

Pendekar Muda: The Malay Patriotism-based Mobile Game using Unity

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Abstract--- *Patriotism is the spirit of love towards one's country. A sense of Patriotism is not present by itself in human life, but this feeling has to be fertilized and nurtured to be powerful in the soul of each and every citizen. Patriotism have five elements which is Iconoclastic Patriotism, Symbolic Patriotism, Capitalistic Patriotism, Instinctive Environmental Patriotism and Nationalistic Symbolic Patriotism. The young generations, that born after Malaysia gained independence from Britain in 1957 are the ones who will be leading the government as well as the country in the future. In this modern era, they found to have low spirit of Patriotism. They lack the awareness how important to have Patriotism spirit for the future. In addition, the negative attitude among the young generation could affect the quality of the young generation which can give big impact to the country. Next, lack of the history knowledge because they lost their interest in learning history by using book. The best way to attract their interest to learn history is by converting the information into interactive learning method. The approach that are taken for this project is by giving them awareness about their level of patriotism and also by converting the information into interactive learning method. The objective of this project is to identify the requirements, design and develop Pendekar Muda game of mobile learning application about the Patriotism The paper aims are to develop a game that will show the level of Patriotism and also to give awareness about the Patriotism among the adolescent. The target user for this project are the young generation from the age of 10 to 12 years old that categorized as adolescent. The methodology approach that would apply in this project is Design Thinking model that covered empathies, define, ideate, prototype and testing phase. This methodology is suitable for interactive learning development process. The adolescent can know their level after they answer multiple-choice question. If they cannot achieve the minimum score, there is a help for them to pass the checkpoint. The help consist of information that related to the question. The last part is they can know their result based on their correct answer and the result will display in a graphical way. Last but not least, this application is to improve the spirit patriotism of the young generation.*

Index Terms—*Patriotism, design thinking, interactive learning, 2D interactive learning game.*

I. INTRODUCTION

Patriotism is defined as an individual or a group with characteristics that show their love to the motherland [1]. It is not only about how straight we are stand or the tear in our eye when we recite the pledge, but the true patriotism is to demonstrate the way we are live [2]. Patriotism among young generation should be taken seriously in order to create the nation's identity as stated in "Wawasan 2020" [1].

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Nowadays, the level of Patriotism among the young generation are very critical and the awareness among teenagers is decreasing over time [3]. The level is different compared to the old generation that fight for independence for our country like Tok Janggut, Datuk Maharaja Lela and so on.

Patriotism start from the early education of child in order to maintain the independence [3]. Most of the parent spend more time on their work compared to the time for their family. To resolve the problem of modern family life, as a parent they need to practice good values to inspire their children to emulate behaviour that will help them build a stable nation. For the government, they established “The

Country’s Youth Development Policy” (Dasar Pembangunan Negara) concept and 1Malaysia concept.

The media should publish more patriotic themes all the times because media is one of the important roles in producing citizens who love their country [4]. For example, produce more movie or film that have the elements of patriotism that can motivate them such as film of Leftenan Adnan and the movies Hati Malaya 1957. Then, media also can use advertisement at the social media to publish more about the patriotism knowledge that attractive to attract the adolescent. It is because young generation nowadays are actively using the internet as an important form of social interaction [5]. The awareness campaign had transformed the attitude of Malaysian on the importance of patriotism that held by the government because Malaysian patriotic scored in 2013 and 2014 increased from 3.8 to 4.19 out of 5.0.

According to [3], nowadays many of the younger generation have very low patriotic spirit in them. This is a normal among younger generations who were born after independence. Supposedly, at young age citizens should be more patriotic as they are the inheritors of the future leader. In Malaysia, lacking in practice of patriotic values becomes an issue. Due to the fact that the spirit of patriotism is influenced by the environment and the practice of patriotism carried out by each of the generation who lives during the colonial period. This phenomenon is also a major issue in Malaysia as young people have lack sense of patriotism. Chief Minister of Johor, Datuk Seri Mohamed Khaled Nordin said that” Sadly, young people do not understand the sacrifices of their forefathers”. Based on Figure 1.1, it shows a video about young popular artist known as Ben Laddin. He was given a few simple questions about Patriotism and most of the questions cannot be answered. It shown that this artist lacks off knowledge of Patriotism and can influence his fans.



