.2.1 Storyboard Design

Table 4.1 Storyboard

Storyboard	Description
	Scene: Introduction Description: Saffa & Doa Hariannya Sound: Actor's voice
	Scene: Introduction Description: Outside actor's house Sound: Background sound
	Scene: Sleep Description: Wake up from sleep Sound: Background sound

	<p>Scene: Sleep</p> <p>Description: Actor's sister reminds her about du'a</p> <p>Sound: Actor's voice</p>
<p>DOA BANGUN TIDUR</p> 	<p>Scene: Du'a</p> <p>Description: Wake up du'a</p> <p>Sound: Actor's voice</p>
	<p>Scene: Toilet</p> <p>Description: Before going into toilet</p> <p>Sound: Background sound</p>
	<p>Scene: Toilet</p> <p>Description: Actor's sister reminds her about du'a before going into toilet</p> <p>Sound: Actors voice</p>
<p>DOA MASUK TOILET</p> 	<p>Scene: Du'a</p> <p>Description: Du'a before going to the toilet</p> <p>Sound: Actor's voice</p>

	<p>Scene: Toilet</p> <p>Description: After leaving the toilet</p> <p>Sound: Actors voice</p>
<p>DOA KELUAR TOILET</p> 	<p>Scene: Du'a</p> <p>Description: Du'a after leaving the toilet</p> <p>Sound: Actor's voice</p>
	<p>Scene: Eating</p> <p>Description: Before eating</p> <p>Sound: Actors voice</p>
<p>DOA SEBELUM MAKAN</p> 	<p>Scene: Du'a</p> <p>Description: Du'a before eating</p> <p>Sound: Actor's voice</p>
	<p>Scene: Eating</p> <p>Description: After eating</p> <p>Sound: Actors voice</p>

<p style="text-align: center;">DOA SELEPAS MAKAN</p> 	<p>Scene: Du'a</p> <p>Description: Du'a after eating</p> <p>Sound: Actor's voice</p>
	<p>Scene: Sleep</p> <p>Description: Before going to sleep</p> <p>Sound: Actors voice</p>
<p style="text-align: center;">DOA TIDUR</p> 	<p>Scene: Du'a</p> <p>Description: Du'a before going to sleep</p> <p>Sound: Actor's voice</p>

4.3 Conclusion

Design phase is essential to get the idea during implementation. Storyboard can act as reference until the production process is completed. The following chapter will discuss more about the process of implementation.

CHAPTER 5: IMPLEMENTATION

5.1 Introduction

This chapter will describe the creation of the animation project. It will include media creation, media integration, product configuration management, and implementation status. The purpose of this chapter is to give a brief overview of the steps and components needed to develop this 2D animation video. The text, graphics and soundtrack for the animation were created during the design phase and will be put together at this point. To make sure that the target user fully understands the project, the product, which is the animation and the report, are generated in this chapter.

5.2 Media Creation

The manual generation and modification of media components will be covered in this section of media creation process before they are combined in the media integration section. The creation of text, graphics, audio and animation is the consequence of this process.

5.2.1 Production of Text

Text is the most significant multimedia elements as it assists in informing the audience and providing context and messaging. It is important to take into consideration issues like legibility, readability, font choice, contrast and alignment to make sure that the text is successful in communicating its intended message and ideally harmonizes with other multimedia elements.

The font type that has been used for the animation video title is Harrington while the font for the title of the each du'as is Pinky Style. The du'a is in Arabic font while it's meaning use Times New Roman. The size of the fonts is between 12 to 40. Table 5 shows the example of the fonts use in the animation.

Table 5.1 Sample of the fonts

No	Family Font	Sample
1.	Harrington	SAMPLE
2.	Pinky Style	SAMPLE
3.	Times New Roman	SAMPLE

The text for this 2D animation was created using Adobe Illustrator and Adobe Premiere Pro. Text is necessary in animation because it educates viewers and aids in their comprehension of the subject.

**Figure 5.1 Text Production Process**

5.2.2 Production of Graphic

Graphics are illustrations of ideas on a surface, such as a wall, canvas, screen or piece of paper, that are intended to inform, illustrate, or entertain. For example, photographs, drawings, line art, charts, diagrams, typography, numbers, symbols, maps or other images.

In this project, all the design and editing process is a phase of developing graphic for 2D animation. Bitmap image has been built using Adobe Illustrator. It is formed in a 2D picture.

**Figure 5.2 Graphic Production Process**



Figure 5.3 Examples of Graphic

5.2.3 Production of Animation

The setting of the whole short story is developed in this section based on the storyboard that have been generated during the pre-production process. The entire setting and also the color have been built using Adobe Illustrator. Adobe Animate is used to generate the movement of the characters.

The characters' lips have been built a lot to sync with the du'a pronunciation.

All the movement and lip syncs were stored in Adobe Illustrator and then exported to Adobe Animate to make an animation.

All the characters' movement used Asset Wrap Tool to make bone on the characters. The characters' bones have been created manually for each part of the body.



Figure 5.4 Example of Bone Created

Furthermore, classic tween is utilized to make the characters can move more smoothly. The hand movement of the character from forward and backward when walking and can twist to reading du'a position.

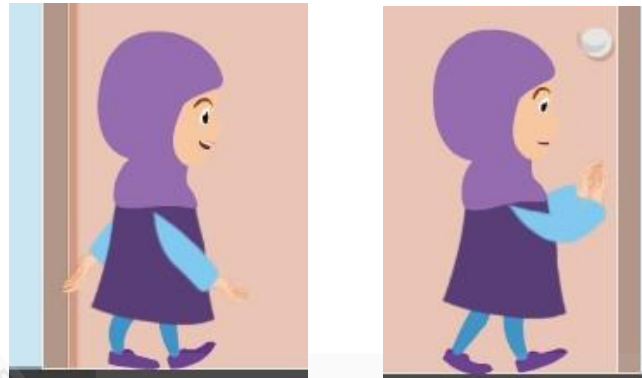


Figure 5.5 Example of character movement

5.2.4 Production of Audio

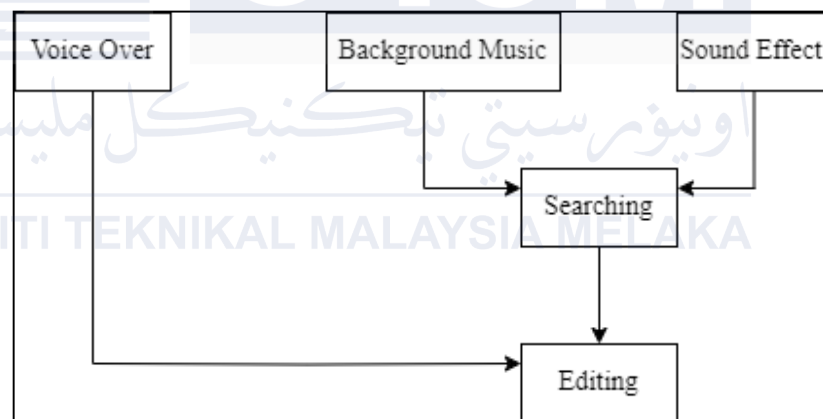


Figure 5.6 Audio Production Process

The use of audio is important to produce an appealing and captivating animation that will attract the target audience. Production of audio can be divided into three categories of audio, which are voice over, background music and sound effect. Audio is needed in animation that can help in producing a better multimedia product. Usually, the production of audio will be done after the integration of design and text. To make the audio synchronize with all the multimedia elements, it is integrated into the animation and text.

All the project's audio files are in MP3 format. The music and sound effect was obtained from the internet which is Pixabay. All the music and sound effect are free to be downloaded.

Table 5.2 List of Audio

No	Audio	Source
1.	Walking sound effect	https://pixabay.com/sound-effects/
2.	Handwash sound effect	https://pixabay.com/sound-effects/

5.3 Media Integration

The animation includes a variety of multimedia elements. All the graphic and animation that were created were drawn using Adobe Illustrator. The characters, object and background were created using Adobe Illustrator and then imported to Adobe Animate to make animations and input the content. The animation has been created scene by scene and then they were compiled in Adobe Premiere Pro. The final video format is mp4.

5.3.1 Adobe Illustrator Integration

Adobe Illustrator was used to create the content in the animation, for example the characters and the background. One of the characters from Freepik will also be edited in the illustrator. The character will be changed in terms of colors, size, and the clothes. Any unnecessary things in the character will be deleted to suit the animation theme.



Figure 5.7 Adobe Illustrator Workspace

5.3.2 Adobe Animate Integration

Adobe Animate was used to create the text which is the du'a and its meaning. The text color will be changed according to the voice over. Adobe Animate is also used to animate the characters' movement.

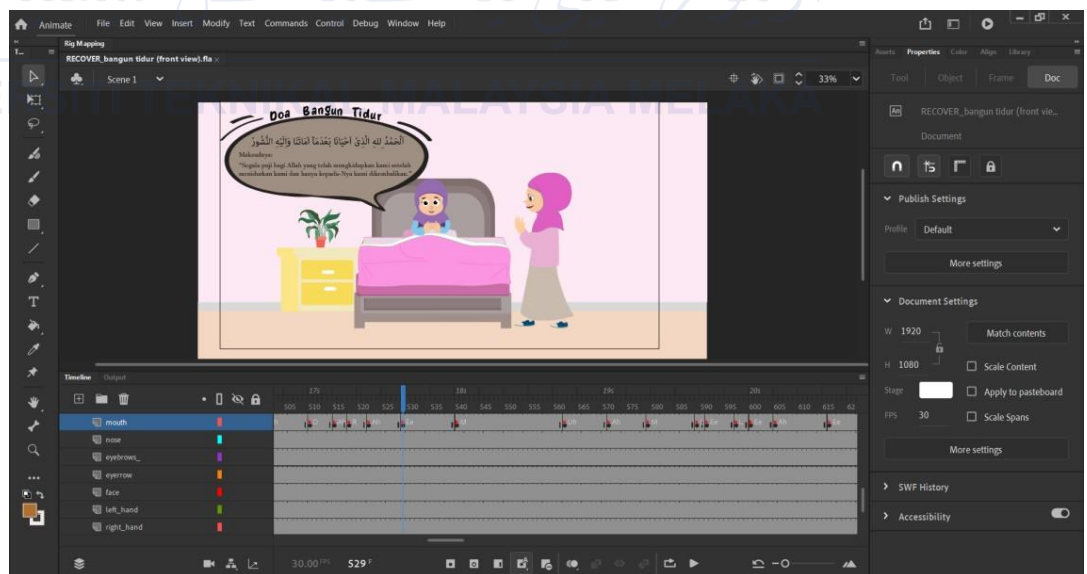


Figure 5.8 Adobe Animate Workspace

5.4 Product Configuration Management

In this project, Adobe Illustrator was used to illustrate and draw the characters and a few objects. All the colors and shading have been done in this software. After finished with the design, it will be exported to Adobe Animate and will be animated frame by frame. The text also has been done in this software. The output of the project is in mp4 format.

5.4.1 Configuration Environment Setup

This project's configuration setup focuses on three software, which are Adobe Illustrator Adobe Animate and Adobe Premiere Pro. The settings used by this software are explained in the section below:

Table 5.3 Software Configuration

Software	Configuration
Adobe Illustrator	<p>View Port Configuration</p> <p>Size: 1920x1080</p> <p>Ruler Units: Pixels</p> <p>Color Mode: RGB color</p> <p>Output Setting</p> <p>Output Size: 1920x1080</p> <p>Quality: High Quality</p> <p>Format: ai</p>
Adobe Animate	Render Setting

	Size: 1920x1080 Quality: High Quality Frame Rate: 30 fps Ruler Unit: Pixels Output Setting Output Size: 1920x1080 Format: MOV
Adobe Premiere Pro	Render Setting Size: 1920x1080 Quality: High Quality Ruler Unit: Pixels Output Setting Output Size: 1920x1080 Format: mp4

5.4.2 Version Control Procedure

The project that is currently under development needs the version control process. It is a safety measure to guarantee that the project can be built and used successfully in the future. Chapters and tasks are being separated out in the

development. The earlier stage of the project development process is the part of the project that is the most challenging.

5.4.2.1 Version Before Release Animation

i. Version 1: Storyboard Creation

A storyboard is a visual representation of how each scene in the animation will look and feel. Each scene is represented by a square with a sketch graphic, along with a description of what actually occurs in the scene and what is being said in the story at that time.

ii. Version 2: Character Creation

Adobe Illustrator has been used to create characters and a few objects. Since each component needed to be animated, it has been created in a separate part. So that, it will be easier to create bone on the characters to make animation.

iii. Version 3: Animating the Animation

The animation will be animated according to the project's storyboard and the first completed product.

5.4.2.2 Version Animation Integration

i. Version 4: Combining the Animation

The completed animation that has been developed in Adobe Animate will be combined in Adobe Premiere Pro. This version will undergo one last review to make sure the animation is error-free.

ii. Version 5: Final Video Rendering

The final output will be rendered using Adobe Premiere Pro. Sound Effect, narration, and transition effect will be added during this version as final touch.

5.4.2.3 Version After Release Testing

After the animation was released, three different types of testing had to be carried out, which are testing for target audience, multimedia experts and subject matter experts. After the users had finished watching the animation, they need to fill in a few questionnaires.

5.5 Implementation

The project's development process is monitored and recorded using the implementation status. Later, this section will discuss how each module is developed according to the Gantt chart.

Table 5.4 Implementation Status

Phase 1	Content Verification
Module Name	Content Verification with Subject Matter Experts
Description	The purpose of the content verification is to ensure that the content that would be utilized to create the animation is accurate.

Phase 2	Storyboard
Module Name	Storyboard

Description	The design, content, and flow of the animation is sketched in the storyboard.
--------------------	---

Phase 3	Character Design
Module Name	Character design
Description	The characters and a few object that used in the animation have been designed using Adobe Illustrator.

Phase 4	Create Animated Scene
Module Name	Animating
Description	Animation have been created frame by frame using Adobe Animate

Phase 5	Compile the Animation
Module Name	Compile Animation
Description	The animation has been done scene by scene, so they will be compiled using Adobe Premiere Pro.

Phase 6	Sound Recording
Module Name	Sound Recording
Description	The voice over will be recorded in this phase. Sound effect also will be added here to convey the feel in the animation.

Phase 7	Rendering the animation
Module Name	Rendering the animation
Description	After finished developing and editing, the animation will be rendered to get output in mp4 format.

Phase 8	Publish Animation
Module Name	Publish Animation
Description	The video animation has been published on YouTube platform. Link: https://youtu.be/w6HLIFP9zOs

5.6 Summary

The development of animation must ultimately include the implementation process. The entire media output has been discussed in this chapter. This chapter has discussed the steps involved in developing an animation as well as the functions of

each software used. The testing and analysis of the completed project will be covered in the following chapter.



CHAPTER 6: TESTING

6.1 Introduction

After the implementation stage has been completed, the project needs to be followed with testing stage. The testing stage will explain how the project will be tested. The result of the testing will also be analyzed in this stage. Project testing is important to find out if the project's goal is achieved or not. The test plan, test strategy, test implementation, test results and analysis, and analysis testing will be discussed in the details below. The project's objectives will determine the project's success.

6.2 Test Plan

6.2.1 Test User

The users that are involved to do testing the target audience, children aged 5 to 6 years old, subject matter expert which is kindergarten teacher, and multimedia experts.

6.2.1.1 Target Audience

The target audience of this project is children that are aged from 5 to 6 years old. They just need to watch the video and answer the questionnaire. Due to many children cannot read and write fluently, the questionnaire will be filled with helped by the guidance and teachers.

6.2.1.2 Subject Matter Expert

The subject matter expert regarding this project is a person that has specialties in this subject and a background in the early childhood education field. The teacher will independently test the project and provide feedback based on academic perspectives and suitability of the animation for children.

6.2.1.3 Multimedia Expert

A multimedia expert is someone who is knowledgeable and experienced in the fields of multimedia and information technology. A few individuals have been chosen to do the test, which are multimedia lectures and graphic designer. The multimedia experts will test the project with a focus on the technique used, interface, interaction, content layouts and integration of multimedia elements.

6.2.2 Test Environment

The test environment describes the location or environment of the testing that will be carried out. It also describes the hardware needed during the testing. The test environment is crucial to make sure that the testing procedure is carried out successfully. The table below shows the hardware used to test the project.

Table 6.1 Test Environment

Hardware	Description
Laptop / Computer	Device to show the project video to the testers.

6.2.3 Test Schedule

The table below shows the schedule for the testing stage.

Table 6.2 Test Schedule

Task Name	Duration	Start	Finish
Test Planning	14 days	31 July 2023	13 August 2023

Test Plan and Schedule Preparation	6 days	14 August 2023	19 August 2023
Test Environment and Questionnaire Preparation	7 days	20 August 2023	26 August 2023
Testing	14 days	27 August 2023	9 September 2023

6.3 Test Strategy

There are three types of users that need to do the test, which are children, subject matter expert, and multimedia experts. The testers will watch the animation video and need to answer the questionnaires given. All three types of users will be given different questionnaires but the same pattern. They have five rating ranges from one to five, strongly disagree to strongly agree accordingly. The rating ranges of the questionnaire is shown in table below.

Table 6.3 Likert Scale

1	2	3	4	5
Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Moderate (Separa)	Agree (Setuju)	Strongly agree (Sangat setuju)

6.3.1 Testing Question for Children (Kindergarteners)

Testing questions for target user consists of 5 sections, which are demography (7 questions), perceived ease of use (3 questions), perceived usefulness (4 questions), attitude towards using (4 questions) and intention to use (2 questions).

