

TESIS APPROVAL STATUS FORM

JUDUL: 2D ANIMATION"THE STORY OF SI TANGGANG

SESI PENGAJIAN: 2005/2006

Saya MOHAMMAD 'AKASHAH BIN ABDUL WAHAB
(HURUF BESAR)

mengaku membenarkan tesis (PSM/Sarjana/Doktor Falsafah) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis adalah hakmilik Kolej Universiti Teknikal Kebangsaan Malaysia.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. ** Sila tandakan (/)

 SULIT (Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)

 TERHAD (Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)

 √ TIDAK TERHAD


(TANDATANGAN PENULIS)


(TANDATANGAN PENYELIA)

Alamat tetap : NO.42 JALAN INTAN
1/5 TAMAN INTAN
86000 KLUANG
JOHOR

PUAN HALIZAH BASIRON

Tarikh : 24 . 11 . 2005

Tarikh : 24 . 11 . 2005


CATATAN: ** Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.

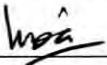
^ Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

ADMISSION

I admitted that this project title name of
2D ANIMATION "THE STORY OF SI TANGGANG"

is written by me and is my own effort and that no part has been plagiarized without
citations.

STUDENT:  Date : 24.11.2005
(MOHAMMAD 'AKASHAH BIN ABDUL WAHAB)

SUPERVISOR :  Date : 24.11.2005
(PN HALIZAH BASIRON)

ACKNOWLEDGEMENTS

In the name of ALLAH, The Most Greatest, The Most Powerful.

I would like to take this opportunity to personally express our deepest appreciation and gratitude.

Projek Sarjana Muda (PSM) is for undergraduate students of KUTKM and all undergraduate are needed to pass it before graduated. Through this project, the students will be able to enhance their ability and skills in literature research, analyzed problems, propose alternative solutions or models and manage available resources in accomplishing the project and present the output effectively.

Firstly, I would like to express my appreciation and gratitude to my supervisor, Pn Halizah Bt Basiron because of his guidance and ideas, kindness, patience, care and friendship throughout PSM.

My deepest gratitude extends to all lecturer in faculty Information and Communication Technology and those who are not mention in here but have directly or indirectly helping and guiding me towards completing my thesis; your efforts and time are much appreciated.

Also a million of thanks to my parent and my family, because give me a lot of moral support and a helping hand.

Finally, this project had giving me the opportunity to learn a lot of knowledge that are not studied before. I have use a lot of technology and technique to develop this project. I hope this project will help the society in the future.

ABSTRACT

This project is carried out to develop a 2D cartoon animation. This project basically is for entertainment and commercial. This project titled is “The Story of Si Tanggang”. Different than a current cartoon story, this cartoon has a good value. This story is about a son did not respect their mother after he become rich. This project is especially for kids and generally for parents. Type of software that had been used in this project are Macromedia Flash MX, Toon Boom Studio, Soundforge and Adobe Premiere Pro. Duration of this project is 10 minutes and 31 second. The research of this project is about a lip sync.

ABSTRAK

Projek ini bertujuan untuk membangunkan animasi kartun 2D. Projek ini pada dasarnya adalah untuk hiburan dan juga tujuan komersial. Tajuk projek ini adalah “ The Story Of Si Tanggang”. Berbeza dengan kartun yang sedia ada pada masa kini, projek ini mempunyai nilai-nilai teladan yang baik. Cerita ini mengisahkan tentang seorang anak yang tidak mengaku ibunya setelah dia menjadi kaya. Projek ini adalah khusus untuk kanak-kanak dan secara umumnya juga boleh ditonton oleh semua lapisan. Jenis-jenis software yang diperlukan untuk mengahilkan projek ini ialah Macromedia Flash MX, Toon Boom Studio, Soundforge dan juga Adobe Premiere Pro. Tempoh masa untuk projek ini adalah selama 10 minit 31 saat. Research yang dijalankan dalam projek ini adalah berkaitan dengan lip sync.