Figure 1.1 Facebook Status
(Source: Facebook, 2018)

Based on the interview with Puan Kamalizan which work as a historical teacher in SMK Bukit Rangin says “Many of the student have negative attitude. For example, they do not study hard and get the best result in exam, they do not know the latest issue and they always do trouble in this school. This shows that, their level of patriotism is very low, and their attitude can give negative impacts in our country. They also tend to be a low quality of young generation”. Young people are very silos are preferred self-interest more that national interest. This can be proving by their posting about talking bad to others, complaining each other and tell everyone about other people fault on the social media such as Twitter, WhatsApp, Instagram and Facebook. Based on Figure1.2, Dato’ Sri Haji Mohammad Najib bin Tun Haji Abdul Razak or his username in Twitter is @NajibRazak is Former 6th Prime Minister of Malaysia from 2009 to 2018. This figure shown that the young generation nowadays are very rude because they use lots of negative words and talking bad about him that really shown they do not respect him as a prime minister or an elderly. If we love our country and we want to show it, we must start by loving and respect each other.



Figure 1.2 Twitter Status
(Source: Twitter, 2018)

Nowadays, only 20% of teens report reading a book, magazine or newspaper daily for pleasure

[6]. According to the findings of the Malaysian reading Profile in 1996 (as cited in [7]), the average of people who read book in Malaysia a year was only two books. [8] conducted a study on reading habits and interests of Malaysians in 1984 he found that Malaysians habit of reading does not appear in the lives of most Malaysians because they had poor reading habits. Most of the students feel bored when they read directly from the historical book. Students also lack interest in reading and no interest in the history subject because the textbook were packed with information [9].

I. METHODOLOGY

The most important element that needs to give attention to every development project is to choose the suitable project methodology. The method used for this project is Design Thinking Methodology Process.

Design Thinking is a process of designer’s work that can help designer systematically extract, learn, teach and apply all the human-centered techniques to solve the problem in a creative and innovative way [10]. According to [11], the most effective process to produce the game is Design Thinking because it can mitigate the risk of building a product which may not find the critical mass, much needed to become a commercial product. Figure 1.3 shown five phases of Design Thinking Process which consists of Empathize, Define, Ideate, Prototype and Testing.

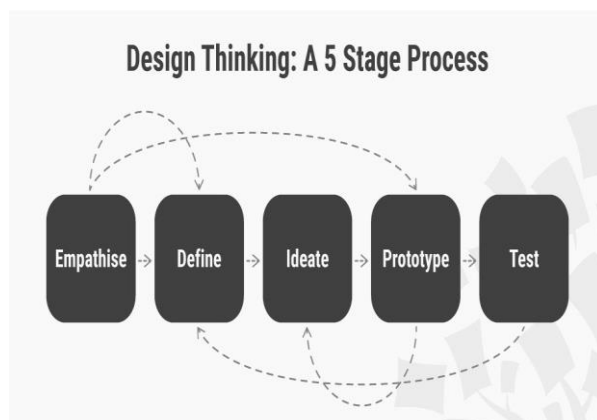


Figure 1.3 5 Stages Process in Design Thinking
 (Source: Dam & Siang, Interaction Design Foundation, 2019 [10])

A. *Emphatise Stage*

In this phase, the details that relate to the project such as problem that need to be identify. This project using the problem about less spirit of Patriotism among the young generation including adolescent. As the problem has been defined, next is to make sure what the best method for the problem are. To find the best method, it needs to refer who is the target user and the target user for this project is adolescent. Along the process of researching the resources, objective and scope are to ensure it related to the topic. The resources taken for this project are from numerous of site, journal, book, and interviewing 2 educators which are Puan Kamalizan as History’s teacher of Bukit Rangin Secondary School and Dr. Mohammad Samsudin as Leader of History’s Program of UKM. A summary of the empathise phase is shown in Table 1.1.

