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Learning History with the Help of Stick Figures

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ABSTRACT

Nowadays school students are having less interest in learning and reading from textbooks. Textbooks are considered mundane and not attractive thus fail to capture students' attention. Therefore, the use of textbooks needs to be supplemented with some other interesting means. Thus, the idea of creating animated learning application would be useful as it can be one of the alternative ways to attract students in their learning process. This application may attract students' attention and assist them to better understand the learning subject. This application introduces the usage of stick figures in the teaching and learning process of history subject among form one students. By implementing stick figures which are simple and easy to draw, it may engage students' interest in learning history. Therefore, this application may overcome the problem of using textbooks in school which is boring and mundane. Thus, it is hoped that students will be more interested in learning and gain better knowledge through the use of this application.

TABLE OF CONTENTS

LIST OF FIGURES	iii
LIST OF TABLES	iv
ABBREVIATIONS AND NOMENCLATURE	v
CHAPTER 1: INTRODUCTION	
1.1 Background of Study	1
1.2 Problem Statement	2
1.3 Objective	4
1.4 Scope of Study	4
CHAPTER 2: LITERATURE REVIEW	
2.1 Transforming our Educational System	6
2.2 Edutainment using Stick Figures	7
2.3 Learning Theory	8
2.4 Related Works	9
CHAPTER 3: METHODOLOGY	
3.1 Iterative Development Methodology	11
3.2 Study Plan	14
3.3 Proposed Architecture	15
CHAPTER 4: RESULTS AND DISCUSSIONS	
4.1 Results and Findings	16
4.2 Workflow	17
4.3 Storyboard	18
4.4 System Design and Implementations	19
4.5 System Evaluation	26
CHAPTER 6: CONCLUSION	
6.1 Relevancy to the Objectives	30
6.2 Suggested Future Works for Continuation	31
REFERENCES	32

LIST OF FIGURES

Figure 3.1	Five stages in Application Development	11
Figure 3.2	System architecture	15
Figure 4.1	Flowchart of the system	17
Figure 4.2	Home interface	18
Figure 4.3	Chapters interface	18
Figure 4.4	Exercises interface	19
Figure 4.5	Design tab	20
Figure 4.6	Code tab	20
Figure 4.7	Split tab	21
Figure 4.8	Home page	21
Figure 4.9	Learn page	22
Figure 4.10	Test page	22
Figure 4.11	Chapter 4 in Learn tab	23
Figure 4.12	Chapter 4 in Test tab	23
Figure 4.13	Using Pivot Animator to create the stick figures	24
Figure 4.14	Sony Vegas Pro 10.0 default page	25
Figure 4.15	Sony Vegas Pro in use	25
Figure 4.16	Question 1	26
Figure 4.17	Question 2	26
Figure 4.18	Question 3	27
Figure 4.19	Question 4	27
Figure 4.20	Question 5	28
Figure 4.21	Question 6	28
Figure 4.22	Question 7	29

LIST OF TABLES

Table 1.1	Result of History in PMR 2010 and 2011	3
Table 2.1	Comparison between the three applications	10
Table 3.1	Study Plan for Final Year Project	14
Table 4.1	Result of interview	16

ABBREVIATIONS AND NOMENCLATURES

GPA	Grade Point Average
ICT	Information and Communication Technology
KBSM	Kurikulum Bersepadu Sekolah Menengah
MOE	Ministry of Education
PMR	Penilaian Menengah Rendah

CHAPTER 1: INTRODUCTION

1.1 Background of Study

Nowadays, the usage of computers in daily life has increased rapidly as people are becoming more familiar with the use of technology. These technologies ease human life in many ways. For example, computers assist human in forest management and yield prediction system for plantation as mentioned by Wild et al. (2001). Moreover, in the medical field, Glenda et al. (2009) stated that the usage of computers have enhanced the medical field greatly as they help to manage the patients' information, monitoring, diagnosis and many more.

Although the use of computer covers various fields, this research work will only focus on the usage of computer in the education sector. This study aims to understand how the use of computer improves students' interest to study the subjects that they are learning. This is supported by Valdemar (2000) who mentions that the usage of computer aid in the development of human brain. He also mentions that computer makes users to be more mature and learn faster as compared to not using them. Additionally with the usage of computer, it is also believed that the use of computer improves human brain development and it helps kids in thinking and reasoning (Valdemar, 2000).

Moreover, having computer applications will be an added advantage as it attract students' interest and offers more interactive kind of learning. This kind of learning is known as 'edutainment'. Edutainment is a combination of education and entertainment which is referring to learning (or education) with entertainment. Student will get attracted and be more interested in studying about the subject that they are pursuing through edutainment (Sabella R, 2010). This is an important factor because students always get attracted to video games as compared to reading and studying textbooks. Games are considered an entertainment to them. Therefore, combining entertainment with education will definitely attract students to learn better. This is supported by Sabella R. (2010) who stated that an effective edutainment will help students to learn easily as they are often engaging and entertaining.

1.2 Problem Statement

School kids have less interest in studying and reading textbooks that are currently being used in our education system (Mz. Nor Azan & Sy. Wong, 2008). This is simply because those textbooks that they use are less interactive and does not attract their attention. Compared to video games that are available at home, they would prefer to play those games since they are often interactive and engaging to them. Due to the nature of textbooks which are plain and unattractive, students are more attracted to video games. Hence, they become lazy to study and fail to do their homework since it is hard to comprehend textbooks. This is supported by Dr. Aldo Reglado (2013) who claims that he never use any textbooks in his entire life of learning process because they are just too plain and boring.

Furthermore, textbook is not just boring and less interactive, but it can be a burden to small students. As we can see, textbooks are getting thicker as a lot of content are added and updated to it. This is supported by David Cutler (2013) who mentions that “*Textbooks have become even larger since 1995*”.

However if student managed to study using computer learning application or edutainment, they only need to have a simple notebook which is easy to carry around. This is reinforced by Elizabeth F. (2012) who stated that less usage of textbook would ease students, and helps the environment as there are about four billion trees being chopped down yearly to print papers and books.

Subject	Year	% of total candidate					No. of candidates	GPA
		A	B	C	D	E		
History	2010	21.3	19.8	20.9	30.6	7.3	438500	2.83
	2011	20.4	19.6	26.1	29.2	4.7	440139	2.78
	Difference	-0.9	-0.2	5.2	-1.4	-2.6	1639	-0.05

Table 1.1: Result of History in PMR 2010 and 2011

Based on the statistics from MOE (refer to Table 1.1), the number of candidates who achieved A in history subject decreased by 0.9% in 2010 as compared to the year 2011. Additionally, the Grade Point Average (GPA) of history subject in PMR has also decreased by 0.05 in 2010, which were 2.83 to 2.78 in 2011. This shows that history subject needs some improvement in terms of teaching and learning.

1.3 Objective

The objective of this study is as follows:

- a) To analyze existing learning theories that is suitable for teaching and learning history subject.
- b) To examine ways that can capture students' interest and motivation to learn history subject.
- c) To develop a web application for form one history subject.
- d) To assess the effectiveness of the history learning application with the target audience.

1.4 Scope of Study

1.4.1 Form 1 students

The target audience of the history application is form one students in Malaysian schools. These students will be taking Penilaian Menengah Rendah (PMR) examination following the current KBSM education system. As mentioned by one of the teacher interviewed, *"... in order to attract interest of [our] students', it must be done at the earlier stage so that it will be easier later on ..."*

1.4.2 Chapter 4, 5 and 6

The chapters included in the history application are: Chapter 4; Pengasasan Kesultanan Melayu Melaka, Chapter 5; Kegemilangan Melaka and Chapter 6; Kejatuhan Melaka. These three chapters are included because it was mentioned by teachers that these three chapters are considered as important in form one syllabus. Even though the chapters are quite interesting however with the usage the textbooks, teachers still fail to attract students' attention. As stated by Mr. Abdul Kuddus, *"... the students are usually can focus only on the first fifteen minutes of the class and after that, they are gone [lose focus in the subject and chapter being taught] ..."*

1.4.3 Web based portal

This history application will be distributed or published in web based form. This is because as requested by the teachers of Sekolah Menengah Sultan Abdul Jalil Shah, students and teachers needed web based application for learning and teaching purposes. As mentioned by one of the teachers, “... *in this school we are going paperless. Therefore students are encouraged to use computer and web based learning... we have a computer lab with internet facilities which are available to be used by our students...* ”

CHAPTER 2: LITERATURE REVIEW

2.1 Transforming Our Educational System

A study has been conducted by Azan and Wong (2008) about the usage of multimedia in the current Malaysian education system. Firstly, the authors mention that history subject is a ‘dead’ and boring subject as one has to memorize facts, concepts and historical events instead of understanding them. (Azwan et al (2005), Azan & Wong, 2008). Secondly, they highlighted that ICT have been developing fast and in that time, it has been found that there are a lot of alternative and a more effective way of learning through ICT. Azan and Wong also stated that the usage of technology in teaching and learning process increases students’ enthusiasm as they are more interesting and makes history subject specifically ‘alive’.

