History – Game Based Learning

by

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Dissertation submitted in partial fulfilment of
the requirements for the
Bachelor of Technology (Hons)
(Information & Communication Technology)

SEPTEMBER 2011

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CERTIFICATION OF APPROVAL

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Computer Information Science Programme
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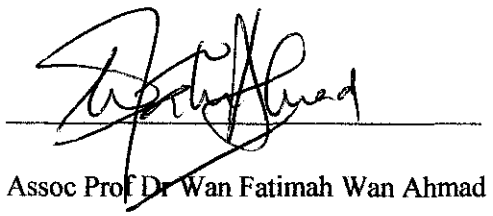
Approved by,



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UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
SEPTEMBER 2011

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have been undertaken or done by unspecified sources or persons.

MUHAMMAD ADIB BIN MOHD REDZUAN

ABSTRACT

Information and Communication Technology (ICT) is growing in many aspects of life. It changes many fundamental of life especially in communication. Better communication is important to have correct information. In this new generation, ICT technologies of internet and multimedia have revolutionized the field of education. The lack of creativity in teaching caused the learning process boring and not interesting especially in history subject where students need to memorize too much information from the subject. With ICT technology of interactive multimedia such as videos, songs or games, it will help students for immerse learning and make the learning process more fun.

The objectives of this project are to identify the suitable game-based methods to be adopted in history teaching learning where the working prototype of the game-based learning application will developed and tested. The project focuses on the secondary school students in form one in history. The game will be based on three modules in History of Malaysian Syllabus for Secondary School (KBSM). The tools used in developing the game are Adobe Photoshop and Adobe Flash. The functions involve in this tools is to make the game interactive with clicking button and creating animations. The programming language involve is Action Script. The incremental model are chose in this project where it have five phase which are analysis, design, development, quality assurance and evaluation. From the results interview the history educators, history is hard subject for students because majority of students does not like to read of thousand words of information and the game based learning is expected to be the additional tools in history teaching to make the learning more fun and interesting.

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CHAPTER 1
INTRODUCTION

1.1 Background

In Malaysia, history is one of the core subjects that compulsory to be taught especially in high school. People or student learn history since form one until form five. Even in university level, people still learn history. What is the important of history? Why governments emphasize this subject as a part in education learning?

History is very important. History taught us to be a better person and learn the mistake that have been made by our ancestor. But the lake of creativity in history teaching can make this subject are very difficult and bored. This is because, history contain a lot of information. People especially students are force to memory all information in history such as dates, name of place and name of the leader. Teachers need to do a lot of affords to think the best of history teaching to make the teaching session are very interesting and fun.

Information and Communication Technology (ICT) are growing in many aspect of life. It changes many fundamental of life especially in communication. Education and technology should be combined to produce new things. ICT especially in interactive multimedia can be another teaching method to make learning fun and motivating the student to learn.

1.2 Problem Statement

According to Azwan et al. (2005), Curriculum Development Division reported that history subject is known as a 'dead' and boring subject. In addition, the society presume that history subject do not have commercial value. The lack of creativity in history teaching caused students to become bored and lose interest in the subject.

From the work research Johdi (2006), majority of students did not like the history subject. Students have a superficial knowledge and understanding of philosophy also the objectives of history subject but lack of feeling of pleasure and not learn to associate history with other subjects effectively.

Furthermore, there are many problems with history learning such as students' attitude; namely lazy to read, read but did not memorize facts, not interested in history subject, student interested but have to memorize too many facts, cannot manage to master the themes and the teaching and learning which is not effective .

Commonly, the interaction contact hours are mostly in one direction which is teacher to students (Isaacs, 2005). The students become passive and shy to ask any question. Hence, they just ignore the subject.

1.3 **Objectives**

The objectives of this project are to:

- To identify the suitable game-based methods to be adopted in history teaching learning.
- To develop a working prototype of a game based learning application in history.
- To conduct a usability test on the game.

1.4 **Scope of Study**

The propose project is mainly concentrated on secondary school students in form one where found that have the problem in history subject. The game will be based on History subject of Malaysia Syllabus for Secondary School (KBSM). To follow the syllabus, the game will be developed in Bahasa Melayu. Instead of finishing all the modules in the subject syllabus, the prototype of the game will be focus on three modules of the subject. This is because of time constraint to develop the game.

From a report on the educational use of games by McFarlane et al. (2002), there is several type of games that can be implemented in the game-based which is adventure/quest games simulations, race games, maze games, edutainment activities, creative/ Model building, shooting/ arcade games, traditional games. The content of chosen modules will be analyzed to choose the suitable methods of games to be adopted.

CHAPTER 2
LITERATURE REVIEW

2.1 Perceptions on History

History is the core subject that important to fulfill the spirit of patriotism among the student by understanding the syllabus of subject that covered the history of the development of society in the country politically, economically and socially and also appreciation the effort of leader who fought for the sovereignty and freedom. Teaching and learning of history is appropriate for students' intellectual, spiritual, emotional and physical development. However, not all students are interested but they perceived history subject is difficult and very boring subject because they have to memorize all facts in the text book besides understand those facts, concepts, time and historical events (Mohamad, 2006).It is depends on the teachers, how they use creativity to teach. The lack of creativity in history teaching caused students to become bored and lose interest in the subject (Nor Azan et al., 2005).

A research conducted by Azwan et al., (2005) on perception of students on the content of History found that approximately two hundred students in Selangor that 72.5% knows the subject while 66.7% and 61.64% understand the subject and have the tendency to learn the subject. They also stated the results were not good and must be solve immediately as History is the core subject that must be mastered by students.

Table 2.1: Perception of students on the content of History, source Azwan et al. (2005)

Perolehan (%) Min	*Pengetahuan*		*Kefahaman*		*Kecenderungan*	
	Tinggi	*Rendah*	*Tinggi*	*Rendah*	*Tinggi*	*Rendah*
Kandungan Sukatan Pelajaran dan Buku Teks	72.5	27.5	66.7	33.3	61.4	38.6
	2.2515		2.1988		2.2749	

They also conducted a survey on perceptions of students on method of teaching-learning in history. Visiting method is the highest rank that agreed by the students followed by video method and computers.

Table 2.2: Methods of teaching-learning in history by Azwan et al. (2005)

Item Perolehan/Kefahaman 'kaedah pengajaran-pembelajaran'	Responden Pelajar (N=171) 4-skala (Min)			
	Kesan	Rank	Guna	Beza Min
1. Lawatan	3.2632	*10*	1.5906	1.67
2. Video	3.1053	*7*	1.7076	1.40
3. Komputer	2.9474	*8*	1.6959	1.25
4. Kumpulan	2.8480	*5*	2.2632	0.58
5. Projek	2.8421	*6*	2.0526	0.79
6. Lakonan, Drama	2.8304	*9*	1.5965	1.23
7. Cerita	2.7845	*4*	2.4035	0.38
8. Buku Teks	2.6082	*1*	3.1287	-0.52
9. Syarahan, penerangan	2.4854	2	2.6491	-0.16
10. Penyoalan	2.4035	3	2.4094	-0.04
Purata Respons	**2.8118**		**2.1497**	**0.6621**

From the research, it can be concluding that majority of students have problems in history learning and they prefer other methods/tools in teaching-learning instead of reading a book.

