

**THE DEVELOPMENT OF CROSSWORD GAMES AS TEACHING TOOL  
FOR FORM 5 HISTORY SUBJECT**



**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

THE DEVELOPMENT OF CROSSWORD GAMES AS TEACHING TOOL  
FOR FORM 5 HISTORY SUBJECT

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

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2021

## DECLARATION

I hereby declare that this project report entitled  
**THE DEVELOPMENT OF CROSSWORD GAMES AS TEACHING TOOL FOR FORM 5  
 HISTORY SUBJECT**

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

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I hereby declare that I have read this project report and found  
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## DEDICATION

I would like to thank and appreciate for that permission my supervisor, Dr Mohd Hafiz bin Zakaria who supported and guided me in this final year project. This is my first time using a gamification application. Despite the mistakes and errors, we still managed to overcome all obstacles. A million thanks to you.

After that, I would like to say a thousand thanks to my classmates and friends who helped me a lot in this project.

Finally, I would like to thank my dear parents for their continued love, support and encouragement throughout this course.



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At last, but not least, I am thankful to my parents and friends who have been always helping and encouraging me throughout the semester. I have no valuable words to express my thanks, but I wish everyone happiness in their life. May Allah blesses and ease our journey.



## ABSTRACT

Students' intellectual, spiritual, emotional, and physical growth all benefit from learning history. Previous study has revealed that pupils have difficulty learning history. Students regard history as a tough and tedious topic since they must memorise data as well as comprehend historical facts, concepts, times, and events. Students' interest in interactive multimedia may be piqued, making the teaching and learning process more engaging and bringing history to life. Interactive technology, such as this crossword puzzle game, can help pupils learn more successfully and interestingly, especially among younger kids. The findings from the first study of difficulties in history teaching and learning, students' preparedness for digital game-based learning, and digital game-based capacity for history learning are presented in this paper. Game-Based Studying (GBL) is a method of creating interactive courseware that engages students in learning history by providing them with enjoyable experiences. As a result, for historical software design, we suggest the GBL Model (crossword puzzle).

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## ABSTRAK

Pembelajaran sejarah sangat penting untuk perkembangan intelektual, rohani, emosi dan fizikal pelajar. Penyelidikan sebelumnya menunjukkan bahawa terdapat masalah dalam pembelajaran sejarah di kalangan pelajar. Pelajar memandang subjek sejarah sebagai sesuatu yang sukar dan sangat membosankan kerana mereka harus menghafal fakta di samping memahami fakta sejarah, konsep, masa dan peristiwa. Multimedia interaktif dapat meningkatkan minat pelajar dan menjadikan proses pengajaran dan pembelajaran lebih menarik dan menjadikan sejarah 'hidup'. Permainan teka silang kata ini, teknologi interaktif dapat memupuk proses pembelajaran dengan berkesan dan menarik terutama di kalangan pelajar muda. Dalam makalah ini, kami memaparkan penemuan dari analisis awal masalah dalam pengajaran dan pembelajaran sejarah, kesediaan pelajar untuk pembelajaran berdasarkan permainan digital dan kemampuan berdasarkan permainan digital untuk pembelajaran sejarah. Pembelajaran Berasaskan Permainan (GBL) untuk pengembangan perisian kursus interaktif untuk meningkatkan minat pelajar dalam mempelajari sejarah melalui pengalaman yang menghiburkan. Oleh itu, kami mencadangkan Model GBL (teka-teki silang kata) untuk reka bentuk perisian sejarah.

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**LIST OF ABBREVIATIONS**

<b>Teka Silang Kata Sejarah Tingkatan 5</b>	<b>-</b>	<b>The development of crossword games as teaching tool for form 5 history subject</b>
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## Chapter 1: INTRODUCTION

### 1.1 PROJECT BACKGROUND

Nowadays, everyone is using smart phones. As smart phones are reducing the work of memory, for youngsters and kids it is necessary to get some work for memory to sharpen it. This crossword game is interesting and little tough to solve. It can help to increase concentration power. This crossword is invented especially for school children in age 17 years old which is opportunity for student focus on completing the game. This crossword game is that to make the student knows and remember all about the history Malaysia and along with learning in school. Silang kata Sejarah is a crossword game about the history subject form 5 in Malaysia school. History subject is a mandatory subject to pass. “Silang kata Sejarah” is making for students knows and remember all about the history Malaysia and along with learning in school. The question will be given randomly by chapter Student will be assessed through time taken they finished answer the questions. A game is a type of play where participants follow defined rules. (Houghton et al., 2013) discusses educational games as the utilization of games to support teaching and learning. Games can be used as a support tool to complement traditional teaching methods to improve the learning experience of the learners while also teaching other skills such as following rules, adaptation, problem solving, interaction, critical thinking skills, creativity, teamwork, and good sportsmanship. Learning should not feel dull and it should not only mean rote memorization where students learn and grasp concepts through repetition or cramming. Teachers can take advantage of the energy and innovative thinking that is provided by using technology in learning to improve student performance.

The first crossword was created in Britain during the mid-1700s by John Spilsbury who used a map puzzle to teach world geography. The first-ever crossword puzzle ran in the New York World newspaper on December 21, 1913. The crossword are still extremely popular and run in newspapers across the country. The crosswords we see today are a bit different from the original "word-cross," which was in the shape of a diamond and didn't note "across" or down" moves. Knowing the benefits of playing puzzle game that we have created game "Silang Kata Sejarah" so they can play the crossword game at anytime and anywhere. This crossword game apps game will overview of modification game, and some quiz. There are many benefits out of this kind of games. This game will help to build some skills for example cognitive skills, emotional skills, and memory skills that they learn in the school.

## 1.2 PROBLEM STATEMENT

In my literature review about existing product, many crossword games developed is not focused on history subject. They only focus on another language for example mathematics and "Bahasa Melayu". So, about this problem, I take an alternative to developing crossword games for History subject form 5. It is suitable for students who wish to take the first term examination. It is because this crossword game covering chapters 1 to 5 in the subject of history. Mobile phones have become commonplace as personal accessories, and they are widely used for both correspondence and entertainment. Currently, cell phones support a wide range of applications, ranging from casual text and multimedia chat to taking pictures, playing sports, listening to music, watching film, and getting information from the internet (Adobe, 20).. History is a core subject in the Kurikulum Bersepadu Sekolah Menengah (KBSM) or Integrated Curriculum for Secondary Schools (ICSS) that must be learned by all students for a continuous period of five years. The History education curriculum at the Lower Secondary Schools must have survival value at the Upper Secondary School, so that the foundations of knowledge, values, skills learned and experience gained can be strengthened and developed further. Most of student that learn in history subject have a problem which is they lack of book references and lack of idea while they study in a class. In addition, they have to borrow some books in library by follow the date that they need to submit back and follow the day which has been set. So if

they play the Malaysian crossword game, it can help them to know and remember the knowledge that they learned in school . It is also free to bring their handphone to any places. After that , the subject filled with many texts that make students easily feel bored when studying the subject of history. Then, most students do not find it easy to remember a subject that is filled with text and makes them lazy to read for each paragraph in a content of books. Beside that , the other problem statement is some of students did not used handphone or device properly . Nowadays, they use the device for useless things are like unnecessary social media for their age group. Having this game can help them not to do useless things that can neglect their learning when at that age and strengthen the memory of their learners.

### 1.3 OBJECTIVES

There are the following objectives of the development of crosswords games for Malaysia school children are:

- i. To study how crossword games teach as a core subject as learning tool.
- ii. To develop adaptive crossword games based on different chapter of history subject.
- iii. To evaluate the effectiveness of the game for teaching general studies in Malaysia.

## 1.4 SCOPES

This project is proposed under certain defined scopes. This is to ensure the project is heading to the right direction to achieve its intended purpose. The scope of the system that will be implemented are below:

### 1. Users

- Only single player can play this game.
- The question will give randomly by following the age of the player
- Get to see their highest score of each game.

### 2. For Android platform only

- Only focuses for android user only.

## 1.5 LIMITATION OF WORK

Limitation work for this project only provide one type of crossword games. For this puzzle games only to solve the stage of level difficulties and player will get the score based on correct question to solved the crossword. For the guess game and drag game it is just only simple side game. It is because the target is for the student 17 years old, and this project just state for Android platform only.

## 1.6 PROJECT SIGNIFICANCE

Following the creation of the proposed project, the expected outcome is that this game will be a success, allowing Malaysian schoolchildren to experience a variety of educational games with multimedia elements, such as a fantastic interface, visuals, fascinating photos, music, and buttons. More than that, I'm hoping the game will be a success in terms of being implemented on Android mobile applications and operating properly when playing. Furthermore, students will be able to enjoy the game without experiencing any tension or difficulty.

## 1.7 CONCLUSION

Finally, this chapter covered the project's overview, which included the issue description, objectives, scope, work limitations, and projected outcome. Based on the information presented, it is important to enhance the learning process so that students are more engaged and motivated during the learning process, in order to encourage students to better comprehend and learn about Malaysian history. Thus, a simulated crossword game is projected to create a novel way to improving the quality of teaching and learning activities carried out in conjunction with the integration of interactive multimedia components through a simulated crossword game.



## CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY

### 2.1 INTRODUCTION

The literature review for the system that will be created is presented in this chapter. In mobile app games, the literature is the process of reading, analysing, evaluating, summarising, and comparing information. It may be used as a guideline for creating a new mobile app game that is better or more functional than existing mobile app games.

A methodology is an organized set of tactics, practices, processes, and systems that are utilised to achieve a goal. The procedure is the entire investigation system that maps out how investigation will be carried out and, among other things, identifies the techniques that will be used. These philosophical strategies define the ways or ways of gathering knowledge, or how a specific outcome is to be determined. Despite the fact that much thought is paid to the nature and types of cycles to be followed in a specific methodology or to achieve a goal, philosophy does not specify particular approaches.

### 2.2 DOMAIN

There are several of Android Application games that are connected to the system that is being developed. Many games employ a variety of methods to create mobile gaming applications. There are certain benefits and drawbacks that may be analysed and given value to the mobile app game that will be developed shortly.

#### 2.2.1 MOBILE GAME APPLICATION

A mobile game is a video game that may be played on a smartphone. The term has previously been used to describe any game that can be played on a mobile phone (feature phone or smartphone), tablet, PDA, handheld gaming console, portable media player, or graphing calculator, both with and without network access. A Tetris version on the Hagenuk MT-2000 gadget from 1994 was the first known game on a mobile phone. Mobile games are usually downloaded from an app store or a mobile operator's site,

however they are occasionally preloaded in handheld devices by the OEM or the mobile operator when purchased, either by infrared connection, Bluetooth, or memory card, or side loaded into the handset using a SIM card.

### **2.2.2 GAME DEVELOPMENT**

Platform games are another name for 2D games. Something that is held on a platform is also referred to as a platform. Characters in 2D games are often cartoonish and exaggerated. We can't give our 2D character a realistic sense. Pixel pictures include images in common formats such as JPG, GIF, and BMP. The quality of these photos cannot be improved by enlarging or shrinking them. Resolution isn't an issue with vector drawings. Pathways having multiple start and end locations, as well as lines linking these points to form the image, define vectors. A character or other picture can be formed with shapes. Vector-based animation smooths motion by resizing pictures with mathematical values. They can re-use these creations, so the animator doesn't need to keep drawing the same characters repeatedly. can move around these vectors and animate that way.

### **2.2.3 CROSSWORD GAME**

A crossword puzzle is a word puzzle made up of white and black-shaded squares in a square or rectangular grid. The goal of the game is to fill the white squares with letters to form words or phrases by answering clues that lead to the solutions. In languages written left to right, the solution words and phrases are put in the grid from left to right ("Across") and from top to bottom. From left to right ("Across") and top to bottom, the solution words and sentences are inserted in the grid ("Down"). The words or phrases are separated by shaded squares.

### **2.2.4 HISTORY SUBJECTS**

History is a subject that teaches about the development of human history from the stone age to the present. This teaching covers the history of human development, technological development, national development, political development and so on. The

introduction of history lessons to primary school students aims to give students an understanding of the importance of history as a guide to shape a better and civilized future. History is able to create public awareness to be a citizen who loves the nation as well as to produce people who have an attitude of openness and prevent racial riots. This subject integrates knowledge, skills, elements of citizenship and civic values in its implementation inside and outside the classroom. This element is taught with the hope that teachers can apply the basics in producing citizens who have a national identity and can form Malaysians who have social cohesion and national integration. Often we live and recall a past event that has a lot of positive or negative impact on each other.





## 2.3 EXISTING SYSTEM

Related products refer a system already existing and used until now. This is example of system:

### 2.3.1 Teka silang kata – 2D Gamed based Learning



**Figure 2.1 Teka silang kata**

Latest word game from the creators of Puzzle Book, Silang kata Malaysia can test your mind with crossword main language. How to play is fun jack. Players have to arrange the given letters and build words to fill in all the blank spaces of the crossword puzzle on the question board. Each question board has several answers as well as additional words, the player has to find the hidden word bm by swipe and connect the correct letters.