In another paper, Tengku Shariman and Abdul Rahman (2007) found that multimedia storytelling approach for history subject would be very useful for students to understand the subject better. The authors mention that, *“They [students] found multimedia storytelling a useful and enjoyable activity for learning history”*. This shows that usage of multimedia in learning and teaching process for history subject may attract more students to be interested in the subject. They also mentioned that most students agreed that multimedia storytelling approach enhanced their attentiveness to learn history subject.

2.2 Edutainment using Stick Figure

Using stick figures is an easy way for people to understand about things which are often explained in long paragraphs and many pages. Studies have shown that it is often hard to explain and to understand text (Corbitt J L, 2012). Through pictures and animation it will be easier for people to understand a scenario. The easiest way to create pictures and animation for explaining is by using stick figures. In fact, stick figure is a universal thing that everyone recognizes. When someone looks at stick figures, they can easily make sense of it and it is applicable for learning. This is supported by the work of Theresa Liao (2012) who found that people have used stick figures in serious discussion, to explain research issues and for thinking. Therefore, this shows that stick figures suits many learning situation as it makes it easier for user to comprehend the subject being discussed.

Moreover, stick figures are simple, easy to draw and engaging. This has been proven by a history teacher in Europe, Greg Ahlquist who has been using stick figures in his history classes to teach his students. Since 2007 until now, which is about 7 years, the number of students that Greg Ahlquist had attracted has increased to about 61%. The improvement of percentage of the enrollment of student to his class shows that the method that Greg Ahlquist has been using which is implementing stick figures in teaching has attracted a large number of students.

Additionally, one of the students in Ahlquist's class said that he is not really good in drawing however that is not important as he is just using stick figures which are easy to draw and easy for students to understand. This proves that the usage of stick figures are easy and simple as someone who is not good in drawing can still deliver an effective teaching despite their drawing weakness. As Greg Ahlquist (2013) said, *"The drawings are simply a hook to the students to engage in subject matter and a way to get the information seared into their brain"*.

2.3 Learning Theory

Learning theory guides a person through the correct learning process. Additionally, it is also considered as a measurement in which one evaluates others' way of learning or receiving knowledge. This is supported by Alzhagoul (2012) who mentions that learning theory is an endeavor to define how people and animals learn thus helps in understanding complex processes of learning.

There are three main learning theories which are known as behaviorism, cognitivism and constructivism. Alzhagoul (2012) stated that these three theories have different focuses. First, behaviorism focuses only on objectively observable aspects. Secondly, cognitivism looks beyond the behavior and explains brain based learning. Lastly, constructivism interprets learning as a progression where learner constructs new ideas or thoughts.

Cognitive learning theory is suitable for learning and teaching history as stated by Miller and Sterns (1995). This is because cognitive learning is a theory that applies recognizes, recall and analyze approaches for the brain to absorb knowledge. This is supported by Alzhagoul (2012) who mentions that cognitive learning involves the use of memory, motivation and thinking that plays an important role in learning.

As cognitive learning focuses on the use of brain, memory and thinking, it is considered appropriate to be implemented in any multimedia medium for learning. However, not many multimedia applications succeeded in aiding students in their study. Kiili (2004) said that one of the main problems of multimedia learning is the memory capacity of a learner is often overloaded due to the excessive multimedia elements. Therefore, it is viewed that the use of stick figures should not be heavy with multimedia element and consequently will be able to help students to learn better.

Moreover, cognitive would be the most suitable theory for this animated application because it will be easier to for students to remember something which is familiar to them. Stick figures are familiar to everyone as they are used by many (Theresa Liao, 2012). This is also supported by Alzhagoul (2012) who mentions that cognitive learning is recalling something that we often see or happen to us.

2.4 Related Works

It was found that there are two other research papers that explore the ways to improve teaching and learning process of history subject in Malaysia. These two research work however have different ideas on how to attract students' interest towards the subject. Both of these works were similar in which they use multimedia in achieving their goals. In this case, it shows that edutainment could be the way to solve the problem.

It was also found that both of these researches are still exploring and has not completed the prototype for the application that was suggested in each paper. The first research paper explained about a game-based learning model for history courseware. This was done by Nor Azan MZ and Wong SY from Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia. This project started in 2008 and reported in their research paper entitled; Game Based Learning Model for History Courseware: A Preliminary Analysis.

On the other hand, the other paper was about a multimedia story telling application for students to study history subject. This multimedia story telling paper was authored by Tengku Putri Norishah Tengku Shariman and Fadilahwati Abdul Rahman from Faculty of Creative Multimedia and Centre of Knowledge Management respectively. Both authors are from Multimedia University, Selangor, Malaysia and the research work started in 2007.

This study has conducted a comparative study between these two research works with stick figures animated application, as shown in Table 2.1.

Research Papers Criteria	Game based learning model	Multimedia Story telling	Learning history with help of stick figures
Subject	History	History	History
Type	Courseware	Courseware	Web based
Advantage	Game based way of learning	Learn by watching stories of the event	Stick figures

Table 2.1: Comparison between the proposed application and the 2 previous works

Referring to Table 2.1, it can be seen that all these three application are focusing on history subject in Malaysia. However, the difference between this proposed research works with the other two projects is that this work is going to develop a web based application. It differs from two others as they are both developing a courseware. It is hoped that a web based application is a better solution since they are accessible any time. In fact, a web based application is now available almost anywhere because there are many platforms available that can be used to run the application thus helps students work better and learn faster.

CHAPTER 3: METHODOLOGY

This chapter explains about the stages that has been and will be taken through the development process of the history learning application. There are five stages altogether including the execution stage of the application. The next part will explain each and every one in more detail.

3.1 Development Phase

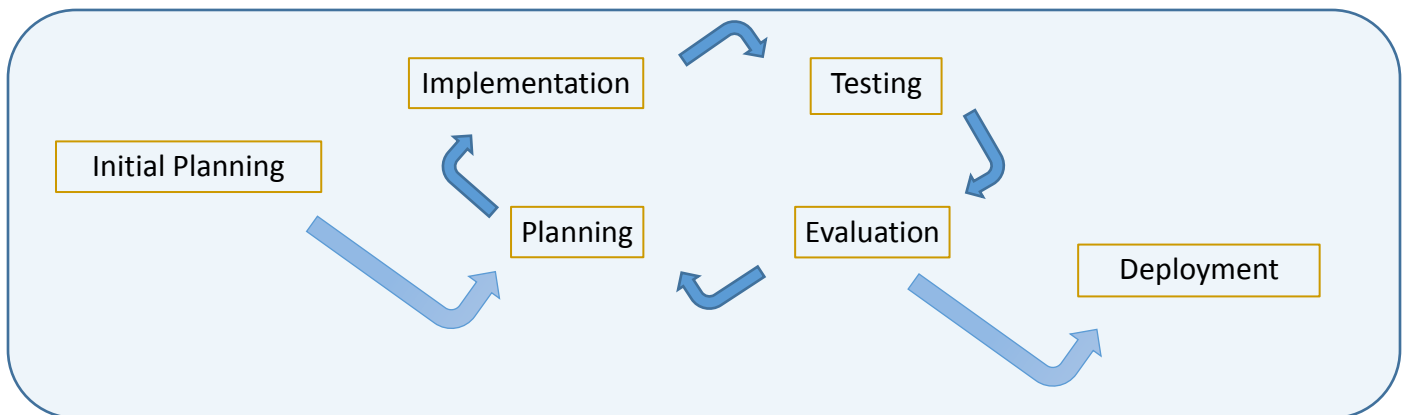


Figure 3.1: Iterative Development Methodology

3.1.1 Initial Planning

Initial planning is the first stage of developing the animated application. In this stage, information gathering is conducted. This includes gathering information on the syllabus of the form 1 history Malaysian education textbook. This is important to ensure that the application will not be teaching students different syllabus as compared to those they learn school. This is because the application is not something to replace the current education system yet it acts as a motivator for the students to learn and practice more. In addition, there are also research about the tool to be used to develop the application that includes the Pivot Animator and Sony Vegas for the video part and Adobe Dreamweaver as for the web development part.

3.1.2 Planning

As this application can be categorized as a story-based-game type of learning, the application obviously needs a storyboard on how the 'game' would be presented from the beginning until the end of the learning session. This stage mostly is used to craft the storyboard of the video to be created and also learning on using the software to develop the application. Crafting a storyboard for the application is one of the most important stages in developing the application. This is because storyboard would be the guideline in the development of the application and it is easier to view the whole learning process.

3.1.3 Implementation

This would be the stage where the development of the application takes place. Pivot Animator and Sony Vegas is used to create the application, the stick figures and animation. In order to complete the application, Pivot Animator and Sony Vegas skills for designing and editing are vital. Additionally as the application is web based, Adobe Dreamweaver is also required to develop the web interface for the application.

3.1.4 Testing

Testing stage is as important as the development stage because a complete prototype of the application must be tested before being marketed. Application that is developed needs to be tested so that the developer knows what is lacking and what needs to be improved to make it perfect. In fact, if there is any problem occurred during the testing stage, the developer will need to fix the errors.

3.1.5 Evaluation

After the testing stage is done, it is the part where the developer will evaluate the prototype that has been developed and really see whether it is ready or not. If there is still some more editing to be made, the development process will repeat again with planning on what to change and so on just like shown in Figure 3.1.