2.2 Game – Based Learning as another teaching tools

In this present generation, Information and Communication Technology (ICT) especially interactive multimedia is a good field to help in the history teaching. The ICT activities should more properly be considered in teaching formats, as a different approach in learning activity on the part of the student, (Isaacs, 2005) .Using ICT is important in teaching and learning of history because ICT can stimulate thinking skills and develop history thinking skills besides being a tool to get relevant resources (Rozeman Abu Hassan, 2004). In the branch of ICT, multimedia such as Game-Based Learning brings the goal of teaching history and make learning history is easier and interesting. Game- Based Learning (GBL) is a software application that uses different type of games for learning and education purpose. Students do not need to force to

remember the storyline of the history but they can remember by using combining real photo concept and interesting animation which it can produce a real event. According to Nor Azan and Wong (2005), found that Game-Based Learning (GBL) approach is essential to produce a courseware that can sustain learners' interest and to achieve learning goals.

While according to another study conducted Rubijesmin (2007), computer games are most acceptable and popular among children, teenager as well as adults. The majority of 341 students are familiar with computer games and he found that playing computer games at school encourages social skills among Malaysian students. This is shown in Table 2.3.

Table 2.3: Distribution between genders on Computer Game

Gender	**Count & %**	**Playing Computer Game other than school**	
		Yes	**No**
Male	**Count**	**137**	**6**
	% within gender	**95.8**	**4.2**
Female	**Count**	**177**	**21**
	% within gender	**89.4**	**10.6**

2.3 Benefits of Game-Based Learning (GBL)

There are many benefits from GBL. This was proven from a research by Healy and Connolly (2007) found that the major benefits of GBL is that game play can sustain skill development such as Personal and Social Development, Language and Literacy, Mathematical Development and Creative Development. For the sides benefits of GBL are youth appeal, flexibility, motivation, engagement, real-time feedback, asynchronous learning, immersive and fun, and adaptable to individual learning needs. According to

Ige (2007) the use of game will help to increase students' passion for learning as they are more interesting to digital resources typified by computers instead of using traditional teaching methods.

2.4 Important Components in GBL

The GBL must have organized architecture and design to make sure that the game is really attractive, interesting and have appropriate value. From research by Nor Azan et al. (2005), there are several important components that must be considered during design the digital game which are game story's background, rules, immersive, enjoyment, feedback, multimedia technology, challenge and competition and reward or award.

The game story's background is the most important component in order to send or to shows how the story happened. Each story event will tell with the date, location, place name and it is designed properly follow the syllabus of the history subject. The game will come out with the rules and guideline when learner involved in the game play. To keep the game interesting and have the impact, the game design should make learners feel immersive and enjoy when they involve with the game. The learner may give up with the game play without the enjoyment. The design interface of the game is also the crucial part for game play; the design interface must be user friendly to learner in order to give the feedback. Challenge of the game should match to the learner because every student has the different abilities for every game play. It is means the game must have difficulty option for the learner such as easy, medium and hard. To motivate the learner keep and continue with the game play, reward or award is the ways.

2.5 Available Genres in Games

McFarlane et al. (2002) list the available genres in games and explained the key features of each genre related with school curriculum. The genres of games are adventure/quest games, simulations games, race games, maze games, edutainment activities games, creative/model building games, shooting/arcade games and traditional games.

The adventure or quest games offer a series of challenges, exploration and puzzle solving usually within an overarching scenario. It also required skills such as reasoning, creativity and curiosity of a game player. The example of adventure games are Freddi Fish and Pajama Sam. The tasks in the game may be relevant to the school curriculum.

Figure 2.1: Examples of adventure games

Simulations games requires the player operates a model/simulation which then behaves according to a pre-programmed set of rules with may match those in the school curriculum or those in real life or may be fantastic. The simulations seek to provide enjoyment through reenactment. In the simulations games, it may also include social situation simulation such as The Sims.

Figure 2.2: Examples of Simulations Games

For the race games, it requires the player to operate a vehicle around an obstacle course which the player will take part in racing competitions. It is also based on real world

racing leagues and implemented in the fantasy world. The good example of race games is F1 Racing Championship.

Figure 2.3: Examples of Race Games

The next genre of games is maze games which it involves movement in 3D or 2D space with obstacles to overcome the challenges. The timing in this game is critical and need a skills and planning. The example of maze game is Lego Alpha Team.

Figure 2.4: Examples of Maze Games

For the edutainment activities games is the games involving activities structured that supporting with educations and give benefits for skill development such as hand-eye coordination, concentration, memory, problem solving, or creation of an outcome based on the content provided. The example of the game are Bob the Builder and The Tweenies.

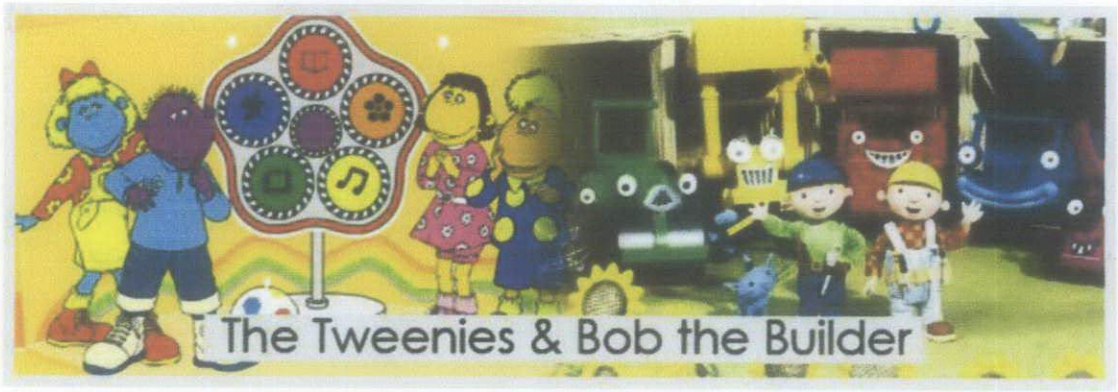

Figure 2.5: Examples of Edutainment Activities Games

All the genres of the game can be implemented in the Game-Based Learning and there is research in the University of Bath where they develop game-based learning and implement the simulation games for Racing Academy. The main aims of the project are to ascertain whether Racing Academy can support communities of practice based around serious or educational discussion and debate of real physics principles.

Figure 2.6: Implementation of Game-Based Learning in Racing Academy in University of Bath

2.6 Learning Theory

Basically, game-based learning was developed referred to learning theory of learners. According to Schuman, (1996) there are three basic learning theories which are behaviorism, cognitivism and constructivism. The behaviorism learning theory based on observation on behavior changing and it is focuses on a new behavioral pattern being repeated until it becomes automatic. For the cognitivism theory, it is based on the thought process behind the behavior. Changes in behavior are observed, and used as indicators as to what is happening inside the learner's mind. The constructivism based on the premise that constructed at perspective of the world, through individual experiences and schema. It is focuses on preparing the learner to problem solve in ambiguous situations.