Table 1.1 A summary of the Empathise phase activities

Phase	Activity	Techniques	Deliverables
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Empathise	Identify problem statement, objective, scope and project significance.	Scheduling project using Microsoft Project	Gantt Chart
		Conducted 2 interview sessions with educators.	Project background, problem statements, objectives, scope and research significance.

B. Define Phase

After the Empathize phase complete, the next phase is Define as shown in Table 1.2. In this phase, it combines the information that have been gathered during the Empathize stage to analyze the observations and synthesize to define the core problems. Next, at this stage it can help to established elements that allow to solve problems. Several applications and systems which have similar functions and features are compared to identify the common features and the improvement that needs to be added to this proposed project. The hardware that is going to be used during the development of the purposed project is a smartphone Samsung J6 and a laptop HP Notebook 14. The smartphone is used to install and run the application and the laptop will be used to develop the application.

Table 1.2 A summary of the Define phase activities

Phase	Activity	Techniques	Deliverables
Define	Identify system requirements	Read journal, articles and related data.	List of system requirements.
	Identify functional and non-functional requirements.	Review some existing similar applications in term of features.	List all the functional and non- functional requirements
	Identify hardware and software to be used.	Review hardware and software that have been used.	List of the hardware and software to be used: <ul style="list-style-type: none"> • Hardware <ul style="list-style-type: none"> - Laptop - Smart Phone • Software <ul style="list-style-type: none"> - Unity3D - Microsoft Visual Studio 2017

C. Ideate Phase

In this third phase, after the understanding of user problems and needs and after analyzing and synthesizing the observation at the previous phase the problem could be solved by generating the ideas. The designing process of design use case diagram and storyboard started at this phase.

Table 1.3 shows the summary of Ideate phase activities.

Table 1.3 A summary of the Ideate phase activities

Phase	Activity	Techniques	Deliverables
Ideate	Design use case diagram	Designing use case diagram using Star Unified Modelling Language (UML)	Use case diagram
	Design storyboard	Digital prototyping	High - fidelity

D. Prototype Phase

Prototype phase is the fourth phase of Design Thinking model. In this phase, the high-fidelity prototype is used. High-fidelity (hi-fi) prototype is a high-technology representation of the design concepts, resulting in partial to complete functionality. This prototype will be shared and tested to the small group of people. The interactive design elements are analyzed, tested and sent to the stakeholder for feedback. The smartphone is used to execute the prototype. When feedback is received, the required changes and improvement will be done. The next improved prototype is then sent back to the stakeholder for next feedback. The aim for this phase is to identify the best solution for each of the problem that are already been identified in the previous phase. All the task, process and feedback in this phase is documented and forwarded to the testing phase. Table 1.4 shows the summary of prototype phase activities.

Table 1.4 A summary of Prototype phase activities

Phase	Activity	Techniques	Deliverables
Prototype	Develop project prototype	Develop using: Unity3D for 2D modeling and Adobe Photoshop CS6 for image editing	The prototype has been developed.

E. Test Phase

The Test phase is the fifth phase in Design Thinking Model. The testing phase is used to make sure that the product delivered is bug-free and can contribute to the organization [12]. The testing of a prototype is performed using real device and be tested in real environment. The tested result forwarded to user for feedback. All the activities that are involved in the testing phase are shown in Table 3.5. The developed application will be installed and tested in the actual device which is a smartphone. The users will be asked to perform several tasks and give the feedback. All the feedback and result will be documented.