3.1.6 Deployment

Then, after everything stage in the repeat part is done and are already pass through the evaluation part, the web application is now ready to be deployed will then be available for the users. Students can use the animated history application to overcome the problem of not having interest in studying. In some circumstances, the maintenance of the application will also need to be monitored. Some updates may be required and some bug need to be fixed to make the application up-to-date following the current syllabus of the Malaysian education.

3.2 Study Plan

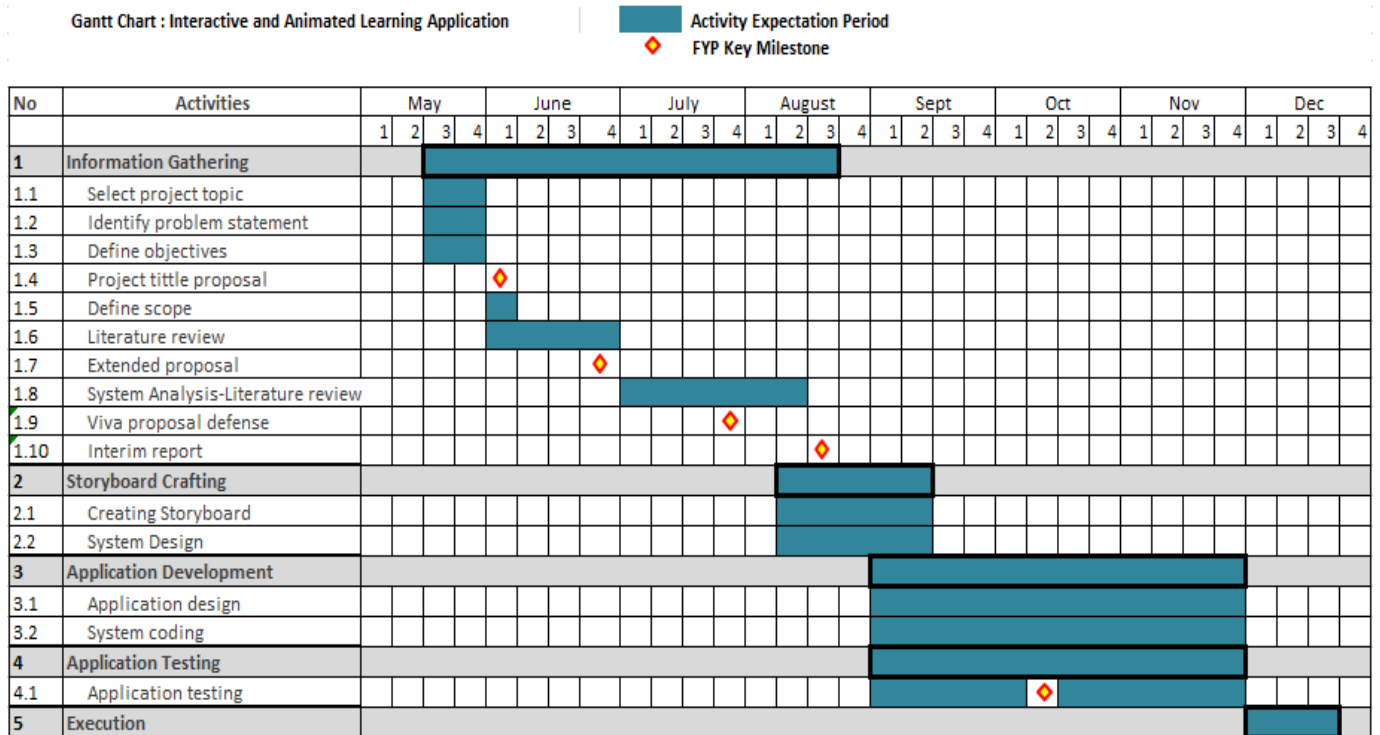


Table 3.1: Study Plan for Final Year Project

3.3 System Architecture

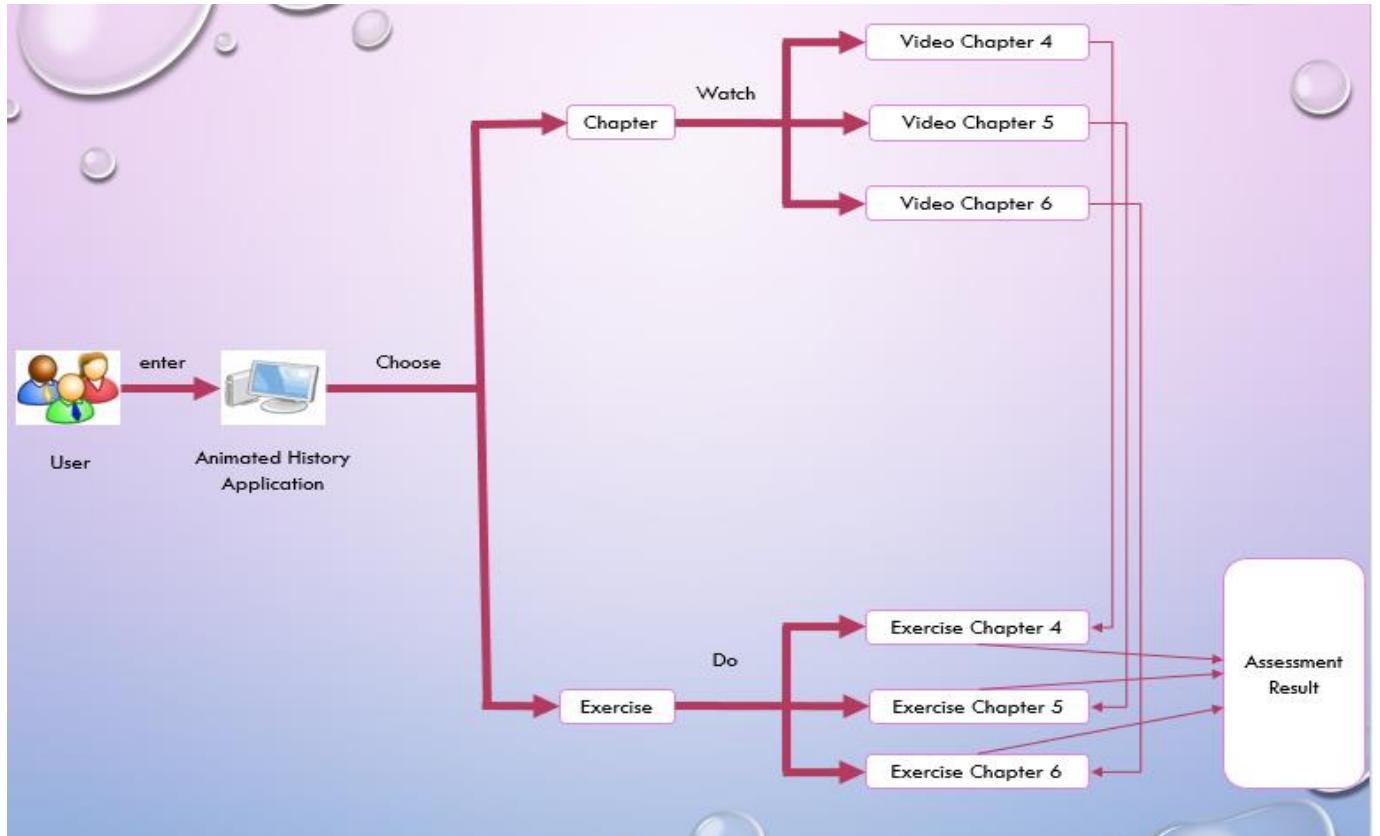


Figure 3.2: System architecture

Figure 3.2 shows the proposed architecture of the application. The flow of this web application is firstly once in the home page of the web there will be some information about the web page and also objective of the web application. There are four tabs on top of the page of the website; home, learn, test, assessment. However the main things that are explained in this proposed architecture is about two of the main functions of the web application which is learn and test tab which explains the 'chapter' and 'exercise' in Figure 3.2. In both of the pages of learn and test, there will be three topics of Sejarah for form 1 students. Last function is the assessment result function which was also on the tab. This page shows the result of the test the student taken.

CHAPTER 4: RESULTS AND DISCUSSIONS

This chapter explains about the current project implementation. In Section 4.1, the results of the interview are presented. Next, Section 4.2 explains about the system workflow which clarifies how the system flow is. Lastly, Section 4.3 is about the interface/storyboard of the application which shows the flow of the application with the aid of the idea of the interface that would be developed in the near future.

4.1 Research Findings

In order to collect more data related to the application that will be developed, an interview with a history teacher has been conducted. Besides that, the interview is also conducted to gather comments from the teachers about the application. For example, the author asked whether the animated application would be helpful in teaching and learning process of the students. Feedbacks were gathered during the interview as shown in Table 4.1.

Scope of interview	Teacher's answer
Comments on the current way of learning using textbook	<ul style="list-style-type: none">- Textbooks are boring and mundane- Too wordy makes it hard to understand- Students are not interested to study and learn
Comments on animated application	<ul style="list-style-type: none">- Animation can attract students' attention- Can attract students' interest to study- Students prefer to watch video as compared to reading text
Comments on the use of stick figure in animated application	<ul style="list-style-type: none">- Easy to create- Not costly- Does not require high skill in term of drawing and designing the animation
Suitable type for animated application	<ul style="list-style-type: none">- Web based- Accessible any time, any where

Table 4.1: Result of interview

4.2 Application Workflow

This section shows the flowchart diagram of the application. The flowcharts of the animated application system are as shown in Figure 4.1.

