

**DIGITAL STORYTELLING FOR
KADAZANDUSUN FOLK STORY**

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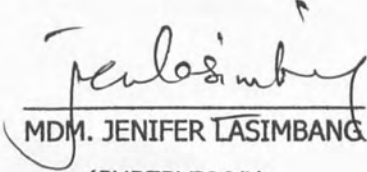
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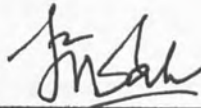
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ABSTRAK

'DIGITAL STORYTELLING' UNTUK CERITA DONGENG KADAZANDUSUN

Pada masa kini, 'digital storytelling' telah mula diberi perhatian akan potensinya untuk digunakan sebagai bahan pengajaran ataupun 'edutainment' iaitu memberi pendidikan melalui hiburan demi menimbulkan minat kanak-kanak dalam pelajaran. Projek ini adalah untuk membantu 'Kadazandusun Language Foundation (KLF)' menterjemah cerita dongeng daripada format pencetakan kepada format digital. Objektif projek ini adalah untuk mencipta suatu 'digital storytelling' yang berinteraksi dan menarik sebagai bahan pendidikan untuk menarik minat orang awam serta kanak-kanak dalam mempelajari bahasa kadazandusun. Dua cerita dongeng yang dicipta adalah 'The Origin of the World' di mana penonton sasaran adalah orang awam, manakala 'Why Mosquito Makes a Buzzing Sound in Our Ears?' adalah lebih ditumpukan kepada sasaran kanak-kanak yang berumur dari 7 hingga 12 tahun. Perisian yang digunakan sebagai alat merekabentuk animasi ialah Macromedia Flash dan Macromedia Director.



ABSTRACT

DIGITAL STORYTELLING FOR KADAZANDUSUN FOLK STORY

Recently digital storytelling (DST) has caught the interest of many as it has the potential to be used as a form of learning material or 'edutainment', which is using entertainment as a channel to yield interest of children in education and learning. This project was carried out to help the Kadazandusun Language Foundation in transforming the folk stories from a printed form into a digital form. The objective of this project is to create a lively and interactive digital storytelling as an educational tool to attract interest of the public as well as children in learning the Kadazandusun language. The two folk stories created in digital storytelling styles are 'The Origin of the World' which targeted the general public as audiences and 'Why Mosquito Makes a Buzzing Sound in Our Ears?' that focused more on children ages 7 to 12 years old as targeted audiences. Macromedia Flash MX Professional 2004 and Macromedia Director were used as an application developer tool to design graphical user interface for this digital storytelling project.



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CHAPTER 1

INTRODUCTION

1.1 Introduction

The title of this final year project is digital story telling (DST). This project's main purpose is to help the Kadazandusun Language Foundation to convert folk stories from printed form into a digital form.

This chapter is an overview of the problem background that may be faced by the current available application/ product and also reasoning the need of doing the project. In addition, a problem statement which summarizes the problem background and show what should be achieved is constructed. Furthermore, the objective of this project which represents the guideline of the solution for the project statement was listed out and the project targeted scope was identified and described.

Lastly, the organization report is concluded with every contents of the final report and summarizes every chapter of the report.



1.2 Problem background

1.2.1 Unattractive

In older days, people express a story or an experience through verbal or in a printed form. Thus it is hard to imagine the story's background and the whole situation. That is why children or even adults sometimes may find it unattractive and boring.

1.2.2 Lack of interaction

Although storytelling was used to take over the printed and oral form, but storytelling in those days are lack of interaction. Thus, it will not make the story any attractive or any better than in printed or oral form that will help the audiences to understand the story better.

1.2.3 Problem in finding and creating image

The image used in the making of the animation must suit the interest and must be attractive to get hold of attention of the audiences. Furthermore, the image really tells the whole picture of the story according to the themes and background of the stories. There are some difficulties in finding the resource of picture needed in legally especially when we have to deal with copyright issues.



1.2.4 Unclear pronunciation

The student can learn more if a story is change into the digital form because there are pronunciations of words in certain language used in the narration. Although students can learn words pronunciation in digital storytelling but when the digital narrative pronunciation is very poor and unclear; this might mislead the audience in learning the correct pronunciation of the language. If the pronunciation is clear and right, it will help the student to improve their language. That is why correct and clear narration is very important.

1.3 Problem statement

There are several problems in the printing and vocal form which are unattractive and lack of interaction. Using the suitable images for the digital storytelling according to its background and theme is very important. Beside that, in printing form, there are no pronunciations of words which make it a disadvantage because it can't teach the reader to pronounce certain words of a language correctly. This is why words pronunciation in digital storytelling must be correct and clear so that the audience can understand and learn the pronounciation of words more effectively.