1. Demography (Demografi)

- i. Your gender (Jantina)
 - Boy (Lelaki)
 - Girl (Perempuan)

- ii. How old are you? (Umur)
 - 5 years old (5 tahun)
 - 6 years old (6 tahun)

- iii. Have you ever learned or been exposed to daily du'a at home?
(Adakah anda pernah belajar atau didedahkan mengenai doa harian di rumah?)
 - Yes (Ya) No (Tidak)

- iv. Have you memorized daily du'a?
(Adakah anda menghafal doa harian?)
 - Yes (Ya) No (Tidak)

- v. Among the following du'as, tick the du'a that has been memorized.
You can tick more than 1.
(Antara doa-doa berikut, tandakan doa yang telah dihafal. Anda boleh tanda lebih daripada 1.)
 - Du'a before going to bed (Doa sebelum tidur)
 - Du'a after waking up (Doa bangun tidur)
 - Du'a before going to toilet (Do'a sebelum masuk tandas)
 - Du'a after going out from toilet (Doa selepas keluar tandas)
 - Du'a before eating (Doa sebelum makan)
 - Du'a after eating (Doa selepas makan)

- vi. Can you understand the meaning of the du'a being read?
(Adakah anda boleh memahami maksud doa yang dibaca?) (ya, sebahagian, tidak)
 - Yes (Ya) Few (Sebahagian) No (Tidak)

- vii. Do you read the du'a every day?
(Adakah anda membaca doa setiap hari?)
 - Yes (Ya) No (Tidak)

2. Part A: Perceived Ease of Use (Dirasakan mudah digunakan)

- i. Easy to understand the content of the animated (cartoon) video.
(Mudah memahami kandungan animasi video)
 - 1 2 3 4 5

- ii. Learning of each du'as in the animated (cartoon) video are clear.
(Pembelajaran setiap doa dalam video animasi adalah jelas)

1 2 3 4 5

- iii. I can understand the content of the animated (cartoon) video without assistance.
(Saya boleh memahami kandungan animasi video tanpa bantuan orang lain)

1 2 3 4 5

3. Part B: Perceived Usefulness (Dirasakan berguna)

- i. The animated (cartoon) video enhances my understanding by providing the movement of the characters.
(Pergerakan watak dalam video animasi membantu saya memahami isi kandungan video)

1 2 3 4 5

- ii. The cartoon (animated) video helps me learn at my own pace and make me easily to learn the du'a (e.g pause, rewind, repeat certain section).
(Animasi video ini membantu saya belajar untuk memahami doa harian mengikut kemampuan diri seperti berhenti, putar balik, ulang bahagian tertentu)

1 2 3 4 5

- iii. The cartoon (animated) video engages my attention and help me to memorise du'a.
(Animasi video ini menarik perhatian saya serta membantu untuk menghafal doa)

1 2 3 4 5

- iv. I found that the animated (cartoon) video is useful for my du'a learning skill.
(Saya dapati animasi video ini berguna dalam meningkatkan kemahiran membaca doa saya)

1 2 3 4 5

4. Part C: Attitude Towards Using (Sikap terhadap penggunaan)

- i. I like the idea of the animated (cartoon) video.
(Saya suka idea dalam video animasi ini)

1 2 3 4 5

- ii. I have a favourable attitude or enjoy learning with the animated (cartoon) video.
(Saya seronok belajar menggunakan video animasi ini)

1 2 3 4 5

iii. I believe the animated (cartoon) video present a refreshing change that can improve existing learning.
(Saya percaya video animasi ini adalah perubahan baharu yang dapat menambah baik pembelajaran sedia ada)

1 2 3 4 5

iv. I think that the animated (cartoon) video is a great idea for learning material.
(Saya fikir animasi video ini adalah idea yang sangat bagus sebagai bahan pembelajaran)

1 2 3 4 5

5. Part D: Intention To Use (Niat untuk Guna)

i. I will use the animated (cartoon) video to help my memorise skill.
(Saya akan menggunakan animasi video ini untuk membantu menghafal doa)

1 2 3 4 5

ii. I will recommend the animated (cartoon) video to my friends and family members.
(Saya akan syorkan video animasi ini kepada rakan-rakan dan keluarga saya)

1 2 3 4 5

Figure 6.1 Questionnaire for Children (Kindergarteners)

6.3.2 Testing Question for Multimedia Expert

The table below shows the testing questions for multimedia experts. It consists of 6 sections. The first section is expert information that has 3 questions. The second section is evaluation of bone animation technique. The third section is evaluation of 2D Dailu Du'a animation. The fourth section is usability evaluation while fifth section is functionality. Last section is overall recommendation where multimedia experts can comment overall about the animation and give any feedback.

Section 1: Expert Information

Name:

Position:

Years of experience in multimedia field:

Section 2: Evaluation of Bone Animation Technique

1. I am familiar with bone animation techniques.

1 2 3 4 5

2. In my opinion, bone animation technique is suitable for conveying educational content to children.

1 2 3 4 5

Section 3: Evaluation of 2D Daily Du'as Animation

3. Based on your expertise, the 2D Daily Du'a animation aligns with the project's objectives for helping children learning daily du'as.

1 2 3 4 5

4. The storyline and characters effectively enhance the learning of daily du'as.

1 2 3 4 5

5. The voice is suitable.

1 2 3 4 5

6. The voice is clear.

1 2 3 4 5

Section 4: Usability Evaluation

7. From a multimedia design perspective, how would you rate the ease of use of the 2D Daily Du'a animation interface?

1 2 3 4 5

8. The animation is useful as a tool for assisting children in memorizing daily du'as.

1 2 3 4 5

9. Based on your expertise, how likely are the end users (children) to continue using the animation for learning and practicing du'as?

1 2 3 4 5

Section 5: Functionality

10. The animation is smooth can be seen clearly.

1 2 3 4 5

11. The animation can be seen clearly.

1 2 3 4 5

12. The narration is clear.

1 2 3 4 5

Section 6: Overall Recommendation

13. Write any additional multimedia elements or features, if any. (Optional)

Figure 6.2 Questionnaire for Multimedia Experts

6.3.3 Testing Question for Subject Matter Expert

The table below shows the testing questions for subject matter expert. It consists of 5 sections. The first section is expert information that has 3 questions. The second section is ease of use. The third section is perceived usefulness. The fourth section is intention to use. Last section content verification.

Section 1: Expert Information

Name:

Position:

Years of experience in teaching early childhood education:

Section 2: Ease of Use

1. I found this video is easy to use.

1 2 3 4 5

2. Learning by using 2D animation would be easy to me.

1 2 3 4 5

Section 3: Perceived Usefulness

3. This animation video can enhance my effectiveness in teaching.

1 2 3 4 5

4. Using 2d animation can increase productivity in my teaching tools.

1 2 3 4 5

5. I found that this animation is useful.

1 2 3 4 5

Section 4: Intention to Use

6. I intend to use 2D animation as my teaching material.

1 2 3 4 5

7. I intend to visit 2D animation frequently for my references.

1 2 3 4 5

Section 5: Content Verification

8. Du'a after waking up.



i. The scene is suitable.

1 2 3 4 5

ii. The du'a with its meaning is correct.

Yes No

9. Du'a before going to toilet.



i. The scene is suitable.

1 2 3 4 5

ii. The du'a with its meaning is correct.

Yes No

10. Du'a after going out from toilet.



i. The scene is suitable.

1 2 3 4 5

ii. The du'a with its meaning is correct.

Yes No

11. Du'a before eating.



i. The scene is suitable.

1 2 3 4 5

ii. The du'a with its meaning is correct.

Yes No

12. Du'a after eating.



- i. The scene is suitable.
 1 2 3 4 5
- ii. The du'a with its meaning is correct.
 Yes No

13. Du'a before bed



- i. The scene is suitable.
 1 2 3 4 5
- ii. The du'a with its meaning is correct.
 Yes No

Figure 6.3 Questionnaire for Subject Matter Expert

6.4 Test Implementation

Test implementation refers to the steps involved in creating a test system, gathering test data, or, alternately setting up test conditions and creating automated test materials. The testing process's test implementation will include how to run tests. On a specific target user, testing will be conducted. The test strategy is followed while establishing the link between the test description and data collecting.

6.4.1 Test Description

There are three different sets of questionnaires with three different users that need to test the project. They are kindergartens, Multimedia Experts and Subject Matter Experts.

The number of user testing of each set is different where 30 persons of kindergarten, three Multimedia Experts and one subject matter expert. Kindergarten's question need has been helped by the guidance to answer the questions while Multimedia Expert and Subject Matter Expert will answer independently.

6.4.2 Test Data

After the testing is over, evaluation is documented. All of the test findings are collected and reviewed with supporting evidence in the form of photos and videos. The table below will describe the test data for user testing.

Table 6.4 Test Data for User Testing

Testing	Questionnaire	Questionnaire	Questionnaire
Position	Kindergarten	Subject Matter Expert	Multimedia Expert
General Information	Kids from 5 to 6 years old.	A person who has background in	People that have experience in multimedia field.

		early childhood education.	
Total User	30	1	3

Table 6.5 Details of User Testing

Position	Details
Kindergarten	30 kids from Tadika Intelek Permata
Subject Matter Expert	Pn. Mashitah binti Hj Mohd Hassan Kindergarten teacher at Tadika Islam (TASMIK) Masjid As Salam Tambak Bunga
Multimedia Expert	Lecturers with Multimedia background <ul style="list-style-type: none"> i. En. Muhammad Helmy bin Emran (22 years experienced) ii. En. Ikmal Faiq Albakri (5 years experienced) iii. En. Mohd Khalid bin Mokhtar (20 years experienced)

6.5 Testing Result and Analysis

6.5.1.1 Testing Result for Children (Kindergarteners)

Table below shows the testing result for kindergarten.

Table 6.6 Testing Result for Children (Kindergarteners)

Demography			
No	Question	Options	Numbers
1.	Gender	Boy	18
		Girl	12
2.	Age	5 years old	14
		6 years old	16
4.	Have you ever learned or been exposed to daily du'a at home?	Yes	24
		No	6
5.	Have you memorized daily du'a?	Yes	30
		No	0
6.	Among the following du'as, tick the du'a that has been memorized. You can tick more than 1.	Du'a before going to bed	24
		Du'a after waking up	4

		Du'a before going to toilet	8
		Du'a after going out from toilet	1
		Du'a before eating	28
		Du'a after eating	9
6.	Can you understand the meaning of the du'a being read?	Yes	0
		Few	27
		No	3
7.	Do you read du'a everyday?	Yes	22
		No	8

Part A: Perceived Ease of Use						
No.	Question	Scale				
		1	2	3	4	5
1.	Easy to understand the content of the animated (cartoon) video.		2	7	7	14
2.	Learning of each du'as in the animated (cartoon) video are clear.	1	1	8	10	10

3.	I can understand the content of animated (cartoon) video without assistance.		7	8	10	5
Part B: Perceived Usefulness						
No.	Questions	Scale				
		1	2	3	4	5
1.	The animated (cartoon) video enhances my understanding by providing the movement of the characters.		2	5	13	10
2.	The cartoon (animated) video helps me learn at my own pace and make me easily to learn the du'a (e.g pause, rewind, repeat certain section).		2	6	18	4
3.	The cartoon (animated) video engages my attention and helps me to memorise du'a.			11	10	9
4.	I found that the animated (cartoon) video is useful for my du'a learning skill.			14	10	6
Part C: Attitude Towards Using						
No.	Questions	Scale				
		1	2	3	4	5
1.	I like the idea of the animated (cartoon) video.			8	11	11
2.	I have a favorable attitude or enjoy learning with the animated (cartoon) video.			8	9	13

3.	I believe the animated (cartoon) video presents a refreshing change that can improve existing learning.			13	7	10
4.	I think that the animated (cartoon) video is a great idea for learning material.			7	9	13
Part D: Intention To Use						
No.	Questions	Scale				
		1	2	3	4	5
1.	I will use the animated (cartoon) video to help my memorise skill.			2	13	15
2.	I will recommend the animated (cartoon) video to my friends and family members.			1	13	16



UNIVERSITI TEKNIKAL MALAYSIA MELAKA


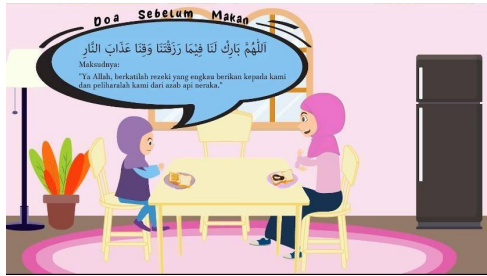
6.5.1.2 Testing Result for Subject Matter Expert

Table below shows the testing result for Subject Matter Expert.

Table 6.7 Testing Result for Subject Matter Expert

Ease of Use						
No.	Questions	Scale				
		1	2	3	4	5
1.	I found this video is easy to use				1	
2.	Teaching by using 2D animation would be easy to me.					1
Perceived Usefulness						
No	Questions	Scale				

		1	2	3	4	5
3.	This animation video can enhance my effectiveness in teaching.					1
4.	Using 2d animation can increase productivity in my teaching.					1
5.	I found that this animation is useful for teaching.					1
Intention to Use						
No.	Questions	Scale				
		1	2	3	4	5
6.	I intend to use 2D animation as my teaching material.					1
7.	I intend to use 2D animation frequently.					1
Content Verification						
No.	Questions	Scale				
		1	2	3	4	5
8.	Du'a after waking up. 					
	a. The meaning is correct.					1
	b. The du'a is correct.					1
	c. The reading of the du'a is accurate.					1
	d. The scene is suitable.					1
	e. The scenario is interesting.					1
9.	Du.a before going to toilet. 					

	a. The meaning is correct.					1
	b. The du'a is correct.					1
	c. The reading of the du'a is accurate.					1
	d. The scene is suitable.					1
	e. The scenario is interesting.				1	
10.	Du'a after going out from toilet. 					
	a. The meaning is correct.					1
	b. The du'a is correct.					1
	c. The reading of the du'a is accurate.				1	
	d. The scene is suitable.				1	
	e. The scenario is interesting.				1	
11.	Du'a before eating. 					
	a. The meaning is correct.					1
	b. The du'a is correct.					1
	c. The reading of the du'a is accurate.					1
	d. The scene is suitable.					1
	e. The scenario is interesting.					1
12.	Du'a after eating.					

	a. The meaning is correct.				1
	b. The du'a is correct.				1
	c. The reading of the du'a is accurate.				1
	d. The scene is suitable.			1	
	e. The scenario is interesting.			1	
13.	Du'a before bed. 				
	a. The meaning is correct.				1
	b. The du'a is correct.				1
	c. The reading of the du'a is accurate.				1
	d. The scene is suitable.		1		
	e. The scenario is interesting.		1		

6.5.1.3 Testing Result for Multimedia Expert

Table below shows the testing result for multimedia expert.

Table 6.8 Testing Result for Multimedia Experts

Evaluation of Bone Animation Technique						
No.	Questions	Scale				
		1	2	3	4	5
1.	I am familiar with bone animation techniques.	1			2	
2.	In my opinion, bone animation technique is suitable for conveying educational content to children.					3
Evaluation of 2D Daily Du'as Animation						
No.	Questions	Scale				
		1	2	3	4	5
3.	Based on your expertise, the 2D Daily Du'a animation aligns with the project's objectives for helping children learning daily du'as.					3
4.	The storyline and characters effectively enhance the learning of daily du'as.				1	2
5.	The voice is suitable.				1	2
6.	The voice is clear.					3
Usability Evaluation						
No.	Questions	Scale				

		1	2	3	4	5
7.	From a multimedia design perspective, how would you rate the ease of use of the 2D Daily Du'a animation interface?					3
8.	The animation is useful as a tool for assisting children in memorizing daily du'as.					3
9.	Based on your expertise, how likely are the end users (children) to continue using the animation for learning and practicing du'as?					3
Functionality						
No.	Questions	Scale				
		1	2	3	4	5
10.	The animation is smooth can be seen clearly.				2	1
11.	The animation can be seen clearly.			1		2
12.	The narration is clear.				1	2
Overall Recommendation						
No.	Question	Answer				
13.	Write any additional multimedia elements or features, if any. (Optional)	- Color choice. Can use Kuler to choose suitable color.				

		<p>- Improve animation with better animation effort.</p> <p>- Good. Easy to learn and interactive way to let children learn about doa.</p>
--	--	--

6.6 Analysis Testing

In this section, diagrams will be generated based on the results of the overview and testing measures. This figure illustrates the assessment testing that was carried out. Based on the data gathered from the test results, a few charts that summarise the assessment's findings were created.

6.6.1 Children (Kindergarteners)

There are 30 students who take part in answering this survey. A questionnaire has been given to them after they finished watching the animation video. A bar chart will be created when analysis of all the data has been gathered.

6.6.1.1 Chart of Demography

i. Gender

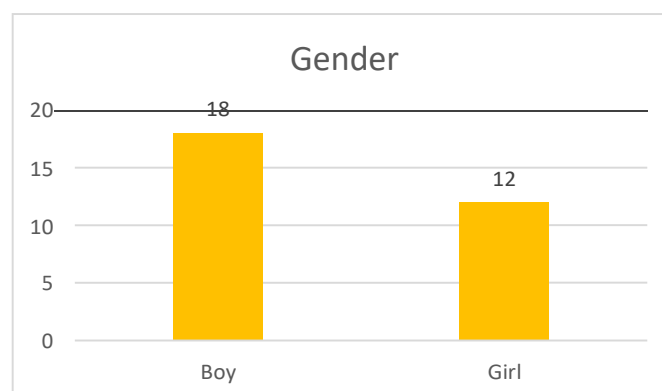


Figure 6.4 Chart of Gender

18 (60%) of the respondents are boys while the others 12 (40%) are girls.

ii. How old are you?