### 2.3.2 Quizlet – Gamed based Learning



**Figure 2.2 Quizlet**

For web users, online quizzes are a popular source of amusement. Although some online quiz websites provide rewards, most online quizzes are free to play and for amusement reasons solely. Online quizzes on a variety of topics can be found on many websites. A personality or relationship questionnaire, similar to those seen in many women's or adolescent magazines, is a popular form of internet quiz. Websites that host quizzes Quizlet. For many online courses, quizzes are one of the most popular eLearning patterns. Some teachers and schools utilise online quizzes as a method of instructing their students. “By taking this understanding of how millions of Quizlet students have effectively mastered subjects in the past and incorporating the learning technique of spaced repetition”.by Matthew Glotzbach (2017)

### 2.3.3 Buku Sejarah Tingkatan 5 – Textbook



Figure 2.3 Buku Sejarah Tingkatan 5

Textbooks are the most important resource in the teaching and learning process at school. Textbooks is a resource where teachers apply effective teaching techniques to achieve learning objectives in the classroom. Textbooks are a core part of the curriculum, as crucial to the teacher as a blueprint is to a carpenter, so one might assume they are conceived, researched, written, and published as unique contributions to advancing knowledge. "The student shall be provided content necessary to formulate, discuss, critique, and review hypotheses, theories, laws, and principles and their strengths and weaknesses." In a press statement Tamim Ansary (2004)

### 2.3.4 Comparison between existing system

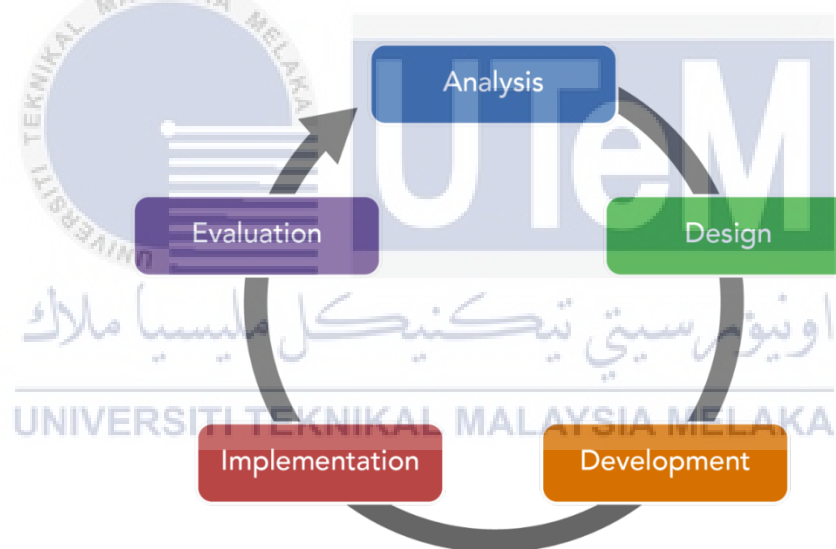
Shows the three existing system which have been taken as the reference in this project. Comparison between the current system and proposed system have been made in this table.

Existing System	Silang Kata Malaysia	Quizlet	Digital Textbooks Form 5
Target User	All range	All range	All range
Platform	2D games	Games	Textbook
Software	Unity		
Language	Malay	Malay/English	Malay
Price	Free	Free	Free
User Interface	Yes	Yes	Yes
Ease of use	Yes	Yes	Yes
Audio	Yes	No	Yes
Strength	<ul style="list-style-type: none"> <li>-Perfect brainteasing game</li> <li>- Colourful graphics and themes for pure enjoyment also excitement</li> <li>-Easy to understand the flow game play</li> </ul>	<ul style="list-style-type: none"> <li>-Force us to think and answer the question</li> <li>-Add knowledge of a given question</li> </ul>	<ul style="list-style-type: none"> <li>-Features pictures, graphs, maps, and illustrative materials that facilitate student understanding.</li> <li>-It does not burden parents to buy textbooks because they are given for free by the government.</li> </ul>
Weakness	<ul style="list-style-type: none"> <li>-Too many ads' popup</li> <li>- A lot of self-study</li> <li>-not very interesting level game design</li> </ul>	<ul style="list-style-type: none"> <li>-The answer will be given in English only</li> <li>-The level design of the game not attractive</li> <li>- Hard to understand the questions</li> </ul>	<ul style="list-style-type: none"> <li>-Not very interesting graphics</li> <li>-Too many text and bored</li> </ul>

**Table 2.1 Comparison between existing system**

## 2.4 PROJECT METHODOLOGY

From the beginning until the completion of the project, this chapter will describe the technique and alternatives that will be employed. The project's flow and system overview will be briefly reviewed to provide a better understanding of the project's design and development idea; the project, in general, involves more software than hardware. To address an issue, the approach must be planned, as well as the search for data about the subject to guarantee that the project is completed and functioning properly. The technique is crucial since it will guide the researcher and ensure that the system can be effectively implemented. The Addie Model was chosen as the technique for developing this gaming system. It will be an appropriate guideline to assist in the development of these mobile app games. This methodology is divided into five phases: analysis, design, development, implementation, and assessment.



**Figure 2.4 Project Methodology**

### 2.4.1 Analysis Phase

The analysis phase examines existing mobile app games as well as the requirements for designing and developing a new crossword game. This phase collects and gathers information about crossword games played on smartphones, whether from journals, articles, books, or research papers. A suitable approach and methodology has been chosen based on the information gathered. The finest ways for developing a crossword game android application are Adobe Flash and Java.

### **2.4.2 Design Phase**

Identify the system's design and construct a prototype based on the functions that will be built during this design phase. During the planning and analysis phases, facts or requirements were gathered and turned into design. A navigation map and a storyboard sketch are created to demonstrate the system's flow, allowing users to assess what and how the genuine prototype operates. The project proposal is prepared and presented to the panel at this phase. The player will have five chapter and player will give questions based on level stages at random. The questions will be about history subject that they learn in their school and getting the score based on correct answers and also provide the scoreboard to completed the crossword. This phase is shown in the chapter 3, design and navigation map.

### **2.4.3 Development Phase**

The third step entails the creation of the overall design and serves as a guide for the authoring process. The authoring phase is when all of the pieces that will be utilised in the puzzle mobile applications game are put together using Adobe Flash. This programme was chosen since it can create navigation applications for Android. In this stage of development, too, all agreed-upon methods or designs from previous phases are used.

### **2.4.4 Implementation Phase**

The testing phase follows the implementation phase. The supervisor will test the completed applications. During the authoring process, testing is done to discover flaws and detect any needless mistakes. Supervisors are permitted to provide suggestions and criticism in order to improve the situation and fix any faults. The efficacy and smoothness of the application may be assured during this period, therefore indirectly preserving the quality of the Android Mobile app games. This is a crucial phase in which the user's requirements must be met and the objectives must be met.

### **2.4.5 Evaluation Phase**

Finally, there is the period of assessment. includes gathering input from users on the software's content, strategies, visuals, audio, animation, interfaces, and so on, either through supervisors, face-to-face meetings with users, or interviews, to ensure that they are aligned with the user set's scope. Supervisors and lecturers from the faculty of computerised informatics made the assessments. If any feedback indicates that the programme needs to be improved, the modification procedure will be conducted to guarantee that it meets the user's needs within the time frame specified. Once the system has reached a stable state, it is checked to see if it has accomplished all of the objectives and aims.

## **2.5 PROJECT REQUIREMENTS**

System requirements are divided into two categories: software requirements and hardware requirements. Both components are interconnected and important for a successful game development process. An exploratory strategy was utilised in the development of this Android application. Users can engage with android applications using self-exploration techniques. As a result, the navigation buttons given by the android app will allow the user to utilise the android app as they desire and explore the android app itself. Users can skip to whatever point they choose using the accessible buttons. The performance of the system application is based on the integration between software and hardware used. Without those requirements, system may malfunction and does not work properly.

### **2.5.1 Software Requirements**

Software requirements define the software resource needs and prerequisites that must be installed on a computer in order for a programme to work properly. These prerequisites or needs are not usually included in the programme installation package and must be installed separately before the product can be installed. The following software has been chosen for this project:

Software Type	Description
Operating System	-Windows 10
Adobe Photoshop	-Used to design background wallpaper, and layout of game
Adobe Illustrator	-Graphics editor and design program developed
Unity	-Creating game

**Table 2.2 Software Requirement**

### 2.5.2 Hardware Requirement

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware.

Item Name	Description
Laptop Lenovo	-Intel® Core™ i5-5200 @ 2.20GHz -8.00GB -64-bit Operating System
Smartphone	-For testing the game

**Table 2.3 Hardware Requirement**

## 2.6 CONCLUSION

Finally, the literature study provided a thorough grasp of other people's research and studies of applications, websites, and journals that are relevant to the project. With the availability of research on current applications, mobile gaming apps, and other types of apps, the process of implementing the project may go more easily, and the project's development can go more quickly. According to the research, combining mobile learning with a game-like quiz is a superior method to build a learning tool.



## CHAPTER 3: ANALYSIS

### 3.1 INTRODUCTION

The project lifetime starts with the analysis phase. The Analysis Phase is where you break down the high-level Project Charter's deliverables into more specific business needs. The Analysis Phase is also the stage of the project where you determine the general direction of the project by creating project strategy papers. The Analysis Phase's major appeal is gathering requirements. In most cases, obtaining requirements entails more than just asking consumers what they want and writing down their responses. The method for gathering requirements has its own well defined approach, depending on the complexity of the application. This procedure consists of a set of repeatable procedures for capturing, documenting, communicating, and managing requirements. There are four fundamental phases to this formal procedure, which will be discussed in greater depth later. Functional, non-functional, and other needs are all part of the requirement analysis process. All of the requirements that will be employed in the development process will be listed, along with their detailed applications. Hardware and software requirements are critical in the development of the system. The system will have a difficulty and will not work correctly in a real-world setting if the requirements are not explicitly identified.

## 3.2 THE CURRENT SCENARIO

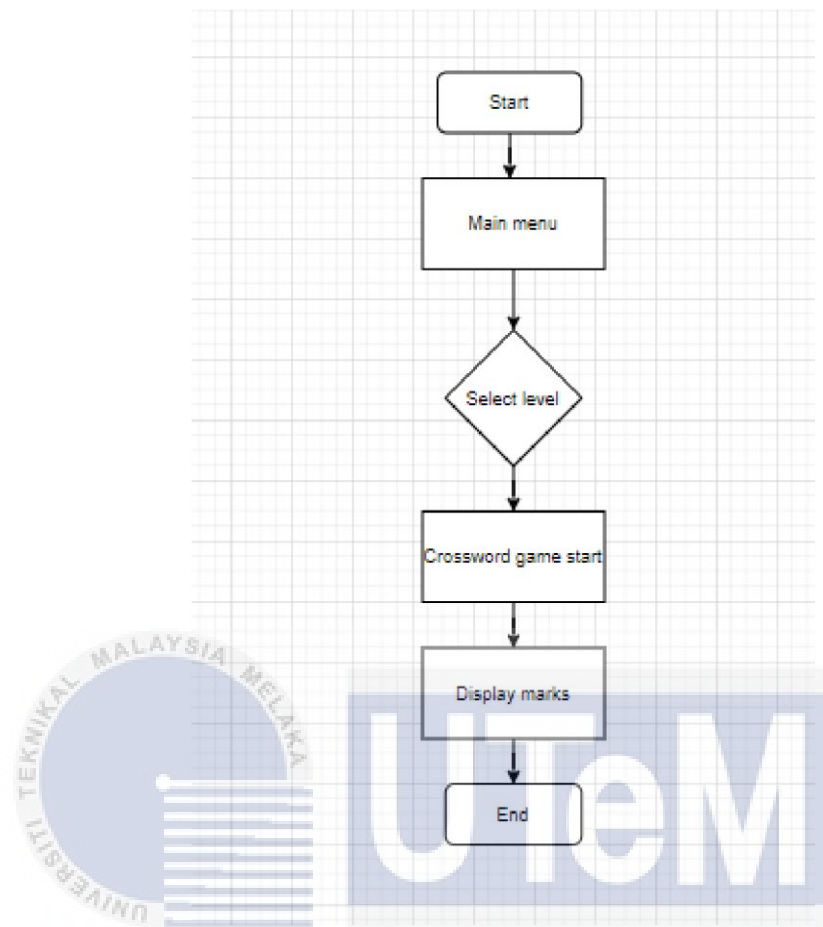
Computers solving crossword puzzles is a difficult challenge in artificial intelligence. In the history topic, it needs logical inference and association, as well as vocabulary and common sense understanding. Constrained satisfaction algorithms have also been evaluated using crossword puzzles. The goal is to place words from the dictionary (or a collection of words) into vertical or horizontal slots while keeping certain limitations in mind. A potential constraint network formulation of the crossword problem is that each word may be put in any space of right length.

### 3.2.1 COMPARING EXISTING CROSSWORD GAME

There are a few applications that have comparative capacity with Malaysian crossword game. Nonetheless, every one of them has contrast includes that separate them. The following is the flowchart for existing framework.

#### 3.2.1.1 2D GAME OF SILANG KATA MALAYSIA?

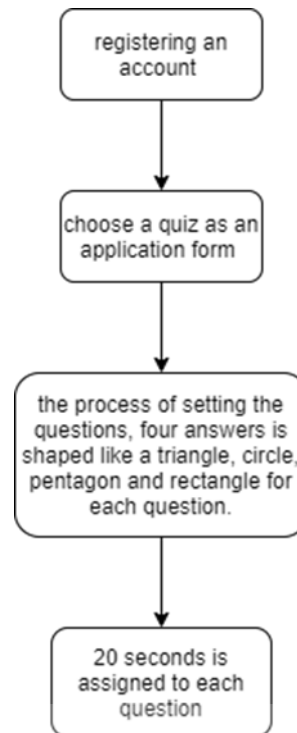
The scenario is game of Silang Kata Malaysia are produced for the people to learn and know about Malay language subject. This game can be found on Play store and Apple store. Silang kata Malaysia have 6 level by following the numbers of alphabet. People may not knowing more Malay language so that they can learn from playing the crossword game



**Figure 3.1 Flowchart 2D game of Silang Kata Malaysia**

### 3.2.1.2 QUIZLET-GAME BASED LEARNING

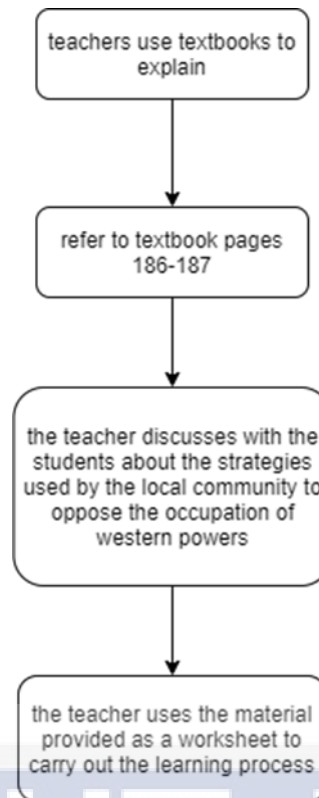
Quizlet is a multi-national American firm that develops and builds study and learning products. Quizlet's main products are digital flash cards, matching games, practise electronic exams, and live quizzes, which were founded by Andrew Sutherland in October 2005 and launched to the public in January 2007. Quizlet claims to have over 350 million user-generated flashcard sets, 3 billion cumulative study sessions, and over 50 million active users as of April 2021



**Figure 3.2 Flowchart Quizlet Gamed Based Learning**

### 3.2.1.3 HISTORY TEXTBOOKS FORM 5

Textbooks are the main reference in the process of learning and teaching in the classroom. The certified textbooks have passed all forms of censorship, especially their alignment with the national syllabus and philosophy of education.