2.7 Usability

Usability is the extent to which the product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use (Bevan, 2001 and Hollowgrass, 2008). The definition explains on how to identify information which is necessary to be taken into account when evaluating usability in terms of measures of user performance and satisfaction. It also explains on how measures of user performances and satisfaction can be used to measure how the components of the work system affect the quality of the whole work system in use.

Bevan (2001) had come out with a quality model which defines metrics for usability and quality in use as per Figure 2.7.

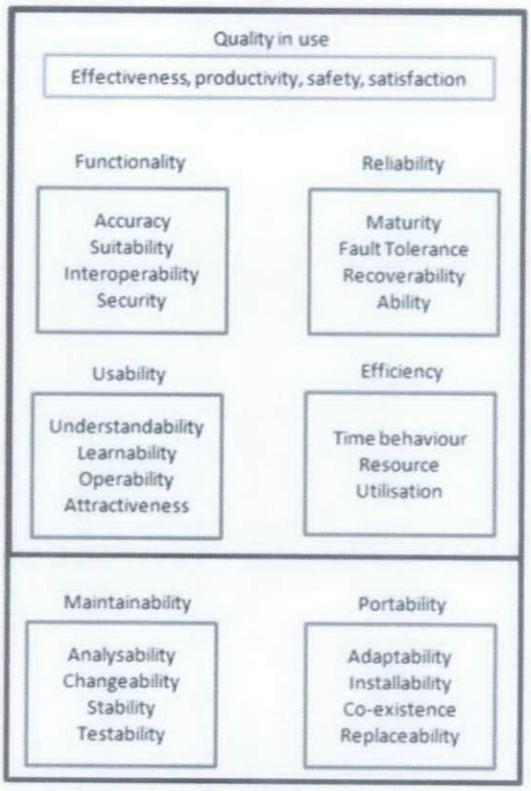

Figure 2.7: Quality Model

CHAPTER 3
METHODOLOGY

This project run based on incremental development life cycle model. The incremental model was chosen because of several benefits which the development of the game will focused on the high-risk or major function of the software first. Then slowly add increased functionality of the software until meet the final requirements. The benefits are the software will deliver faster and bring it to next phase. It also can reduce the risk of requirement changing where the main requirement has been developed in the earlier phase. Furthermore, the model is used to accommodate requirements changes or evolved during the evaluation of the software. It will give the frequent adaptation to alternative designs and revised models so that further enhancements will be made, if needed. In this Incremental methodology, it consist five phases which are planning, analysis and design, development, quality assurance and evaluation. The five development phases are summarized below.

Figure 3.1: The Incremental Model

3.1 Phase 1: Analysis

This project will initiate on the analysis that related with the title project proposed which is History Game-Based Learning where it is the crucial phases. The analysis of the project material can be varying which is the analysis on:

- The problem in history teaching and learning.
- The modules of the history subject.
- The suitable game-based methods to be adopted in history teaching learning.
- The requirement of the game to meet the satisfactions of the learners in the game play.
- The suitable software to develop the game.
- The design and the idea of the game.

Basically the sources of analysis are from related preliminary report or journal. An interview and questionnaire will be conducted if there is any relevant information needed. Then, the type of game platform will be analyzed to determine whether to use mobile phone platform, television platform or computer platform.

3.2 Phase 2: Design

After analyze all materials involve, the design phase will come out. In this phase, game method has been determined. The important part in design phase is to determine the game design and teaching strategy which is how the teaching will deliver to the learners to achieve the subject learning outcome. The game design will be developed based on several components such as are game story's background, rules, immersive, enjoyment, feedback, multimedia technology, challenge and competition and reward or award.

The storyboard of the game will created based on the module of the history subject. All the characters and environment involved in the module of the subject will be extracted and listed. This is means that design art of all characters involved will be

sketched. For example, in the module one of the subjects which is *Pengasasan Kesultanan Melayu Melaka*, a character involves is Parameswara, The Prince. The character will be listed and draw. All suitable multimedia elements such as text, graphic, audio and video will be determined for every scene in the game.

There are two tools involve in making the game which are expected to used in this project. First is Adobe Photoshop. This tool is used to design the art of the game such as the characters and environments. The second tool is Adobe Flash and SwishMax which is used to program or develop the game functions. The functions involve in this tools is to make the game interactive with clicking button and creating animations. The programming language involve is Action Script.

3.3 Phase 3: Development

In the development phase, all theories during the previous phase will be used or referred to make the working prototype. The content and interface of the game will be developed and all codes will be implemented to create the game function by using Adobe Flash. The type/method of game will determine and finalized. All the history characters will be modeled and finalized using Adobe Photoshop. The selected multimedia elements will be used to develop the prototype of the game.

3.4 Phase 4: Quality Assurance

In this phase, the quality of finish prototype will be tested. It will be tested by play testing which alpha testing and beta testing will be conducted. To make sure it is pass the alpha testing, the game can be played the beginning until the end. For beta testing, it is to conduct whether the game have errors or not. In the beta testing, the tests are conducted to generate results that determine the usability of the developed game.

Usability testing need to be conducted regarding to this project in order to determine either the developed project had met the three important element of usability. The three important elements are:

- Efficiency, either it is easy for users to apply back the knowledge once they have learned regarding the design or the architecture of the project.
- Learnability, either it is easy for users to accomplish basic tasks the first time they encounter the design or the architecture of the project.
- Satisfaction, either the design of the interface is pleasant to the user's eye.

The tools required to do the test are, computer to execute the game and a small room.

3.5 Implementation and Evaluation

For the evaluation purpose, the prototype of the game will be tested completely by target users. The testing will be conducted in a school where several students were evaluating on the usability of the prototype.

3.6 Project Gantt Chart

Below is the timeline for every phase of the project:

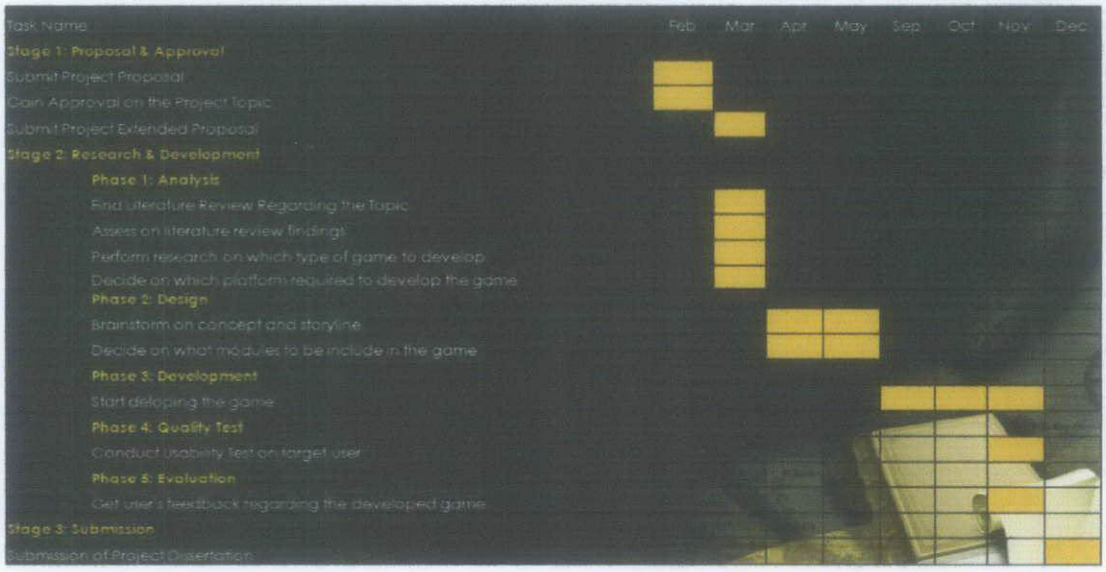

Figure 3.2: The Gantt chart

CHAPTER 4
RESULTS AND DISCUSSIONS

After making research with regards to the game – based learning (BGL), the author had come out with ideas or concepts on how the game will be structured and developed based on all data and requirements received.

4.1 Conducting Interview/Survey

To decide what modules to be implemented in the games, an interview are conducted. It is also to identify problems regarding the history teaching and determine what the most preferred genre of the game. The interview is conducted by asking questions through email.

4.2 Interview Contents

The author had conducted an interview session with En. Zamri Talib, a teacher from SMK Kemumin, Kota Bharu, Kelantan. Below are the results being obtained from the interview session.

1) In your opinion, is the subject of history is a subject that is difficult for students?

Difficult for students because now students are lazy to read factual books, but if you do properly, it is a simple way to teach especially if using a variety of teaching techniques, such as games and others.

2) When you teach, what are the challenges that had to face to ensure that students fully concentrate when learning?

For my class, students are interested for using power point and there are various techniques for attracting students with active participation in learning sessions.

3) Some believe that learning-based interaction games (Game Based Learning) can further encourage student interest in learning, what is your view or opinion if the game is implemented for the learning in history?

It is a good idea. There is one that used it and it embedded to a blog on the internet. Tt is very interesting and students are preferred to study with that method for history.

4) The following is lists of chapters from form one of history syllabus, please indicate the number of each title according to the level of difficulty of that chapter:

(Numbers from 1 to 10 where 1 is the easiest and 10 is the most difficult chapter)

Sejarah dan Kita [1]
Zaman Prasejarah di Malaysia [3]
Kerajaan Awal di Asia Tenggara [2]
Pengasasan Kesultanan Melayu Melaka [2]
Kegemilangan Melaka [2]
Kemerosotan Melaka [3]
Johor Menegakkan Semula Kewibawaan Kesultanan Melayu Melaka [9]
Kerajaan Negeri-negeri Melayu [9]
Warisan Kesultanan Melayu [6]
Sarawak [10]
Sabah [9]

5) The chapter on the subject of history, select the three chapters that you want to be implemented in the education-based games.

Chapter 4, chapter 5 and chapter 7

4.3 List of Modules in History for Form One

The modules of the subject need to be determined for the prototype of History Game-Based Learning. Only three modules of history subject will be chosen. This is because of the time constraint to develop the game. Below are the complete lists of history subject's modules:

1. Sejarah dan Kita
2. Zaman Prasejarah di Malaysia
3. Kerajaan Awal di Asia Tenggara
4. Pengasasan Kesultanan Melayu Melaka
5. Kegemilangan Melaka
6. Kemerosotan Melaka
7. Johor Menegakkan Semula Kewibawaan Kesultanan Melayu Melaka
8. Kerajaan Negeri-negeri Melayu
9. Warisan Kesultanan Melayu
10. Sarawak
11. Sabah

4.4 The Modules Selection

As mention, this project focus on secondary school students in forms one. The modules of the subject are based on History subject of Malaysia Syllabus for Secondary School (KBSM). As a results of conducted interview, there are three modules of subject most preferred to include in the game and this project will be focused which is Founding of the Malacca Sultanate (*Pengasasan Kesultanan Melayu Melaka)*, The glory of Malacca (*Kegemilangan Melaka)* and Deterioration of Malacca (*Kemerosotan Melaka)*.

In the modules, it tells the history of the early days of the Melaka state where a prince of Palembang wants to restore his kingdom from the reign of Majapahit. In this module also tells how Melaka achieve the glory and fall under the authority of colonial. From the summary of the modules, the expected game method is the adventure game with the problem solving method.

4.5 Design and Early Sketches

Before the game designed, the flow of the game is determined. Below is the flow of the game:

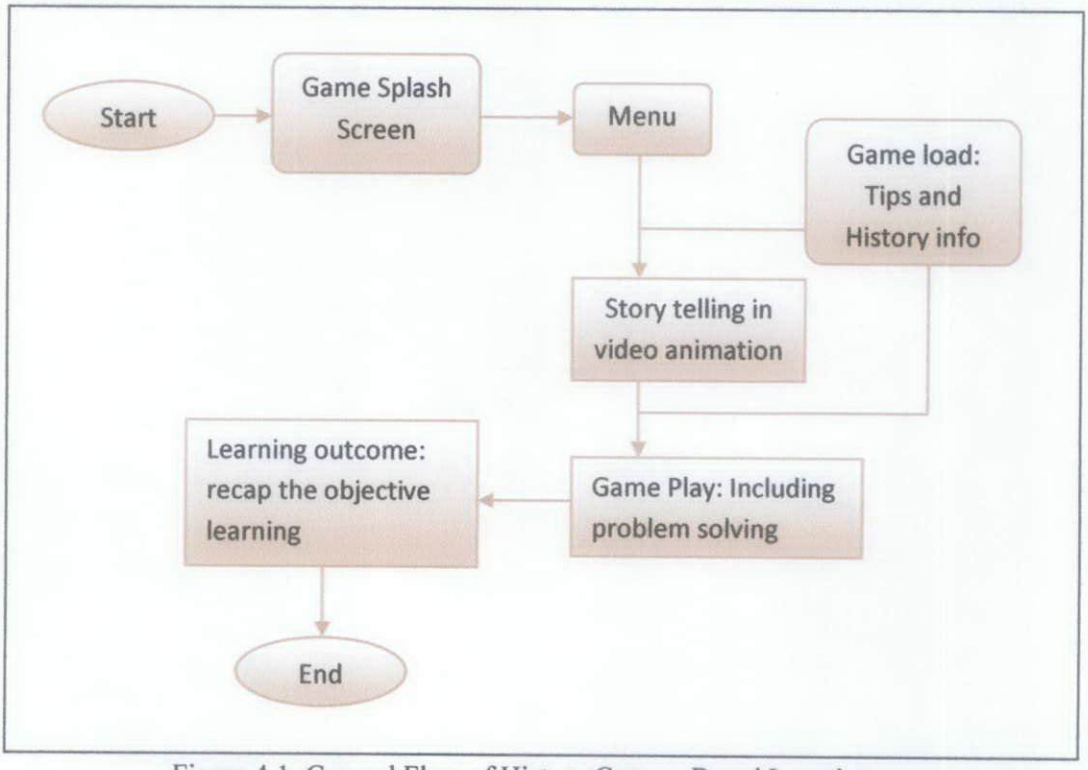

Figure 4.1: General Flow of History Game – Based Learning

4.5.1 Splash Screen Design

A splash screen is an image that appears while a game or program is loading. It is to tell the learner the game is loading rather than wait without splash screen and the learner will assume the game is not open or not work. Below are the sketches of splash screen of the game:

Figure 4.2: Game Splash Screen (early sketches)

4.5.2 Characters Design

There are four phases in characters design which are sketching, stroke, cleaning and drawing.