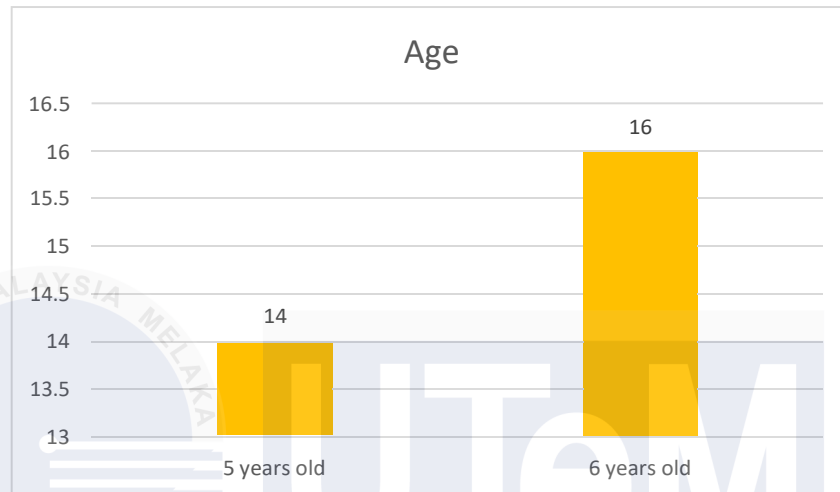


Figure 6.5 Chart of Age

The respondents are from 5 to 6 years old and all of them are from Tadika Intelek Permata. 14 (46.67%) respondents are 5 years old while 16 (53.33%) respondents are 6 years old.

iii. Have you ever learned or been exposed to daily du'a at home?

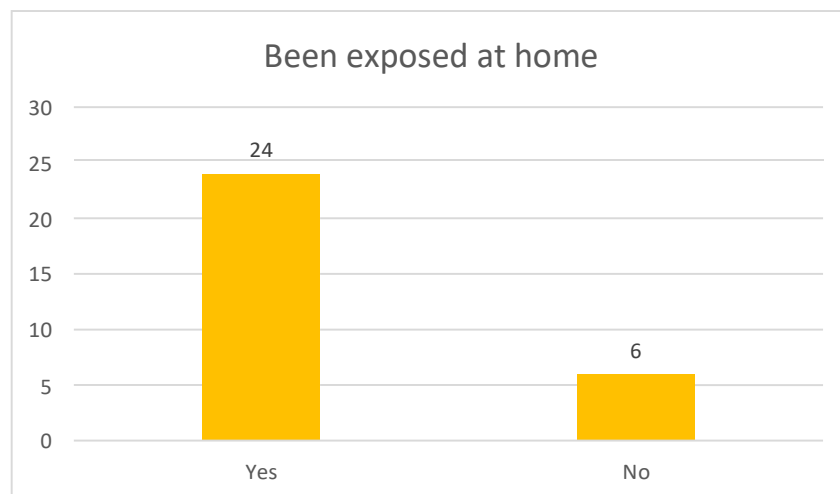


Figure 6.6 Chart of Been Exposed at Home

24 (80%) respondents have learned or been exposed to daily du'a at home while only 6 (20%) respondents did not exposed to daily du'a at home.

iv. Have you memorized daily du'a?

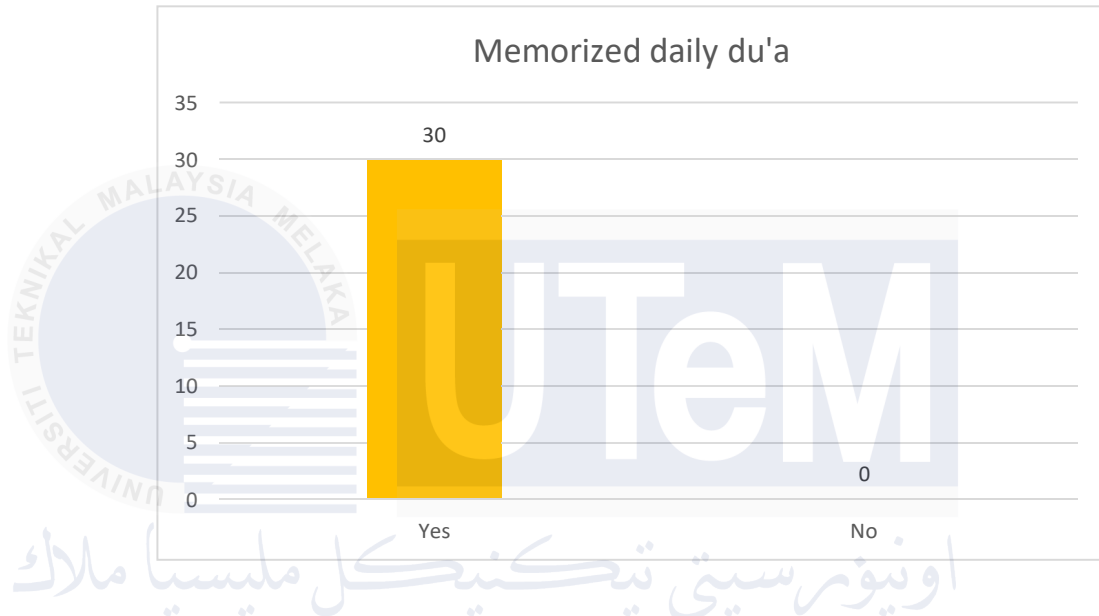


Figure 6.7 Chart of Memorized Daily Du'a

All the respondents (100%) have memorized daily du'a, at least a du'a.

v. Among the following du'as, tick the du'a that has been memorized. (Can tick more than 1).

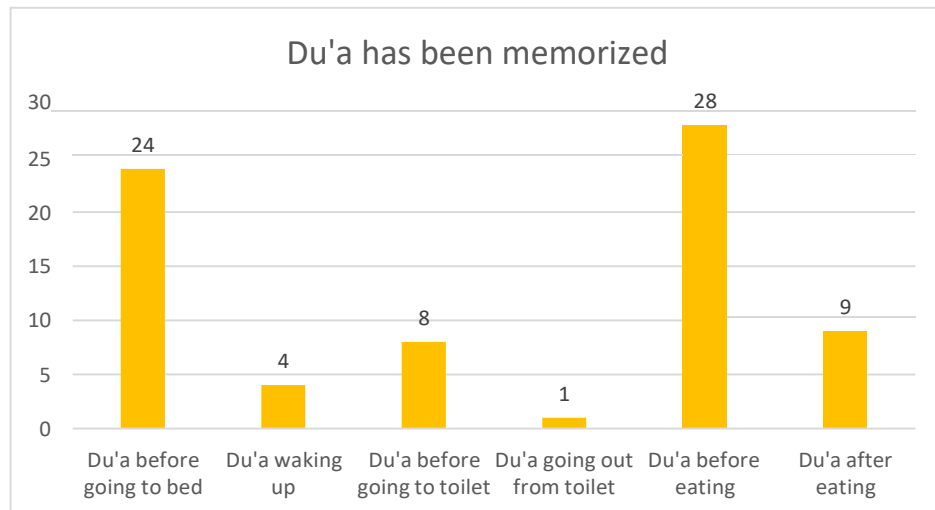


Figure 6.8 Chart of Du'as that have been memorized

28 (93.33%) respondents have memorized du'a before eating. It is the highest as they will recite the du'a everyday at the kindergarten before eating. 24 (80%) respondents have memorized du'a before going to sleep, 9 (30%) respondents memorized du'a after eating, 8 (26.67%) respondents memorized du'a before going to toilet, 4 (13.33%) respondents memorized du'a after waking up, and only 1 (3.33%) respondent memorized du'a after going out from toilet.

- vi. Can you understand the meaning of the du'a being read?

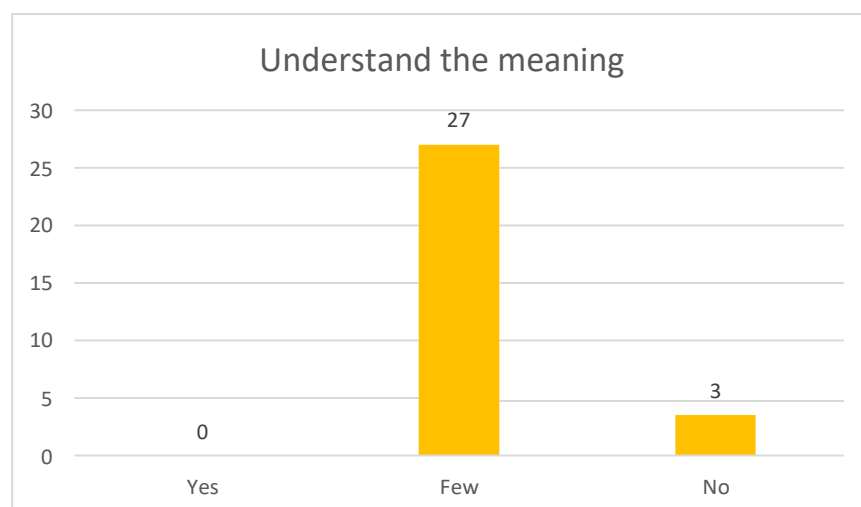
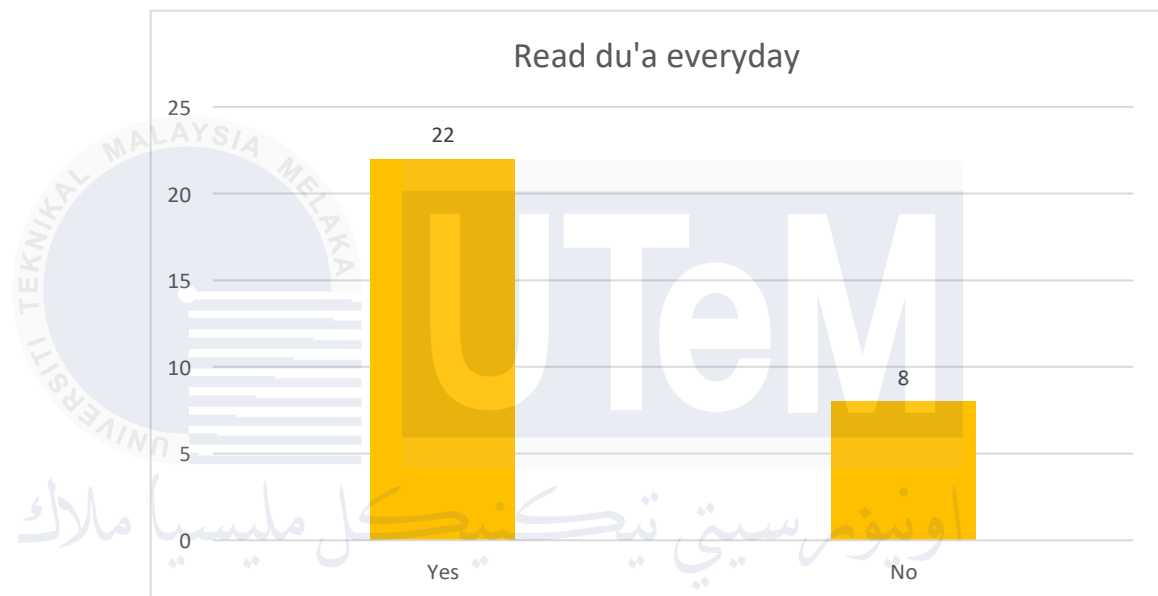


Figure 6.9 Chart of Understand the meaning of du'a being read

A total of 27 (90%) respondents can understand a few of the meaning of the du'a being read and the other 3 (10%) respondents cannot understand at all.

vii. Do you read du'a everyday?



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Figure 6.10 Chart of reading du'a everyday

22 (73.33%) respondents read the du'a everyday while 8 (26.67%) respondents did not read everyday.

6.6.1.2 Chart of Perceived Ease of Use

i. Easy to understand the content of the animated (cartoon) video.

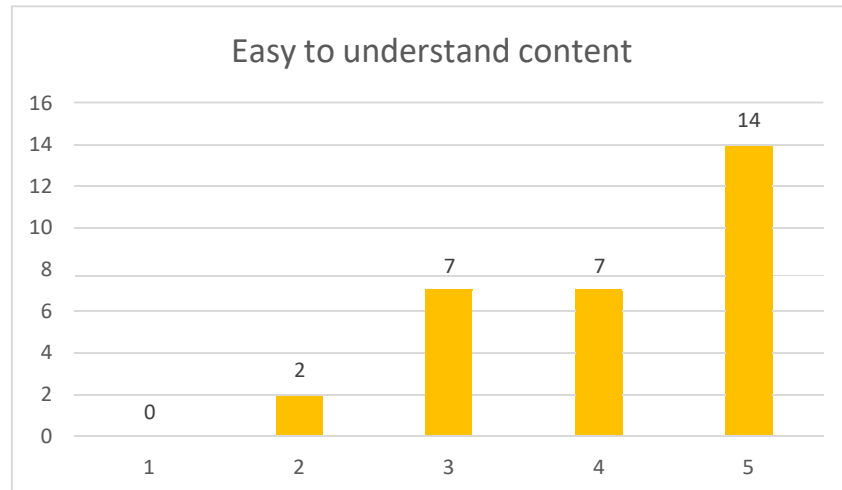


Figure 6.11 Chart of Easy to Understand Content

14 (46.67%) respondents strongly agree that the content of the animated (cartoon) video is easy to understand. The number of agree and moderate are same which is 7 (23.33%) respondents. However, there are 2 (6.67%) respondents feel that it is not very easy to understand the content of the video.

ii. Learning of each du'as animated (cartoon) video are clear.

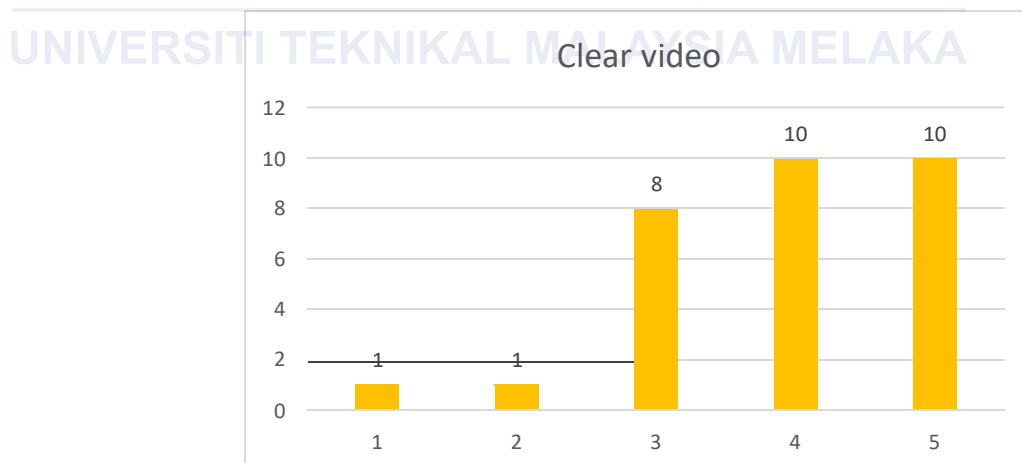


Figure 6.12 Chart of Clear Video

The total of strongly agree and agree are same which is 10 (33.33%) respondents that the video is clear. However, there are also have same number on strongly disagree and disagree which is a respondent on each.

- iii. I can understand the content of animated (cartoon) video without assistance.

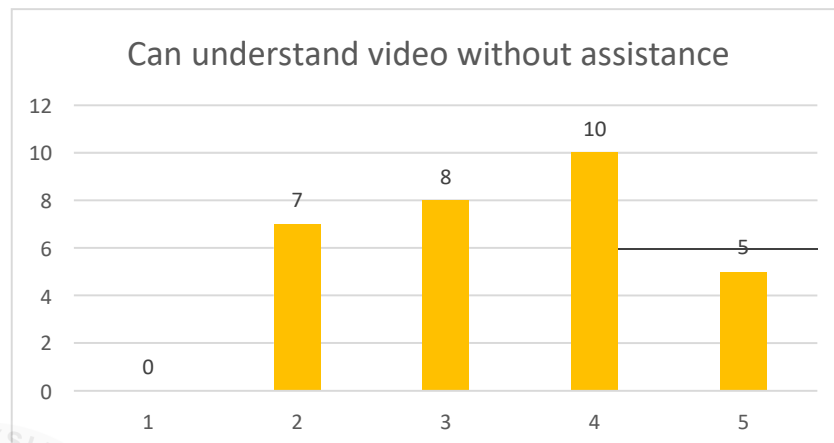


Figure 6.13 Chart of Understand Video without Assistance

10 (33.33%) respondents are agree and 5 (16.67%) are strongly agree that they can understand the content of the video without assistance. However, 7 (23.33%) respondents cannot understand the content of the video if there is no people guide them.

6.6.1.3 Chart of Perceived Usefulness

- i. The animated (cartoon) video enhances my understanding by providing the movement of the characters.

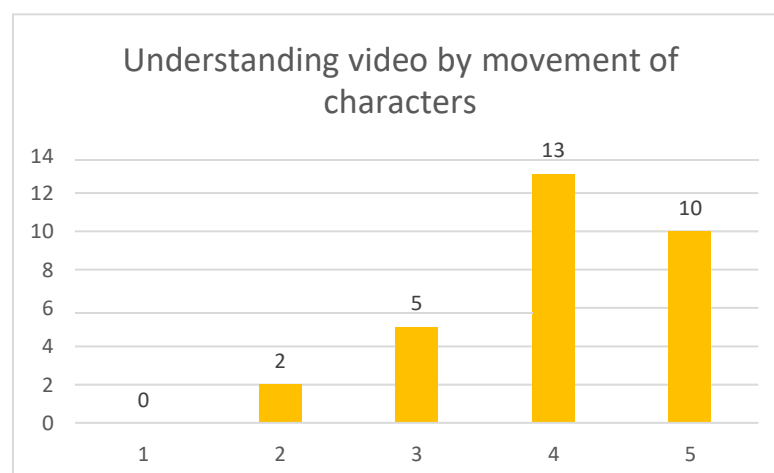


Figure 6.14 Chart of Understanding Video by Character's Movement

Most of the respondents are strongly agree (33.33%) and agree (43.33%) that the movement of the characters can help them understand the content. 16.67% respondents are not really understanding and there are 6.67% are not understand the content of the video.