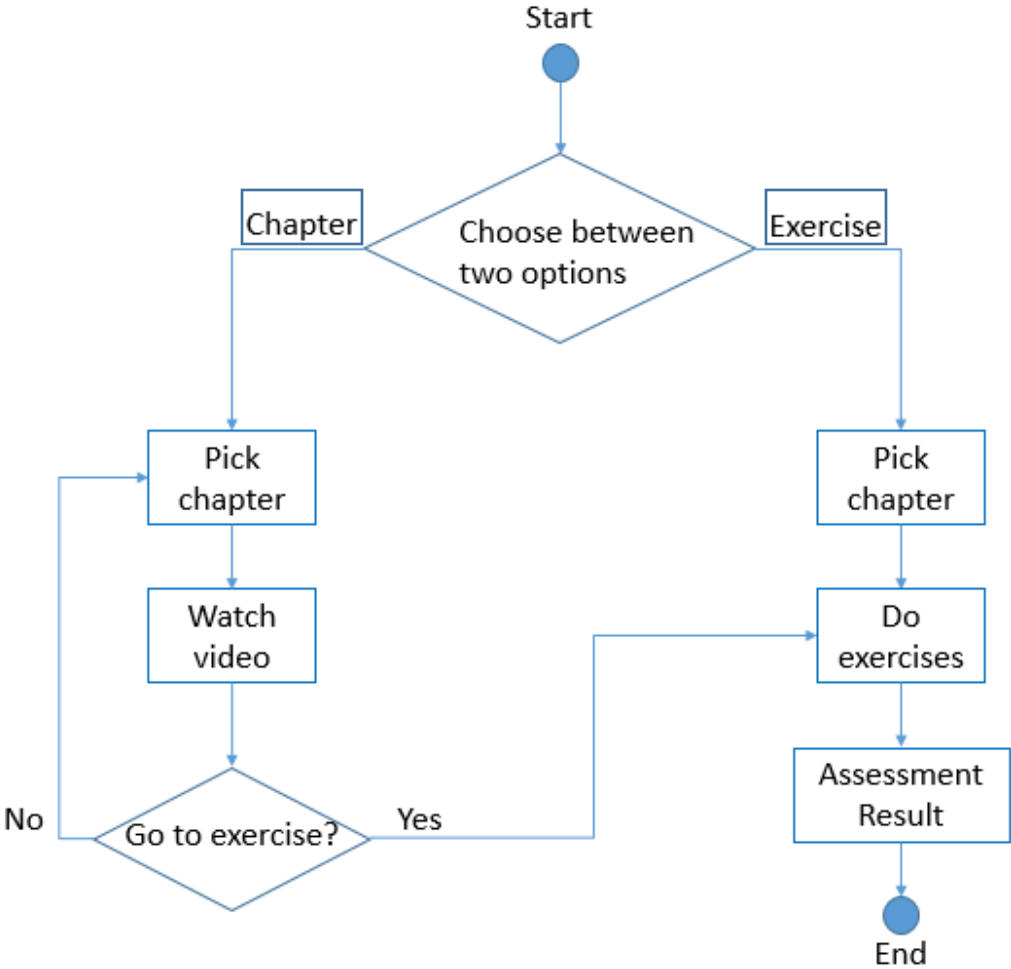


Figure 4.1: Flowchart of the system

4.3 Storyboard



Figure 4.2: Home interface

At this page of the application, the user will be given two choices where they can choose which one to go to, whether to go through the notes or to do the exercises.



Figure 4.3: Chapters interface

If the user chooses to pick notes, it will bring them to another phase where they will have to choose which topic for them to start their revision. Once they pick one topic, a video of that particular topic will be displayed.



Figure 4.4: Exercises interface

On the other hand, if at home phase the user picked exercise, it will bring them to an almost similar to the note phase but with different function. Here, any topic that the user picks will give them some exercise on the topic that they pick.

4.4 System Design and Implementations

This chapter explains about development of the web application. In order to develop a complete system of this web application, basically there are two main parts of the system. Firstly, is the web design itself, which is developed by using Adobe Dreamweaver. The reason the author uses Adobe Dreamweaver as the tool of developing this system is because it is easy to use. More than that, by using Adobe Dreamweaver the author is able to view the code that is written in design tab and it will show the design of the web through the code (refer to Figure 5.1). If the developer wants to just focus on the coding part of the web, the code tab is also there to just show the code (refer to Figure 5.2). In addition, Adobe Dreamweaver also provides the option for the developer to view both the design of the web and the code at the same through the split tab (refer to Figure 5.3).