**Figure 3.3 Flowchart History Textbook form 5**

### 3.3 REQUIREMENT ANALYSIS

Requirement Analysis, often known as requirement analysis, is the process of creating user expectations for new or updated software. It is sometimes referred to as requirements collecting or requirements capture in the context of software engineering. The tasks that go into determining the needs or conditions to meet for a new or altered product or project, taking into account the potentially conflicting requirements of various stakeholders, analysing, documenting, validating, and managing software or system requirements are all included in requirements analysis.

### 3.3.1 PROJECT REQUIREMENT

In the project requirements, the system to be developed is analysed. It will describe the action, processes or other conditions the project needs to meet. It will analyse based on the requirement gathering and specific technique that used in this project. This project requirements will provide a clear clarification of the works that need to be done.

### 3.3.2 REQUIREMENT GATHERING

Requirements gathering is presumably the most significant movement to be acted in conveying and data arrangement. There are two categories of requirement gathering which are qualitative and quantitative. Subjective evaluations utilize words or relative qualities to communicate danger, cost, and effect. A quality assessment is appropriate when there is not enough time, money and data to perform a quantitative assessment. Usually, the qualitative assessment is used in a questionnaire. The questionnaire will be conducted with the primary school students. All of the project functionality, proposed interaction and the analysis of raw data and sources will be discussed in requirement gathering. The specific technique used when developed this project also be analysed. The analysis result will be contributed to the development crossword game.

### 3.3.3 SOFTWARE REQUIREMENT

Unity, Adobe Photoshop, Adobe Illustrator are the principle foundation of crossword game building and design.

#### 3.3.1.1 Unity 2019.2.5f1

Unity is a cross-platform game engine developed by Unity Technologies, The engine can be used to create three-dimensional, two-dimensional, virtual reality, and augmented reality games, as well as simulations and other experiences. The engine has been adopted by industries outside video gaming, such as film, automotive, architecture, engineering and construction.

### **3.3.1.2 Adobe Photoshop**

Adobe Photoshop is a raster image editing, graphic design, and digital art software that is widely used. It employs layering to provide depth and versatility to the design and editing process, as well as sophisticated editing tools that, when used together, can do almost anything.

### **3.3.1.3 Adobe Illustrator**

Adobe Illustrator is a programme for making drawings, illustrations, and artwork on a computer running Windows or MacOS. Illustrator was first published in 1987, and it is still updated on a regular basis, and it is now part of the Adobe Creative Cloud. Graphic designers, web designers, visual artists, and professional illustrators utilise Illustrator to create high-quality artwork all around the world. Illustrator comes with a number of advanced drawing tools that can help you save time while creating drawings.

### **3.3.1.4 Office Microsoft Word 365**

Office Microsoft word 365 is used to make the documentation and proposal. All the documentation part will be done in Microsoft Word. It has been used to type, edit, and makeup all the format that needs in the project documentation.

## **3.4 PROJECT SCHEDULE AND MILESTONE**

The milestone schedule gives you an idea of how long the project will last. All project activities and intermediate actions required to complete the project are included in the milestones. The timeline should include milestones for the project's planning, development, construction, assessment, and reporting. The milestone dates are merely estimates based on the likelihood of a grant award. Those dates might change depending on when the grant is awarded.

Activity Description	Duration (Working days only)	Start Date	End Date
<b>1. Brainstorming</b>	<b>7 days</b>	<b>29/1/21</b>	<b>14/1/21</b>
1.1 Select project title	4 days	29/1/21	1/2/21
1.2 Find the information related the title	3 days	2/1/21	4/2/21
<b>2. Proposal</b>	<b>13 days</b>	<b>5/2/21</b>	<b>17/2/21</b>
<b>3. Project Preparation</b>	<b>13 days</b>	<b>18/2/21</b>	<b>2/3/21</b>
3.1 Install the needed software	4 days	18/2/21	21/2/21
3.2 Learn how to use the software	9 days	22/2/21	2/3/21
<b>3.1. Analysis</b>	<b>14 days</b>	<b>3/3/21</b>	<b>16/3/21</b>
3.1.1 Describe project background	2 days	3/3/21	4/3/21
3.1.2 Identify target user	1 days	5/3/21	5/3/21
3.1.3 Identify project significance	1 days	6/3/21	6/3/21
3.1.4 Define literature review	5 days	7/3/21	11/3/21
3.1.5 Identify project methodology	2 days	12/3/21	13/3/21
3.1.6 Analysis project requirement	2 days	14/3/21	15/3/21
3.1.7 Review project plan	1 days	16/3/21	16/3/21
<b>4. Development</b>	<b>77 days</b>	<b>17/3/21</b>	<b>1/6/21</b>
<b>4.1 Design 2D object</b>	<b>15 days</b>	<b>17/3/21</b>	<b>31/3/21</b>
<b>4.2 Modelling 2D object</b>	<b>15 days</b>	<b>1/4/21</b>	<b>15/4/21</b>



<b>4.3 Develop scene</b>	<b>15 days</b>	<b>16/4/21</b>	<b>30/4/21</b>
<b>4.4 Integrate object into Unity</b>	<b>16 days</b>	<b>1/5/21</b>	<b>16/5/21</b>
<b>4.5 Develop user interaction</b>	<b>16 days</b>	<b>17/5/21</b>	<b>1/6/21</b>
<b>5. Testing</b>	<b>7 days</b>	<b>2/6/21</b>	<b>8/6/21</b>
<b>6. Development</b>	<b>7 days</b>	<b>9/6/21</b>	<b>15/6/21</b>
<b>6.1 Edit scenes</b>	<b>4 days</b>	<b>9/6/21</b>	<b>12/6/21</b>
<b>6.2 Improve the interface</b>	<b>3 days</b>	<b>13/6/21</b>	<b>15/6/21</b>
<b>PSM 2</b>			
<b>7. Development</b>	<b>28 days</b>	<b>16/6/21</b>	<b>13/7/21</b>
<b>8. Implementation</b>	<b>21 days</b>	<b>14/7/21</b>	<b>4/8/21</b>
<b>9. Testing</b>	<b>21 days</b>	<b>5/8/21</b>	<b>25/8/21</b>
<b>9.1 Testing</b>	<b>11 days</b>	<b>5/8/21</b>	<b>15/8/21</b>
<b>9.2 Evaluate</b>	<b>5 days</b>	<b>16/8/21</b>	<b>20/8/21</b>
<b>9.3 Publish</b>	<b>5 days</b>	<b>21/8/21</b>	<b>25/8/21</b>
<b>10. Documentation</b>	<b>14 days</b>	<b>26/8/21</b>	<b>8/9/21</b>
<b>11. Final Preparation</b>	<b>21 days</b>	<b>9/9/21</b>	<b>29/9/21</b>

**Table 3.1 Project Schedule and milestone**

### 3.5 CONCLUSION

This section summarize all of the research that has been completed prior to the start of the new stage, organize the investigation and strategy, and clarifies the framework that will be developed. In general, this stage is used to assess the client's needs and the importance of addressing, improving, and implementing improvements to meet those needs. Developers can understand what you want by doing a requirement study.



## CHAPTER 4: DESIGN

### 4.1 INTRODUCTION

This chapter elaborates on the findings of the review conducted in the previous chapter. The design phase includes various advancements in terms of learning goals, assessment apparatuses, preparation, and workouts. The developer will design and structure the application during the design phase. It is based on the project's concept and idea. The developer will get a basic layout on what to add to the project interface by sketching the idea, layout, and design. The process of this design application will be elaborated more in chapter.

### 4.2 SYSTEM ARCHITECTURE

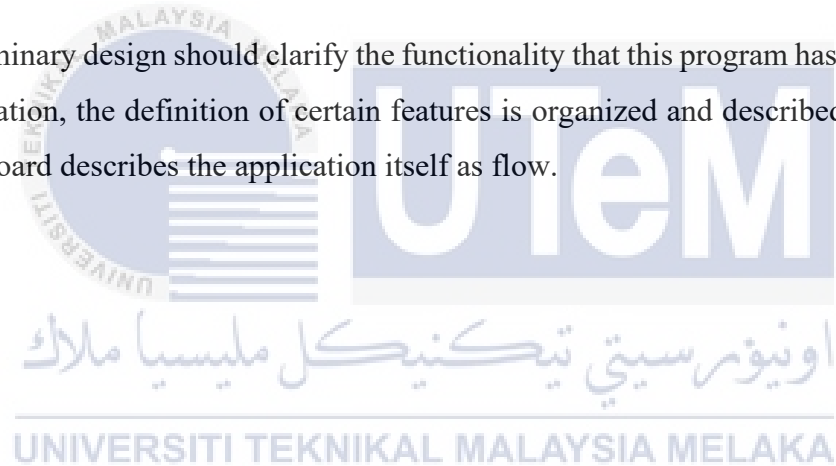
The game architecture are giving the briefly explanation for the overall application. In this Game Development, there are several parts to form the system architecture. The “Crossword games for history subject form 5 application is a marker-based game application. The marker for this application is subject History. User required to use the handphone to play the crossword game, then the question will appearance randomly by choosing the each topic or syllabus in subject History. After player choose the topic they have to play and answer the question . Then, the marks of each player will appear by the time taken that it take while answer the questions. Besides, to improve the user experience some buttons will be have in the application. In addition we also put the different sound and music in the crossword game so that player can get more spirit to finish the crossword game. User can view the mark when they done answer all the questions given.




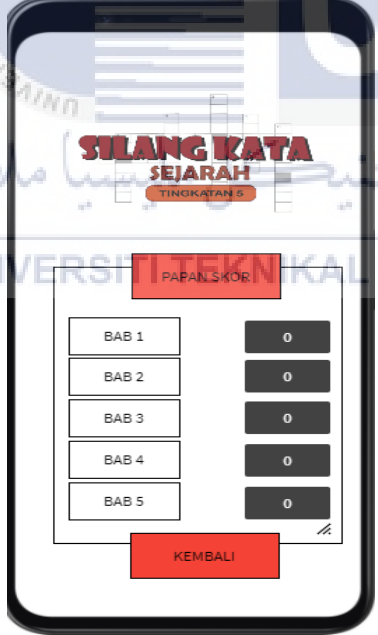
**Figure 4.1 System Architecture**


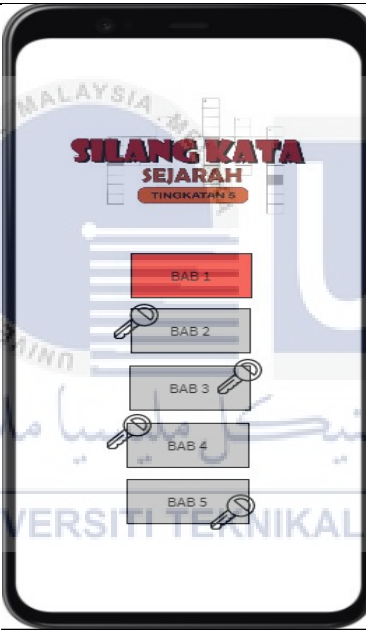
### **4.3 PRELIMINARY DESIGN**

Preliminary design should clarify the functionality that this program has to offer. Within the application, the definition of certain features is organized and described. The design of the storyboard describes the application itself as flow.