TABLE OF CONTENTS

Title page	i
Acknowledgement	ii
Abstract	iii
Abstrak	iv
Table of Contents	v
List of Tables	vi
List of Figures	vii
Abbreviation	viii
List of Appendix	ix

CHAPTER 1 INTRODUCTION

1.1	Project Background	1
1.2	Problem Statements	2
1.3	Objective	2
1.4	Scopes	3
1.5	Project Significance	3
1.6	Conclusion	4

CHAPTER 2 LITERATURE REVIEW

2.1	Introduction	5
2.2	Fact and Finding	6
2.2.1	History of animation	6
2.2.2	Introduction to animation	8

2.2.3	Making 2D animation	9
2.2.3.1	Create an animation set	11
2.2.3.2	Draw line art and gather multimedia	11
2.2.3.3	Add the soundtrack	12
2.2.3.4	Ink and paint drawing	11
2.2.3.5	Change the sequence	11
2.2.3.6	Choreograph the elements	11
2.2.3.7	Export	12
2.2.4	Research on lip sync	13
2.3	Project Methodology	16
2.3.1	Pre-production	20
2.3.2	Production	22
2.3.3	Post production	22
2.4	Project requirements	23
2.4.1	Software Requirement	23
2.4.2	Hardware Requirement	25
2.5	Project schedule and Milestones	26
2.6	Conclusion	28

CHAPTER 3 ANALYSIS

3.1	Introduction	29
3.2	Problem Analysis	29
3.2.1	Example of 2D cartoon animation	30
3.2.2	List of problems	30
3.3	Requirements Analysis	30
3.3.1	Needs Assessment	31
3.3.1.1	Interview	31
3.3.1.2	Observation	32
3.3.2	Content Analysis	33
3.3.3	Resources	33

3.3.3.1	Hardware requirement analysis	33
3.3.3.2	Software requirement analysis	35
3.4	Conclusion	37

CHAPTER 4 DESIGN

4.1	Introduction	38
4.2	Raw input/data	38
4.3	System Architecture	39
4.4	Preliminary design	41
4.4.1	Storyboard design	41
4.5	Conclusion	45

CHAPTER 5 IMPLEMENTATION

5.1	Introduction	46
5.2	Production and Implementation	47
5.3	Conclusion.	53

CHAPTER 6 TESTING

6.1	Introduction	54
6.2	Test Plan	55
6.3	Test Strategy	55
6.4	Test Design	56
6.5	Test Case Result	59
6.6	Conclusion	59

CHAPTER 7 CONCLUSION

7.1	Introduction	60
7.2	Observation on weaknesses and Strengths	60
7.3	Propositions for improvement	61
7.4	Conclusion	62

BIBLIOGRAPHY	63
---------------------	----

APPENDIX	64
-----------------	----

LIST OF TABLES

Table No.	Title	Page
Table 2.1	History of Animation	6
Table 2.2	Project Schedule and Milestones	26
Table 4.1	Script Design	44

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
Figure 2.1	Toon Boon Workflow	10
Figure 2.2	Basic Phoneme Samples	14
Figure 2.3	Six Basic Expressions	15
Figure 2.4	Example of Usop Sontorian Character	16
Figure 5.1	Text production in introduction scene	48
Figure 5.2	Snapshot of drawing by using Flash MX	49
Figure 5.3	Snapshot of creating audio	50
Figure 5.4	Snapshot of video that has been rendered	51
Figure 5.5	Snapshot of making animation using Toon Boom	52

LIST OF ABBREVIATIONS**Abbreviations**

PSM 1

PSM 2

KUTKM

PC

DVD

MB

RAM

CD RW

CD ROM

MHz

Mac OS

GB

WORDS*Projek Sarjana Muda 1**Projek Sarjana Muda 2*

Kolej Universiti Teknikal Kebangsaan Malaysia

Personal Computer

Digital Versatile Disk

Mega Byte

Random Access Memory

Compact Disk Rewrite

Compact Disk Read Only Memory

Megahertz

Macintosh Operating System

Gigabyte

CHAPTER I

INTRODUCTION

1.1 Project Background

Nowadays, we can see many types of 2D cartoon animation in television. Basically all 2D cartoon animations are for entertainment especially for kids. Beside for entertainment, this 2D cartoon animation also has a good message shown in the story.

For this PSM project, we choose to make 2D cartoon animation. The title is 'The Story Of Si Tanggang '. For this story of course a lot of people in Malaysia are already knew it. Before this, 'The Story of Si Tanggang 'was just shown in television in a real story. So know, we choose this title to make this story using 2D animation. This story has given good messages especially for kids. As we know, kids are prefer to watch cartoon than a real story. This story is a man who did not respect his mother after he gets rich.

The aim of this project to be developed is about the kids can learn how important to respect our mother. Beside that, this project is for entertainment and has a commercial value. For this project, we prefer to make in about 10 to 15 minutes long.

1.2 Problem statement(s)

As we all know, there are many kinds of 2D cartoon animation showing in television. From current cartoon likes “Usop Sontorian” and “Kluang Man”, mostly children like to watch then from these two cartoons, we found that some bad language had been used. Therefore, there have less good value showing in this cartoon. So, we prefer to make a 2D cartoon animation called “The Story Of Si Tanggang” because from a real story, there are many good value.