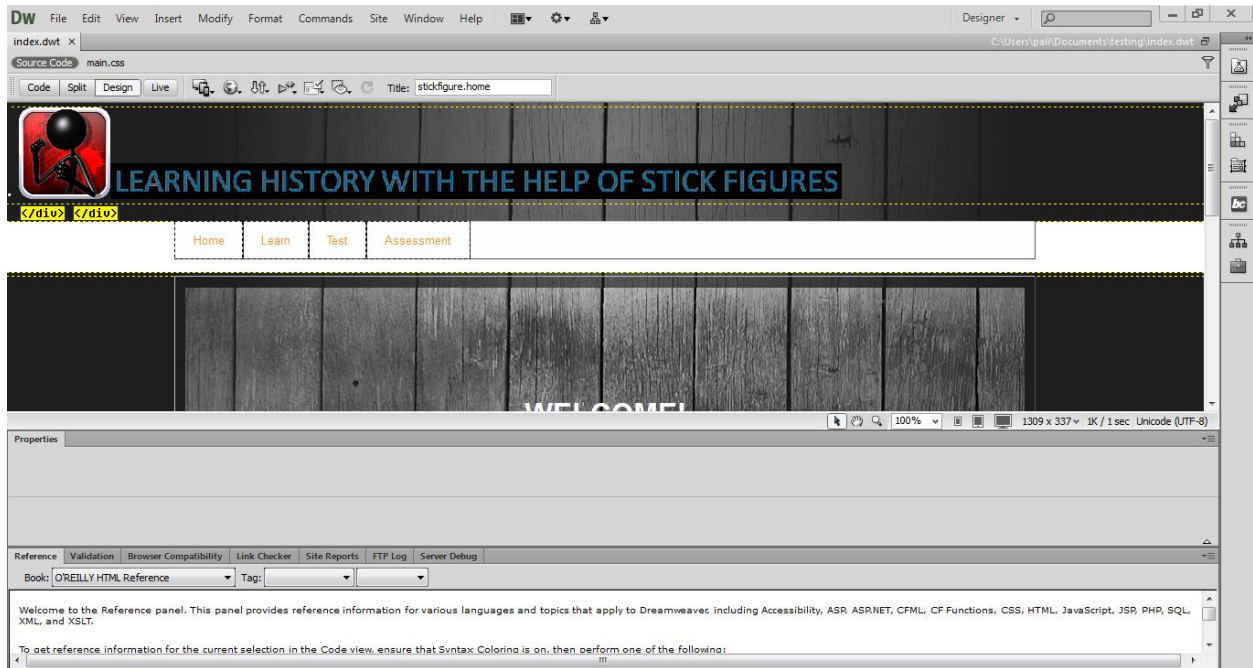


Figure 4.5: Design tab

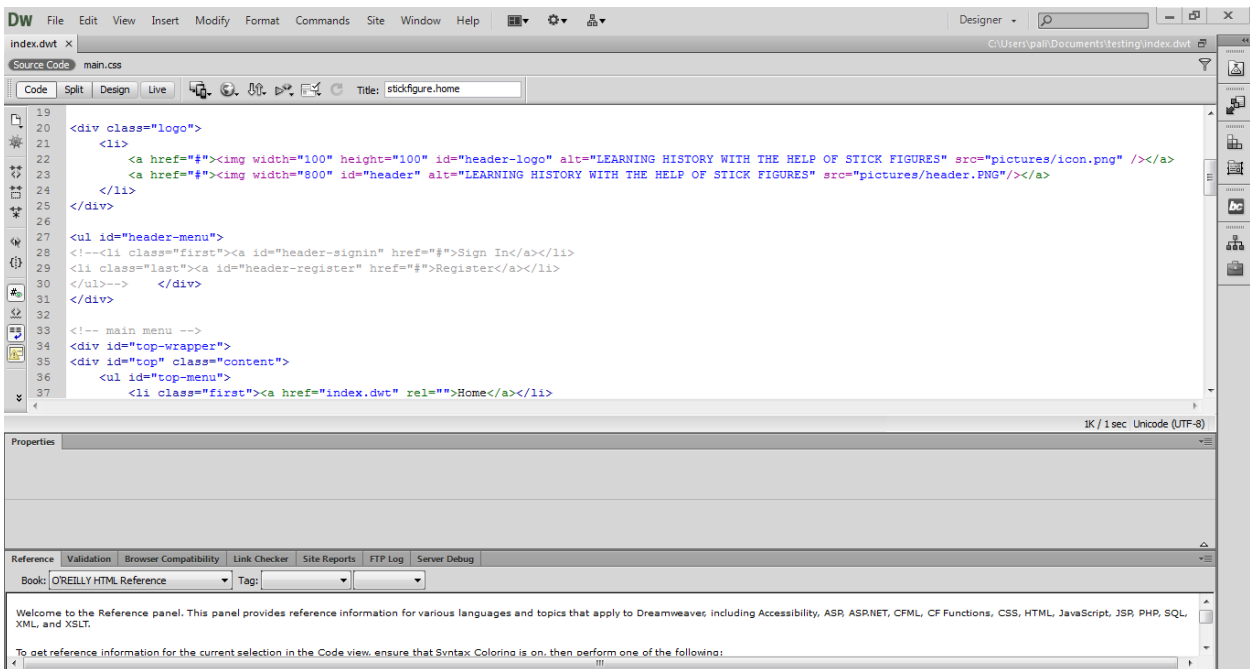


Figure 4.6: Code tab

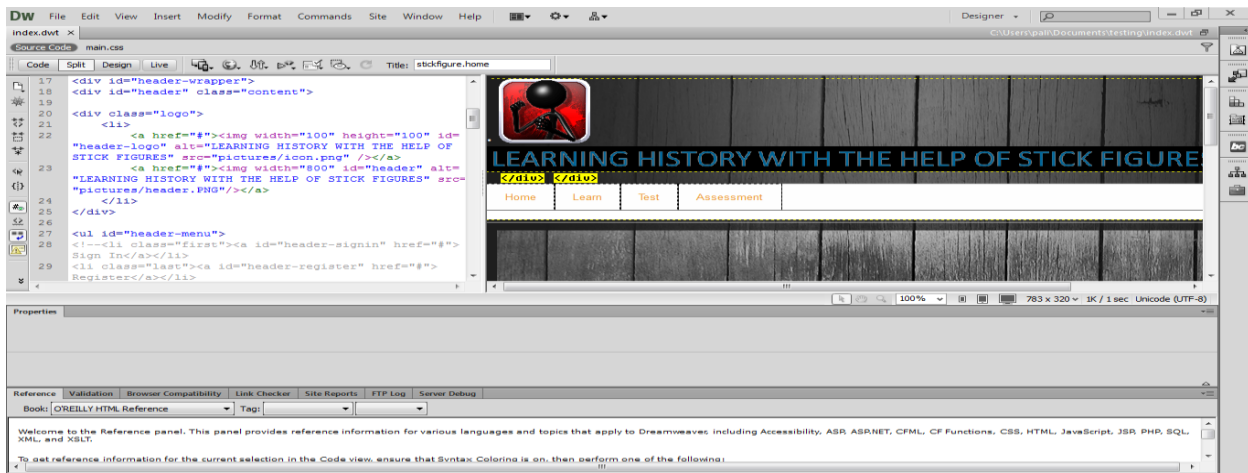


Figure 4.7: Split tab

As for the interface of the web application, the current stage of the development of the system is on developing the basic user interface for the web application and some basic functions in it. As can be seen in figure 5.4 in the home page of the web there are four tabs on top which consist of the main functions of the web application; Home, Learn, Test, Result. Later on will explained more on each page of the tabs.

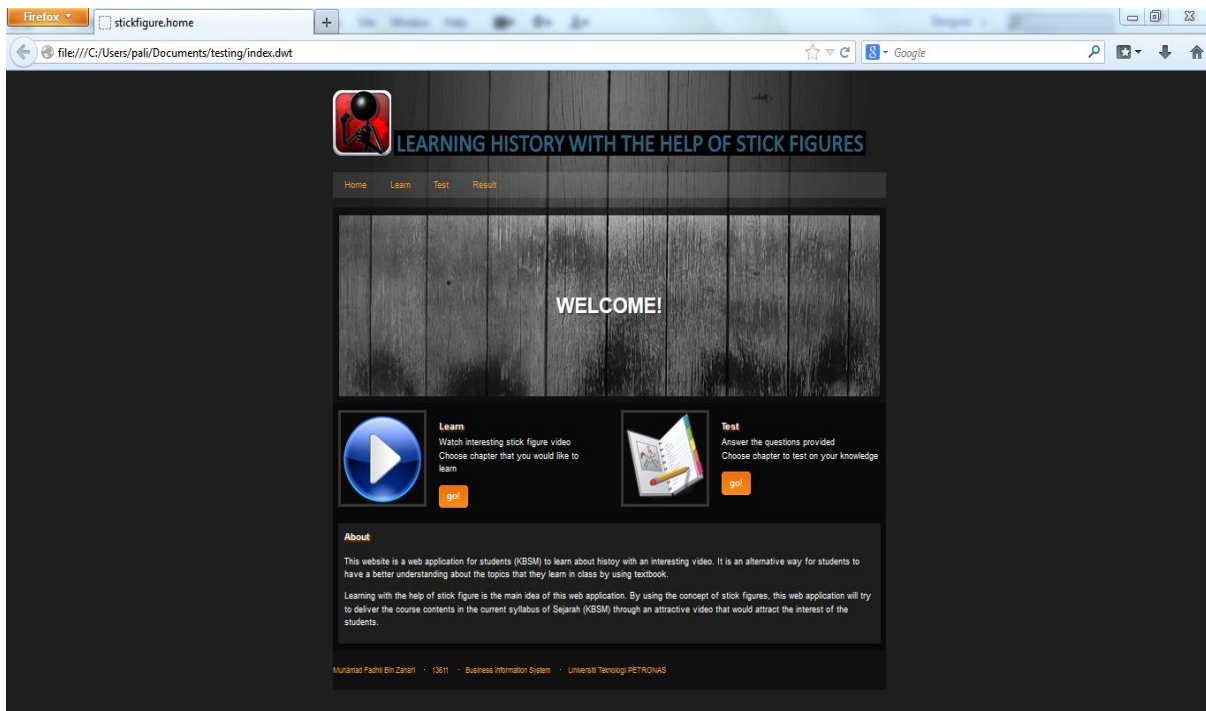


Figure 4.8: Home page

Second on the tab is the Learn page. If the user clicks on the tab, user will be able to choose on which chapter that they would like to go and learn on. As it can be seen in figure 4.9 there are three different chapters for the user to choose on. Same thing goes on in the test tab (refer to figure4.10). Basically same interface with the learn tab but the difference is when the user click on the chapter, they both will have different interface then.