Phase 1: Sketching

A character will be sketch by using pencil and paper or tablet pc. The character sketched based on storyline.

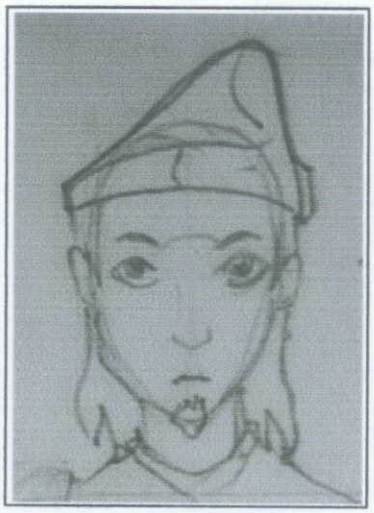

Figure 4.3: Character Sketches

Phase 2: Stroke

The character then will be transfer into Adobe Flash software to be sketch by using line tools to make character more precise.

Figure 4.4: Stroking Character

The sketch of character will be cleaned.

Figure 4.5: Character Cleaning

Phase 4: Drawing

The character drawn and put the realistic effects such as shadow effects. After this phase, the image/picture of the character is ready to animate and used for game purpose.

Figure 4.6: Drawing Character

4.5.3 Game Play Design

Figure 4.7: Sketch of Video/animation

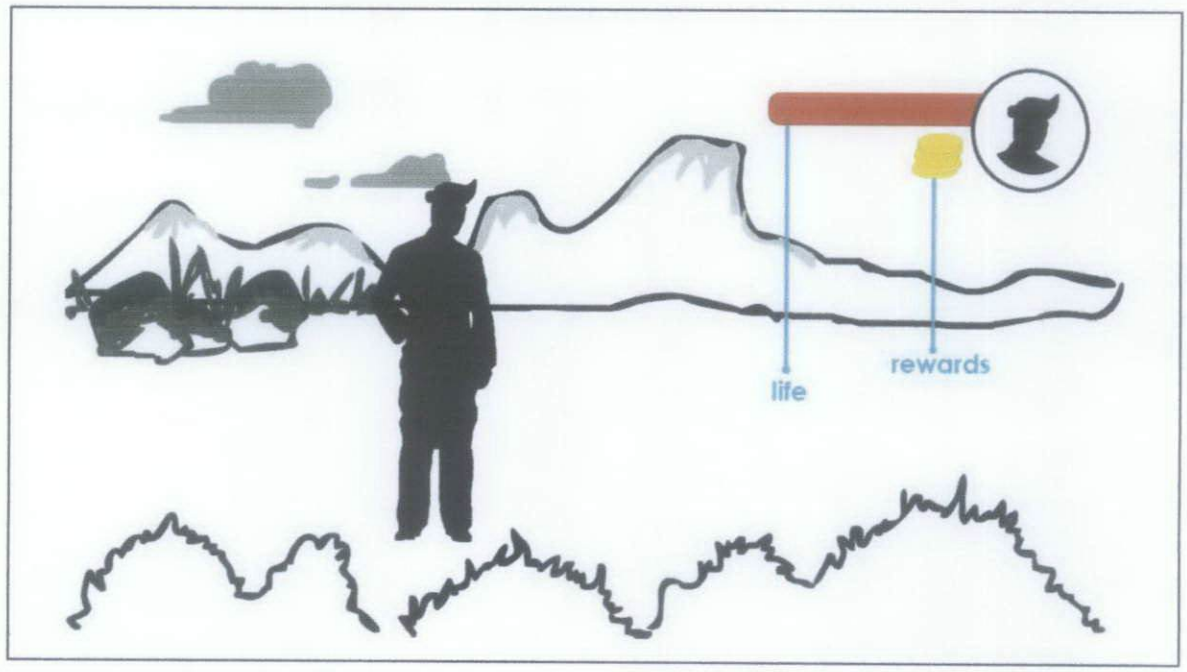

Figure 4.8: Sketch of Game Play

4.6 Project Deliverable

The project planned is currently executed upon prior comments gained from supervisor and people around. Below are the details of the game flow and interfaces.