- ii. The animated (cartoon) video helps me learn at my own pace and make me easily to learn the du'a (e.g pause, rewind, repeat certain section).

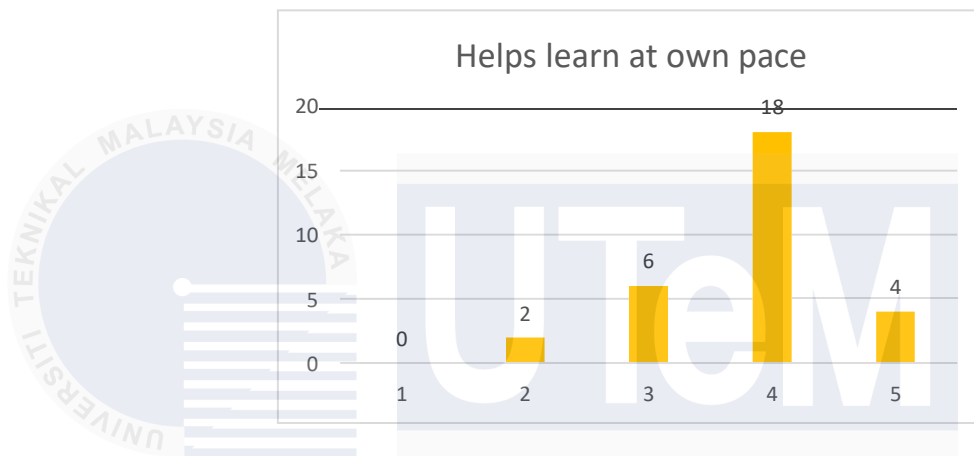


Figure 6.15 Chart of Helps learn at own pace

The number of agree is the highest with 60% of the respondents. They agree that they can learn at their own pace as the video can be pause, rewind and repeat the part that they cannot catch up.

- iii. The animated (cartoon) video engages my attention and help me to memorise du'a.

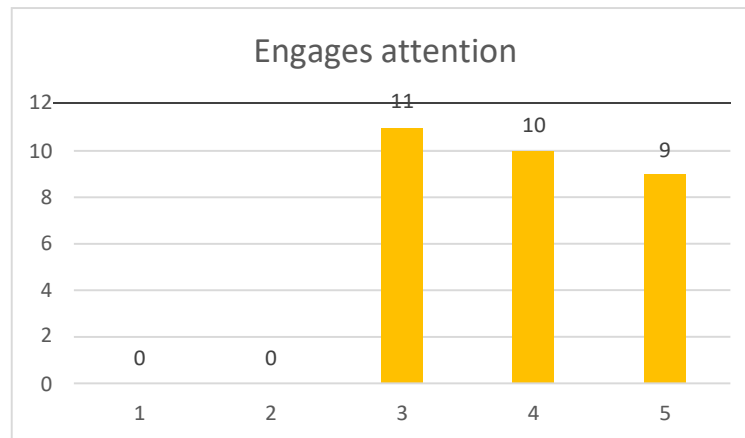


Figure 6.16 Chart of Engages attention

The number of moderate, agree and strongly agree that the video can engage their attention and help to memorise du'a are almost close which are, 36.67%, 33.33% and 30% accordingly.

- iv. I found that the animated (cartoon) video is useful for my du'a learning skill.

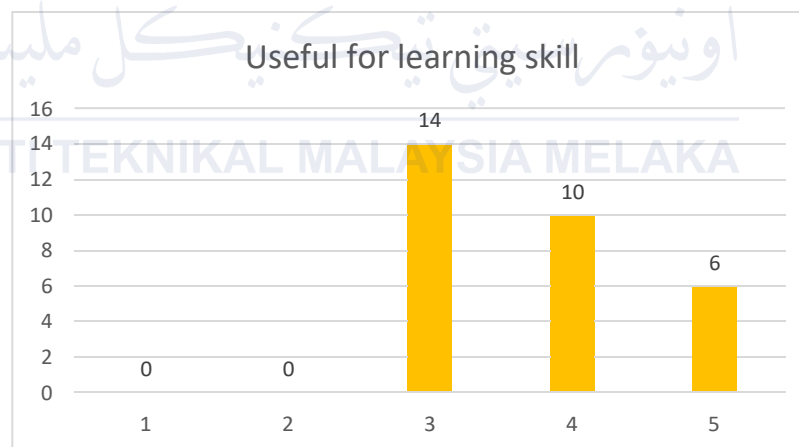


Figure 6.17 Chart of Useful for Learning Skill

Most of the respondents feel that it is just moderate in helping them to increase their learning skill.

6.6.1.4 Attitude Towards Using

- i. I like the idea of the animated (cartoon) video.

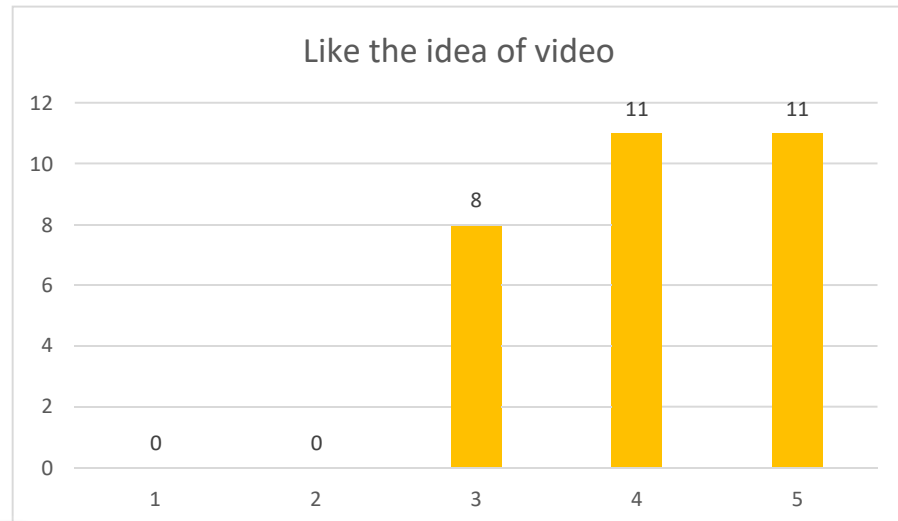


Figure 6.18 Chart of Like the idea of video

The number of agree and strongly agree are same that the respondents like the idea of the animated (cartoon) video, which is 11 respondents, while 8 respondents are just moderate.

- ii. I have a favourable attitude or enjoy learning with the animated (cartoon) video.

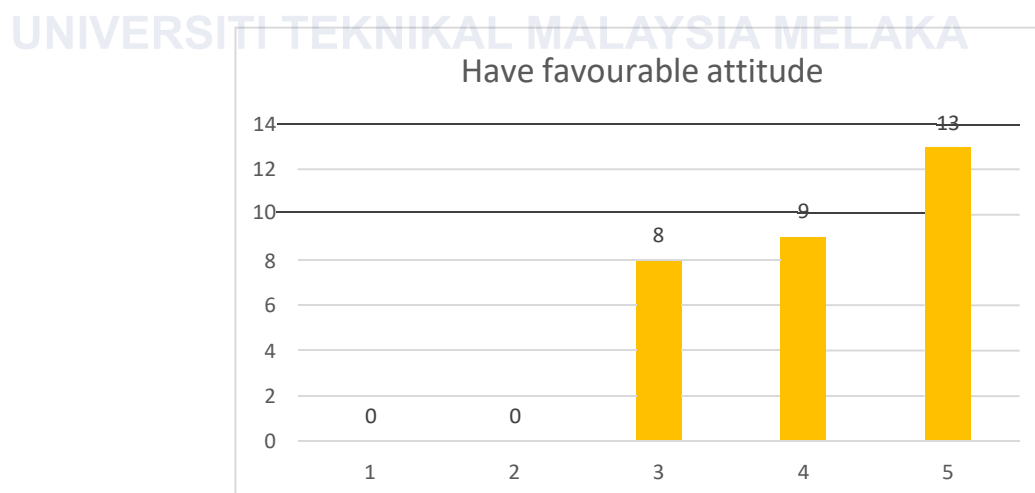


Figure 6.19 Chart of have favourable attitude

Strongly agree has the highest number with 43.33%, that they have a favourable attitude or enjoy learning the animated (cartoon) video.

- iii. I believe the animated (cartoon) video present a refreshing change that can improve existing learning.

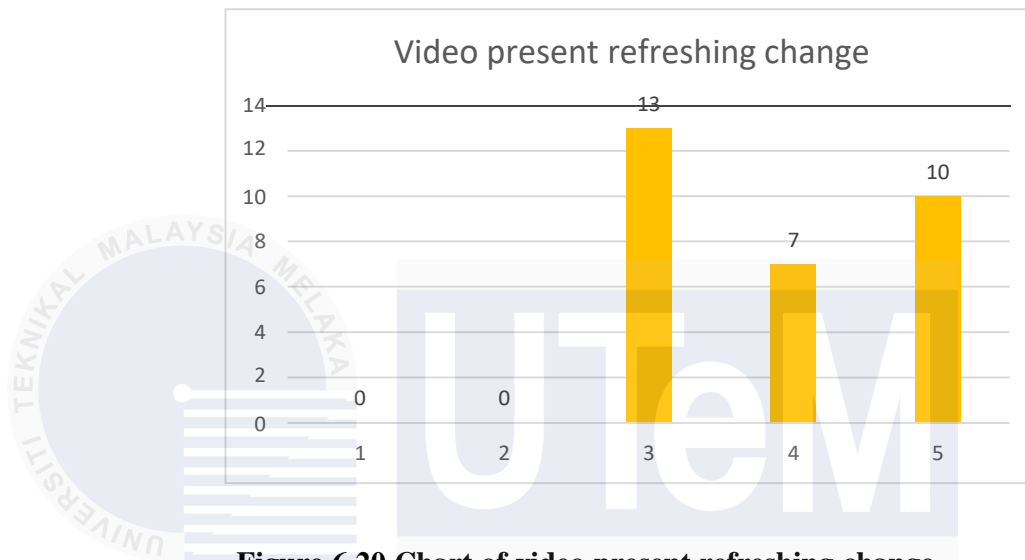


Figure 6.20 Chart of video present refreshing change

Most of the respondents are just moderate that the animated (cartoon) video can present a refreshing change that can improve existing learning.

- iv. I think that the animated (cartoon) video is a great idea for learning material.

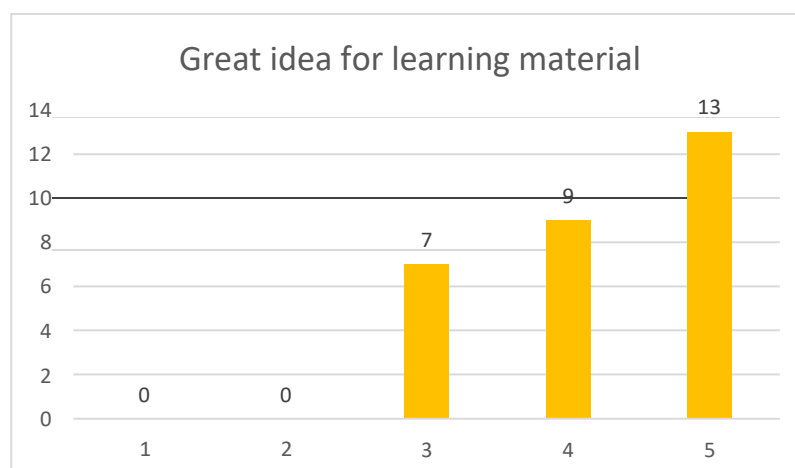


Figure 6.21 Chart of Great idea for learning material

There are many respondents strongly agree that the animated (cartoon) video is a great idea for learning material.

6.6.1.5 Intention to Use

- i. I will use the animated (cartoon) video to help my memories skill.

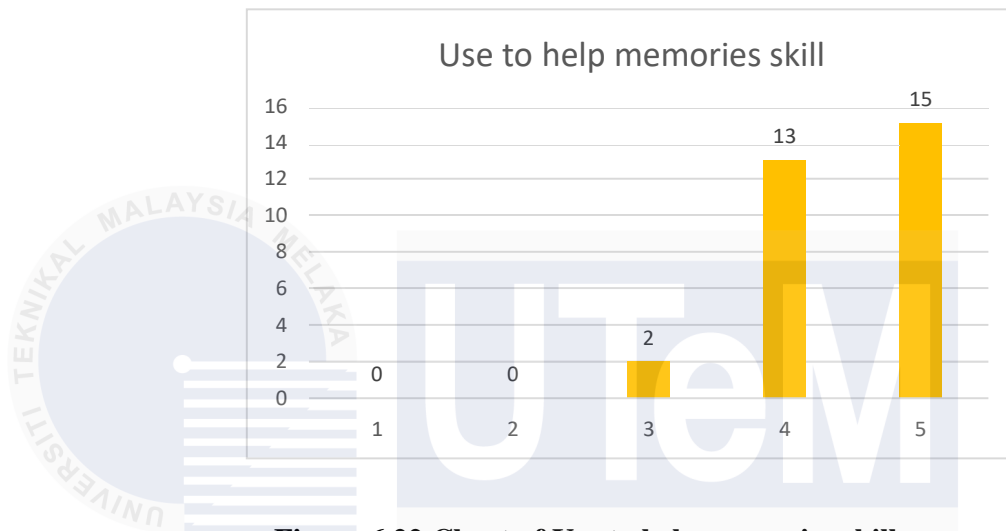


Figure 6.22 Chart of Use to help memories skill

15 respondents strongly agree that they will use the animated (cartoon) video to help their memories skill, which is the highest number.

- ii. I will recommend the animated (cartoon) video to my friends and family members.



Figure 6.23 Chart of Recommend to friends & family members

There are 16 respondents, the highest voted, strongly agree that they will recommend the animated (cartoon) video to their friends and family members.

6.6.1.6 Summary for The Result of Children (Kindergarteners)

Table 6.9 Table of Summary for the Result of Children (Kindergarteners)

Question	Strongly disagree (%)	Disagree (%)	Moderate (%)	Agree (%)	Strongly agree (%)	Total (%)
Perceived Ease of Use	1	11	26	30	32	100
Perceived Usefulness	-	3	30	43	24	100
Attitude towards Using	-	-	30	30	40	100
Intention to Use	-	-	5	43	52	100

6.6.2 Subject Matter Expert

Only 1 subject matter expert that took part in doing the project testing. She is a teacher at Tadika Islam (TASMIK) Masjid As Salam Tambak Bunga. The subject matter expert was asked about the content verification and suitability as teaching material. The questions have been asked from an educational point of view. All the data collected will be analyzed and shown using diagram.

6.6.2.1 Chart for Ease of Use

14. I found this video is easy to use.

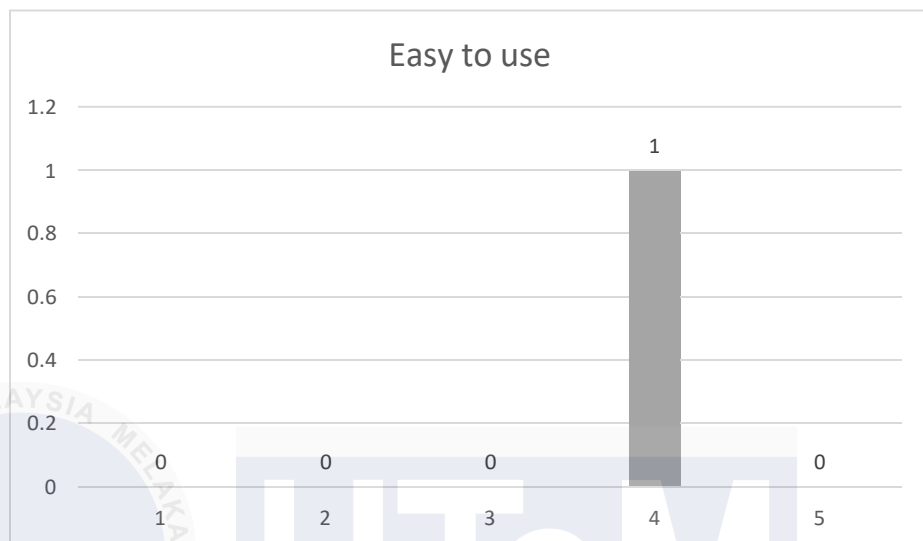


Figure 6.24 Chart of Easy to use

The expert agree that this animation video is easy to use.