This project is to construct a digital story telling that are more interactive, attractive, suitable images according to the theme and emphasis in clear and correct narrative pronunciation of words in order to achieve the effectiveness of 'edutainment'.



1.4 Objective

1.4.1 Attractive and interesting

This project will make digital storytelling an interesting and attractive 'edutainment' to attract students' attention so that they will be more interested in knowing more about stories and they will not feel bored in learning the languages, culture and moral value of the story. For example, create a beautiful image ,adding sound and animation into the digital storytelling.

1.4.2 Interactive and understandable style

In this project will include storybook module, exercise module and learning room module which to make it more interactive so that the educator can use the storybook module to explain each scene to children in order to make sure that they fully understand what the story is about. Furthermore, in the exercise module and learning room module, student will learn more about stories and language in it.

1.4.3 Clear narration

In this project, the pronunciation should be clear and easy to understand so that the students will not be confused by the words use in the narration and lost track of the whole story. Through clear narration, students can learn the words pronounciatian of the language more effectively.



1.5 Project scope

There are two folk stories that are to be converted into digital form. One of them is "The Origin of The World" and another one is "Why the Mosquito Makes a Buzzing Sound in Our Ears". The targeted group for the animation "The Origin of The World" is the general public while the other animation "Why the Mosquito Makes a Buzzing Sound in Our Ears" is developed specially for primary school's student in Malaysia or students all around the world.

This digital storytelling will be designed using the multi-modal approach where there will be two languages: the Kadazan Dusun language and English language. On the other hand, students from other races and cultures too will be exposed to this digital storytelling which allows them to have a chance to learn the Kadazan Dusun's culture and language. Besides that, teachers can use it as a teaching material too. Museum can use it as a presentation and 'edutainment' of multicultural. By using this digital storytelling, we can share our experiences and build a sense of community with others. At the same time, we are actually indirectly introducing a new digital teaching material to the next generation.

This project content some feature, such as graphics, video, animation and sound to make the story more lively and attractive. The power of soundtrack can enhance and underscore the accompanying story and adding complexity and depth to the narrative. Furthermore, the digital storytelling also provides the interactive Q & A (Question and Answer) which helps people to think and learn more about the story and the languages used in it more effectively.



1.6 Organization of the report

Chapter 1 provides introduction to the project, objectives, scope, and problem background and problem statement.

Chapter 2 reviews researches done, existing systems or applications that are related to the project. These chapters also include techniques, methods, equipments or technologies that will be applied on our project.

Chapter 3 reports approaches and overall framework taken in building the application. It can also contain techniques or approaches that will be applied in the design and implementation of the project/research. This chapter can also contain justification regarding the methods or approaches used and software and hardware requirements.

Chapter 4 explains the application design, user interface design, techniques and related algorithms. Also included is flowchart, DFD, class diagram, structure chart, Use case diagram and others depending on the system development model used.

Chapter 5 reports results and findings from project in detail that includes steps of module implementation in application development. Chapter 6 reports several types of testing in the order with the result of testing.

Chapter 7 is mainly discussed about the current results of this project with research in details. This chapter also explains the conclusion, future work, summarizes the project and results obtained. Project limitations, advantage and recommendations for future works need to be mentioned.



CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Literature review is an account of what has been published on a topic by accredited scholars and researchers of previous researches. It can be either a part of a larger report of a research project, or it can be a bibliographic essay that is published separately in a scholarly journal. The main purpose of writing literature review is to convey to the reader what knowledge and ideas that have been established on a topic before and what their strengths and weaknesses are. The literature review must be defined by a guiding concept.

This chapter is an overview and review of the existing digital storytelling concepts and applications. The existing digital storytelling concepts and applications are then compared and the content is then summarized in this chapter.



2.2 Review of existing concept

Leslie Rule of Digital Storytelling Association defined digital Storytelling as the modern expression of the ancient art of storytelling. Digital stories derive their power by weaving images, music, narrative and voice together, thereby giving deep dimension and vivid color to characters, situations, experiences, and insights (Barrett, 2004).

Digital Storytelling takes the ancient art of oral storytelling and engages a palette of technical tools to weave personal tales using images, graphics, music and sound mixed together with the author's own story voice. Digital storytelling is an emerging art form of personal, heartfelt expression that enables individuals and communities to reclaim their personal cultures while exploring their artistic creativity. While the heart and power of the digital story is shaping a personal digital story about self, family, ideas, or experiences, the technology tools also invite writers and artists to think and invent new types of communication outside the realm of traditional linear narratives (Berna Jean, 2004).