4.6.1 Game Flow

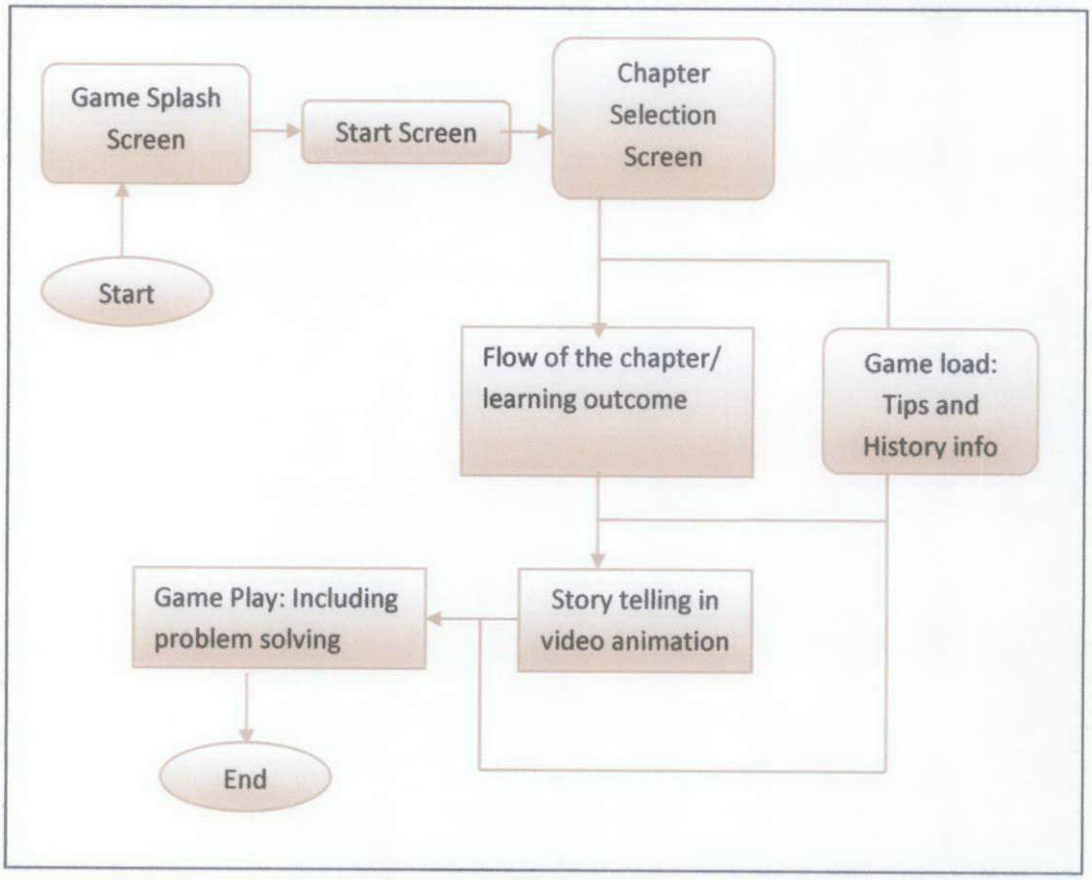

Figure 4.9: Game Flow (Final)

4.6.2 Start Screen

Figure 4.10 is the start screen of the History Game – Based Learning main interfaces or screenshots of the game. The Start Screen contain Start button where it will redirect to next screen which is Chapter Selection Screen.

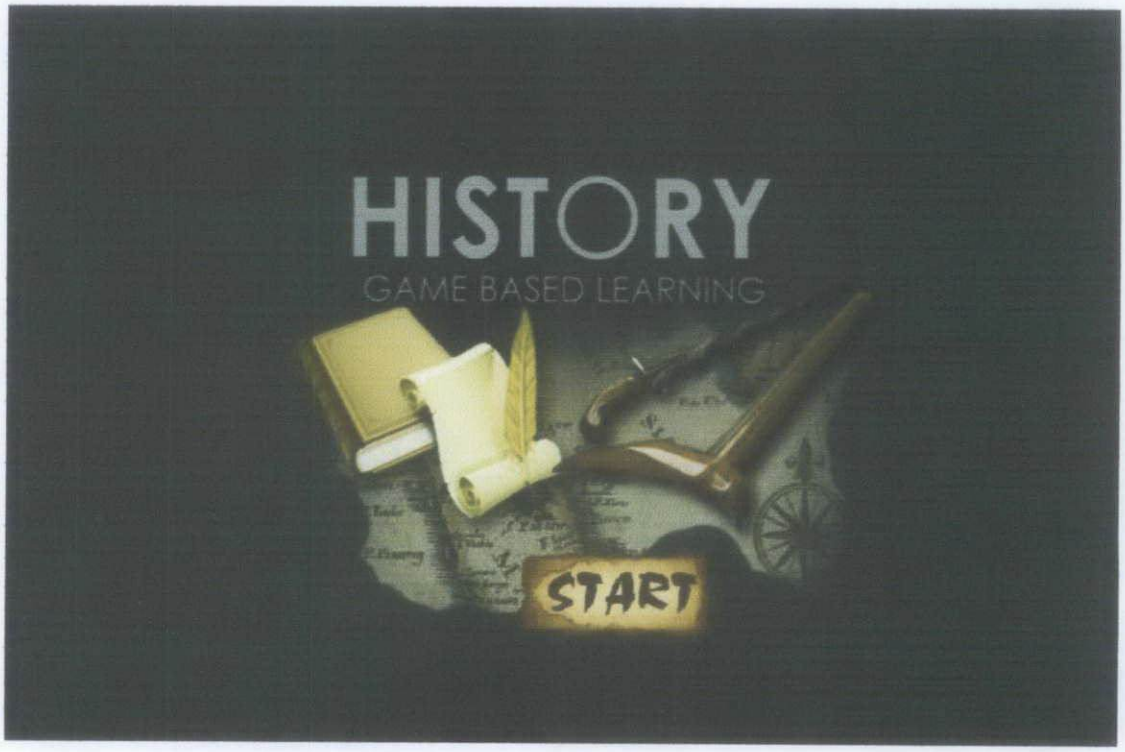

Figure 4.10: Game Start Screen

4.6.3 Chapter Selection Screen

Figure 4.11 shows the Chapter Selection Screen of History Game-Based Learning. This will be the screen where user can choose chapter to play. The titles of the chapters are according to history syllabus. For the prototype of this game, user can choose only three chapters as it is the requirement of the project.

Figure 4.11: Chapter Selection Screen

4.6.4 Chapter 4 Game Interface

Figure 4.12 depict the Start Screen of chapter 4 with title of the chapter. It is important show the start screen to ensure the users know where they are.

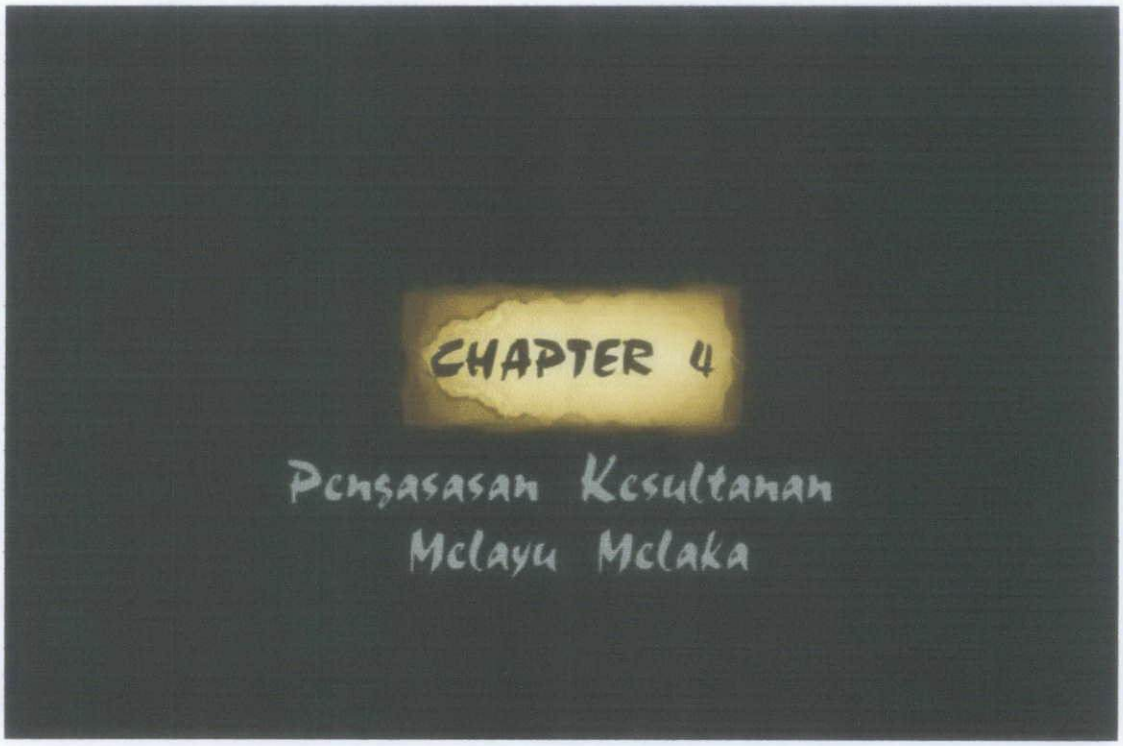

Figure 4.12: Chapter 4 Start Screen

4.6.5 Flow of Learning Interface

Before users can proceed to play the game, the flow of learning interface will appear first to give a teaser or let users know what will happen in the game. It is also can be as the summary of the chapter. See Figure 4.13.