For the testing process, User Acceptance Test (UAT) technique is used. This is because the testing is to test how the user behaves using the mobile application from the simple tasks given.

Table 1.5 A summary of Test phase activities

Phase	Activity	Techniques	Deliverables
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Test	Conduct user testing with 10 adolescents in the area of Shah Alam.	Mobile phone with the applications.	Result testing User feedback
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II. DESIGN & DEVELOPMENT OF PENDEKAR MUDA MOBILE GAME APPLICATION

1. Gathering the requirements for Pendekar Muda Mobile Game Application

User requirements are needed in developing the successful application. The information was gathering through the interview session with 2 educators of history which are Dr Mohd Shamsudin from Universiti Kebangsaan Malaysia (UKM) and Puan Kamalizan from Bukit Rangin Secondary School (BRASS). Based on the situation and requirement of this project, this technique has been chosen. The purpose of conducting the interview is:

- i. To identify the user requirement to develop Pendekar Muda Mobile Game application.
- ii. To design Pendekar Muda Mobile Game application for adolescent to use.
- iii. To develop Pendekar Muda Mobile Game application using Design Thinking methodology.

1a) Interview Analysis

This section describes about the requirement of the application. The requirements gathered through the interview session with the educator of history. The purpose of the interview session is to know the current way of gaining the information of the Patriotism, the problem about the adolescent, and functions or features of Pendekar Muda Mobile Game application. The sample of interview question is shown on Appendix C. The result of the interviews fulfilled with the requirements and information for this application. The result from the interview session tabulated in Table 1.6 as shown.

Table 1.6 Result of the Interview sessions

No	Topic	Analysis
1.	Feel about the young generation nowadays have low spirit of Patriotism.	Both agree that young generation have low spirit of Patriotism
2.	The main problems that lead to low spirit of Patriotism among the youth.	Both of them agree that they lack of knowledge and awareness about the important to have spirit of Patriotism in future.
	Most effective medium to use the application for youth.	Both agree that mobile is the best way to use the application.
	The aspect of Patriotism that will be used.	Puan Kamalizan had choose Symbolic aspect because for her, young generation need to know the symbolic of the country first before they go for the next step. For Dr. Mohd, he chooses all of the aspects because he said that there is no specific aspect to measure the level of patriotism.
	The generation that important to cultivate the spirit of Patriotism.	Both agreed that it is important to cultivate the spirit of Patriotism among young generation.

	This application is important for the future.	Both agreed, cause all the netizen in Malaysia should know their level of patriotism to give them awareness.
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1b) List of Requirements

This section describes about the requirements that already gathered for Pendekar Muda Mobile Game are elaborated here. There are two classifications of requirements which are functional and non-functional requirements.

i. Functional requirements

Table 1.7 Functional Requirements for Pendekar Muda Mobile Game

No	Functional Requirements
1.	User can view the map that contains aspects of Patriotism.
2.	User can answer the quiz with the time given.
3.	User can view the information based on the question.
4.	User can view their marks and details based on their correct answer.
5.	User can view their marks in graphical ways

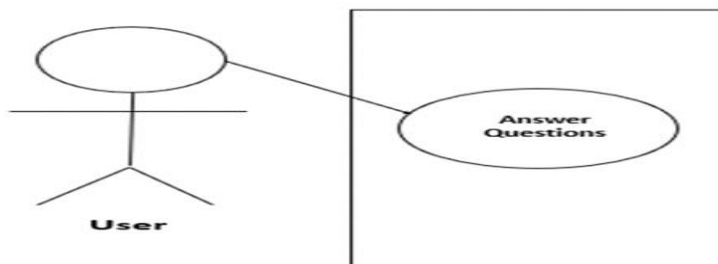


Figure 1.4 Use Case Diagram

ii. Non-Functional Requirements

The non-functional requirements are elaborate a performance characteristic of the system. There are several of non-functional requirements that have been identified through the requirement gathering phase. Table 1.8 shows the non-functional requirements of Pendekar Muda.