15. Teaching by using 2D animation would be easy to me.

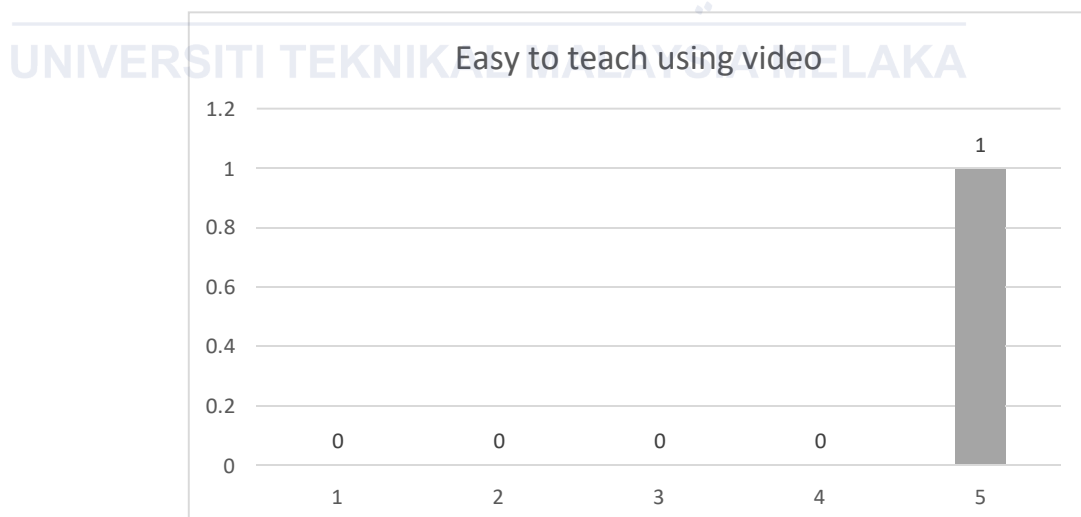


Figure 6.25 Chart of Easy to teach using video

The expert strongly agree that teaching using 2D animation would be easy.

6.6.2.2 Chart for Perceived Usefulness

16. This animation video can enhance my effectiveness in teaching.

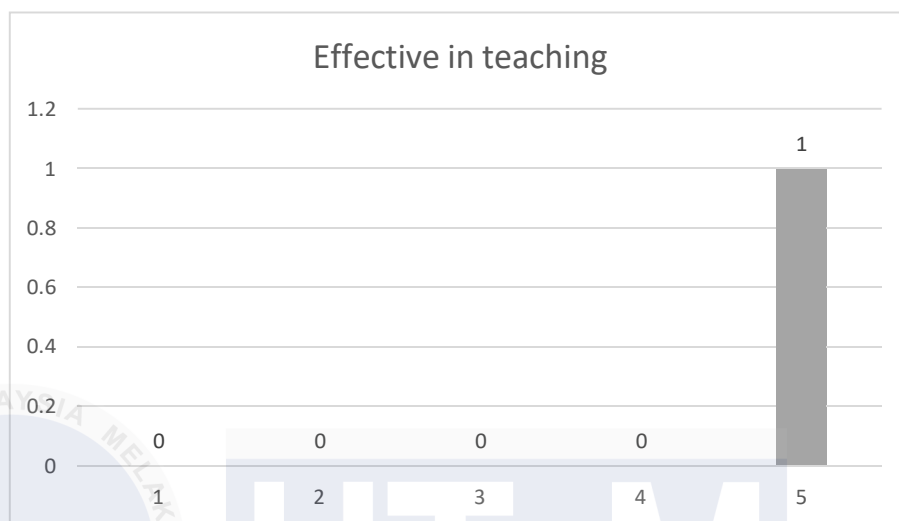


Figure 6.26 Chart of Effective in teaching

The expert strongly agree that this animation video can enhance effectiveness in teaching.

17. Using 2d animation can increase productivity in my teaching.

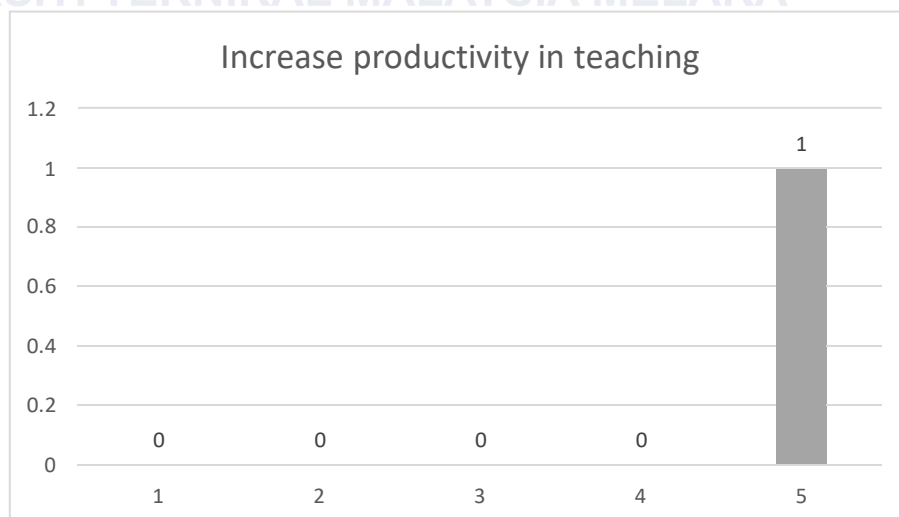


Figure 6.27 Chart of Increase productivity in teaching

The expert noticed that this video could increase productivity in her teaching skill.

18. I found that this animation is useful for teaching.

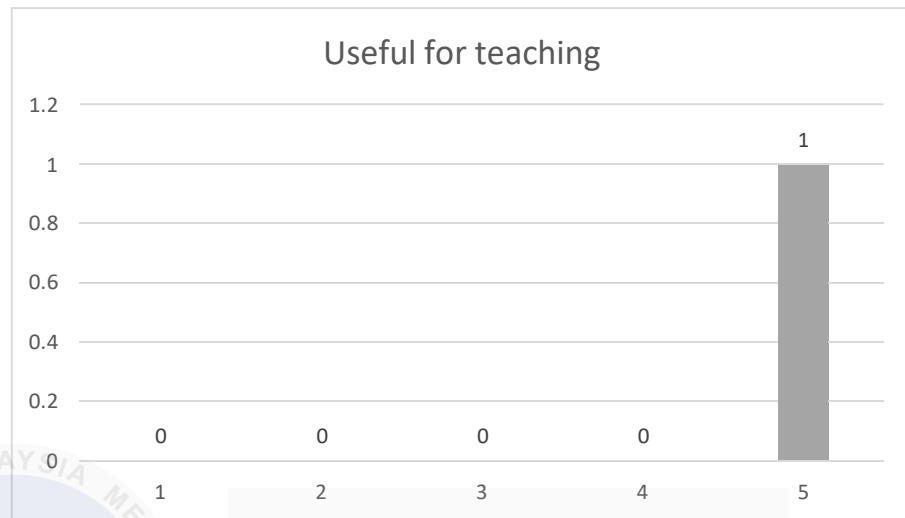


Figure 6.28 Chart of Useful for Teaching

The expert strongly agree that this animation is useful for teaching.

6.6.2.3 Chart for Intention to Use

19. I intend to use 2D animation as my teaching material.

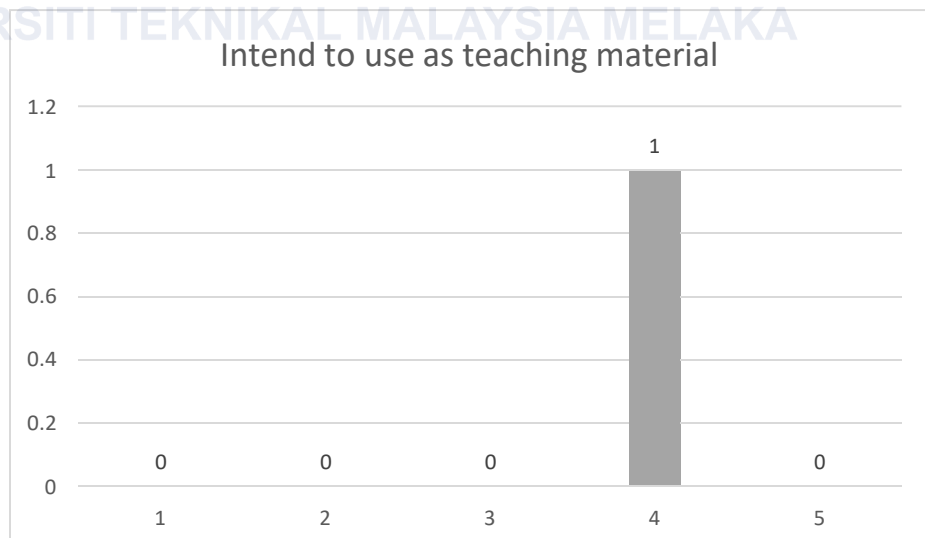


Figure 6.29 Chart of Intend to use as teaching material

The expert agree that the animated (cartoon) video can be use as her teaching material.

20. I intend to use 2D animation frequently.

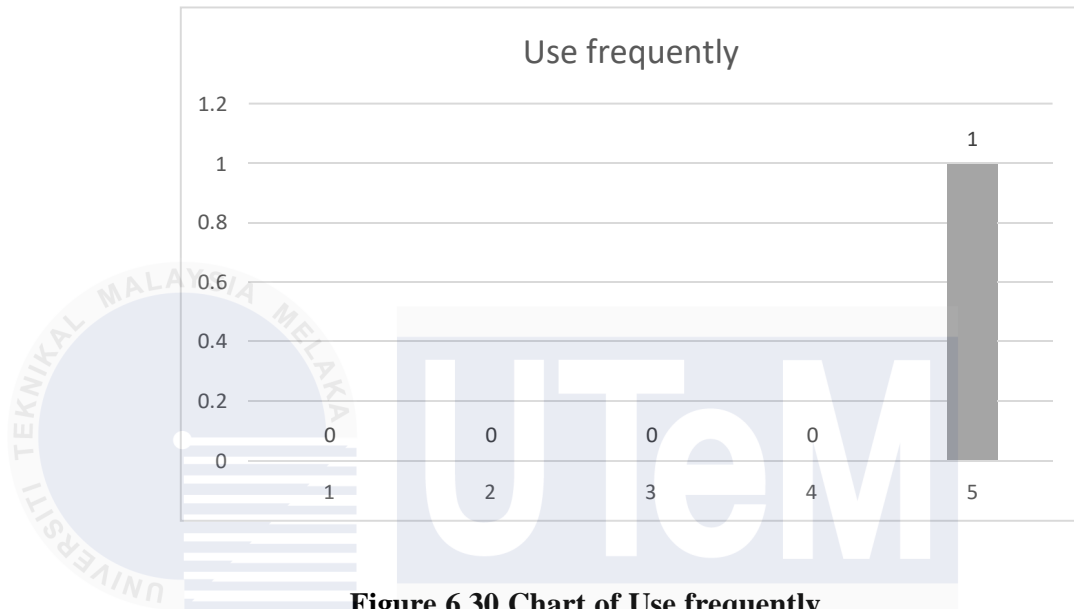


Figure 6.30 Chart of Use frequently

The expert strongly agree she will use the animation video frequently.

6.6.2.4 Chart for Content Verification

21. Du'a waking up

- a) The meaning is correct
- b) The du'a is correct.
- c) The reading of the du'a is accurate.
- d) The scene is suitable.
- e) The scenario is interesting.

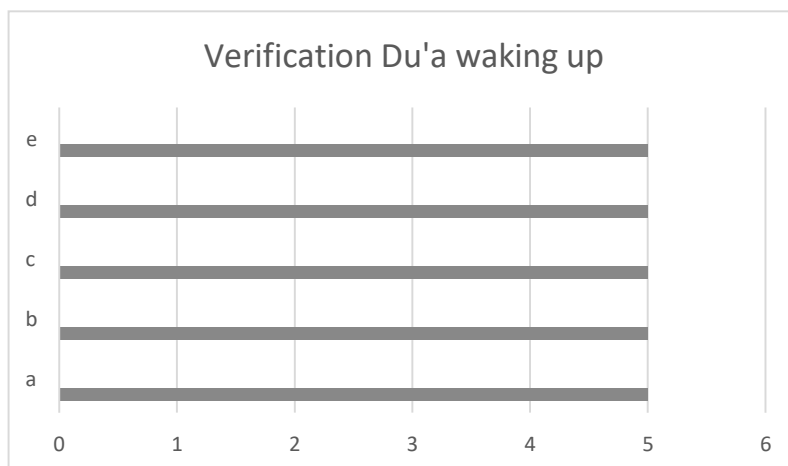


Figure 6.31 Chart of Verification Du'a waking up

22.

Du'a before going to toilet.

a) The meaning is correct.

b) The du'a is correct.

c) The reading of the du'a is accurate.

d) The scene is suitable.

e) The scenario is interesting.

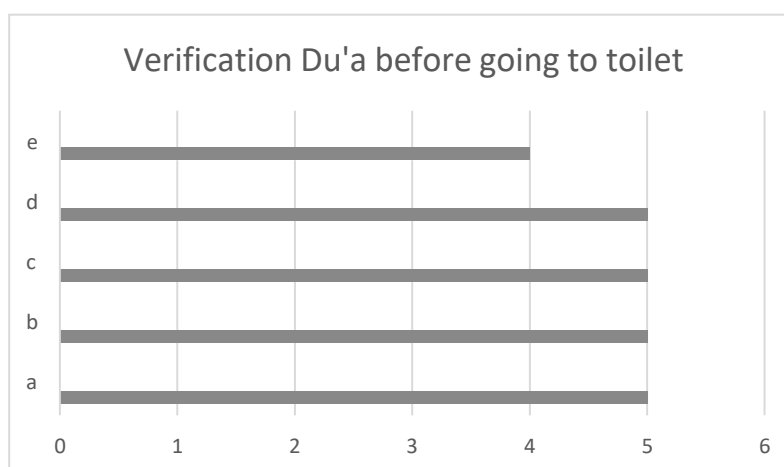


Figure 6.32 Chart of Verification Du'a before going to toilet

23. Du'a after going out from toilet.

- a) The meaning is correct.
- b) The du'a is correct.
- c) The reading of the du'a is accurate.
- d) The scene is suitable.
- e) The scenario is interesting.

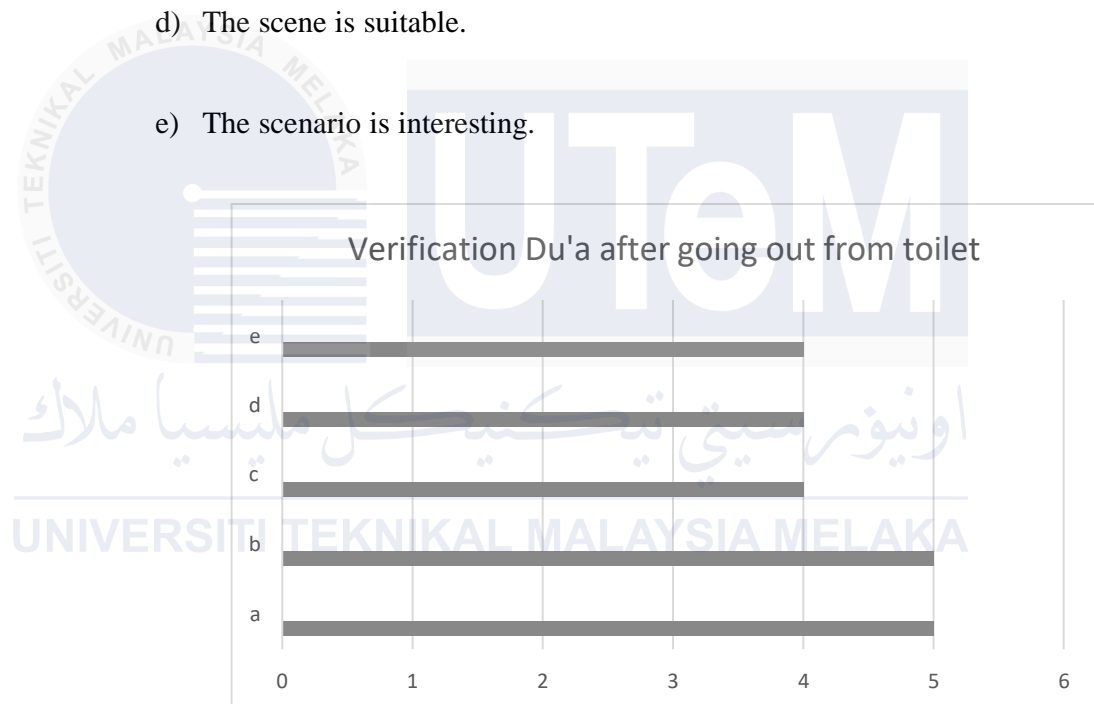


Figure 6.33 Chart of Verification Du'a after going out from toilet

24. Du'a before eating.

- a) The meaning is correct.
- b) The du'a is correct.
- c) The reading of the du'a is accurate.
- d) The scene is suitable.

- e) The scenario is interesting.

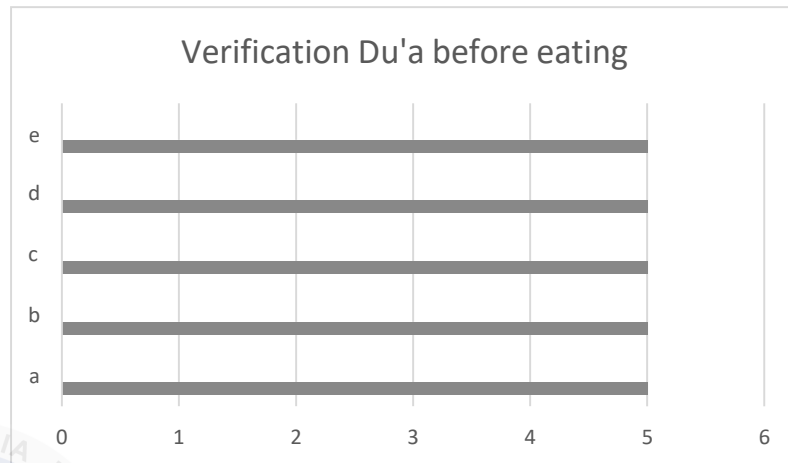


Figure 6.34 Chart of Verification Du'a before eating

25. Du'a after eating.

- a) The meaning is correct.