#### 4.4 Storyboard Design

No	Storyboard of Game	Description
1)		<p>User enter the interface of the game, After that they have three options, either choose “Mula” , “Papan Skor” and “Tetapan”.</p>
2)		<p>User are in the “Papan Skor” selection</p>

3)		<p>User are in the “Tetapan” selection. So in this scene user can mute and unmute the sound or music</p>
4)		<p>User have to start with first chapter and the questions will appear randomly.</p>

5)		The questions will be appear in this scene
6)		If the user answer the wrong question it will be appear “Salah”

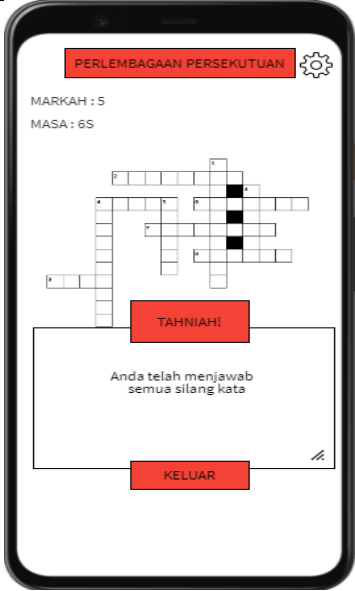
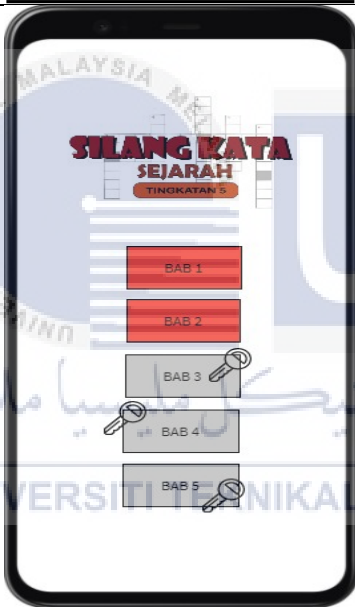
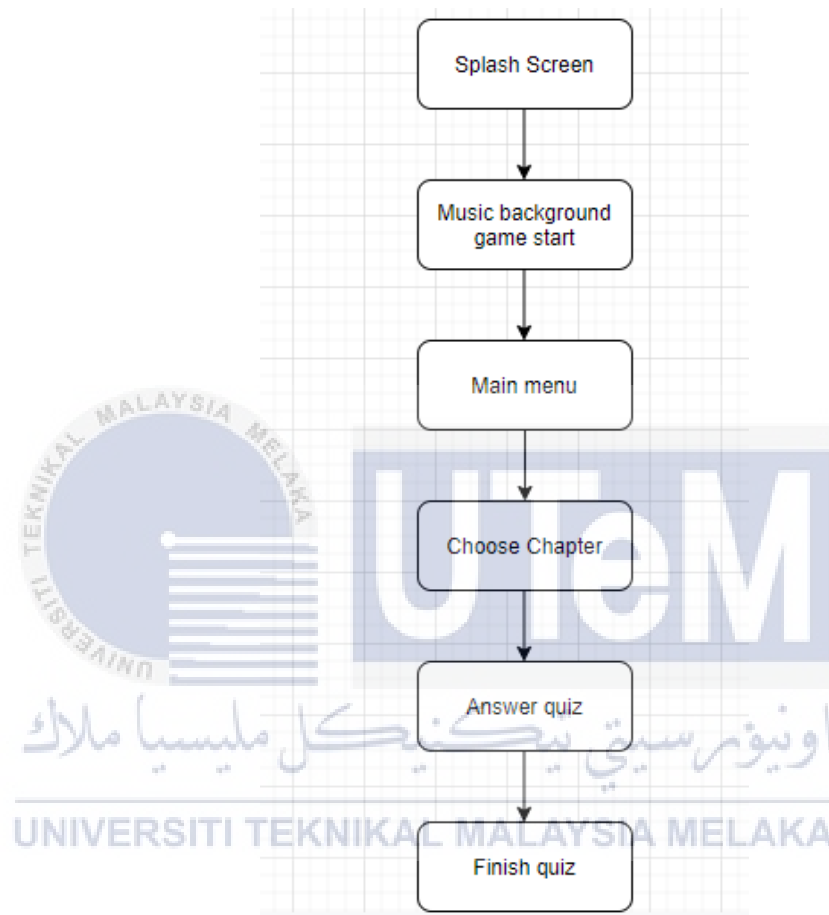
7)		It will be appear a congratulations text when user finish answer all the question in first chapter
8)		When user finish answer the question in first chapter, second chapter will be open

Table 4.1 Storyboard



#### 4.4.1 FLOWBOARD

A flow board is the best way to document a game's structure. The term is derived from a flowchart and a storyboard: Storyboards are a linear series of pictures used by filmmakers to plan a set of shots.



**Figure 4.2 Flow board**

#### 4.4.2 LEVEL DESIGN

In a video game, the complete space available to the player during the course of achieving a defined objective is referred to as a level, map, area, stage, world, track, board, floor, zone, phase, mission, episode, course, or rank.

- FIVE LEVEL
- Chapter 1 : Kedaulatan Negara
- Chapter 2: Perlembagaan Persekutuan
- Chapter 3: Perlembagaan dan Demokrasi Berparlimen
- Chapter 4: Sistem Persekutuan
- Chapter 5: Pembentukan Malaysia

#### 4.5 USER INTERFACE DESIGN

User Interface is about as medium that license the user to help out the broadened reality. It is huge because most of the incredible extended the fact of the matter is depending what number of customers can perceive how to use the developed reality application. Along these lines, the route toward arranging user interface should be genuine in order to make the correspondence between the user and the expanded reality convincing. There are three fundamental pieces of user interface which are navigation design, logo design and History subject questions.

### 4.5.1 NAVIGATION DESIGN

Navigation design is to create a system that users can interact easily with the system and use the system. The navigation design can help the users easier to use the system. Below are the flowchart for navigation design.

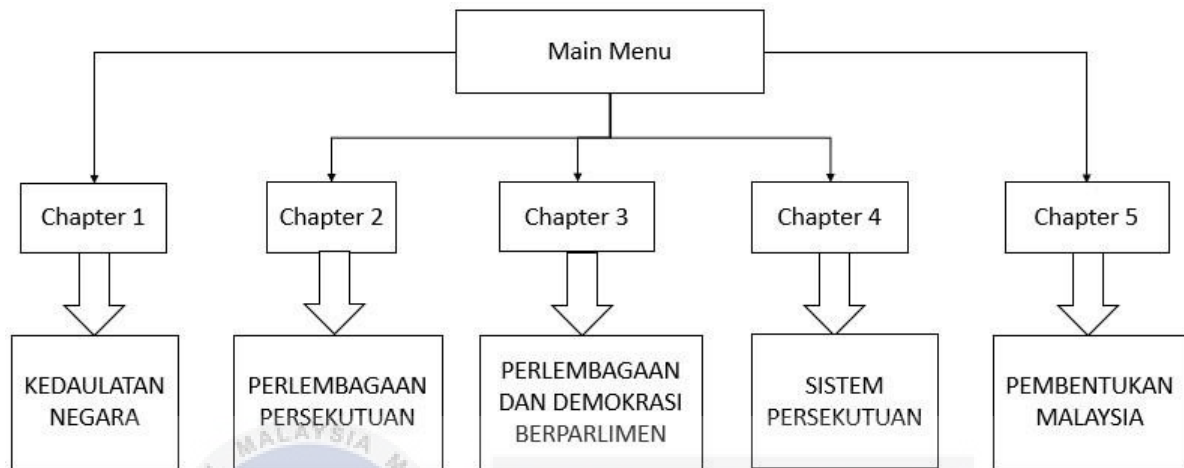


Figure 4.3 Navigation Design

### 4.5.2 LOGO DESIGN

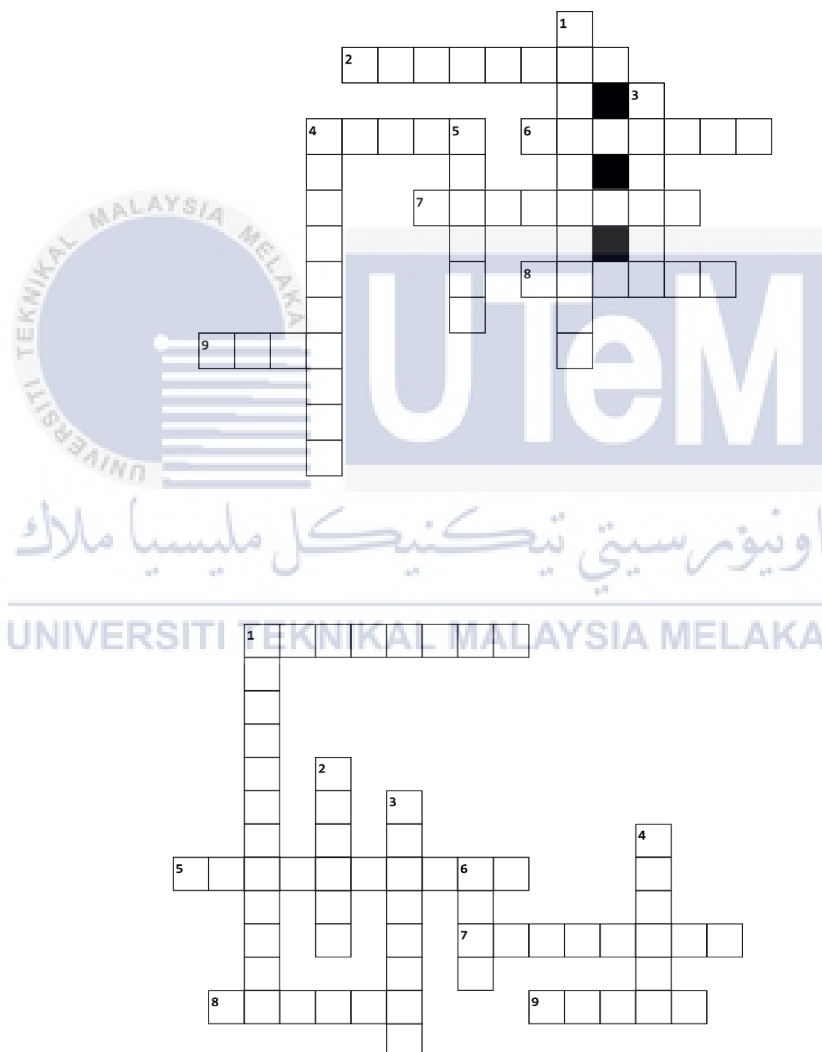
Logo design is all about creating the perfect visual brand mark for a crossword game. Depending on the type, a logo usually consists of a symbol or landmark and a logotype, along with a tagline.

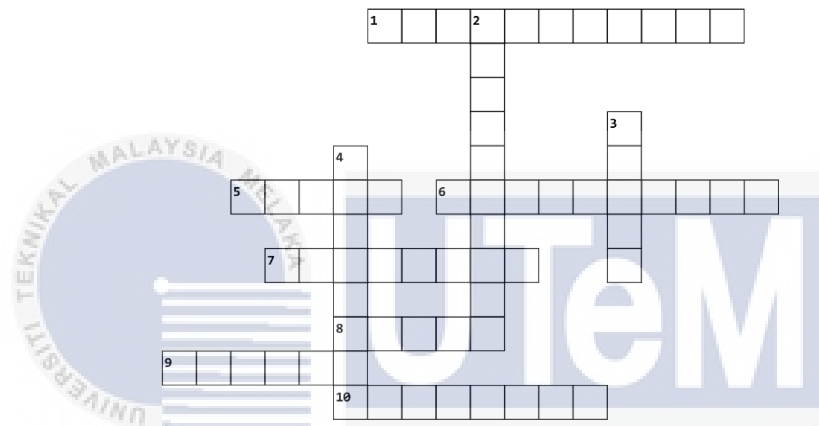
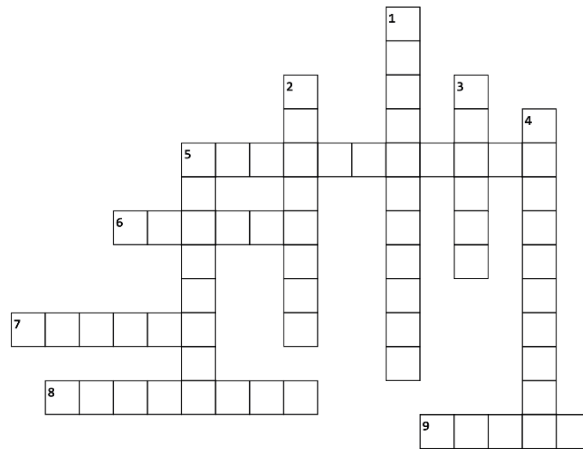


Figure 4.4 Logo Design Silang Kata Sejarah

### 4.5.3 HISTORY SUBJECT QUESTIONS

In this crossword game we took five chapter in a subject “Sejarah”. For each chapter we prepare four set questions and ten questions in the set. So, we arranged the questions by randomly so that not all player can get the same set questions.





**Figure 4.5 Crossword Design**

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#### 4.5.4 AUDIO/SOUND EFFECT

Sound effects on computers and video game systems were generally created via sound synthesis. Increases in storage space and playback quality have enabled the use of sampled sound in contemporary systems. Positional audio, typically with hardware acceleration, and real-time audio post-processing are also common in current systems, which can be linked to 3D graphics development. Multiple alternative computations can be done based on the game's internal status. This will enable realistic sound attenuation, echoes, and the doppler effect, among other things.

- Background sound
- Click button sound
- Wrong answer sound
- Congratulation sound

#### 4.6 CONCLUSION

Design phase is important for developer because in this phase the developer will get the idea to design the application. After that, the next phase will follow the sketch on the storyboard to develop the application. As for user interface design, the navigation design help user to keep track the flow of the system. Lastly, the design of the system will come out from this phase. Next chapter will cover phase of implementation that involves the process and activities of implementation and the progress of the project.

## CHAPTER 5: IMPLEMENTATION

### 5.1 INTRODUCTION

In this chapter we will highlight one of the important phases in game development which are the implementation. This chapter will provide information from the technical view of the implementation from programmer perspective during production of graphics, production of audio, production of video and production of animation. We also touch a little bit on the integration for the feature core mechanics the game, configuration management and status

### 5.2 CREATION OF GAME ART

A subcategory of game development is game art design. It's the process of developing artistic elements for crossword games. The pre-production phase of making a crossword game is where game art design begins.

#### 5.2.1 Production of Audio

Audio production is a term used for all the stages of production between the actual recording in a studio and the execution of a master recording. Audio Production involves various different stages from sound design, to sound editing, to audio mixing, and finally the addition of effects.

The recordings for the voice narration are made with a smartphone, and then the files are transferred and processed with Audacity. After that, editing techniques such as noise reduction, which removes background white noise, and amplify, which increases the audio loudness, are used. After that, the files are converted to MP3 format. Background music and sound effects that are not copyrighted are acquired from the internet and organised in Adobe Premiere Pro according to the scenarios.