To make this story can be accepted by children, we need to make this story in 2D animation. So, we think most children like to watch this story same as that they like watching other cartoon. Beside for entertainment, children who are watching this story can get a several good values like respect to our parents and many more.

This project is mainly for a kids and children. To make this project more interesting, we need to include graphics and also good combination of colour that suitable for kids.

1.3 Objective

There are several objectives that are underlined to develop this project.

- i. To make a 2D animation for “The Story of Si Tanggang” because previously the version of this story is only in film format.
- ii. To make this story more interesting especially for kids because this story has some good values.
- iii. To commercialize this story to every people in Malaysia especially for a kids.

- iv. To make this story accepted by kids because they usually like watching cartoon than a real story. So, a good message in this story can be shown to them.

1.4 Scopes

The scopes of the project are:

- i. The project is developed mainly for kids. So the animation that is needed to make must be suitable for kids such as a combination colour and graphics.
- ii. This story is still as same as from the real story but the duration of 2D animation story is shorter than a real movie.
- iii. This story is not only for entertainment but there have some good messages delivered to or kids who watch this story.

1.5 Project significance

The importance of this 2D animation is generally for parents and especially for kids. Beside that this story has a good message to show to every kid that watches this story. From this story, we know how important to respect our parents especially our mother. Basically, children likes cartoon than a real movie. To make children watch this story, we need to change this story into 2D animation.

This story has a same concept with a real story but some part need to be changed to make this story more interesting because the project that we want to make is an animation story and especially for kids. This project is a good project for entertainment

and also for commercial. Although this project is mainly for entertainment, there still has a good value in this project.

1.6 Conclusion

This project is mainly for entertainment but there still has a good value and also using a language that suitable for kids. Generally this story is for everyone but we target this story watched by children. We hope this project can be commercialized after we have finished making the entire story. From this project also we hope we can add more knowledge and skill in animation.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

This chapter will focus on the literature review and project methodology. History and theory of animation will be explained in fact and finding section. For the project methodology, we will focus on how to build and create the 2D animation.

In literature review section, we will describe the entire thing about 2D animation. For our project, we will research about the lip sync of the character. Some examples of 2D animation also will be described in this topic.

Project methodology refers to the technique on how to build our project. So, to build this project, we need to follow the steps and technique that listed on the project methodology. From the story of animation, all animation keeps following the step and technique so that we can publish the good product of animation.

2.2 Fact and finding

In this section, we will describe on history of animation, introduction to animation and making 2D animation.

2.2.1 History of Animation

As we know the entire things in the world have their own history. Animation also has its own history and they did not just happen instantly. Referring to the website by Joshua Mosley , here are some of the major milestones which made animation what it is today (1992 – 2003):

Table 2.1 : History Of Animation.

1992:	Beier and Neely, at SGI and PDI respectively publish an algorithm where line correspondences guide morphing between 2D images. "Demo" is Michael Jackson video <i>Black and White</i> . Ref: T. Beier and S. Neely, " <i>Feature-Based Image Metamorphosis</i> ", Computer Graphics, 26(2), July 1992. (In the SIGGRAPH 98 Seminal Graphics collection.) v
1993:	Chen and Williams at Apple publish a paper on view interpolation for 3D walkthroughs. Ref: S. E. Chen and L. Williams, " <i>View Interpolation for Image Synthesis</i> ", Computer Graphics Proceedings, Annual Conference Series, 1993. (In the SIGGRAPH 98 Seminal Graphics collection.)
1993:	Jurassic Park use of CG for realistic living creatures
1995:	Toy Story first full-length 3D CG feature film
1996	<ul style="list-style-type: none"> • BEAVIS AND BUTTHEAD, now a feature is released and makes over 60 million. • MARS ATTACKS, Tim Burton. During its production the Manchester studio Bare Bones spends 9 months animating stop-