- b) The du'a is correct.

- c) The reading of the du'a is accurate.

- d) The scene is suitable.

- e) The scenario is interesting.

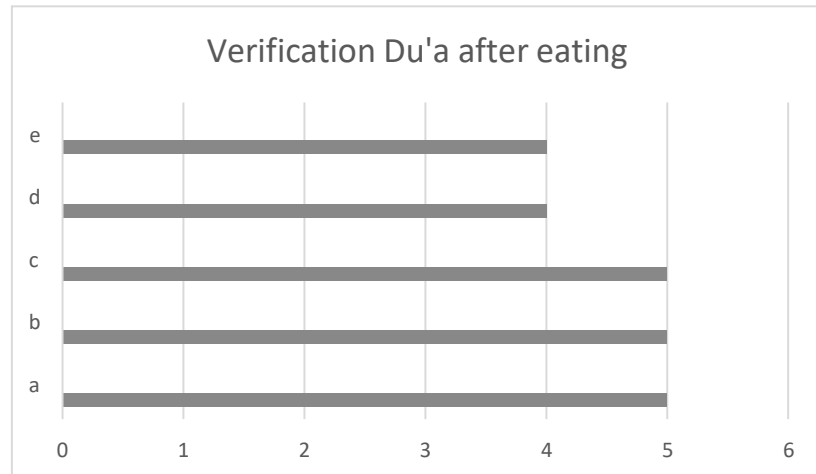


Figure 6.35 Chart of Verification Du'a after eating

26. Du'a before bed.

- a) The meaning is correct.
- b) The du'a is correct.
- c) The reading of the du'a is accurate.
- d) The scene is suitable.
- e) The scenario is interesting.

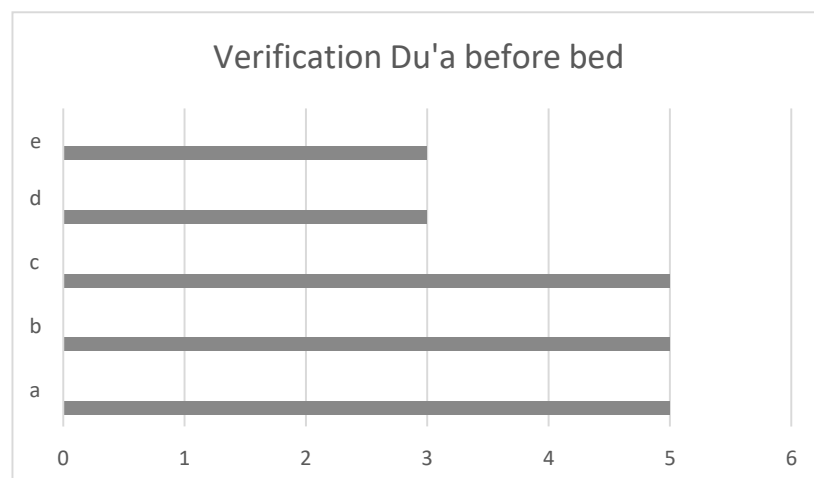


Figure 6.36 Chart of Verification Du'a before bed

6.6.2.5 Summary for the Result of Subject Matter Expert

Table 6.10 Table of Summary for the Result of Subject Matter Expert

Question	Strongly disagree (%)	Disagree (%)	Moderate (%)	Agree (%)	Strongly agree (%)	Total (%)
Ease of Use	-	-	-	50	50	100
Perceived Usefulness	-	-	-	-	100	100
Intention to Use	-	-	-	-	100	100
Content Verification						
Du'a waking up	-	-	-	-	100	100
Du'a before going to toilet	-	-	-	20	80	100
Du'a after going out from toilet	-	-	-	60	40	100
Du'a before eating	-	-	-	-	100	100

Du'a after eating	-	-	-	40	60	100
Du'a before bed	-	-	-	40	60	100

6.6.3 Multimedia Expert

Multimedia experts, lecturer that have experienced in multimedia field took part in the testing phase. There are 3 respondents for multimedia experts. They were asked regarding multimedia features, which are storyline, quality of audio and video and interface design. All the collected data and suggestions will be analyzed and compiled into a bar chart.

6.6.3.1 Chart for Evaluation of Bone Animation Technique

1. I am familiar with bone animation techniques.

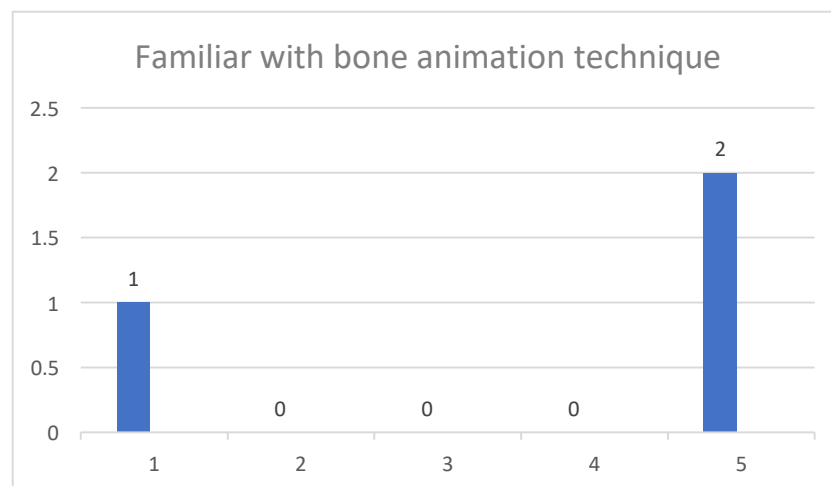


Figure 6.37 Chart of Familiar with bone animation technique

There are 2 multimedia experts that agree they are familiar with bone animation technique, while one expert did not even know about bone animation technique.

2. In my opinion, bone animation technique is suitable for conveying educational content to children.

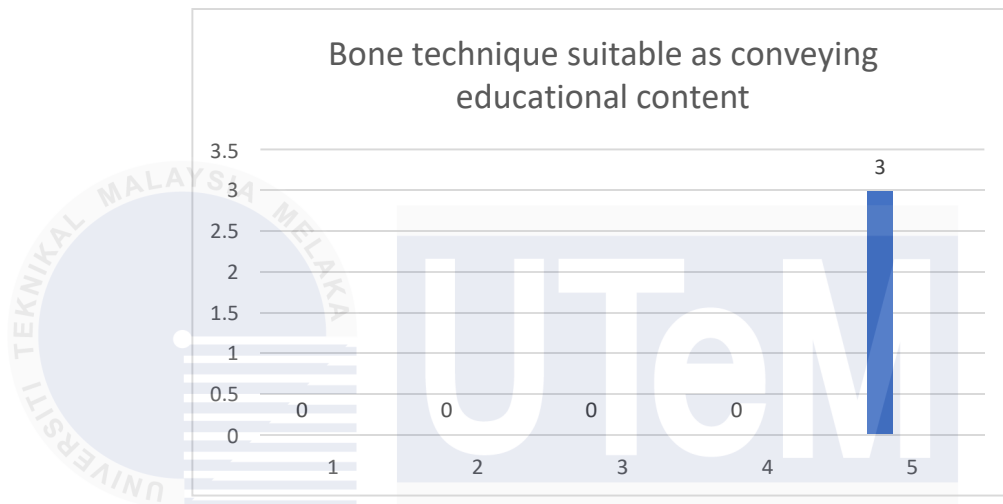


Figure 6.38 Chart of Bone technique suitable as conveying educational content

All of the experts strongly agree that bone animation technique is suitable for conveying educational content to children.

6.6.3.2 Chart for Evaluation of 2D Daily Du'as Animation

3. Based on your expertise, the 2D Daily Du'alearnon aligns with the project's objectives for helping children learning daily du'as.

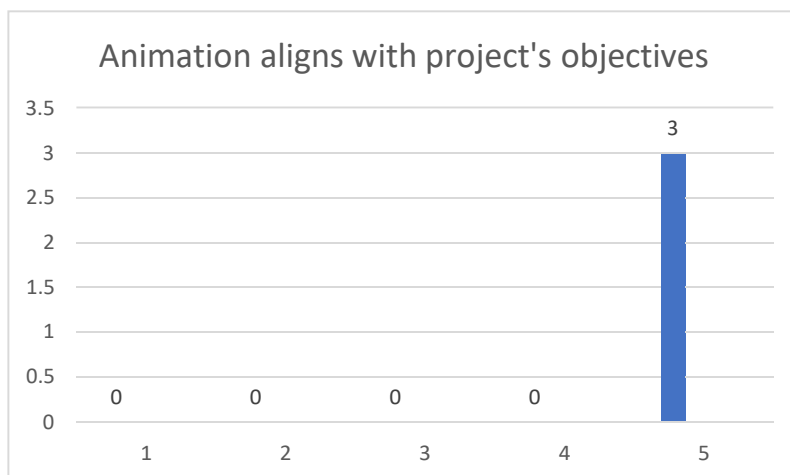


Figure 6.39 Chart of Animation aligns with project's objective

All of the multimedia experts strongly agree that 2D Daily Du'a animation aligns with the project's objectives for helping children learning daily du'as.

4. The storyline and characters effectively enhance the learning of daily du'as.

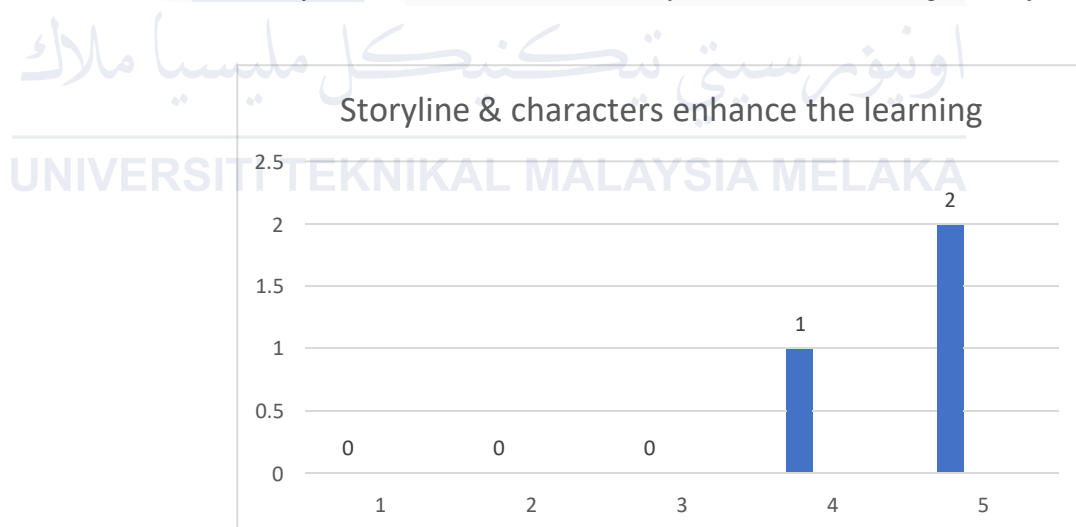


Figure 6.40 Chart of Storyline & Characters enhance the learning

Two multimedia experts strongly agree and one agree that storyline and characters in the animation effectively enhance the learning of dauly du'as.

5. The voice is suitable.

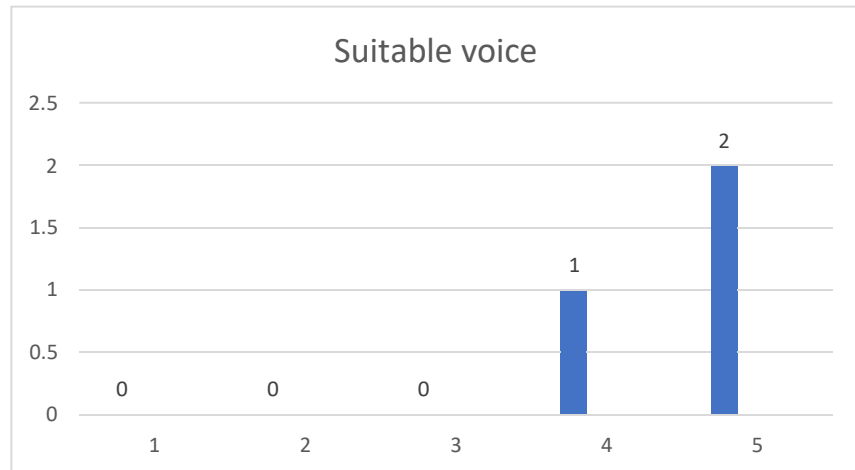


Figure 6.41 Chart of Suitable voice

Only 1 expert agree meanwhile 2 experts strongly agree that the voice is suitable to attract children.

6. The voice is clear.

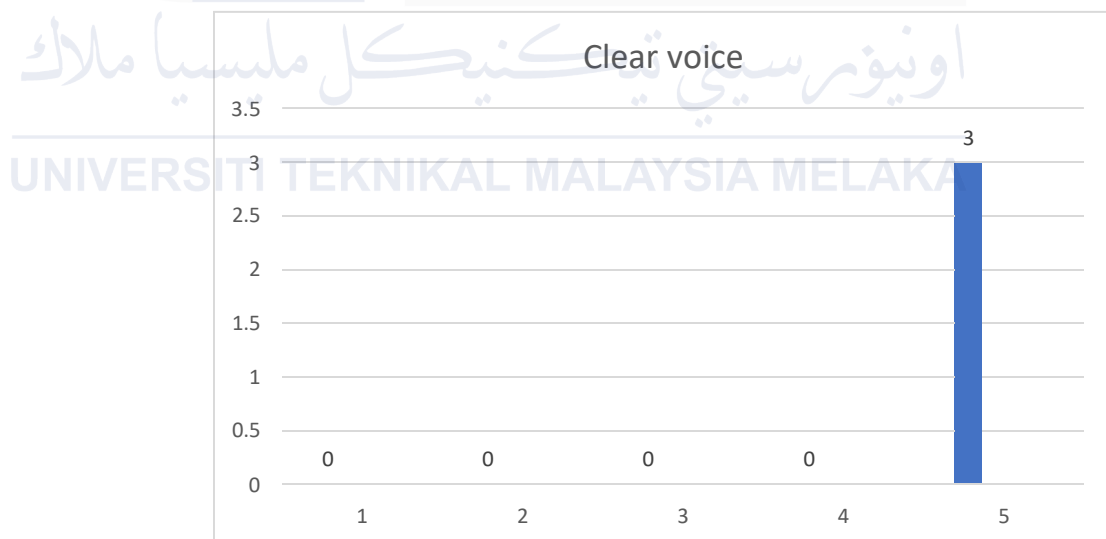


Figure 6.42 Chart of Clear voice

All of the experts strongly agree that the voice in the animated (cartoon) video is clear.

6.6.3.3 Chart for Usability Evaluation

7. From a multimedia design perspective, how would you rate the ease of use of the 2D Daily Du'a animation interface?

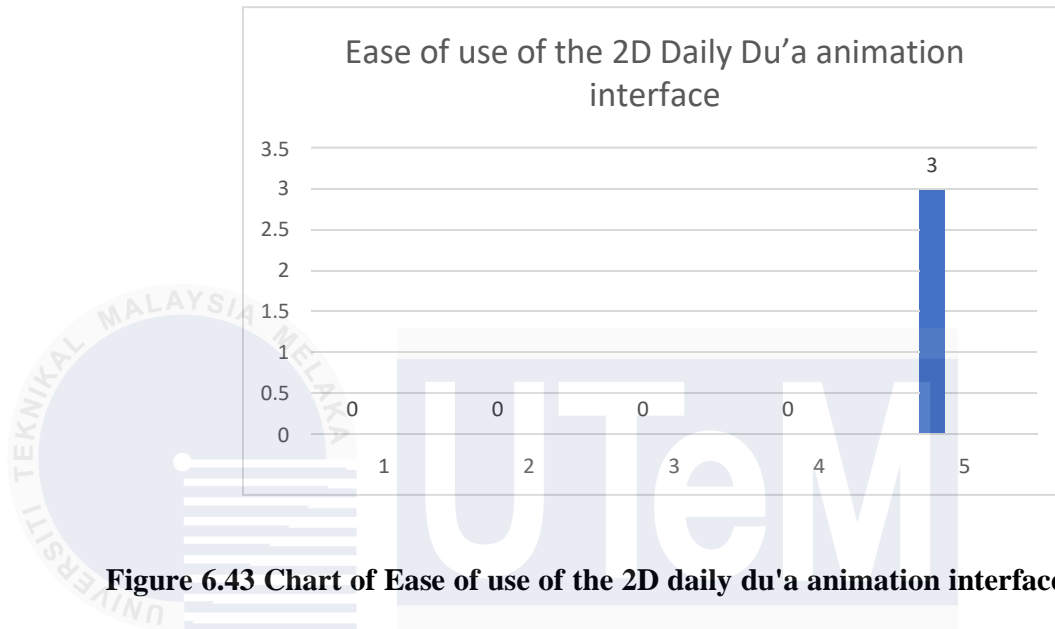


Figure 6.43 Chart of Ease of use of the 2D daily du'a animation interface

All of the experts strongly agree that it is easy to use the animation interface.