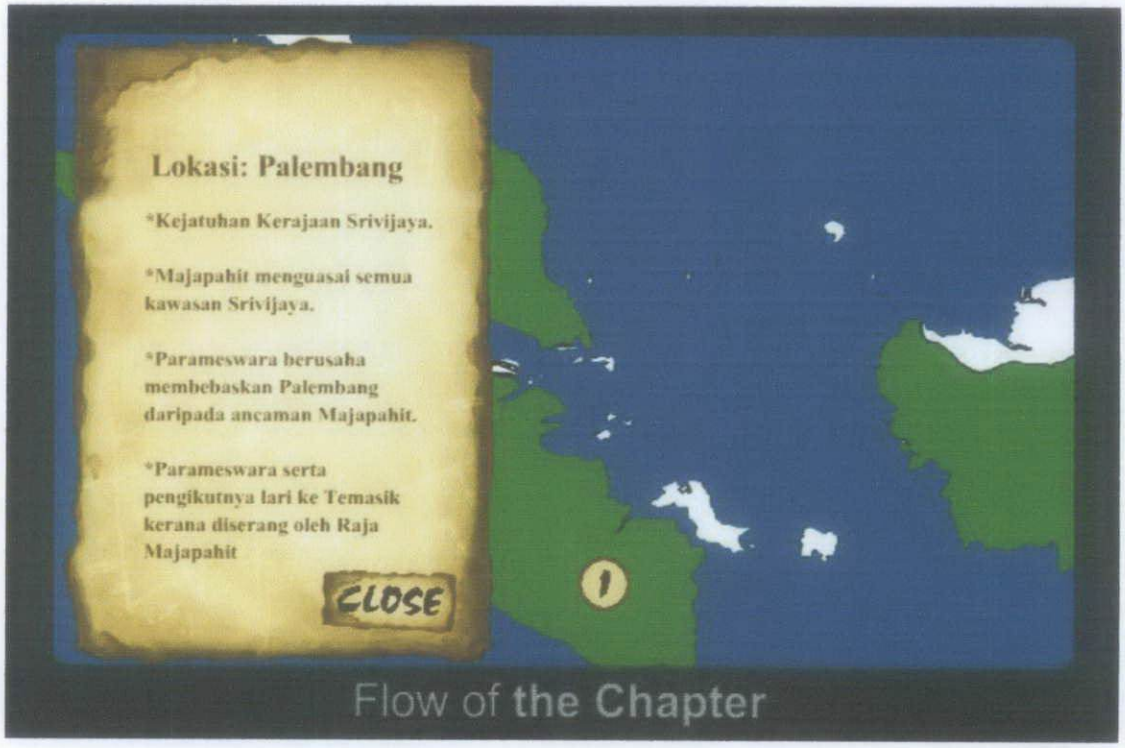

Figure 4.13: Flow of the Chapter

4.6.6 Main Screen

Figure 4.14 and 4.15 is the Main Screen of the game. Users will be spending most of their time in this interface. The users can move the main character by clicking the playable area in the game. The dialog will appear if there are interactions in every region. There are three tools on left side below the screen which is Save, Options and Inventory button.

However, the game not be implemented only in adventures method, it will be in quizzes or puzzle depend on the chapter. This is because not all chapters are suitable to be implemented in adventures genre of game.

Figure 4.14: Main Screen (1)

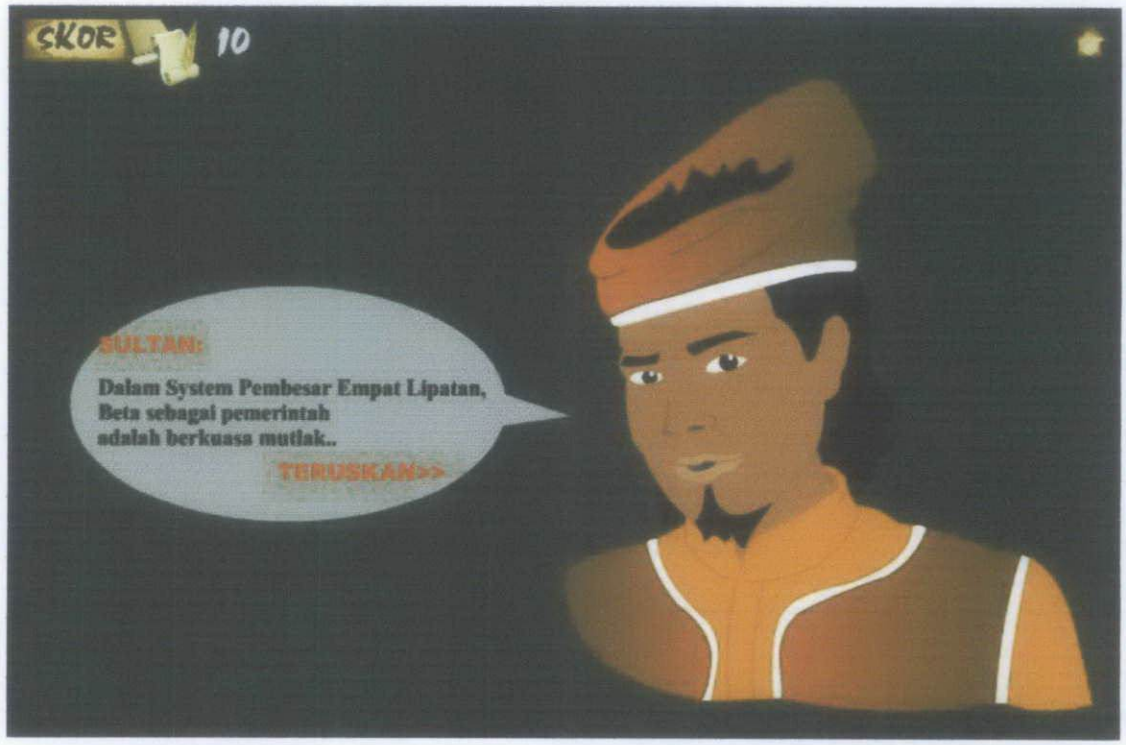

Figure 4.15: Main Screen (2)

4.7 Usability Testing

By referring to Chapter 3.3, the usability testing has been conducted to a group of 20 of student in Sekolah Menengah Kebangsaan Subang. Each of the participants is free to explore the system until they satisfied with the exploration.