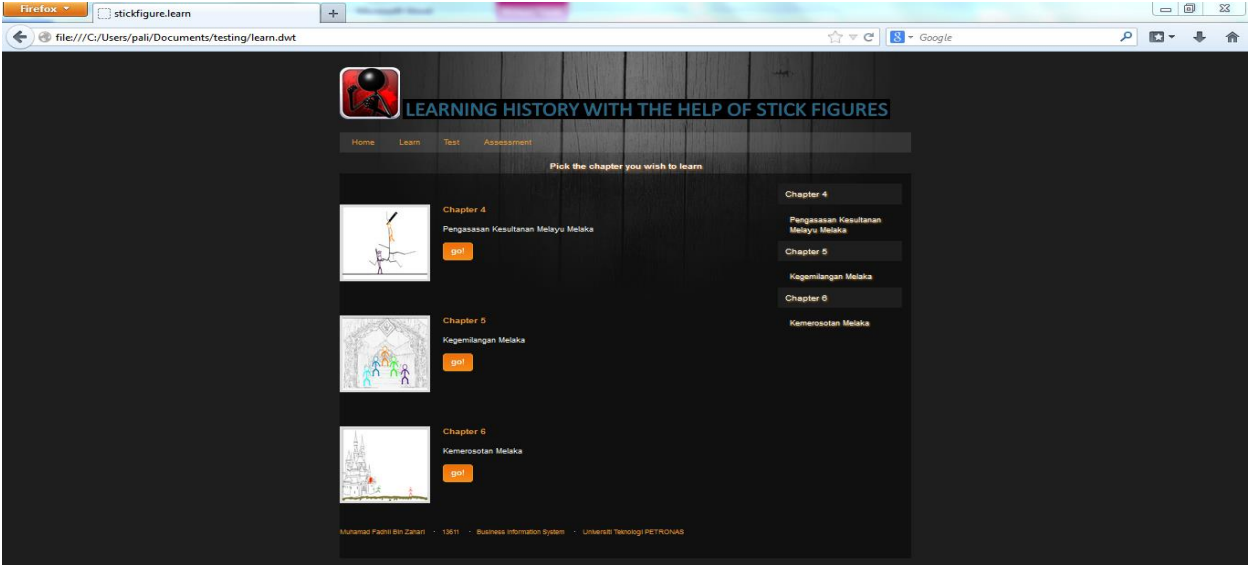


Figure 4.9: Learn page

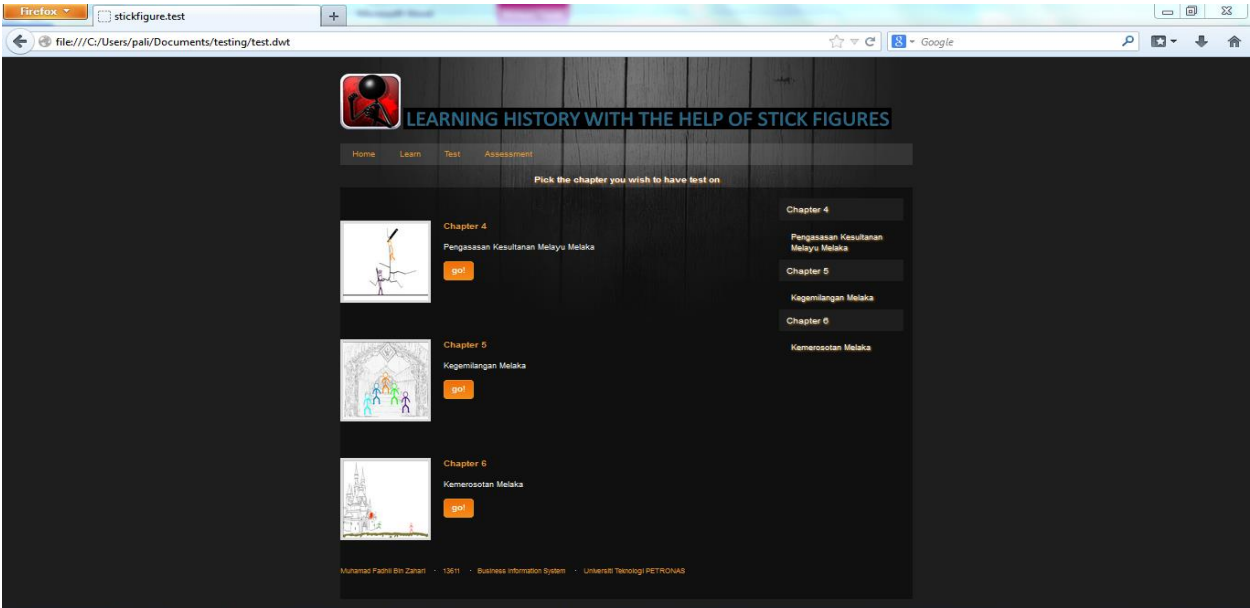


Figure 4.10: Test page

When the user click on chapter 4 in the learn page, they will come on to another page which have a video embedded in it (refer to figure 4.11).

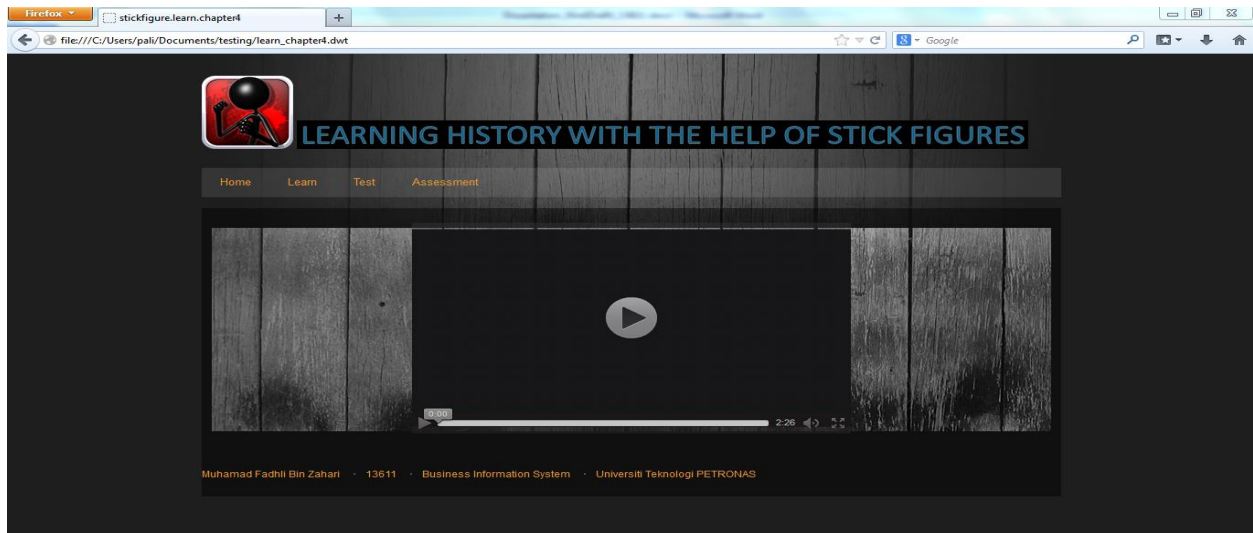


Figure 4.11: Chapter 4 in Learn tab

The controls for the video will make the user able to play, pause, mute, and also make the video go to full screen.

Going back to the Test tab, when the user click on chapter 4, this will then come out (refer to figure 4.12).

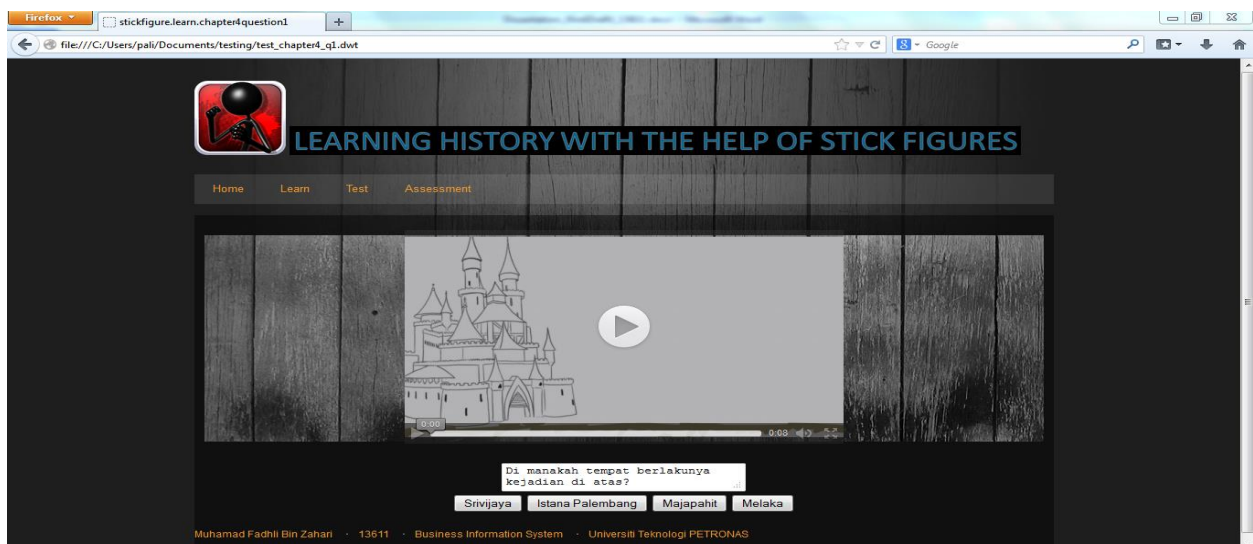


Figure 4.12: Chapter 4 in Learn tab

Notice the difference is that there is a text area under the video in the page. This text area contains the questions for the user to answer. The video in this page is not like the one in the Learn tab. In the Test part, the video just show some of the scene of the whole chapter and will then ask question on the scene. Using this way is because to apply the cognitive learning theory.

As has been stated before, the first part of the development of this proposed web application is the web design. Second part of it is the video part that uses stick figures for the learning of students. In order to develop the video with stick figures, tool that is used is Pivot Animator and Sony Vegas. Pivot Animator allows the developer to create a simple yet attentive learning history video with some stick figures in it. This software makes it really easy for the user to create a set of moving stick figures in .gif file. Figure 4.13 shows some snapshot of the Pivot Animator software in use.

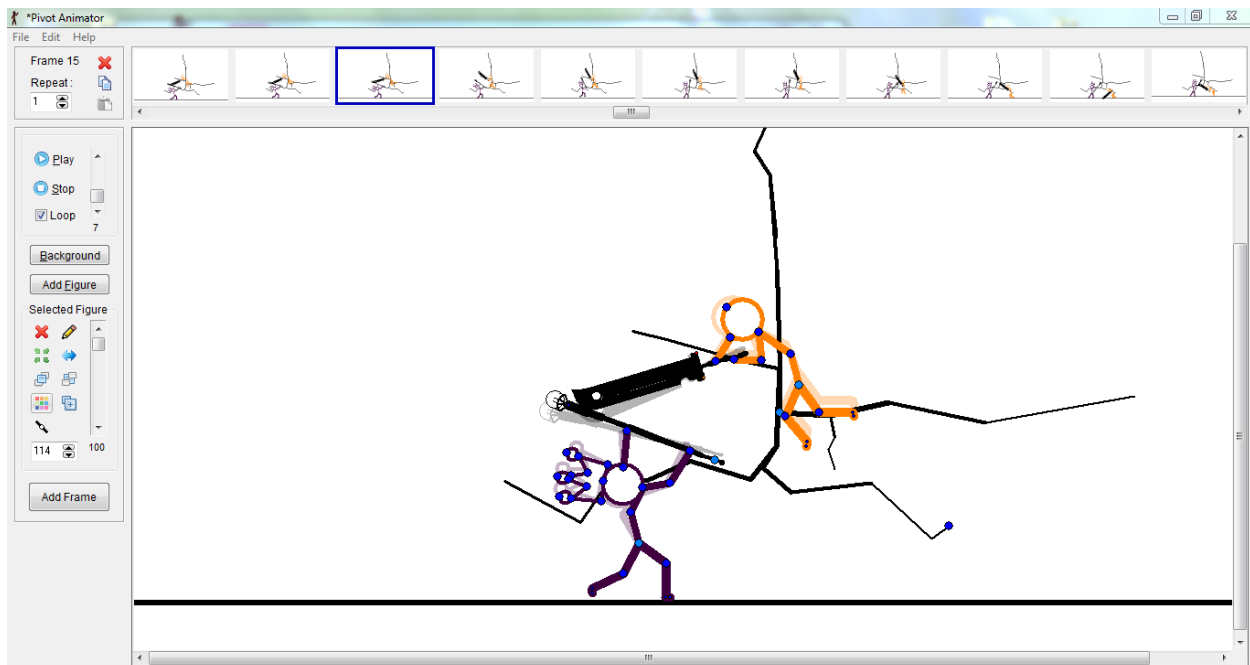


Figure 4.13: Using Pivot Animator to create the stick figures

Then, after done with sets of the .gif file of the stick figures created in Pivot Animator, the author uses another software application in order to combine up all of the .gif files and making it into one complete scenes of video in the Sony Vegas Pro 10.0. Below is the snapshot of the software to render up a video.