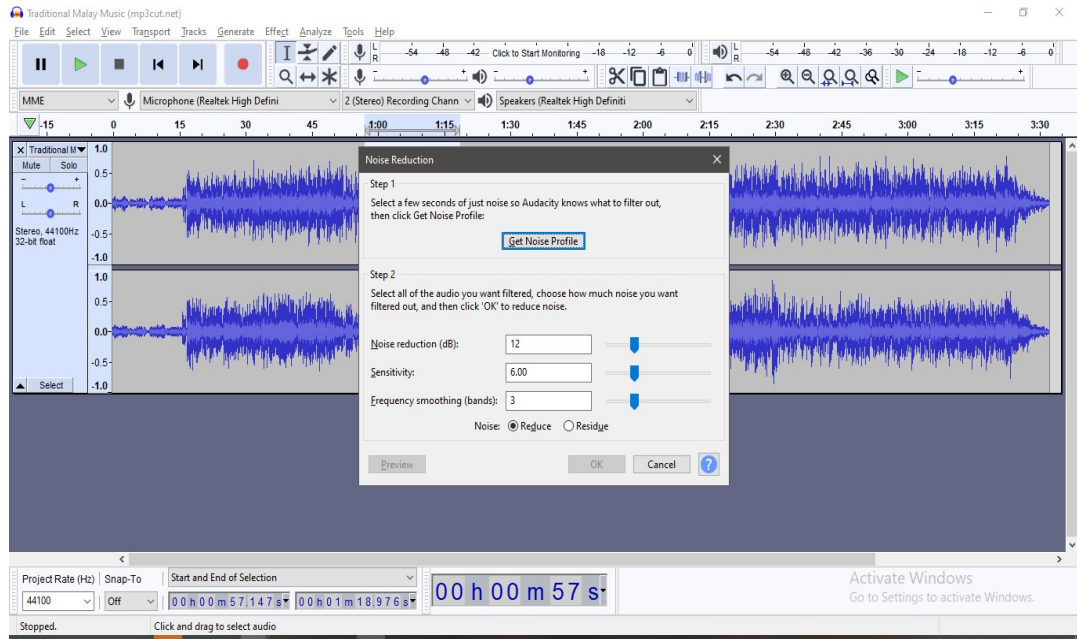
Sound	Description
<b>Background sound</b>	Used in opening game system which is when the player open the “Silang Kata Sejarah” by using the Tradisional Malay music
<b>Click button sound</b>	Used in when player click “Mula”, “Tetapan”, “Kembali” , “Papan Skor”and choose the chapter in the subject “Sejarah” by using Mouse click soundtrack
<b>Wrong answer sound</b>	Used in when player answer the wrong questions by using wrong answer sound
<b>Congratulations sound</b>	Used in when player had finished answer all the questions and the scoreboard will be appearance by using clapping sound effect

Table 5.1 Types of sound and music

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**Figure 5.1 Audacity for control and edit sound**

## 5.2.2 Production of Text

One of the most important interactive media components in this project is text.

Text is being used to deliver information to the crowd in order for them to understand what this project is all about. Text is an important medium for conveying content for description, instruction, and nuance. The language and sentences used in this initiative are straightforward and direct, with the purpose of attracting the attention of the public.

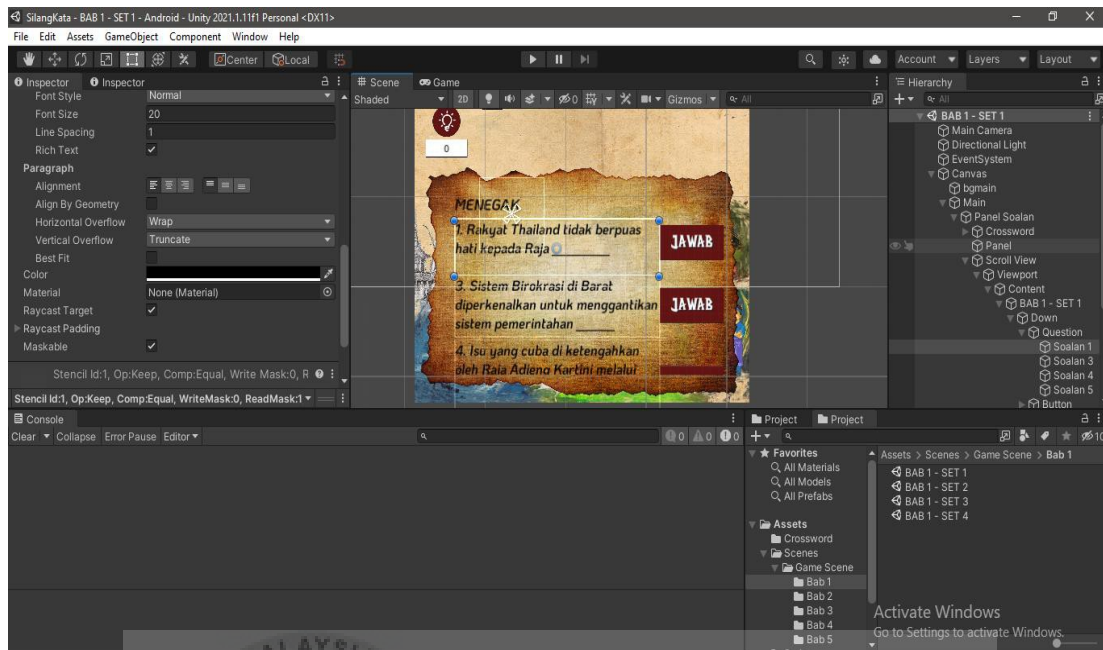
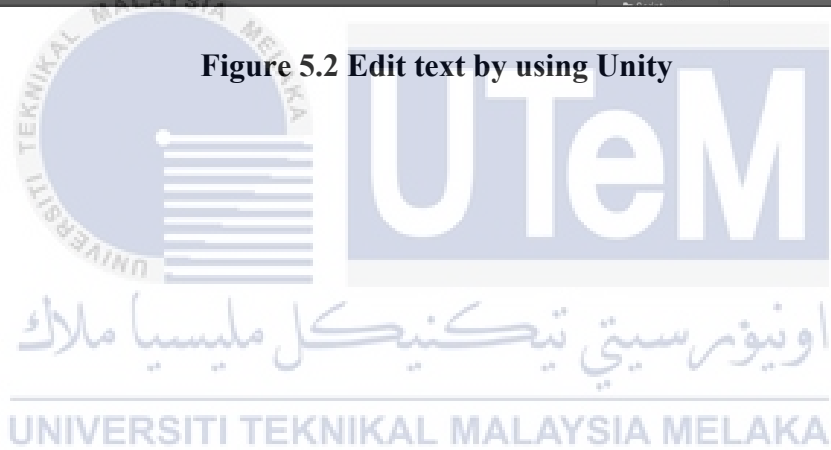
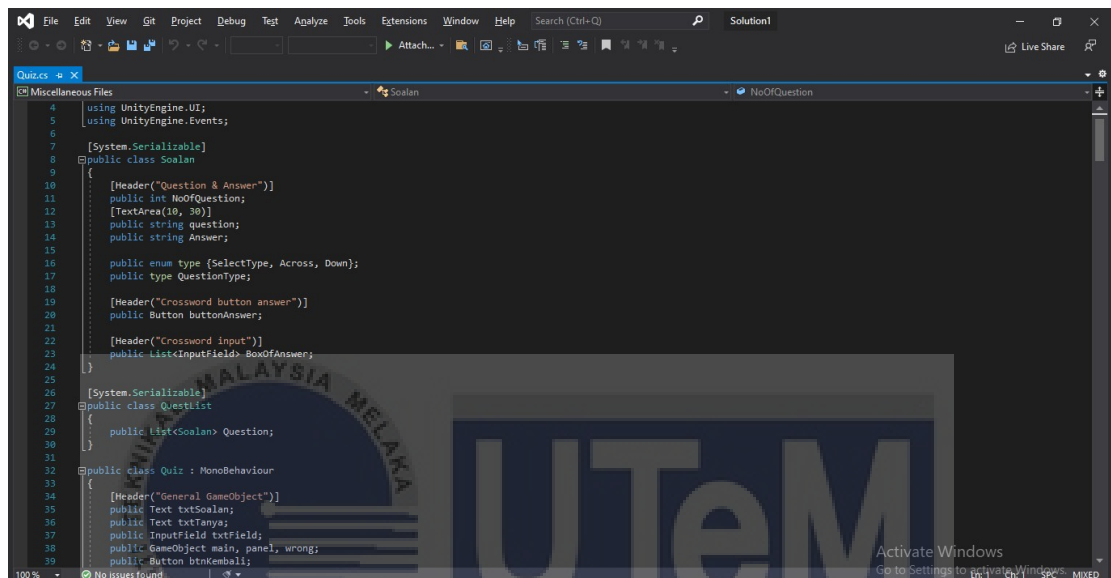


Figure 5.2 Edit text by using Unity



### 5.2.3 Production of Coding

Production code is the code that other people are actually using it (other coders or end users). Through your development process you write code that you later realize that it should not be that way so you go through a process called Refactoring to make you code better, more reusable and extendable. This is one of the code to make the quiz function



```

4 using UnityEngine.UI;
5 using UnityEngine.Events;
6
7 [System.Serializable]
8 public class Soalan
9 {
10     [Header("Question & Answer")]
11     public int NoOfQuestion;
12     [TextArea(10, 30)]
13     public string question;
14     public string Answer;
15
16     public enum type {SelectType, Across, Down};
17     public type QuestionType;
18
19     [Header("Crossword button answer")]
20     public Button buttonAnswer;
21
22     [Header("Crossword input")]
23     public List<InputField> BoxOfAnswer;
24 }
25
26 [System.Serializable]
27 public class QuestList
28 {
29     public List<Soalan> Question;
30 }
31
32 public class Quiz : MonoBehaviour
33 {
34     [Header("General GameObject")]
35     public Text txtSoalan;
36     public Text txtTanya;
37     public InputField txtField;
38     public GameObject main, panel, wrong;
39     public Button btnKeBall;

```

Figure 5.3 Edit coding using Microsoft visual 2019

## 5.3 CONFIGURATION MANAGEMENT

### 5.3.1 User configuration

The configuration management setup for crossword game is user need a android smartphone and user need to install of this game application.

### 5.3.2 Connection of Android Application

Crossword game application is a native application that can be accessible by android 5.0 device or above the phone that are not required the internet connection.

### 5.3.3 Version Control Procedure

Version	Description
Version 1.0	<ul style="list-style-type: none"> <li>• The storyline</li> <li>• Storyboard</li> <li>• Design</li> </ul>
Version 2.0	<ul style="list-style-type: none"> <li>• Game scene by scene</li> </ul>
Version 3.0	<ul style="list-style-type: none"> <li>• Demo and testing Alpha version</li> </ul>
Version 4.0	<ul style="list-style-type: none"> <li>• Improve final game into the mobile application</li> </ul>

**Table 5.2 Version Control Procedure**

### 5.4 Implementation Status

Progress of the development status for each phase.

Task	Duration	Status
Design storyboard of the game	2 weeks	On time
Code the functionality of the game	2 weeks	On time
Compilation and develop game in Unity	4 weeks	On time

**Table 5.3 Implementation status**

## 5.5 CONCLUSION

The phase has explained the implementation of integrating all of the multimedia elements for the crossword game concept. On the next chapter will discuss the execution of testing and evaluation of the product.



## CHAPTER 6: TESTING

### 6.1 INTRODUCTION

Testing is a crucial step in ensuring that a product's quality meets the needs of its intended audience. In this phase, the application's flaws and defects are found in order to make room for improvement. As a result of this phase, an enhanced version will be able to be developed.

This chapter will go through the testing that was done before for this application. This chapter contains the test plan, which covers the test user, test environment, and test schedule, as well as the test strategy used on this product and the application's implementation process. At the end of this chapter, the findings of these tests will be examined and discussed.

### 6.2 TEST PLAN

The test plan is a detailed document that describes the testing methods utilized in this application. It's utilized to collect the test's data in order to get the required findings. A test plan will specify the sort of test to be conducted, as well as the type of data to be used, as well as the actual and expected outcomes. In this step, the test's objectives and scope are defined. The method of identification used in this testing will be discussed later on. Furthermore, the test plan will also discuss the test environment and test schedule.

### **6.2.1 Test User**

The test user will describe the number of participants in the test who will participate as testers of this activity. Two user meetings, consisting of teacher and students, will complete the testing phase for this historical crossword game.

#### **6.2.1.1 Teachers**

The teacher for this test is someone who teaches in the subject of history subjects. The project will be tested by 11 teachers. 1 teacher will be interviewed while 10 other teachers will answer the questions provided. This is because the crossword game must first be launched before being sent to the user. This test is completed at the conclusion of the development process and before to the product release. They will test the crossword game with a focus on usability.

#### **6.2.1.2 Students**

Form 5 students that take history subjects. Someone who understands historical topics that can help improve a product or manage a particular situation. This assessment is to test whether crossword game can make it easier for students to understand better and can be used as reference material or lesson tools for students. to see if the information or content in the app corresponds to historical facts. These students are selected because they will be taking the exam. They will test the project by answering the questions provided.

Testing	Profession	General information	No of respondent
	Teachers (Interviewed) 1) Farah Nabila binti Zainuddin School: Sekolah Menengah Kebangsaan Jerantut	Working experience 3-20 years above	1 of respondent
	2) Teacher in History subject from Sekolah Menengah Kebangsaan Jerantut and Sekolah Menengah Kebangsaan Bandar T6	Working experience 3-20 years above	10 of respondent
	Students from Sekolah Menengah Kebangsaan Jerantut	17 years old	20 of respondent

Table 6.1 Table for test user by the profession



### 6.2.2 Test Environment

This project is being developed as a mobile application. As a result, testing this software is simple, as just requires an Android phone. The test environment primarily focuses on software and hardware testing. The ability to evaluate the effectiveness of the testing and the capacity to support multiple platforms of Android devices is dependent on environment testing.

Environment	Tools	Description
Hardware	Platform	Android Smartphone
	Operating System	Android 4.4 (KitKat) and above
	Storage Requirement	Minimum 20MB
Software	Platform	Unity

**Table 6.2 Table for test environment in software and hardware**



### 6.2.3 Test Schedule

Test schedule is essential as it requires strategic planning so that the time during the testing is at peak performance and to ensure that the testing can be successfully completed in the given time. Running tests in the tester might be challenging if the time is not carefully controlled. Following a tutorial of how to use historical crossword problems, which have been selected by experts, users will test the apps functioning. In compliance with regular government operating standards, the test environment will be done online. Users will be given a link to a short tale to test and offer comments via a survey utilising a Google form that will serve as a record of test results. Then, through interviews done through the Zoom app, an instructor will offer comments.