8. The animation is useful as a tool for assisting children in memorizing daily du'as.

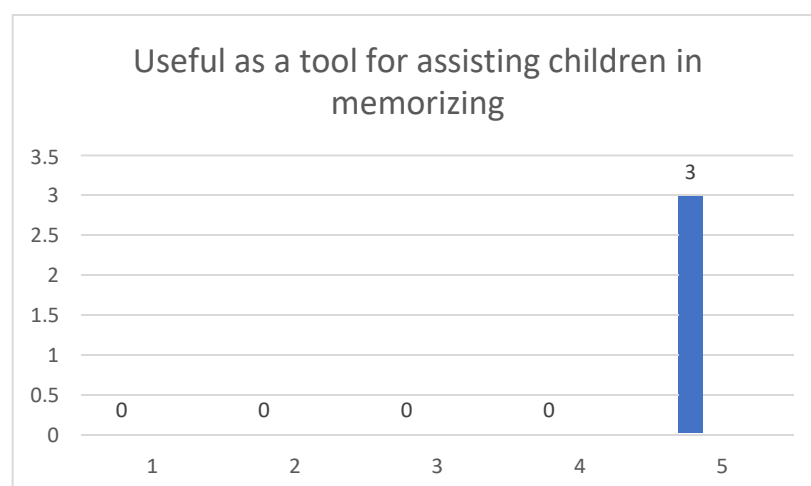


Figure 6.44 Chart of useful as a tool for assisting children in memorizing

All of the experts strongly agree that the animation video is useful to assist children in memorizing daily du'as.

9. Based on your expertise, how likely are the end users (children) to continue using the animation for learning and practicing du'as?

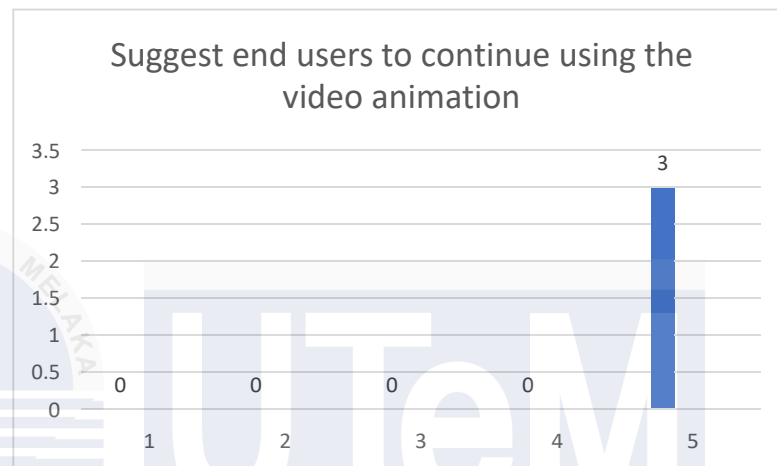


Figure 6.45 Chart of Suggest end users to continue using the animation

All the experts strongly agree that the children would use the animation video to learn and practice du'a.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

6.6.3.4 Chart for Functionality

10. The animation is smooth.

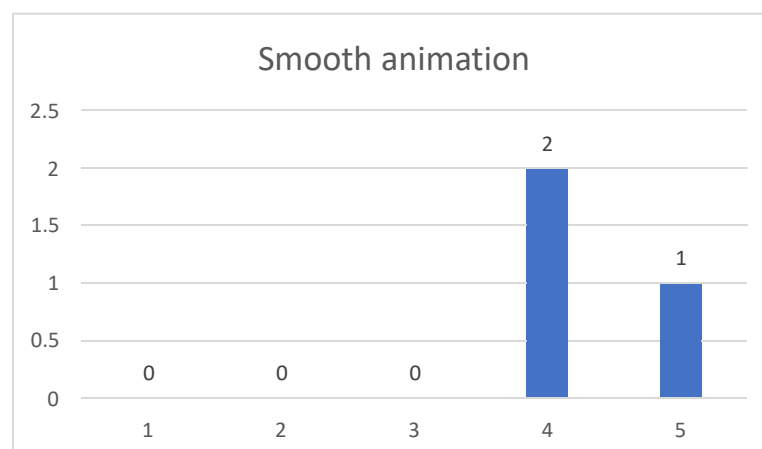


Figure 6.46 Chart of smooth animation

There are 2 experts that agree and 1 expert strongly agree that the animation is smooth.

11. The animation can be seen clearly.

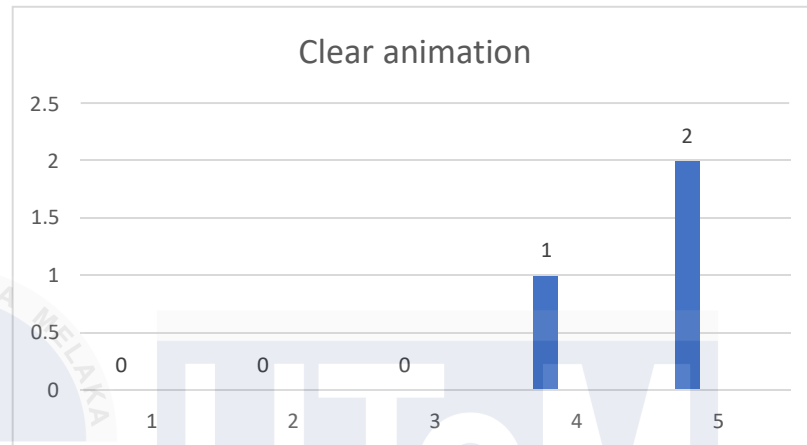


Figure 6.47 Chart of clear animation

1 of the experts is not really agree that the animation can be seen clearly, meanwhile 2 experts is strongly agree.

12. The narration is clear.

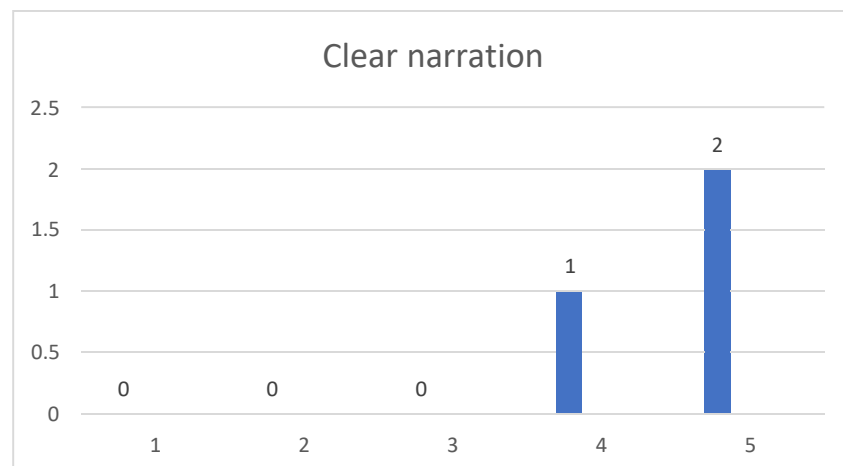


Figure 6.48 Chart of clear narration

Only 1 expert is agree and the other 2 are strongly agree that the narration in the animation video is clear.

6.6.3.5 Summary Result for Multimedia Expert

Table 6.11 Table of Summary Result for Multimedia Expert

Questions	Strongly disagree (%)	Disagree (%)	Moderate (%)	Agree (%)	Strongly agree (%)	Total (%)
Evaluation of Bone Animation Technique	17	-	-	-	33	100
Evaluation of 2D Daily Du'a Animation	-	-	-	17	83	100
Usability Evaluation	-	-	-	-	100	100
Functionality	-	-	11	33	56	100

6.7 Summary

This chapter has covered the testing phase of animation production. Testing is crucial because it takes up half of development time and is one of the main ways to determine how well a project goes along. There are three different types of questionnaires which are for kindergarteners, subject matter expert and multimedia experts. Analysis has been done on all test results.

CHAPTER 7: CONCLUSION

7.1 Introduction

This last chapter will analyze the project's weaknesses and strengths based on the result of the questionnaire and the comment from experts. To produce a quality 2D animation, this project has a few shortcomings that must be fixed. Future updates to this animation are planned.

7.2 Observation on Weaknesses and Strengths

Based on the result analysis, it can be seen that this video animation project has weaknesses and strengths.

7.2.1 Project Weaknesses

i. Color used

The color of the characters and background are most likely same. Children might be confused where they need to focus. The color chosen between bubble that has du'a and the background also needs to be improve. However, the color between bubble and background has contra to make sure sure children can read du'a clearly.

ii. Animation

The animation needs to be improve with better animation effort. This is due to less movement of the characters.

7.2.2 Project Strengths

i. Easy to learn

The content is easy to learn and look interactive way to let children learn about du'a. The characters are the main to attract the children to watch the video.

7.3 Preposition for Improvement

Based on the analysis and comments from the experts, there are some suggestions that have been recommended to improve the animation.

i. Color

The color of the animation might be confusing for children and look less interesting, the expert suggests to use Kuler software. Kuler can help users to decide which color is suitable for the target audience.

7.4 Project Contribution

Some preschools never used video to teach the children. This must be tired to teachers to keep repeat every single day, the same thing. This project might help them to improve their teaching skill and children can also learn new things. Children can learn at their own pace as the video can be stopped and rewind.

7.5 Summary

In a nutshell, the development and execution of this animation for the intended audience has proven successful. This project has been evaluated by 3 different scopes based on their field, which are children, subject matter expert and multimedia experts. All the objectives of this animation have been achieved. However, there are also flaws that can be improved for the next project.

REFERENCES

- Adamo-Villani, N., Doublestein, J., & Martin, Z. (2005). Sign Language for K-8 Mathematics by 3D Interactive Animation. *Journal of Educational Technology Systems*, 33(3). <https://doi.org/10.2190/kub1-6m7x-nhy5-3bwg>
- Apriliyanti, D., Fadila, J. N., & Nugroho, F. (2023). 3D ANIMATION DESIGN “SCIENCE, LANTERNS TO HEAVEN” USING THE POSE-TO-POSE METHOD. *JITK (Jurnal Ilmu Pengetahuan Dan Teknologi Komputer)*, 8(1). <https://doi.org/10.33480/jitk.v8i1.2231>
- Calatayud, F., De La Vega-Hazas, L., & Iglesias, A. (2018). Force-based evolutionary computation approach for automatic skeletal motion learning in human animation. *Proceedings - 2018 International Conference on Cyberworlds, CW 2018*. <https://doi.org/10.1109/CW.2018.00052>
- Hambal, M. (2020). HADITH EDUCATION IN FORMING CHARACTER OF EARLY CHILDHOOD. *Journal of Chemical Information and Modeling*, 4(1).
- Islam, B., Ahmed, A., Islam, K., & Shamsuddin, A. K. (2014). Child Education Through Animation: An Experimental Study. *International Journal of Computer Graphics & Animation*, 4(4). <https://doi.org/10.5121/ijcga.2014.4404>
- Salim, H., Mustafa, Z., Abdullah, N. H., Wahab, Z., Rouyan, S. N. M. S. A. N. M., Ayub, S. H., Azmy, S. N. M. S., Rouyan, N. M., & H. Ayub, S. (2017). Factors Influencing Parents’ Choice Of Religious Private Preschools. *3rd Academic International Conference on Social Sciences and Humanities & 3rd Academic International Conference on Multi-Disciplinary Studies and Education*, 3.

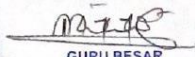
APPENDIX A: SURVEY FORM FOR SUBJECT MATTER EXPERT

**Borang Kaji Selidik
Untuk Guru-guru Tadika**


Sila (✓) pada kotak yang disediakan.

- Adakah murid-murid fasih membaca?
 - Sangat fasih
 - Fasih
 - Sederhana
 - Kurang fasih
 - Lemah
- Adakah murid-murid mudah menghafal?
 - Sangat mudah
 - Mudah
 - Sederhana
 - Agak sukar
 - Lemah
- Berapakah anggaran umur murid-murid untuk mudah menghafal?
 - 3 - 4 tahun
 - 4 - 5 tahun
 - 5 - 6 tahun
- Ketika murid mula bersekolah, adakah murid mengetahui apa-apa doa?
 - Ya
 - Tidak
- Apakah yang mendorong murid-murid untuk lebih mudah menghafal?
 - Hanya pembelajaran secara fizikal
 - Menonton video yang hanya mempunyai grafik
 - Menonton video yang mempunyai animasi dan grafik
- Apakah pandangan anda tentang menggunakan animasi sebagai alat untuk membantu murid-murid untuk lebih mudah menghafal doa?

Membantu cuma perlu dengan formula secara lisan di dalam teks.
- Apakah teknik yang boleh diaplikasikan di dalam video animasi untuk meningkatkan keberkesanan penggunaan animasi untuk mengajar doa?
 - Repetition (pengulangan)
 - Storytelling Approach (pendekatan bercerita)
 - Visual Associations (persatuan visual)
 - Visual Cues (isyarat visual)
 - Multisensory experiences (pengalaman multisensori)
 - Lain-lain: _____


 GURU BESAR
 TADIKA ISLAM MASJID
 AS-SALAM TAMBAK BUNGA
 MASITAH BT HJ MOHD HASSAN

APPENDIX B: QUESTIONNAIRE FOR CHILDREN



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DAILY DU'A: 2D SHORT-STORY USING BONE ANIMATION TECHNIQUE TO LEARN BASIC DU'A

QUESTIONNAIRE
[CHILDREN THAT HELPED BY GUIDANCE]

Assalamualaikum and hello. I am Syaza Najihah Binti Abdul Halim, final year student from Faculty of Information Technology and Communication. The objective of this survey is to evaluate the User Acceptance Test Towards 2D Animation (Saffa and her Daily Du'a) using Technology Acceptance Model.

Assalamualaikum dan salam sejahtera. Saya Syaza Najihah Binti Abdul Halim, pelajar tahun akhir Fakulti Teknologi Maklumat dan Komunikasi. Objektif tinjauan ini adalah untuk menilai Ujian Penerimaan Pengguna Ke Arah Animasi 2D (Saffa dan Doa Hariannya) menggunakan Model Penerimaan Teknologi.

Instruction: Please tick and and give your rating to the following questions according to the scale given.
Arahan: Sila tandakan dan berikan penilaian anda kepada soalan berikut mengikut skala yang diberikan.

1	2	3	4	5
Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Moderate (Separa)	Agree (Setuju)	Strongly agree (Sangat setuju)

1. Demography (Demografi)

- i. Your gender (*Jantina*)
 - Boy (*Lelaki*)
 - Girl (*Perempuan*)
- ii. How old are you? (*Umur*)
 - 5 years old (*5 tahun*)
 - 6 years old (*6 tahun*)
- iii. Have you ever learned or been exposed to daily du'a at home?
 (*Adakah anda pernah belajar atau didedahkan mengenai doa harian di rumah?*)
 - Yes (*Ya*)
 - No (*Tidak*)

- iv. Have you memorized daily du'a?
(Adakah anda menghafal doa harian?)
 Yes (*Ya*)
 No (*Tidak*)
- v. Among the following du'as, tick the du'a that has been memorized. You can tick more than 1.
(Antara doa-doa berikut, tandakan doa yang telah dihafal. Anda boleh tanda lebih daripada 1.)
 Du'a before going to bed (*Doa sebelum tidur*)
 Du'a after waking up (*Doa bangun tidur*)
 Du'a before going to toilet (*Doa sebelum masuk tandas*)
 Du'a after going out from toilet (*Doa selepas keluar tandas*)
 Du'a before eating (*Doa sebelum makan*)
 Du'a after eating (*Doa selepas makan*)
- vi. Can you understand the meaning of the du'a being read?
(Adakah anda boleh memahami maksud doa yang dibaca?)
 Yes (*Ya*)
 Few (*Sebahagian*)
 No (*Tidak*)
- vii. Do you read the du'a every day? (Adakah anda membaca doa setiap hari?)
 Yes (*Ya*)
 No (*Tidak*)

2. Part A: Perceived Ease of Use (Dirasakan mudah digunakan)

- i. Easy to understand the content of the animated (cartoon) video.
(Mudah memahami kandungan animasi video)
 1 2 3 4 5
- ii. Learning of each du'as in the animated (cartoon) video are clear.
(Pembelajaran setiap doa dalam video animasi adalah jelas)
 1 2 3 4 5
- iii. I can understand the content of the animated (cartoon) video without assistance.
(Saya boleh memahami kandungan animasi video tanpa bantuan orang lain)
 1 2 3 4 5

3. Part B: Perceived Usefulness (Dirasakan berguna)

- i. The animated (cartoon) video enhances my understanding by providing the movement of the characters.
(Pergerakan watak dalam video animasi membantu saya memahami isikandungan video)
- 1 2 3 4 5
- ii. The cartoon (animated) video helps me learn at my own pace and make me easily to learn the du'a (e.g pause, rewind, repeat certain section).
(Animasi video ini membantu saya belajar untuk memahami doa harian mengikut kemampuan diri seperti berhenti, putar balik, ulang bahagian tertentu)
- 1 2 3 4 5
- iii. The cartoon (animated) video engages my attention and help me to memorise du'a.
(Animasi video ini menarik perhatian saya serta membantu untuk menghafal doa)
- 1 2 3 4 5
- iv. I found that the animated (cartoon) video is useful for my du'a learning skill.
(Saya dapati animasi video ini berguna dalam meningkatkan kemahiran membaca doa saya)
- 1 2 3 4 5

4. Part C: Attitude Towards Using (Sikap terhadap penggunaan)

- i. I like the idea of the animated (cartoon) video.
(Saya suka idea dalam video animasi ini)
- 1 2 3 4 5
- ii. I have a favourable attitude or enjoy learning with the animated (cartoon) video.
(Saya seronok belajar menggunakan video animasi ini)
- 1 2 3 4 5
- iii. I believe the animated (cartoon) video present a refreshing change that can improve existing learning.
(Saya percaya video animasi ini adalah perubahan baharu yang dapatmenambah baik pembelajaran sedia ada)
- 1 2 3 4 5
- iv. I think that the animated (cartoon) video is a great idea for learning material.
(Saya fikir animasi video ini adalah idea yang sangat bagus sebagai bahan pembelajaran)
- 1 2 3 4 5

5. Part D: Intention To Use (Niat untuk Guna)

- i. I will use the animated (cartoon) video to help my memorise skill.
(Saya akan menggunakan animasi video ini untuk membantu menghafal doa)
- 1 2 3 4 5
- ii. I will recommend the animated (cartoon) video to my friends and family members.
(Saya akan syorkan video animasi ini kepada rakan-rakan dan keluarga saya)
- 1 2 3 4 5

APPENDIX C: PHOTOS TESTING WITH CHILDREN



APPENDIX D: QUESTIONNAIRE FOR SUBJECT MATTER EXPERT



DAILY DU'A: 2D SHORT-STORY USING BONE ANIMATION TECHNIQUE TO LEARN BASIC DU'A

QUESTIONNAIRE [SUBJECT MATTER EXPERT]

Assalamualaikum and hello. I am Syaza Najihah Binti Abdul Halim, final year student from Faculty of Information Technology and Information. I am very pleased for your cooperation participating in the subject expert evaluation of this project. Please provide your insights by answering the following questions.