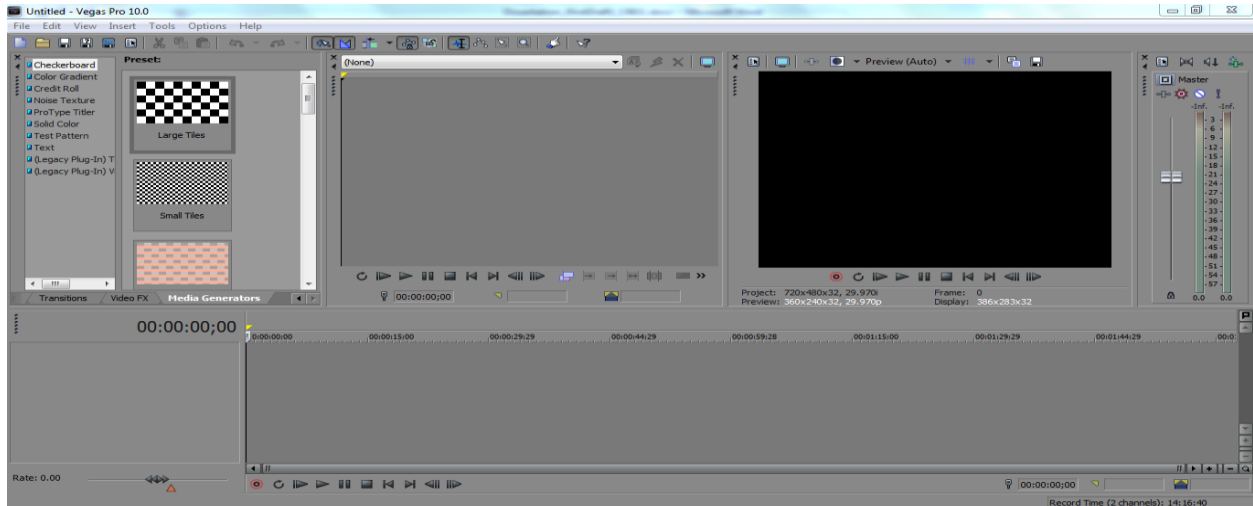


Figure 4.14: Sony Vegas Pro 10.0 default page

The author decides on to use the Sony Vegas Pro as for the software to render the stick figure video is because the Sony Vegas Pro is really easy to use and are a very easy to learn as the author is never familiar with the software. Another snapshot below (refer to figure 4.15) is the snapshot of Sony Vegas Pro in use.

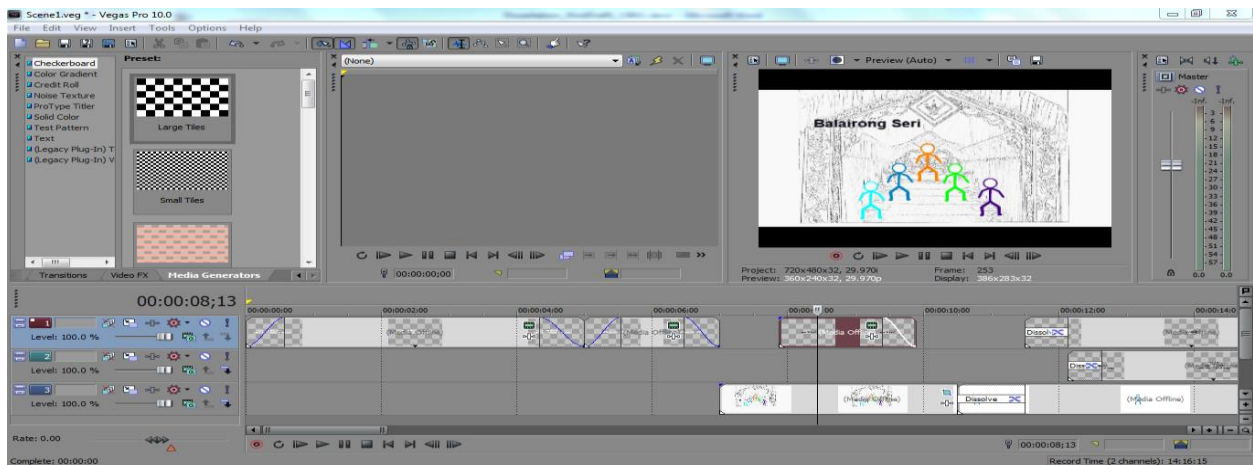


Figure 4.15: Sony Vegas Pro in use

4.5 System Evaluation

In order for the system to be evaluated and know about the acceptance of the system to the user, the author had done a user acceptance test. This test has been done to a group of five form one students which are the target user at a nearby school. In order to come out with the evaluation of the system by the user, a user acceptance test feedback question has been given to each of the students after they had done using the system. There a total of seven questions from the feedback form given. With the feedback collected from the students, there are a lot more information received in term of the acceptance of users to the system developed. The charts below shows the results of the feedback gained from the users.

The system is engaging and interesting

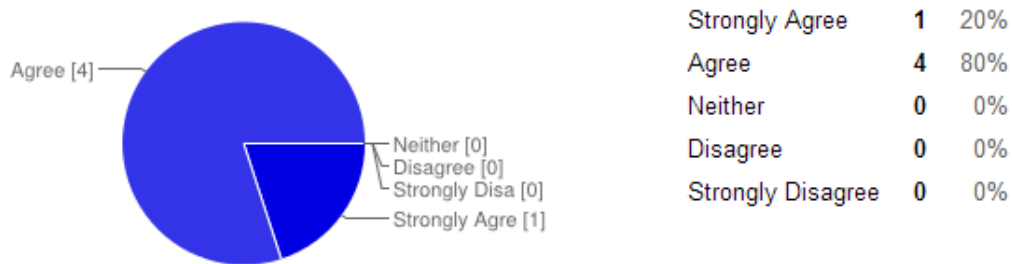


Figure 4.16: Question 1

Based on the chart in figure 4.16, 80% of the target user agreed that the system is engaging and interesting for their use while another 20% strongly agree about the statement.

The system is more attractive compared to textbook

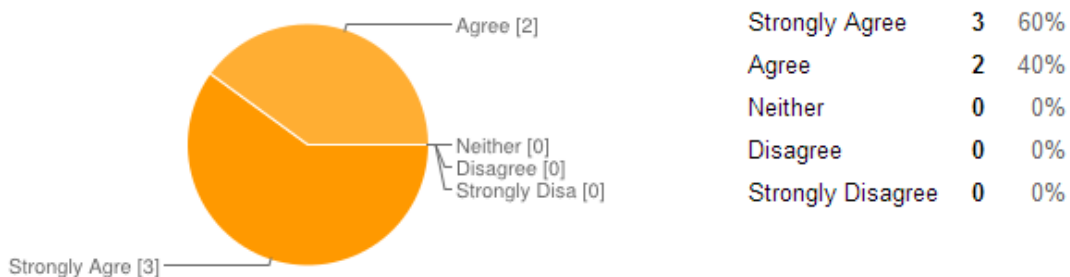


Figure 4.17: Question 2

Figure 4.17 shows that 60% of the respondent strongly agree that the system developed is more attractive compared to textbooks. The remaining respondents agree with the statement but are not too convinced yet.

The system can replace textbook



Figure 4.18: Question 3

Majority of the respondent which is 60% are neither agree nor disagree that this system can replace the current textbook which is in used in the current way of learning and teaching process in school. 20% of the students both agree and disagree about replacing the current textbook used in school.

The system is easy to use



Figure 4.19: Question 4

Only 40% of the total respondents strongly agree that the system is easy to use. The number of the respondent which agree on that matter are also the same with 40% and 20% are neither agree nor disagree about the easiness of using the system. This could mean that the system is easy to use but some of them are not convinced about it.