Tester	Number of Tester	Testing Date	Testing Venue	Platform (Online)
Teacher	1 people	10/08/2021 - 13/08/2021	Anywhere	Zoom Apps
Teacher in History subject	10 respondents	10/08/2021 - 13/08/2021	Anywhere	Google form
Students	2 respondents	10/08/2021 - 13/08/2021	Anywhere	Google form

**Table 6.3 Table show for test schedule**

### 6.3 TEST STRATEGY

The test strategy used in this testing phase is interview and survey. For the interview will be done with the teacher. Some questions about the game will be asked through the video conference for a few minutes. The teacher is a teacher who teaches Form 5 history subjects. Meanwhile, For the survey will be done with students and teacher. Some questions about the game will be asked through google form or known as questionnaire. This testing strategy is used to gather testing results from multiple users.

Score	Description
1	Strongly disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

**Table 6.4 Table show rate of Test Strategy**

### 6.3.1 Test Instrument

#### Interview questions with teacher

No	Question
1	Does learning through graphic notes help students to improve learning? <i>Adakah pembelajaran melalui nota grafik dapat membantu pelajar untuk meningkatkan pembelajaran?</i>
2	Will provide training in writing can enhance the learning skills of students in considering that they learn? <i>Adakah memberi latihan secara bertulis dapat meningkatkan kemahiran pelajar dalam mengingati pembelajaran yang mereka pelajari?</i>
3	Do crossword puzzles with this help as one of the tools for students? <i>Adakah teka-teki silang kata ini sebagai salah satu alat bantuan pelajaran untuk pelajar?</i>

**Table 6.5** Table show interview questions with teacher



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### Questionnaire with teacher

No	Question	1	2	3	4	5
1	Does the use of game-based learning increase the confidence and performance of high and low ability students? <i>Adakah penggunaan pembelajaran berasaskan permainan meningkatkan keyakinan dan prestasi pelajar berkemampuan tinggi dan rendah?</i>					
2	Is the use of game-based learning affective in improving student achievement, problem solving skills and motivation for history subject? <i>Adakah penggunaan pembelajaran berasaskan permainan mempengaruhi dalam meningkatkan pencapaian pelajar, kemahiran menyelesaikan masalah dan motivasi untuk mata pelajaran sejarah?</i>					
3	Whether crossword games with peer assessment can improve student achievement, motivation and problem solving? <i>Adakah permainan silang kata dengan penilaian rakan sebaya dapat meningkatkan pencapaian, motivasi dan penyelesaian masalah pelajar?</i>					
4	Do you think crossword games are easier than using a textbook? <i>Adakah anda fikir permainan silang kata lebih mudah daripada menggunakan buku teks?</i>					
5	The flow of game used in this crossword game is easy to understand. <i>Adakah aliran permainan yang digunakan dalam permainan silang kata ini mudah difahami.</i>					
6	Does a given time in the crossword game is suitable or not? <i>Masa yang diletakkan di dalam permainan silang kata sesuai atau tidak?</i>					

**Table 6.6 Table show questionnaire with teacher**

## Questionnaire with students

No	Question	1	2	3	4	5
1	This crossword game attracts my interest about to learn more about history subject <i>Permainan silang kata ini menarik minat saya untuk mempelajari lebih lanjut mengenai subjek sejarah</i>					
2	Is this game easy to understand and answer? <i>Adakah permainan ini senang difahami dan dijawab?</i>					
3	Are the music and sounds used in this crossword game appropriate? <i>Adakah muzik dan bunyi yang digunakan dalam permainan silang kata ini sesuai?</i>					
4	The interface and graphic display are clear and attractive <i>Antara muka dan paparan grafik jelas dan menarik</i>					
5	Does the use of game-based learning increase the confidence and performance of high and low ability students? <i>Adakah penggunaan pembelajaran berasaskan permainan meningkatkan keyakinan dan prestasi pelajar berkemampuan tinggi dan rendah?</i>					
6	Is the use of game-based learning affective in improving student achievement, problem solving skills and motivation for history subject? <i>Adakah penggunaan pembelajaran berasaskan permainan mempengaruhi dalam meningkatkan pencapaian pelajar, kemahiran menyelesaikan masalah dan motivasi untuk mata pelajaran sejarah?</i>					
7	Whether crossword games with peer assessment can improve student achievement, motivation and problem solving? <i>Adakah permainan silang kata dengan penilaian rakan sebaya dapat meningkatkan pencapaian, motivasi dan penyelesaian masalah pelajar?</i>					
8	Will this crossword puzzle help you to review the lesson where you are? <i>Adakah teka-teki silang kata ini akan membantu anda mengulangkaji pelajaran di mana anda berada?</i>					
9	I find it easier to understand a topic using crossword game than a text description. <i>Saya lebih mudah memahami topik menggunakan permainan silang kata daripada keterangan teks.</i>					
10	Whether with help hint crossword game can help students to answer questions? <i>Adakah dengan permainan silang kata petunjuk dapat membantu pelajar menjawab soalan?</i>					

Table 6.7 Table show questionnaire with students

## 6.4 TEST IMPLEMENTATION

Test implementation is the procedure where we optimizing all the test process, test procedures, steps in creating test data which later on is collected and presented. In this section, the testing results from the questionnaire are shown. The main objective of this project is tested whether the creative games techniques is effective to the user.

### 6.4.1 Test Description

Test description is a survey was delivered to the chosen target user during the testing session. Each respondent will do the testing independently after the developer gives them a brief overview of the project. They must put every aim they have to the test. At that point, each respondent is asked to complete a poll that the developer has sent to them.

### 6.4.2 Test Data

A test report is a document that summarises all of a testing project's test activities and final test findings. A test report is an assessment of how well the testing was completed. Both functionality testing and user acceptability testing are used to determine whether or not this project meets the aim set out in the first chapter.

No	Tester	Number of respondents
1	Teacher	1 people
2	Teachers	10 people
3	Students	20 people

**Table 6.8 Test data for user testing**

### 6.4.3 Test result and analysis

This crossword game has only been subjected to one type of testing: usability testing. Respondents feel that using this crossword would improve the current way of teaching history and will make learning simpler for students. According to the survey responders, the crossword is also simple to use. This crossword game will be useful to both students and instructors in many positions. The majority of respondents were good with the overall system, according to the data.

#### 6.4.3.1 Interview with teacher

In this testing, 1 teacher from Sekolah Menengah Kebangsaan Jementah Segamat have already been interviewed to answer some questions regarding this historical crossword game. These interviews were conducted virtually using a zoom application. The teacher thinks that this crossword game is a suitable game to use nowadays again when learning from home. Apart from that, the teacher also said that graphic notes are very suitable to use because according to the study, colourful writing can foster interest in learning and easy to memorize.

No	Question	Result
1	Does learning through graphic notes help students to improve learning? <i>Adakah pembelajaran melalui nota grafik dapat membantu pelajar untuk meningkatkan pembelajaran?</i>	Yes, because notes in graphic can improve student to memorize that they learn because its colourful and attract them
2	Will provide training in writing can enhance the learning skills of students in considering that they learn? <i>Adakah memberi latihan secara bertulis dapat meningkatkan kemahiran pelajar dalam mengingati pembelajaran yang mereka pelajari?</i>	Yes, because research have said when we listen, reading and writing can also improve students 'comprehension
3	Do crossword puzzles with this help as one of the tools for students?	Yes, because very helpful and correct, in addition to the situation of learning from

<i>Adakah teka-teki silang kata ini sebagai salah satu alat bantuan pelajaran untuk pelajar?</i>	home. this crossword can attract more students to play
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**Table 6.9 Table show interview questions with teacher**

#### 6.4.3.2 Questionnaire with teachers

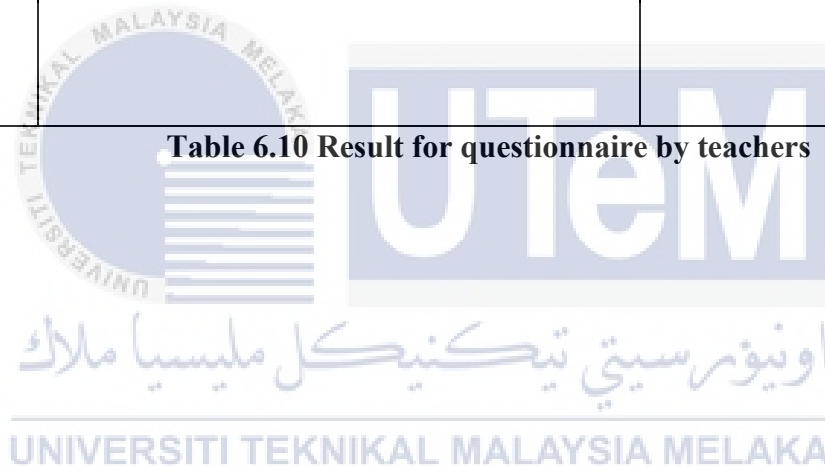
In this testing, there are 10 respondents from Sekolah Menengah Kebangsaan Jementah Segamat and Sekolah Menengah Kebangsaan Bandar T6 are answer the questionnaire. The teachers will be answer all the question that include in the questionnaire. The collected data will be analyzed and compile for all the questions. The mean and standard deviation of the questionnaire is calculated in the Table 6.8

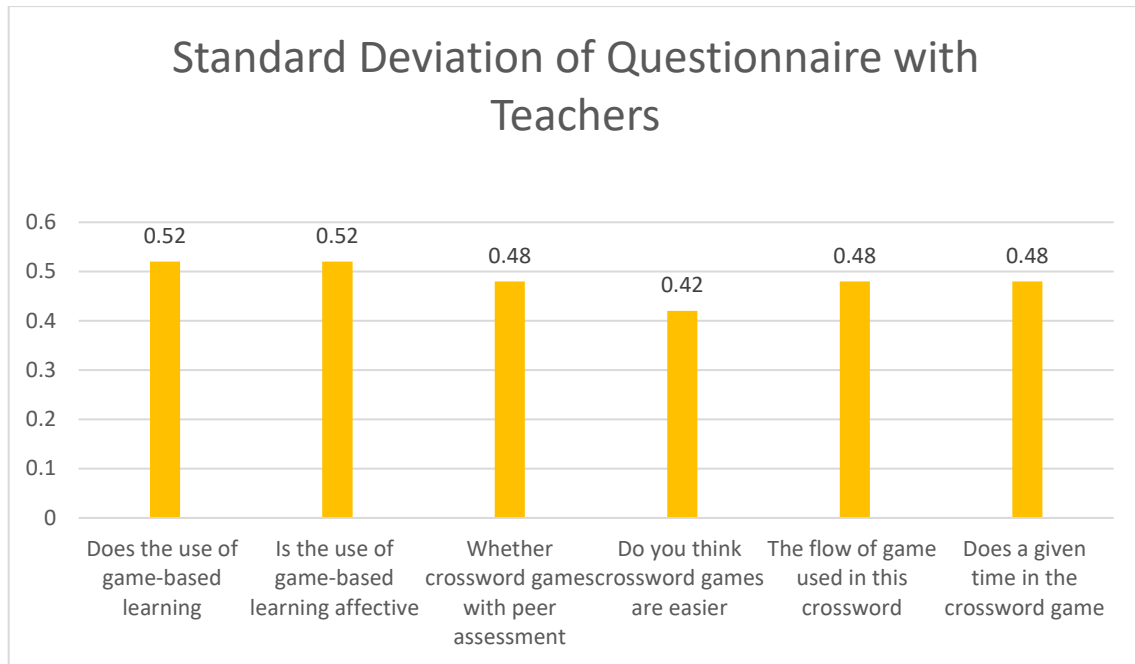
No	Question	Mean	Standard deviation
1	Does the use of game-based learning increase the confidence and performance of high and low ability students? <i>Adakah penggunaan pembelajaran berasaskan permainan meningkatkan keyakinan dan prestasi pelajar berkemampuan tinggi dan rendah?</i>	4.6	0.52
2	Is the use of game-based learning affective in improving student achievement, problem solving skills and motivation for history subject? <i>Adakah penggunaan pembelajaran berasaskan permainan mempengaruhi dalam meningkatkan pencapaian pelajar, kemahiran menyelesaikan masalah dan motivasi untuk mata pelajaran sejarah?</i>	4.6	0.52
3	Whether crossword games with peer assessment can improve student achievement, motivation and problem solving? <i>Adakah permainan silang kata dengan penilaian rakan sebaya dapat meningkatkan pencapaian, motivasi dan penyelesaian masalah pelajar?</i>	4.7	0.48



4	Do you think crossword games are easier than using a textbook? <i>Adakah anda fikir permainan silang kata lebih mudah daripada menggunakan buku teks?</i>	4.7	0.48
5	The flow of game used in this crossword game is easy to understand. <i>Adakah aliran permainan yang digunakan dalam permainan silang kata ini mudah difahami.</i>	4.8	0.42
6	Does a given time in the crossword game is suitable or not? <i>Masa yang diletakkan di dalam permainan silang kata sesuai atau tidak?</i>	4.7	0.48