	<p>motion aliens for the film, only to be told that computer generated images (CGI) would be used instead.</p> <ul style="list-style-type: none"> • The merger of Time Warner and Turner brings Warner Bros. Feature, TV, and Classic Animation, Hanna-Barbera, Cartoon Network, plus a couple of others under one roof.
1998	<ul style="list-style-type: none"> • BUNNY, Chris Wedge, US, AA • THE PRINCE OF EGYPT, DreamWorks first animated feature is released. • CELEBRITY DEATH MATCH began as a special, expanded into a series five months later. • QUEST FOR CAMELOT (Warner)
1999	<ul style="list-style-type: none"> • THE OLD MAN AND THE SEA, Alexander Petrov, Various Countries, AA • IRON GIANT, Directed by Brad Bird, based on the 1968 work by Poet Laureate Ted Hughes. • SOUTH PARK: BIGGER, LONGER AND UNCUT is released • THE PRINCESS MONONOKE released, Hayao Miyazaki, Director. • TOY STORY 2 released, Disney/Pixar • STUART LITTLE released, Columbia/Sony o Falun Gong outlawed in China
2000	<ul style="list-style-type: none"> • FATHER AND DAUGHTER, Michael Dudok de Wit. AA • Marc Davis dies (1913-2000), born in Bakersfield, CA., he was one of the Nine Old Men from Disney. He was well known for doing female characters.
2002	<ul style="list-style-type: none"> • Nine feature animated films were rules eligible for the three nominations in the Academy of Motion Picture Arts and Science first ever Feature Length Animation category. They are: "Final Fantasy: The Spirits Within", "Jimmy Neutron: Boy Genius", "Marco Polo, Return to Xanadu", "Monsters, Inc.", "Osmosis Jones", "Shrek", "The Trumpet of the Swan", "The Prince of Light", "Waking Life".

	<ul style="list-style-type: none"> • "Shrek" from Dreamwork Feature animation won the first ever Oscar for animated feature they beat out Pixar/Disney's "Monsters Inc.
2003	<ul style="list-style-type: none"> • "Finding Nemo" All time highest grossing animation of all time, beating out Beauty and the Beast.

2.2.2 Introduction to Animation.

There are many definitions of animation. Animation is the simulation of movement through a series of pictures that have objects in slightly different positions. Cartoons are familiar forms of animation. We have probably seen other forms of animation on a computer, such as company logos that move on Internet Web page, characters move in a computer game, or even objects that move on the computer screen in a software demonstration or tutorial.

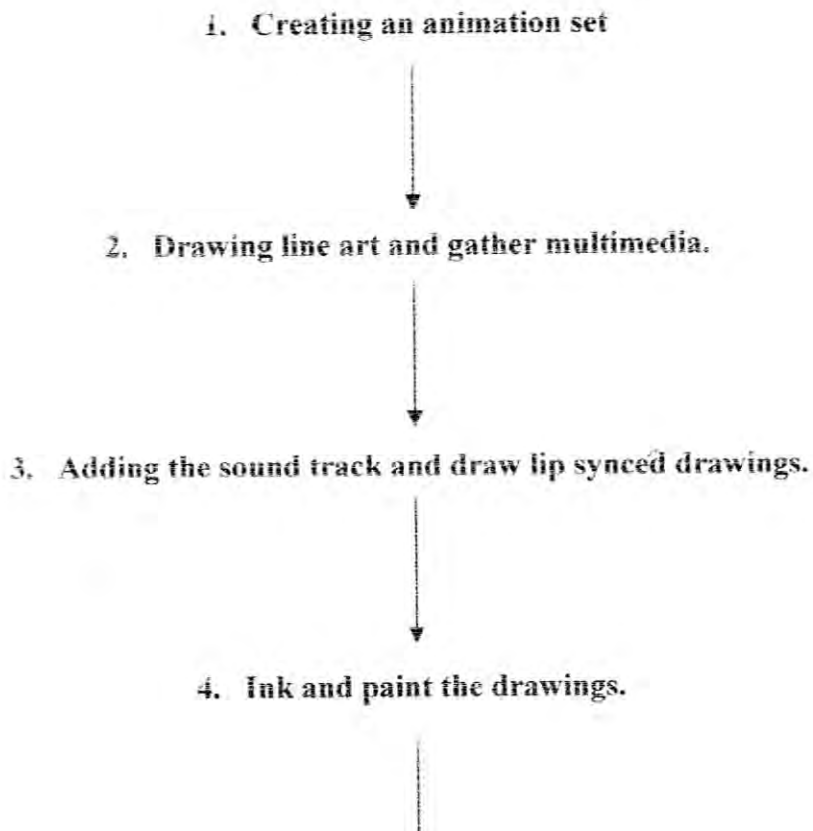
In order to make animation works correctly, pictures that making up the animation must replace one another quickly enough to trick the human eye into believing there is movement. A replacement rate of at least 14 frames per second or raster accomplishes this sense of movement. For example, a movie camera replaces the picture frame in a Disney cartoon at a rate of 28 frames per second.

To animate means to bring to life and communicate feelings through storytelling. Students of all ages can create animations with new technologies. Telling a story that communicates emotions to an audience involves deep thinking, creativity and reflection. The old saying, "A picture says a thousand words," is very true with animation because the picture moves, and is alive. And there is usually other media such as sound to add another layer of meaning. The simplest animation is usually the most effective and often takes detailed planning and creativity. 2D animation using Toon Boom, Flash, Swish can produce sophisticated presentations, demonstrations, simulations and stories. For our project, we choose to make a 2D cartoon animation.