The system helps to understand more on the subject

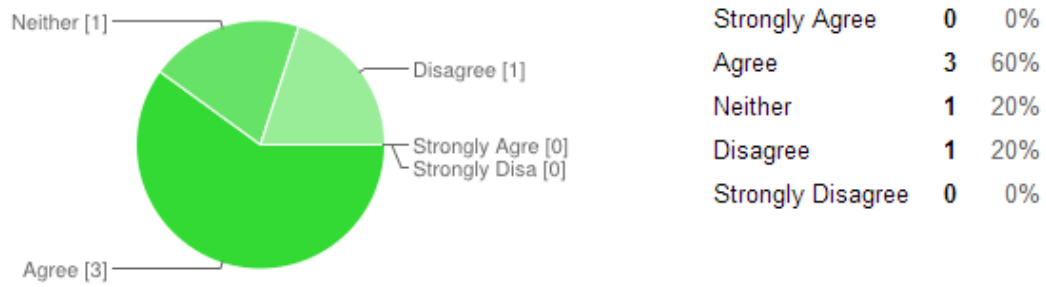


Figure 4.20: Question 5

Majority of the respondents (60%) agreed that the system helps them to understand more about the subject that they are learning. This means that compared to reading to textbooks, the students prefer to use the system to make them understand more about the subject. Only 20% of the respondents disagree with the usage of the system helps to make understanding easier and another 20% is neither agrees nor disagrees about the statement.

The system helps to remember more on the subject



Figure 4.21: Question 6

Based on the chart in figure 4.21, most of the respondents are neither agree nor disagree with whether the system help them to remember more of the subject learned. If most of them agree that it helps in understanding but only 20% agree that the system helps in memorizing the subject learned. Meanwhile another 20% disagree about the statement.

The system help change in the way of learning

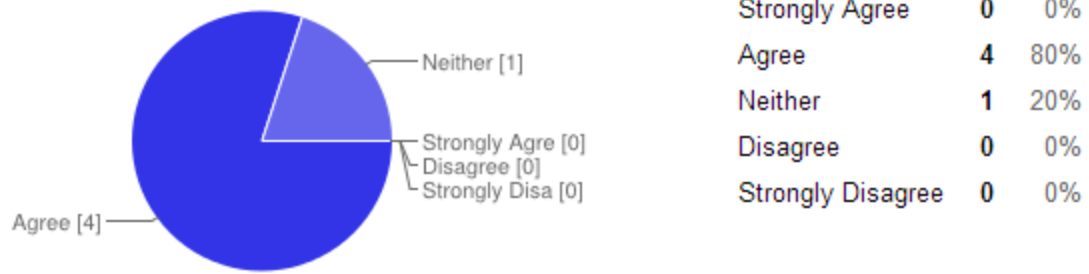


Figure 4.22: Question 7

80% of the respondents agree that this system help in changing the way of learning. From the classic way of using and reading the textbooks, now they have a web application in assisting them to learn with the more modern way of learning.

CHAPTER 6: CONCLUSION

Referring to chapter 1, in section 1.3, it was stated that this project has 4 unique objectives. It can be concluded that, as stated below:

6.1 Relevancy to the Objectives

6.1.1 To analyze existing learning theories that is suitable for teaching and learning

Based on the literature review (refer to chapter 2, section 2.3), cognitive learning theories are suitable for learning and teaching method for history subject. This is because history subject is a hard to memorize subject. However, by using cognitive theory, it is an easy way to recall facts as it is related to experience. Cognitive is not just about memorizing the facts stated in history subject, but cognitive is a use of memory, has elements of motivation and thinking which deals a lot with brain.

6.1.2 To study ways that can capture student's interest in learning history subject

Based on the literature review, the stick figures are found to be the suitable way to attract and let students engaged with the history subjects. This is because it was found that the number of enrollment in a history class has been increasing since a teacher started using stick figures in his teaching. Greg Ahlquist (2013) said, "*The drawings are simply a hook to the students to engage in subject matter and a way to get the information seared into their brain*".

6.2 Suggested Future Works for Continuation

Moreover, referring to the objectives, this research work is going to develop an animated learning application for history subject (refer to objective c). After completed in developing a web application of an animated learning application of the stick figures, a user acceptance test has been done. The results and feedbacks of the user acceptance test has been collected and gathered.

6.2.1 To develop an animated learning application

With the results and feedbacks from the user acceptance test, in future, the web application will be improved more and more in order to get the user to be more satisfied with the application developed. This is because to help the target user to be more comfortable and easier for them to use. The amendments to be made are based on the feedbacks from the user acceptance test.

6.2.2 To assess the effectiveness of the history learning application

In order to assess the effectiveness of the history learning application that is developed, another system testing will be conducted for school students from time to time to get more and more updates on what the user really want. This will help to make the system to be more user friendly as the change and improvements make are based on the feedbacks from the user that use and test the system themselves.

REFERENCES

- Alzaghoul, Ahmad Fawaz (2012). The Implication of the Learning Theories on implementing E-Learning Courses. *The Research Bulletin of Jordan ACM*. Vol 11(11). Pp. 27-30. Accessed on 20/8/2013
- Corbitt J L, (26th July 2012). Graphical vs Textual Information, Slideshare.net. Retrieved 15th October 2013, from <http://www.slideshare.net/jlcorbitt/dashboardgraphics-vs-text-data>.
- Elizabeth F. (12th December 2012). Should Student's Textbooks and Notebooks be replaced with Laptops? In Dublin Patch. Retrieved 25th June 2013, from <http://dublin.patch.com/groups/elizabeth-fs-blog/p/bp--should-students-textbooks-and-notebooks-be-replac31d95e3d77>
- Fotrell, L.D. (2013, 29). NYSUT: A Union of Professionals. www.nysut.org | NYSUT.org. *Teacher of the Year uses engaging tools to prepare students for college and careers* / NYSUT.org. Retrieved July 29, 2013, from <http://www.nysut.org/news/nysut-united/issues/2013/april-2013/teacher-of-the-year-uses-engaging-tools-to-prepare-students-for-college-and-careers>
- Glenda, G. et al. (2009.). Free Term Papers, Research Papers, Essays, Book Notes | StudyMode.com. *Use of Computer Technology in Medicine - Essays - Asilaj*. Retrieved August 15, 2013, from <http://www.studymode.com/essays/Use-Of-Computer-Technology-In-Medicine-200930.html>
- Kiili, K. (2005). Digital game-based learning: Towards an experiential gaming model. *The Internet and Higher Education*, 8(1), 13-24.
- Miller, M.M., & Sterns, P.N. (1995). Applying Cognitive Learning Approaches in History Teaching: An Experiment in a World History Course. *The History Teacher*, pp. 83-204. Retrieved 15th October 2013, from <http://www.jstor.org/discover/10.2307/494485?uid=3738672&uid=2&uid=4&sid=21102750127661>

Mz, N.A., & Sy, W. (2008). Game based learning model for history courseware: A preliminary analysis. *Information Technology, 2008. ITSIm 2008. International Symposium on (Volume: 1), 1, 1-8.*

Tengku Shariman, T.P.N., & Abdul Rahman, F. (2007,). Faculty of Education, Universiti Teknologi Malaysia — innovative | entrepreneurial | global. *MULTIMEDIA STORYTELLING FOR TEACHING HISTORY: IMPACT ON STUDENT LEARNING, MOTIVATION AND ENGAGEMENT.* Retrieved August 20, 2013, from <http://www.fp.utm.my/ePusatSumber/listseminar/20.KonventionTP2007-20/pdf/volume2/87-tengkuPutri.pdf>

Sabella, R.A. (2010, 29). Education.com | an Education & Child Development Site for Parents | Parenting & Educational Resource. *Edutainment: Positive Aspects of Video Gaming / Education.com.* Retrieved August 15, 2013, from <http://www.education.com/reference/article/positive-video-game-benefits-educational/>

Theresa Liao. (1st December 2012). How Stick Figure Comics Can Contribute to Discussions of Serious Research Issues. In Science, I Choose You. Retrieved 25th June 2013, from <http://sciencechooseyou.wordpress.com/2012/12/01/how-stick-figure-comics-can-contribute-to-discussions-of-serious-research-issues/>

Valdemar W. Setzer. (2000). Computers in Education. In Southern Cross Reviews. Retrieved 25th June 2013, from <http://www.southerncrossreview.org/4/review.html>.

Valdemar W. Setzer and Lowell Monke. (2000). Computers in Education: Why, When, How. In. Retrieved 25th June 2013, from <https://www.google.com.my/search?q=studying+with+computer+application&oq=studying+with+computer+application&aqs=chrome.0.57j6213.9181j0&sourceid=chrome&ie=UTF-8#>

Wild, I., Strandgard, M., & Chong, D. (2001,). Forest & Wood Products Australia Ltd. *Plantation Yield Regulation System PLYRS: A Computer Based System to Assist in the Management of Pinus radiata Plantations* | www.fwpa.com.au. Retrieved July 24, 2013, from <http://www.fwpa.com.au/node/233>

Zarina Che Embi. (22nd March 2005). Analysis of local and foreign edutainment products--an effort to implement the design framework for an edutainment environment in Malaysia. In The Free Library. Retrieved 25th June 2013, from <http://www.thefreelibrary.com/Analysis+of+local+and+foreign+edutainment+products--an+effort+to...-a0128170452>