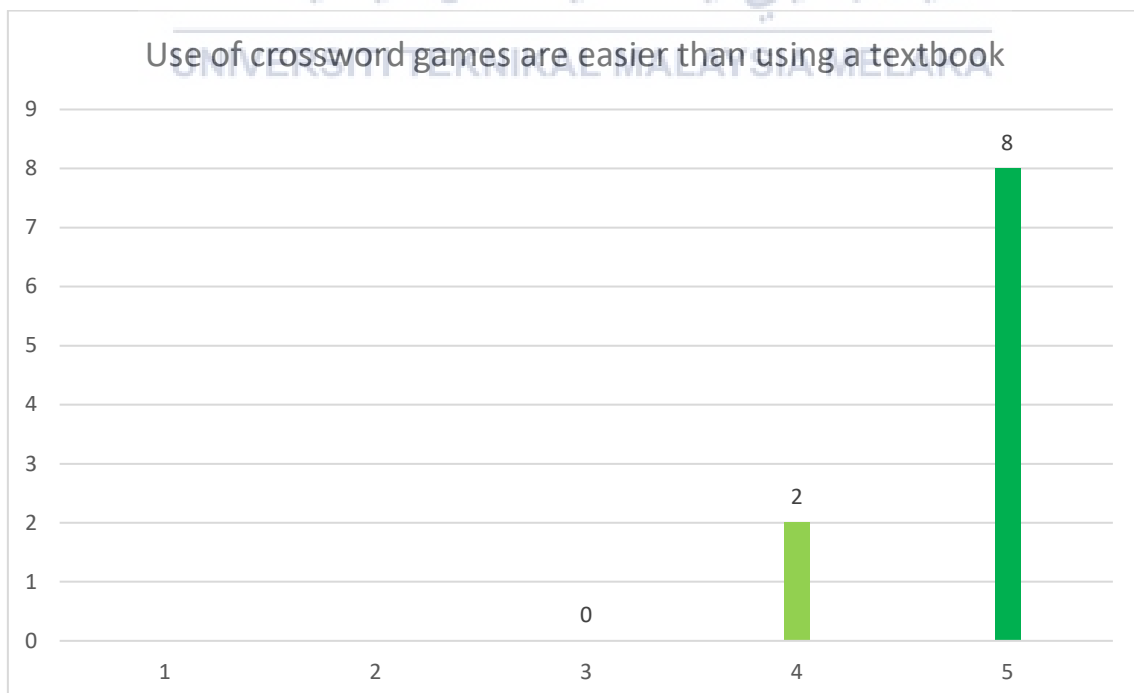
**Table 6.10** Result for questionnaire by teachers





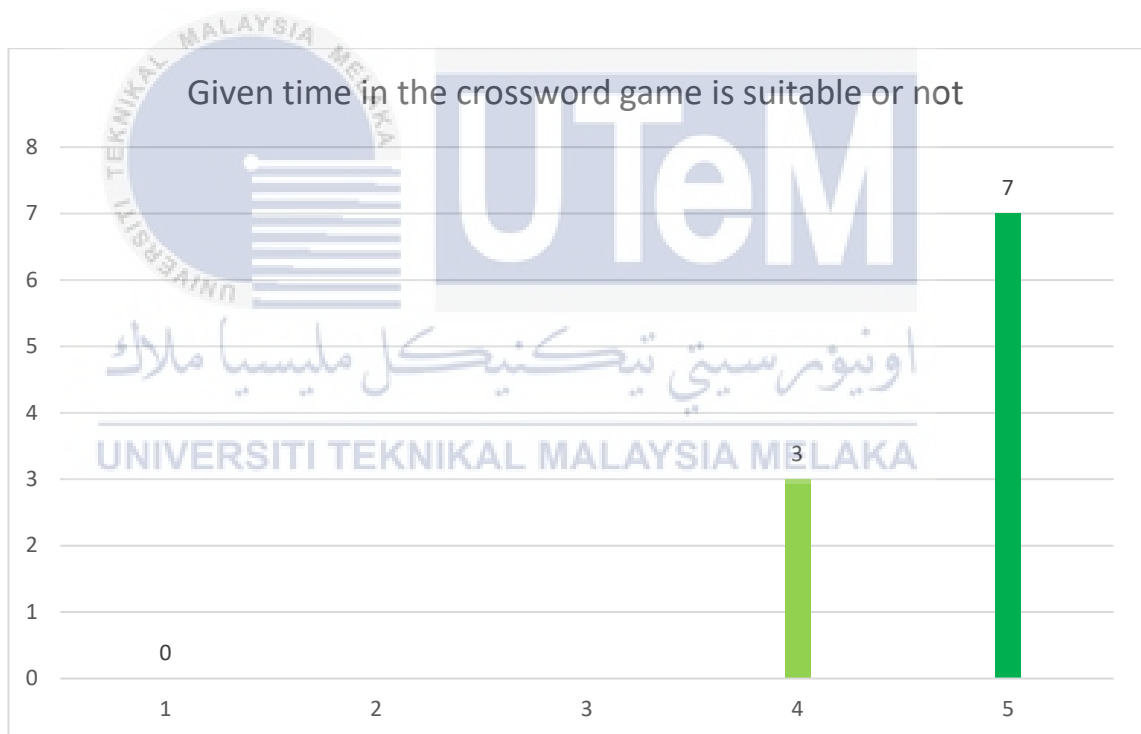
**Figure 6.1 Standard Deviation of Teachers**

Table 6.8 and figure 6.1 is about Teachers Mean and Standard Deviation data. From this analysis the mostly the standard deviation is 0.48 and 0.52. Most of teacher agree crossword game is the best way for improving student skills in History subject.



**Figure 6.2 Result for use of crossword games are easier than using textbook**

Based on question 4, the mean for the questions is 4 and the standard deviation are 0.42. It is because 2 teacher are vote in scale 4 and the others vote for scale 5 which is mostly agree. The question is about the crossword games are easier than using a textbook. Textbook is a main character of the History subject. Textbooks should not be dismissed lightly but most believe that this crossword puzzle as a tool for students more this subject of history. First factor is because in the textbook there is a lot of writing that can make students sleepy and less interested in learning. With this crossword puzzle can be an attraction for students because it does not have a lot of text and there are multimedia elements that can make students feel fun while learning.



**Figure 6.3 Result of question given time in the crossword suitable or not**

Based on question 6, the mean for the questions is 4 and the standard deviation are 0.48. It is because 3 teacher are vote in scale 4 and the others vote for scale 5 which is mostly agree. The question is about the is the given time in the crossword game appropriate or not. Most of them agree and the time is suitable. The marks of the students are based on the time taken by

the student. In addition, the use of indicators also affects the marks that will be given. This can help students to keep trying to play this game until they finish answering the questions.

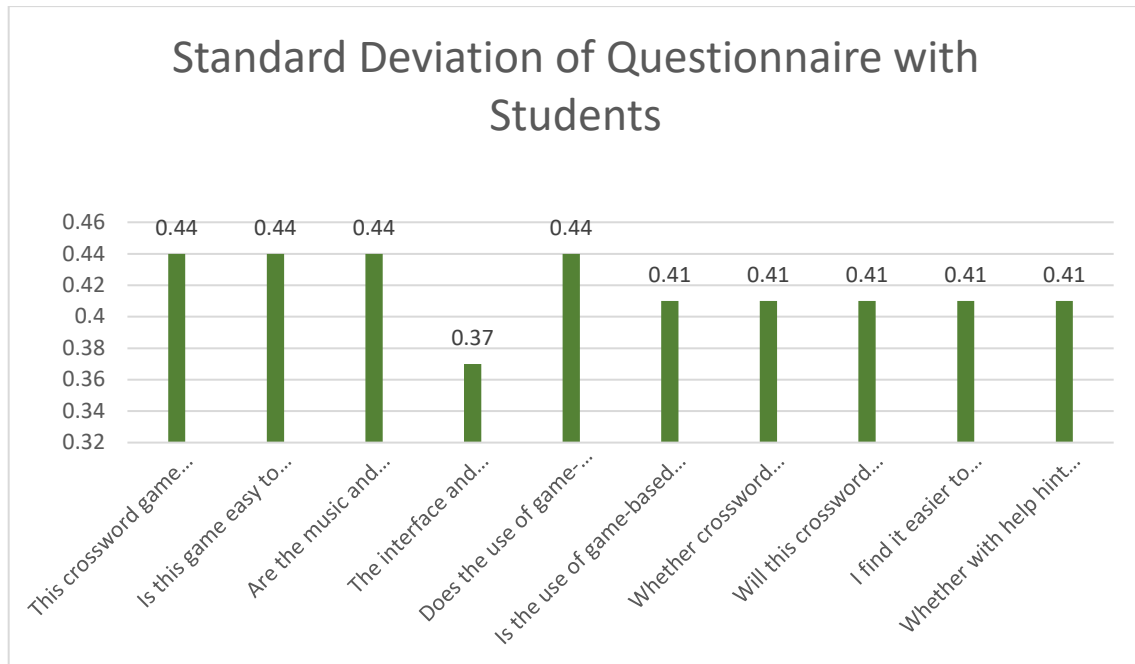
### 6.4.3.3 Questionnaire with students

The respondent are 20 students from Sekolah Menengah Kebangsaan Jementah Segamat participated in the survey. Goals and objectives have already been set by the researcher. As a consequence, the respondents chosen satisfy certain criteria for example, because this study focused on students perceptions, respondents viewpoints as students were able to channel the information needed for research. This study's sampling method is appropriate for the study's goal. The data was chosen to respond to the study's goals and objectives.

No	Question	Mean	Standard deviation
1	This crossword game attracts my interest about to learn more about history subject <i>Permainan silang kata ini menarik minat saya untuk mempelajari lebih lanjut mengenai subjek sejarah</i>	4.75	0.44
2	Is this game easy to understand and answer? <i>Adakah permainan ini senang difahami dan dijawab?</i>	4.75	0.44
3	Are the music and sounds used in this crossword game appropriate? <i>Adakah muzik dan bunyi yang digunakan dalam permainan silang kata ini sesuai?</i>	4.75	0.44

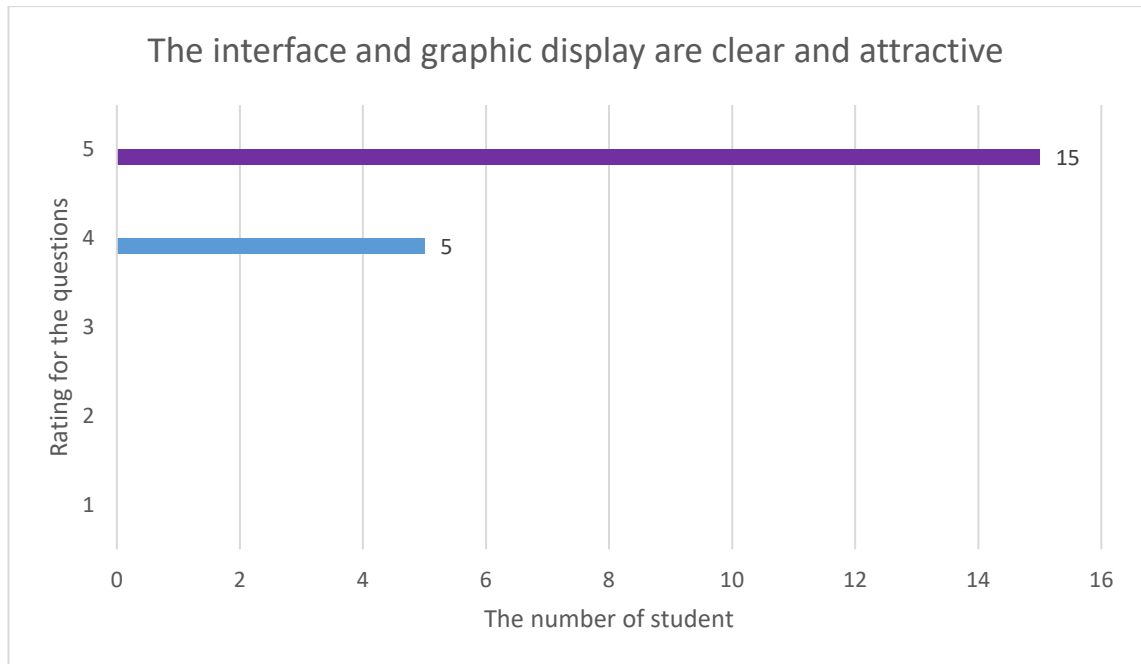
4	The interface and graphic display are clear and attractive <i>Antara muka dan paparan grafik jelas dan menarik</i>	4.85	0.37
5	Does the use of game-based learning increase the confidence and performance of high and low ability students? <i>Adakah penggunaan pembelajaran berasaskan permainan meningkatkan keyakinan dan prestasi pelajar berkemampuan tinggi dan rendah?</i>	4.75	0.44
6	Is the use of game-based learning affective in improving student achievement, problem solving skills and motivation for history subject? <i>Adakah penggunaan pembelajaran berasaskan permainan mempengaruhi dalam meningkatkan pencapaian pelajar, kemahiran menyelesaikan masalah dan motivasi untuk mata pelajaran sejarah?</i>	4.8	0.41
7	Whether crossword games with peer assessment can improve student achievement, motivation and problem solving? <i>Adakah permainan silang kata dengan penilaian rakan sebaya dapat meningkatkan pencapaian, motivasi dan penyelesaian masalah pelajar?</i>	4.8	0.41
8	Will this crossword puzzle help you to review the lesson where you are? <i>Adakah teka-teki silang kata ini akan membantu anda mengulangkaji pelajaran di mana anda berada?</i>	4.8	0.41
9	I find it easier to understand a topic using crossword game than a text description. <i>Saya lebih mudah memahami topik menggunakan permainan silang kata daripada keterangan teks.</i>	4.8	0.41
10	Whether with help hint crossword game can help students to answer questions? <i>Adakah dengan permainan silang kata petunjuk dapat membantu pelajar menjawab soalan?</i>	4.8	0.41