2.2.3 Making 2D animation.

AS we know, nowadays there are many types of 2D animation such as cartoon animation. For our project, we choose to make 2D cartoon animation. Basically, to develop animation, there are several steps or processes. There are Pre-production, Production and Post-production. There are many software provided to make 2D animation such as Toon Boom, Flash and Swish. For our project, we choose Toon Boom software. Every software has its own specialty. In this topic, we would like to discuss about how to make 2D animation using Toon Boom software.

For the first step, we need to know the Toon Boom workflow. Toon Boom studio uses the power and logic of traditional animation production, yet it has a workflow flexible enough to support the creative process involved in the Web animation. Below is the high-level step in Toon Boom Studio animation workflow.



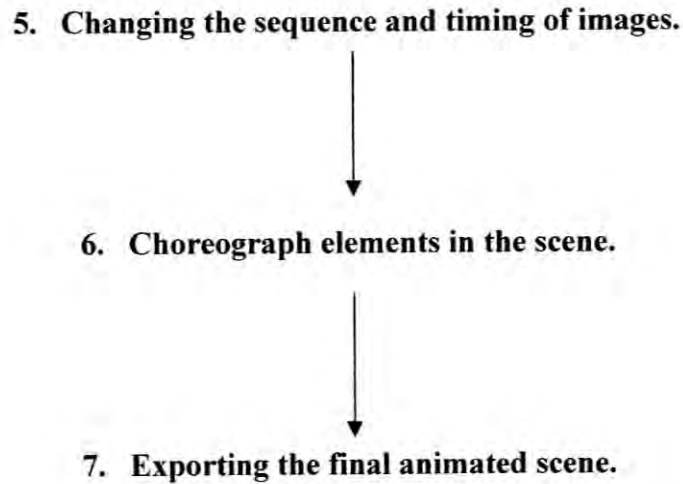


Figure 2.1: Toon Boom Workflow

2.2.3.1 Creating an Animation Set

An animation set is a project folder that contains all the drawing, bitmaps, sounds and effect in the animation, as well as all of the timing lay out and motion changes the build.

2.2.3.2 Drawing Line Art and Gather Multimedia

This mode provides with a workspace and a set of tools for develop the visual content of animation. In Drawing Mode, we perform the following tasks:

- Add element layers to Exposure Sheet.
- Draw the contents of animation layers. Drawing tools is to create vector images that are key to producing high-quality, small size, and animation.

- Import background images into element layers.
- Import multimedia, such as complete Macromedia Flash movies and audio files. Toon Boom Studio provides a unique system of content management that can help to re-use animation elements.

2.2.3.3 Adding the Sound Track

We can use Toon Boom Studio voice track analyzer to identify the lip positions that must be drawn to match the voice track in each frame.

2.2.3.4 Ink and Paint the Drawings

After completing the line art, we are ready to fill the drawings with colour. Toon Boom Studio provides a colour palette management system that simplifies the creation and organization of project colours. With Toon Boom Studio we can:

- Create colour palettes for each character.
- Create palettes for different versions of a character's colour palette.
- Change all of colour swatches in a palette style.
- After mixed project colours, we can easily ink and paint the line art and zones with the painting tools.

2.2.3.5 Changing the Sequence/Timing of Images

The exposure Sheet allows keeping track of all the drawings and element layers in the scene. Each row represents one frame in animation.

2.2.3.6 Choreograph the Elements in the Scene

After ink and paint the drawings and artwork out their exposure, we are ready to use the Scene planning space to lay out our elements and make them change over time. With the timeline window, we can see when element start and end. We can use the timeline window to add and manage peg and camera elements.

2.2.3.7 Exporting

This is the time to export the scenes and produce a final movie. We can export the final movie clip in one following formats:

- Macromedia Flash format (swf), if working with Macromedia Flash MX.
- Quick Time format. (MOV).
- Plazmic Mobile SVG Movie.

2.2.4 Research on lip sync

For this project, we have done a research about the lip sync. From the workflow, lip sync is put in Add the Soundtrack level. For every character, we need to make a lip sync to make the lip consistent with the sound language.

Lip sync is the art of taking a pre-recorded track of dialogue, and making a character appear to speak it. This involves figuring out the timings of the speech (breakdown) as well as the actual animating of the lips/mouth. In addition making the actual setup or mouth phonemes needed can also be considered a part of the entire Lip sync process for 2D.