After the participants satisfied, they were given a set of questionnaire that related to the elements of usability. Figure 4.16 shows the results of the usability testing that being conducted.

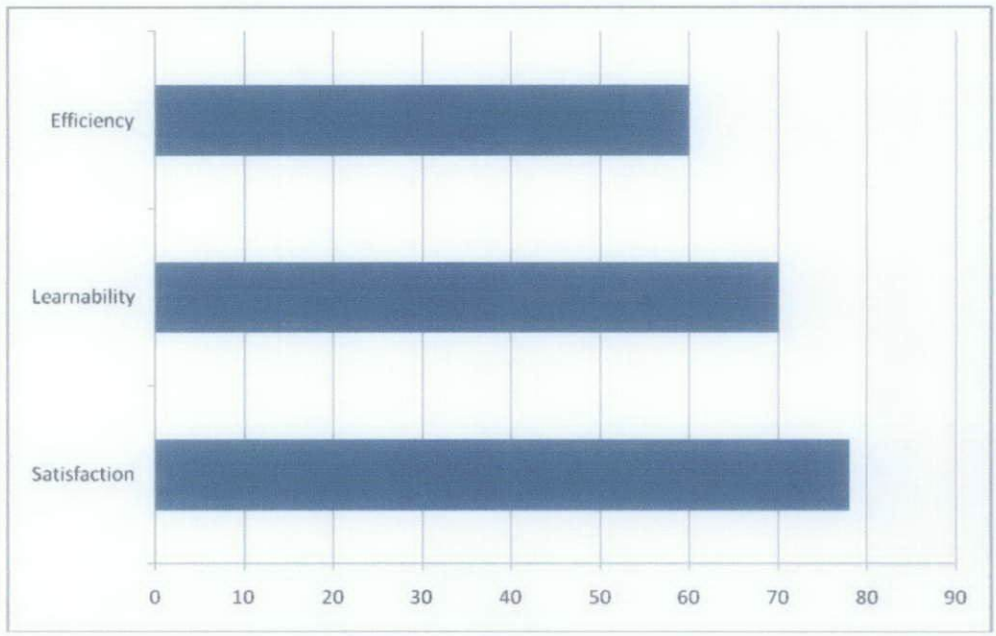

Figure 4.16: Bar Chart of Usability Testing Results

Figure 4.16 show that the percentage of the usability testing which focusing on three types of elements which is Efficiency (60%), Learnability (70%) and Satisfaction (78%).

From these results, the researcher had discovered the main problem for the game is the lack of the effiency. There were certain function buttons that were not properly functioned. Apart from that, errors occur during the usability testing which require a modification in the technical side.

For overall of the game presentation, many participants are satisfied with the flow and the design of the game and a few of them suggest putting more animation.

CHAPTER 5
RECOMMENDATIONS AND CONCLUSIONS

After the project presentation, there is feedback from the examiner that might be improving the efficiency of the game. The game need improved by putting more on animation of the cartoon character. This might be attracting user as they thought the cartoon animation talk to them.

To commercialize the game, the content of the game must be in English version. With that, the target audience can be global. Furthermore, it would be interesting if the game can be implemented in mobile application. This is because, nowadays people have their own smart phone and even parent buy it for their children.

In conclusion, this project History Game - Based Learning is the initiative for education learning where it is another platform in history teaching to make learning process more effective and fun. The use of ICT in this project is because of it follow the generation where ICT now acceptable in all ages. Instead of using a reading material, this project will come out with the prototype of game history learning based on interactive animation where it is expected more interesting and fun for education.

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APPENDICES

Usability Testing Questionnaire

This questionnaire is intended in providing the researcher valuable information with regards to his Final Year Project which is History Game – Based Learning. This questionnaire will be evaluating respondent opinion with regards to the usability of the game developed which will be divided into three main categories, which are learnability, efficiency and satisfaction.

This questionnaire contains 4 sections. Please **circle** the option which would best describe as yours:

1) Background

1. The final result (A B C or D) which you have achieved for history.

   A B C D

2. Your motivation in learning history, giving 5 is the highest

   Not motivated at all **Very motivated**

   1 2 3 4 5

3. The best describe your tendency in playing games during leisure time, giving 5 is the highest:

   Not interested in games **Playing games all the time**

   1 2 3 4 5

4. Do you like history?

   Not interested **Very Interested**

   1 2 3 4 5

2) Evaluation on efficiency

1. How fast can you grab the concept of the game? e.g. the storyline:

Very slow				**Very fast**
1	2	3	4	5

2. Is it easy for you to find the functional button in the game? e.g. back button

Very difficult				**Very easy**
1	2	3	4	5

3. Is it easy for you to understand the words design on the game?

Very difficult				**Very easy**
1	2	3	4	5

4. Describe the overall efficiency of the game, which is the easiness to perform back the concepts learnt.

Very difficult				**Very easy**
1	2	3	4	5

3) Evaluation on learnability

1. Is it easy for you to be able to understand the instruction given on the game?

Very difficult				**Very easy**
1	2	3	4	5

2. Is it easy for you to get the concept of the game when you first try it?

Very difficult				**Very easy**
1	2	3	4	5

3. Is it helping you to understand in your learning?

Very difficult				**Very easy**
1	2	3	4	5

4. Rate the overall easiness to play the game.

Very difficult				**Very easy**
1	2	3	4	5

4) Evaluation on satisfaction

1. Rate the pleasantness of the game's interface, such as the location of the button.

Very unpleasant				**Very pleasant**
1	2	3	4	5

2. Rate the pleasantness of the game's color to the eye.

Very unpleasant				**Very pleasant**
1	2	3	4	5

3. Rate the pleasantness of the game's delivery.

Very unpleasant				**Very pleasant**
1	2	3	4	5

4. Rate the research implementation, either it is suitable to be implemented or not?

Very unpleasant				**Very pleasant**
1	2	3	4	5

Sample of codes implemented to develop the game.

Action Script Language

To make sound, when mouse cursor at the button:

```
on (rollOver) {
   playSound("button");
}
```

To able button work:

```
on (press) {
   gotoSceneAndPlay("Sponsor",141);
}
```

Drag and Drop Function:

```
on (press) {
   nummer1.startDragUnlocked();
   check="";
}
on (release,releaseOutside) {
   stopDrag();
   if (nummer1.isNearTarget(box1._target)) {
      nummer1._x= 131.45;
      nummer1._y= 71.4;
      check="Betul";
      iColor = new Color( box1 );
      iColor.setRGB(0XD28827);
      score = score + 2;
      scoreNum = score;
      currentPoint = currentPoint + 1;
       if (currentPoint == 5){
         gotoSceneAndPlay("popUp",35);
```

```
    }
  }
  else {
    nummer1._x= 551.55;
    nummer1._y= 116.5;
    check="Salah, cuba lagi";
    iColor = new Color( box1 );
    iColor.setRGB( 0XDDDDDD );
    score = score - 1;
    scoreNum = score;
  }
```

Scoring Function:

```
on (press) {
  gotoSceneAndPlay("Sponsor",140);
  totalScorevar = score;
```

Sample of character design