**Table 6.11 Result questionnaire by students**



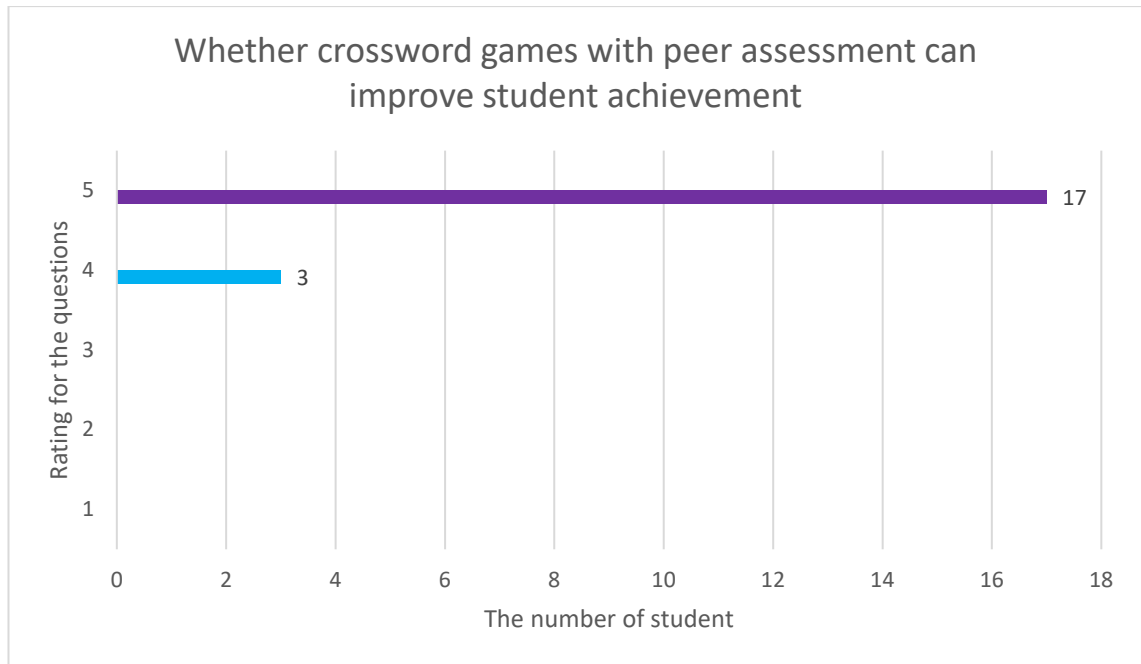
**Figure 6.4 Standard deviation of questionnaire with students**

Statistics of Mean Target Users and Standard Deviation are included in table 6.11 and figure 6.4. There are four results of 0.44, five of 0.41 and a single result is 0.37 based on this data. The lowest result which is mostly agree that the interface and graphic display are clear and attractive. In addition, with the presence of features of this multimedia element is more encouraging and interesting for students to learn the subject of history through this game. The other questions mostly students are agree that crossword game are very suitable for them as a one of teaching tools for them that can be used in anywhere.



**Figure 6.5 Result of questionnaire 4**

Refer on question 4, the mean for question is 4.8 and the standard deviation is 0.37. This is the lowest and most students agree that crossword games have a clear and interesting interface. With an attractive interface, students do not easily feel bored to study this history subject. In addition, it can help students to memorize this graphical learning because according to research, students will easily memorize if they see something colourful. Crossword games have been shown in studies to help students grasp content more rapidly, as well as better and more successfully answer questions and complete tasks in teaching and learning activities.



**Figure 6.6 Result of questionnaire 7**

Refer on question 7 and shown in figure 6.6, this historical crossword puzzle approach is a total of 17 students strongly agree that crossword games with peer assessment can improve student achievement, motivation and problem solving. This is because, the game can be downloaded to the mobile phone app to play with fellow friends outside of class time. With this can foster a competitive spirit among students. In addition, it can be used as a tool to help students review more efficiently with the presence of interesting multimedia elements. It can assist students in better understanding the information given, as well as answering questions and completing tasks in teaching and learning activities.

## 6.5 CONCLUSION

In conclusion, the questionnaire is used to investigate whether the project's objective have been fulfilled. This crossword game has been successfully implement. The results of the questionnaire have been tabulated to tables. The tables have clearly shown that the elements used in this application has successfully been achieved. It has been proven that the respondents are able accept and also interested in the usage of an interactive way to learn History subject.



## CHAPTER 7: CONCLUSION

### 7.1 OBSERVATION ON WEAKNESSES AND STRENGTHS

Developing a crossword game has its own habits and features that can affect the user experience when using an app that can be liked or disliked. Identifying the strengths of this project is important but nevertheless identifying the weaknesses is very important. A well-planned testing phase is useful to help identify the strengths and weaknesses of the project by observing the respondents and the results of the analysis. These strengths and weaknesses derived from the results will make the application unique. Understanding strengths and weaknesses can provide room for improvement in the future.

The disadvantage of crossword game is not user friendly. It is because students can use only using android phone to play the crossword games. Next, this crossword game are not have a complete chapter for form 5 history subject. In a textbooks form 5 have 10 chapters but in this crossword games have 5 chapter only.

The advantages of crossword game is provides an interactive method for learning history subjects for standard form 5 students. The use of multimedia elements helps to increase their interest and understanding in studying the History subject. Moreover, this crossword game can be used anywhere and anytime due to its movement. This mobile app supports the most accessible Android smartphones

## 7.2 PROPOSITIONS FOR IMPROVEMENT

To improve this crossword game, there are some suggestions that can make this crossword stand out from other similar apps. The first and most important is to prepare and add 5 other chapters to be completed as a textbook. Next add animations in the crossword puzzle when they have finished answering all the questions. This helps users learn the subject of History in a more fun way. Further, the rearrangement of the crossword game design can also improve the intuitive navigation of the user application.

## 7.3 PROJECT CONTRIBUTION

This application can provide many benefits to users, especially Form 5 students who want to sit for the examination, Sijil Pelajaran Malaysia (SPM). This crossword game provides a platform for students to understand and remember history subjects learned in school without using a lot of text and avoid feeling bored and sleepy. In addition, using the multimedia component in this crossword game, it provides a platform for students to improve history subjects more easily and improve their knowledge. The app is easily obtained using the Android smartphone platform.

## 7.4 CONCLUSION

In conclusion, the objectives of this project were successfully achieved. Crossword game are a good teaching tool for students use in History subjects. This crossword game is also suitable as a reference material for students who do not have enough research material. During the literature review stage, most of the improvements needed to develop this crossword game were decided. During this phase, a crossword game analysis was performed to compare the existing systems to identify the elements needed to create a crossword game. Testing was done on the respondents who also proved that this crossword game was interesting for them and gained interest in solving critical problems in their study. Finally, this crossword game still needs a bit of improvement to cover up its shortcomings. In the future, improvements will be made to achieve higher quality levels.

## REFERENCES

Engel, P. (2013, December 21). Here's the first crossword puzzle that ran 100 years ago today.

Business Insider. <https://www.businessinsider.com/first-crossword-puzzle-that-ran-100-years-ago-2013-12>

How are course designers using crossword puzzle games in E-learning? #240. (n.d.).

E-Learning Heroes.

<https://community.articulate.com/articles/using-crossword-puzzle-games-in-elearning>

10 best word games, word puzzle, and word search games for Android. (2021, January 12).

Android Authority.

<https://www.androidauthority.com/best-word-games-word-puzzle-word-search-android-945526/>

Multimedia elements. (2018, March 24).

Web Design Calgary - WordPress Website Design for Small Business.

<https://www.simplyeffectivewebdesign.com/five-elements-of-multimedia/>

John Spilsbury (cartographer). (2010, October 31).

Wikipedia, the free encyclopedia.

[https://en.wikipedia.org/wiki/John\\_Spilsbury\\_\(cartographer\)](https://en.wikipedia.org/wiki/John_Spilsbury_(cartographer))

Games and puzzles equip kids with problem-solving skills. (2019, November 30).

The Star Online.

<https://www.thestar.com.my/lifestyle/family/readerswrite/2012/11/26/games-and-puzzles-equip-kids-with-problemsolving-skills>

9 great reasons your child should do word puzzles. (2021, February 26).

WorksheetCloud | Download CAPS School Worksheets South Africa.

<https://www.worksheetcloud.com/blog/9-reasons-your-child-should-do-word-puzzles-every-day/>

10 ways word puzzles can help your child. (n.d.).

TheSchoolRun.

<https://www.theschoolrun.com/10-ways-word-puzzles-can-help-your-child>

Teka silang kata Bahasa melayu - Sumber pengajaran. Wordwall |

Create better lessons quicker.

<https://wordwall.net/ms/community/teka-silang-kata-bahasa-melayu>

Welcome to popular Malaysia - Word search PS. (n.d.).

POPULAR.

[https://www.popular.com.my/products.php?cat=4&sub\\_cat=136&details=13649](https://www.popular.com.my/products.php?cat=4&sub_cat=136&details=13649)

The 5 main health benefits of crossword puzzles | Crossword hobbyist. (2018, August 5).

A blog about crossword puzzles from a crossword puzzle maker.

<https://blog.crosswordhobbyist.com/health-benefits-of-crossword-puzzles/>

Do crossword puzzles really help prevent Alzheimer's? (2015, April 26).

HuffPost.

[https://www.huffpost.com/entry/do-crossword-puzzles-real\\_b\\_6741866](https://www.huffpost.com/entry/do-crossword-puzzles-real_b_6741866)

Kurniawan. (n.d.). Cara Belajar Sejarah untuk Anak dengan Bermain game Sejarah.

▷ Kursus privat - di manapun yang Anda inginkan @ Superprof.

<https://www.superprof.co.id/blog/bermain-game-sebagai-sarana-belajar-sejarah/>

Permainan dalam talian suntik elemen ceria PdPR. (2021, May 18).

Berita Harian.

<https://www.bharian.com.my/berita/pendidikan/2021/05/817922/permainan-dalam-talian-suntik-elemen-ceria-pdpr>



Interview with teacher by use zoom application



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

## Questionnaire for teachers

Section 1 of 2

Penyelidikan pembelajaran subjek Sejarah Tingkatan 5

Form description

Part 1 / Bahagian 1

Personal Information / Maklumat Peribadi

Name / Nama \*

Short answer text

Age / Umur \*

Short answer text

Section 2 of 2

Penyelidikan pembelajaran subjek Sejarah Tingkatan 5

Part 2 / Bahagian 2

Effectiveness of test / Ujian Keberkesanan

Score	Description
1	Sangat tidak setuju
2	Tidak setuju
3	Sederhana
4	Setuju
5	Sangat setuju

Does the use of game-based learning increase the confidence and performance of high and low ability students? Adakah penggunaan pembelajaran berasaskan permainan meningkatkan keyakinan dan prestasi pelajar berkemampuan tinggi dan rendah?

1 2 3 4 5

Is the use of game-based learning effective in improving student achievement, problem solving skills and motivation for history subject? Adakah penggunaan pembelajaran berasaskan permainan mempengaruhi dalam meningkatkan pencapaian pelajar, kemahiran menyelesaikan masalah dan motivasi untuk mata pelajaran sejarah? \*

- 1                      2                      3                      4                      5
- 

Whether crossword games with peer assessment can improve student achievement, motivation and problem solving? Adakah permainan silang kata dengan penilaian rakan sebaya dapat meningkatkan pencapaian, motivasi dan penyelesaian masalah pelajar? \*

- 1                      2                      3                      4                      5
- 

Do you think crossword games are easier than using a textbook? Adakah anda fikir permainan silang kata lebih mudah daripada menggunakan buku teks? \*

- 1                      2                      3                      4                      5
- 

The flow of game used in this crossword game is easy to understand? Adakah aliran permainan yang digunakan dalam permainan silang kata ini mudah difahami? \*

- 1                      2                      3                      4                      5
- 

Does a given time in the crossword game is suitable or not? Masa yang diletakkan di dalam permainan silang kata sesuai atau tidak? \*

- 1                      2                      3                      4                      5
-



## Questionnaire for students

Section 1 of 2

Penyelidikan pembelajaran subjek Sejarah  
Tingkatan 5

Form description

Part 1 / Bahagian 1

Personal Information / Maklumat Peribadi

Name / Nama \*

Short answer text

Gender / Jantina \*

Woman / Perempuan

Man / Lelaki

Penyelidikan pembelajaran subjek Sejarah  
Tingkatan 5

Part 2 / Bahagian 2

Effectiveness of test / Ujian Keberkesanan

Score	Description
1	Sangat tidak setuju
2	Tidak setuju
3	Sederhana
4	Setuju
5	Sangat setuju

This crossword game attracts my interest about to learn more about history subject. Permainan silang kata ini menarik minat saya untuk mempelajari lebih lanjut mengenai subjek sejarah \*

1                      2                      3                      4                      5

Is this game easy to understand and answer? Adakah permainan ini senang difahami dan dijawab? \*

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are the music and sounds used in this crossword game appropriate? Adakah muzik dan bunyi yang digunakan dalam permainan silang kata ini sesuai? \*

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The interface and graphic display are clear and attractive? Antara muka dan paparan grafik jelas dan menarik? \*

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Does the use of game-based learning increase the confidence and performance of high and low ability students? Adakah penggunaan pembelajaran berasaskan permainan meningkatkan keyakinan dan prestasi pelajar berkemampuan tinggi dan rendah? \*

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

⋮

Is the use of game-based learning affective in improving student achievement, problem solving skills and motivation for history subject? Adakah penggunaan pembelajaran berasaskan permainan mempengaruhi dalam meningkatkan pencapaian pelajar, kemahiran menyelesaikan masalah dan motivasi untuk mata pelajaran sejarah? \*

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Whether crossword games with peer assessment can improve student achievement, motivation \*  
and problem solving? Adakah permainan silang kata dengan penilaian rakan sebaya dapat  
meningkatkan pencapaian, motivasi dan penyelesaian masalah pelajar?

- 1                      2                      3                      4                      5
- 

⋮

Will this crossword puzzle help you to review the lesson where you are? Adakah teka-teki silang \*  
kata ini akan membantu anda mengulangkaji pelajaran di mana anda berada?

- 1                      2                      3                      4                      5
- 

I find it easier to understand a topic using crossword game than a text description. Saya lebih \*  
mudah memahami topik menggunakan permainan silang kata daripada keterangan teks



- 1                      2                      3                      4                      5
- 

⋮

Whether with help hint crossword game can help students to answer questions? Adakah dengan \*  
permainan silang kata petunjuk dapat membantu pelajar menjawab soalan?

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- 1                      2                      3                      4                      5
-