Instruction: Please tick and give your rating to the following questions according to the scale given.

Arahan: Sila tandakan dan berikan penilaian anda kepada soalan berikut mengikut skala yang diberikan.

1	2	3	4	5
Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Moderate (Separat)	Agree (Setuju)	Strongly agree (Sangat setuju)

Section 1: Expert Information

Name: Puan Mashitah Binti Haji

Position:

Section 2: Ease of Use

- I found this video is easy to use.
 1 2 3 4 5
- Teaching by using 2D animation would be easy to me.
 1 2 3 4 5

Section 3: Perceived Usefulness

- This animation video can enhance my effectiveness in teaching.
 1 2 3 4 5

4. Using 2d animation can increase productivity in my teaching.
 1 2 3 4 5
5. I found that this animation is useful for teaching.
 1 2 3 4 5

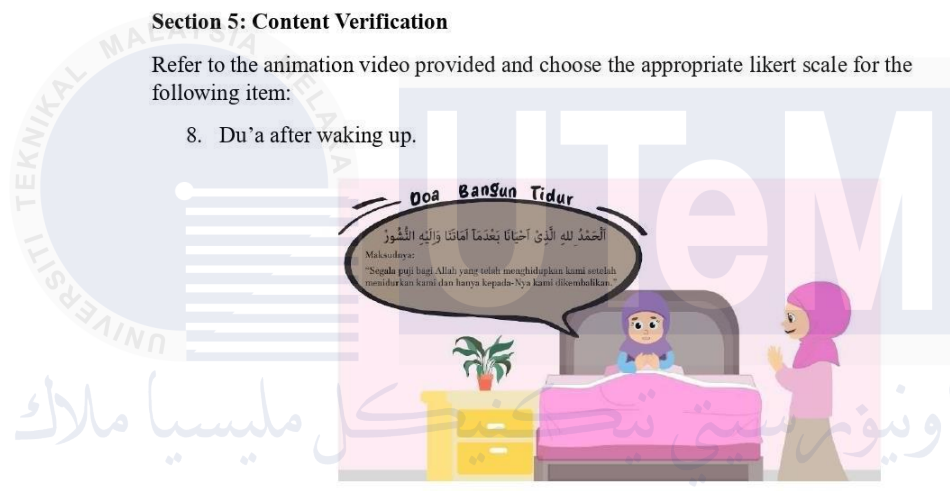
Section 4: Intention to Use

6. I intend to use 2D animation as my teaching material.
 1 2 3 4 5
7. I intend to use 2D animation frequently.
 1 2 3 4 5

Section 5: Content Verification

Refer to the animation video provided and choose the appropriate likert scale for the following item:

8. Du'a after waking up.



Item	1	2	3	4	5
a. The meaning is correct.					
b. The du'a is correct.					
c. The reading of the du'a is accurate.					
d. The scene is suitable.					
e. The scenario is interesting.					

9. Du'a before going to toilet.



Item	1	2	3	4	5
a. The meaning is correct.					
b. The du'a is correct.					
c. The reading of the du'a is accurate.					
d. The scene is suitable.					
e. The scenario is interesting.					

10. Du'a after going out from toilet.



Item	1	2	3	4	5
a. The meaning is correct.					
b. The du'a is correct.					
c. The reading of the du'a is accurate.					
d. The scene is suitable.					
e. The scenario is interesting.					

11. Du'a before eating.



Item	1	2	3	4	5
a. The meaning is correct.					
b. The du'a is correct.					
c. The reading of the du'a is accurate.					
d. The scene is suitable.					
e. The scenario is interesting.					

12. Du'a after eating.

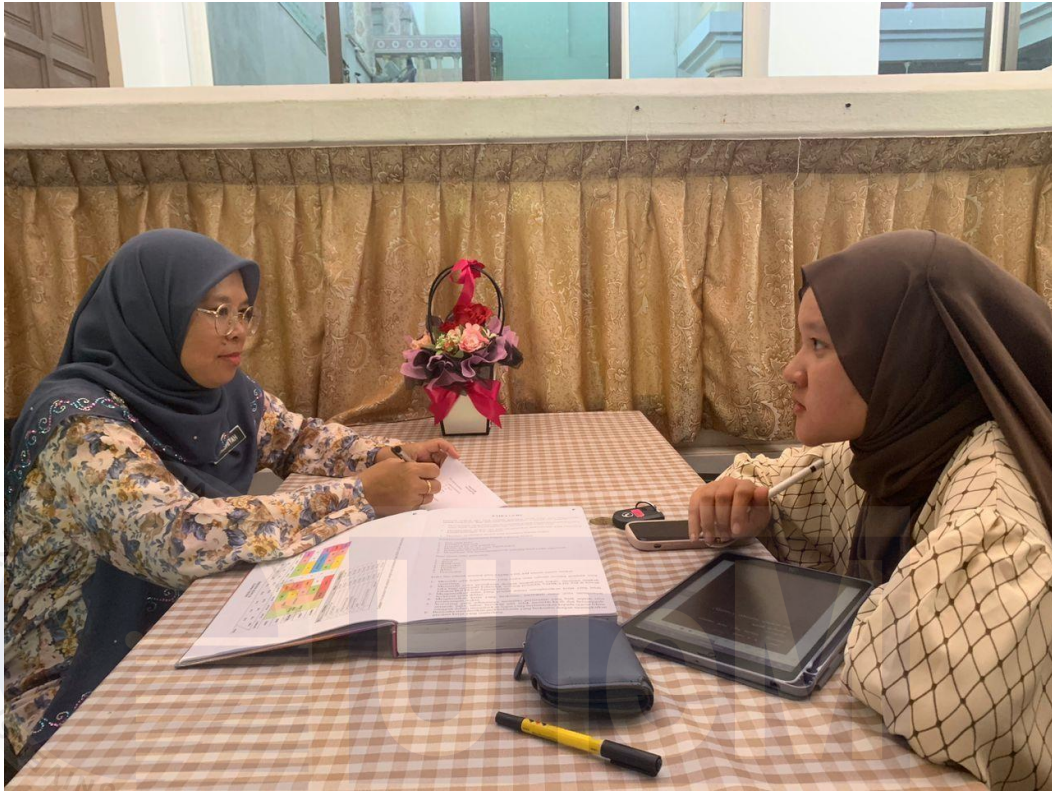


Item	1	2	3	4	5
a. The meaning is correct.					
b. The du'a is correct.					
c. The reading of the du'a is accurate.					
d. The scene is suitable.					
e. The scenario is interesting.					

13. Du'a before bed




Item	1	2	3	4	5
a. The meaning is correct.					
b. The du'a is correct.					
c. The reading of the du'a is accurate.					
d. The scene is suitable.					
e. The scenario is interesting.					

APPENDIX E: PHOTO TESTING WITH SUBJECT MATTER EXPERT

اونيورسيتي تيكنيكل مليسيا ملاك
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

APPENDIX F: QUESTIONNAIRE FOR MULTIMEDIA EXPERTS



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DAILY DU'A: 2D SHORT-STORY USING BONE ANIMATION TECHNIQUE TO LEARN BASIC DU'A

**QUESTIONNAIRE
[MULTIMEDIA EXPERT]**

Assalamualaikum and hello. I am Syaza Najihah Binti Abdul Halim, final year student from Faculty of Information Technology and Information. I am very pleased for your cooperation participating in the expert evaluation of the project "2D Short-Story Based on Bone Animation to Learn Basic Du'a." Your expertise is highly valued in assessing the bone animation technique and its effectiveness in achieving the project's objectives. Please provide your insights by answering the following questions.

Instruction: Please tick and give your rating to the following questions according to the scale given.
Arahan: Sila tandakan dan berikan penilaian anda kepada soalan berikut mengikut skala yang diberikan.

1	2	3	4	5
Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Moderate (Separa)	Agree (Setuju)	Strongly agree (Sangat setuju)

Section 1: Expert Information

Name: Ikmal Faiz Albakri

Position: Lecturer

Years of experience in multimedia field: 5 years

Section 2: Evaluation of Bone Animation Technique

1. I am familiar with bone animation techniques.
 1 2 3 4 5

2. In my opinion, bone animation technique is suitable for conveying educational content to children.
 1 2 3 4 5

Section 3: Evaluation of 2D Daily Du'as Animation

3. Based on your expertise, the 2D Daily Du'a animation aligns with the project's objectives for helping children learning daily du'as.
 1 2 3 4 5
4. The storyline and characters effectively enhance the learning of daily du'as.
 1 2 3 4 5
5. The voice is suitable.
 1 2 3 4 5
6. The voice is clear.
 1 2 3 4 5

Section 4: Usability Evaluation

7. From a multimedia design perspective, how would you rate the ease of use of the 2D Daily Du'a animation interface?
 1 2 3 4 5
8. The animation is useful as a tool for assisting children in memorizing daily du'as.
 1 2 3 4 5
9. Based on your expertise, how likely are the end users (children) to continue using the animation for learning and practicing du'as?
 1 2 3 4 5

Section 5: Functionality

10. The animation is smooth can be seen clearly.
 1 2 3 4 5
11. The animation can be seen clearly.
 1 2 3 4 5
12. The narration is clear.
 1 2 3 4 5

Section 6: Overall Recommendation

13. Write any additional multimedia elements or features, if any. (Optional)

Good ! Easy to learn and interactive way to let children learn about doa.



DAILY DU'A: 2D SHORT-STORY USING BONE ANIMATION TECHNIQUE TO LEARN BASIC DU'A

**QUESTIONNAIRE
[MULTIMEDIA EXPERT]**

Assalamualaikum and hello. I am Syaza Najihah Binti Abdul Halim, final year student from Faculty of Information Technology and Information. I am very pleased for your cooperation participating in the expert evaluation of the project "2D Short-Story Based on Bone Animation to Learn Basic Du'a." Your expertise is highly valued in assessing the bone animation technique and its effectiveness in achieving the project's objectives. Please provide your insights by answering the following questions.

Instruction: Please tick and give your rating to the following questions according to the scale given.

Arahan: Sila tandakan dan berikan penilaian anda kepada soalan berikut mengikut skala yang diberikan.

1	2	3	4	5
Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Moderate (Separat)	Agree (Setuju)	Strongly agree (Sangat setuju)

Section 1: Expert Information

Name: MOHD EHA-ID B/N MUKHTAR

Position: LECTURER

Years of experience in multimedia field: Multimedia Application (20 tahun)

Section 2: Evaluation of Bone Animation Technique

1. I am familiar with bone animation techniques.

1 2 3 4 5

2. In my opinion, bone animation technique is suitable for conveying educational content to children.

1 2 3 4 5

Section 3: Evaluation of 2D Daily Du'as Animation

3. Based on your expertise, the 2D Daily Du'a animation aligns with the project's objectives for helping children learning daily du'as.
 1 2 3 4 5
4. The storyline and characters effectively enhance the learning of daily du'as.
 1 2 3 4 5
5. The voice is suitable.
 1 2 3 4 5
6. The voice is clear.
 1 2 3 4 5

Section 4: Usability Evaluation

7. From a multimedia design perspective, how would you rate the ease of use of the 2D Daily Du'a animation interface?
 1 2 3 4 5
8. The animation is useful as a tool for assisting children in memorizing daily du'as.
 1 2 3 4 5
9. Based on your expertise, how likely are the end users (children) to continue using the animation for learning and practicing du'as?
 1 2 3 4 5

Section 5: Functionality

10. The animation is smooth can be seen clearly.
 1 2 3 4 5
11. The animation can be seen clearly.
 1 2 3 4 5
12. The narration is clear.
 1 2 3 4 5

Section 6: Overall Recommendation

13. Write any additional multimedia elements or features, if any. (Optional)

Improve animation with better animation
 by effort.



**DAILY DU'A: 2D SHORT-STORY USING BONE ANIMATION TECHNIQUE TO
LEARN BASIC DU'A**

**QUESTIONNAIRE
[MULTIMEDIA EXPERT]**

Assalamualaikum and hello. I am Syaza Najihah Binti Abdul Halim, final year student from Faculty of Information Technology and Information. I am very pleased for your cooperation participating in the expert evaluation of the project "2D Short-Story Based on Bone Animation to Learn Basic Du'a." Your expertise is highly valued in assessing the bone animation technique and its effectiveness in achieving the project's objectives. Please provide your insights by answering the following questions.

Instruction: Please tick and give your rating to the following questions according to the scale given.

Arahan: Sila tandakan dan berikan penilaian anda kepada soalan berikut mengikut skala yang diberikan.

1	2	3	4	5
Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Moderate (Separa)	Agree (Setuju)	Strongly agree (Sangat setuju)

Section 1: Expert Information

Name: *TS. Muhammad Helmy Bin Emran.*

Position: *Teacher*

Years of experience in multimedia field: *22 years.*

Section 2: Evaluation of Bone Animation Technique

1. I am familiar with bone animation techniques.

1 2 3 4 5

2. In my opinion, bone animation technique is suitable for conveying educational content to children.

1 2 3 4 5

Section 3: Evaluation of 2D Daily Du'as Animation

3. Based on your expertise, the 2D Daily Du'a animation aligns with the project's objectives for helping children learning daily du'as.
- 1 2 3 4 5
4. The storyline and characters effectively enhance the learning of daily du'as.
- 1 2 3 4 5
5. The voice is suitable.
- 1 2 3 4 5
6. The voice is clear.
- 1 2 3 4 5

Section 4: Usability Evaluation

7. From a multimedia design perspective, how would you rate the ease of use of the 2D Daily Du'a animation interface?
- 1 2 3 4 5
8. The animation is useful as a tool for assisting children in memorizing daily du'as.
- 1 2 3 4 5
9. Based on your expertise, how likely are the end users (children) to continue using the animation for learning and practicing du'as?
- 1 2 3 4 5

Section 5: Functionality

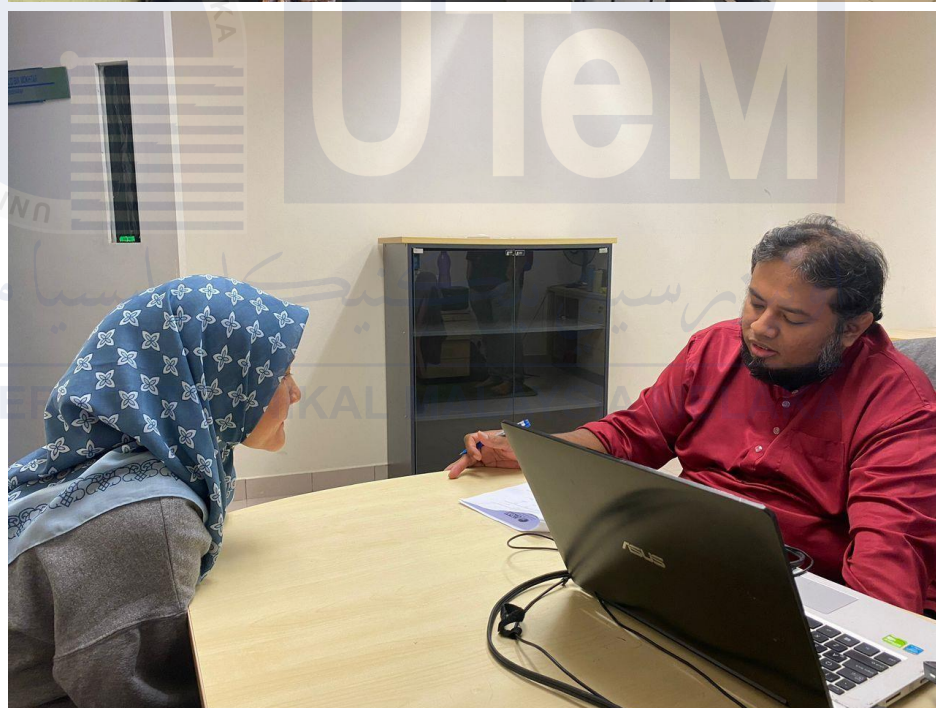
10. The animation is smooth can be seen clearly.
- 1 2 3 4 5
11. The animation can be seen clearly.
- 1 2 3 4 5
12. The narration is clear.
- 1 2 3 4 5

Section 6: Overall Recommendation

13. Write any additional multimedia elements or features, if any. (Optional)

Kulor - colour choice.
Adube Color.

APPENDIX G: PHOTOS TESTING WITH MULTIMEDIA EXPERTS





اونيورسيتي تيكنيكل مليسيا ملاك

UNIVERSITI TEKNIKAL MALAYSIA MELAKA