According to Trumbo (1996), multimedia combines a variety of media formats such as text, image, sound and movement into a dynamic environment that allows users to select the level of interaction and to make active decisions about how they access the content. Thus the multimedia designer must create an experience that anticipates so to allow the user's approach and movement through the presentation, as well as the user's exit.



A media study done by Foster, Stiemerling and Knieper (2002) in comparing animated infographics with still version and textual representations of the same information found that it is not always appropriated to visualize and animate certain topics, although in most of the cases, visualization can enhance information transfer.

Multimedia, experiential and interactive terms is frequently used to describe digital storytelling. According to Paul & Fiebich (2002), these concepts are too broad. After examination of thousands of digital stories, they found that digital storytelling is mainly formed by five elements; media, action, relationship, context, and communication.

However, Lambert (2003) emphasizes storytelling process more in a group settings and storytelling is meant to be a collaborative art. They found that there are actually seven elements in producing digital storytelling. The seven elements are point of view, dramatic question, emotional content, voice, soundtrack, economy and pacing.

Photo stories should incorporate with voice and photo sharing should be a more cinematic experience. Vronay, Farnham & Davis (2000) found that although in the market there are software such as Adobe Premier, Macromedia Director, Microsoft's Movie Maker and others, but they are either too complex or lack of key features such as the ability to pan across photographs. Thus, they have created PhotoStory software. This software focuses on the narration emphasis and visual



effects. This software is user friendly and requires no other additional user's attention at all. The prototype used in this project was written using Microsoft's Visual C++. The final output file will be saved in a QuickTime format.

Spierling (2002) takes a closer look at the author of interactive storytelling applications. Four hierarchical levels architecture was presented for authoring. Each of the levels provides a different degree of agency for the user in the production of a story. At each level the architecture consists of an engine and a corresponding model. The engine is responsible for driving the action on that level; the model contains rules which define this procedure.

Interactive storytelling system technology must be interrelated with a complete interactivity strategy, complementing and enhancing story's plot (Murray, 1997). Murray (1997) characterizes digital environments, with four essential features which are procedural, participatory, spatial, and encyclopedic. The first two features make up most of what we mean by the vaguely used word interactive; the remaining two features help to make digital creations seem as easy to be explored and extensive as the actual world.

Interactive storytelling environments for children must ensure the development of a world that takes advantage from children's emergent and continuous imagination that easily enchants them; but this does not mean that we can be careless: children need to identify themselves and engage with the story and spatial environment; besides, interaction it must be intuitive and simple,

granting children's interest during the interactive journey (Valinho & Correia, 2004).

2.3 Comparison of existing concept

According to the previous literature review, there are several definitions or concept of digital storytelling. Digital story telling is one of the multimedia. It is basically consists of image, text, sound, video and animation to express the ancient art of storytelling that enables individuals and communities to reclaim their personal cultures while exploring their artistic creativity.

The studies by Paul & Fiebich (2002) and Lambert (2003) shows different uses of elements in forming a digital storytelling. Although they uses a complete different concepts, but the concepts that they are using actually seems to be complementing each other instead. The elements used by Lambert (2003) are more in application for creating a story rather than how to create digital story when compared.

Photo story is more of a still real life pictures style of digital storytelling rather than an animated style of digital storytelling. Photo story applies photo into digital storytelling which allows cultural communication and sharing but it is lack of attractiveness and liveliness if compared with the animated digital storytelling. According to Valinho & Correia (2004), a world that takes advantage from children's imagination that easily enchants them must be developed, thus using



animated pictures is important to attract and build creative imagination in children.

There are many researches focus on achieving the interactivity from different ways such as interactive storytelling environments, systems and applications. This show that interactivity is one of the most important parts in constructing the digital storytelling.

2.4 Summary

In a nutshell, digital storytelling is a type of communication between the story teller and the audiences. It is a way to impart certain messages or values to the targeted audiences for a certain purposes such as promotion, education and others. Therefore, a digital storytelling must be attractive enough to catch the attention of the targeted audiences so that they will be willing to receive the information presented.

After reviewing the existing concept and application in constructing the digital storytelling, we can conclude that to construct an attractive, interactive and lively digital storytelling, it must consists of images, sound, text, video and animation. Furthermore a more suitable tool or applications such as macromedia flash, adobe Photoshop and others can be used.



CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter reports approaches and overall framework taken in building the system/application or research. It also contains techniques/approaches that will be applied into the design and implementation of the project/research. This chapter contains justification regarding the methods/approaches used and software and hardware requirements.

This chapter reviews or explains methodology used and software and hardware requirements. Overall contains in this chapter are also summarized.

3.2 Reviewing or explaining methodology used

3.2.1 The multimedia production cycle

The multimedia production cycle is a concept that used to plan and manage the development process. The multimedia production cycle includes the project planning phase, storyboarding phase, preproduction phase, production and postproduction phase, testing phase and product delivery phase.



REFERENCES

- Anderson, S. 2005. "Multimedia Design: Navigation Maps and Storyboards." Retrieved from <http://www.usu.edu/sanderso/multinet/wwwnavi.html>
- Bailey, B. 1995. "Interactive Sketching of Multimedia Storyboards." Retrieved from <http://hci.cs.uiuc.edu/publications/acm-mm-1999.html>
- Balabanovi, M., Chu, L. L. & Wolff, G. J. 2000. "Storytelling with Digital Photographs." CHI 2000.
- Carnegie Mellon University. 2001. "Planning." Retrieved from http://www.cmu.edu/teaching/howto/Digital_Storytelling/planning.html
- Counts, S. & Fellheimer, E. 2004. "Supporting Social Presence through Lightweight Photo Sharing On and Off the Desktop." CHI 2004. 6 (1).
- Davis, A. 2005. "Co-authoring identity: Digital storytelling in an urban middle school." Retrieved from <http://www.thenjournal.org:16080/feature/61/>
- Dube, J. 2005. "Online Storytelling Forms." Retrieved from <http://www.cyberjournalist.net/news/000117.php>
- Flanagan, M. & Arble, F. 1998. "Interactive Narrative: Stepping Into Our Own Stories." CHI 1998.
- Forster, K., Stiemerling, S., & Knieper, T. 2002. "Evaluating animated infographics: A step towards multimedia research, an experimental approach."
- Kudriavtseva, S., Kolos, V. & Kommers, P. 2001. "Development of the Methodology of Applying Multimedia Means for Distance Courseware Design, Development and Implementation."



- Lynch & Horton. 2002. "Design and multimedia." Retrieved from <http://www.webstyleguide.com/multimedia/design.html>
- Mallon, A.1995. "Storyboarding Multimedia." Retrieved from http://ourworld.compuserve.com/homepages/adrian_mallon_multimedia/story.htm
- McEwan, T. 2005. Multimedia Development Process. Retrieved from <http://www.dcs.napier.ac.uk/~tommc/modules/mm8413307/methodologies.htm>
- Murray, J. E. 1997. "Hamlet on the Holodeck: The Future of Narrative in Cyberspace." The Free Press.
- Neo, M. & Neo, K. T. K. 2001. "Innovative teaching: Using multimedia in a problem-based learning environment" Educational Technology & Society. 4 (4).
- Nordgren, L. 1998. "Overview of Multimedia Production Cycle." Retrieved from <http://www.plu.edu/~libr/workshops/multimedia/overview.html>
- Omnie Solution. 2005. "Websites and Multimedia Development." Retrieved from <http://www.omniesolutions.com/methodology.asp>
- Ong, J. & Dowell, J. 1989. "Towards a Conception for an Engineering Discipline of Human Factors. Ergonomics." 32 (11) pp.1513-1535.
- Pant, A. 1999. "Methodology of Multimedia Production." Retrieved from <http://ignca.nic.in/clcnf180.htm>
- Paul, N & Fiebich, C. 2005. "Digital Storytelling." Retrieved from <http://inms.umn.edu/Elements/overview.php?title=Overview>
- Schäfer .L., Valle, C. & Prinz,W. 2004. "Group Storytelling for Team Awareness and Entertainment." CHI. 2004.



- Sherwood, C. & Rout, T. 1998. "A Structured Methodology For Multimedia Product and Systems Development." ASCILITE 1998.
- Spierling, U., Grasbon, D., Braun, N. & Iurgel, I. 2002. "Setting the scene: playing digital director in interactive storytelling and creation." 26 (1) pp. 31-44.
- Trumbo, J. 1996. "Navigating the Digital Universe: the use of space in the design of multimedia."
- Valinho, P. & Correia, N. 2004. "oTTomer: An Interactive Adventure System for Children."
- Vronay, J., Farnham, S. & Davis, J. 2000. "PhotoStory: Preserving Emotion in Digital Photo Sharing."
- Watkins, J. & Russo, A. 2005. "Digital Cultural Communication: Designing Co-Creative New Media Environments"