Table 1.8 Non-Functional Requirements for Pendekar Muda Mobile Game

Characteristic	Description
Availability	Uptime less than 6 seconds.
Performance	Good performance with minimum constraint
Network	Can be run without internet connection.
Usability	Easy to be understood, learned and used by intended user.

2. Project design process

This process is important in order to complete this prototype development. It consists of several processes which are producing the use case diagram, designing a high- fidelity of storyboard, designing 2D model, and designing user interface. Those processes used

different type of tools in order to be completed however each process is related to each other.

2a) Storyboard

The storyboard is graphical presentation of the interaction between the user and the application that explained the short description about this system. It has been completed in order to visualizing the real application design and process during the prototype phase.

2b) 2D Model Design

The 2D model design must be completed first. This application prototype only consists of one character. This character has five traditional accessories which are Baju Melayu (Traditional Malay Outfit), Kain Sampin, Destar, Kris and the leather slippers.



Figure 1.5 2D Character of Pendekar Muda
(without the complete outfit)



Figure 1.6 Tengkolok (Destar)
(Player will get this gift when able to solve all questions in first checkpoint.)



Figure 1.7 Baju Melayu (Malay Traditional Outfit) (Player will get this gift when able to solve all questions in second checkpoint.)



Figure 1.8 Kain Sampin
(Player will get this gift when able to solve all questions in third checkpoint.)

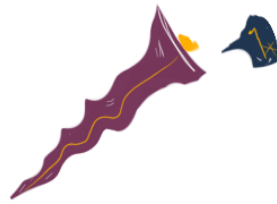


Figure 1.9 Keris (The Kris) (Player will get this gift when able to solve all questions in forth checkpoint.)



Figure 1.10 Chapal (Type of leather slippers)
(Player will get this gift when able to solve all questions in fifth checkpoint.)

2c) User Interface

For the user interface, there are few parts in this application prototype. First is the map, this part will display five checkpoints. Each of the checkpoint consists of five question. Secondly, it will display the question based on the checkpoint. Thirdly, SOS part will display the information about the question for the user who want to know the right answer. Then, if the user gets 100% in each level, they will get the trophy. Lastly, the result part, after user answer all of the question, user will know their grade based on their score that will display in graphical method.



Figure 1.11 Interface for Home Page of the Application



Figure 1.12 Interface for Map of Tanah Melayu.



Figure 1.13 Interface for Multiple-Choice Questions

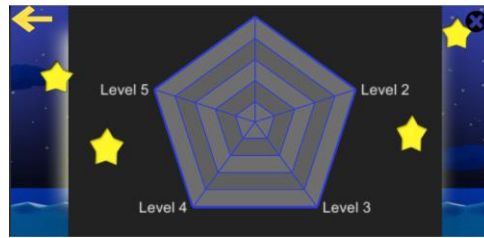


Figure 1.14 Interface for The Result (the score will be generated into spiderweb graph once player answer all questions).



Figure 1.15 Interface for The Greet Page (once the player completed each checkpoint with all correct answers)



Figure 1.16 Interface of Trophy Room
(The Pendekar Muda with completed Malay outfit will be displayed once player completed 5 checkpoints with correct answer)

3. Importing Asset

In this project's assets, it consists a few files that were used to develop the Pendekar Muda Mobile Game. Figure 1.17 shows asset that had been used in design phase such as character model, image, icon and sound will be imported to Unity 3D. The asset will be organized into a different folder. Therefore, it is easier to manage the content. Animation file consists of the animation of the button. For example animation for map button, button A B C and D. It also contains animation for the timer and score that give the interaction for the user. Fonts file consists of the different fonts. The name of the fonts are AMCAP Eternal, DCC – Dreamer and Titan One. Png file is a file that consists all of the graphics such as image and button. Scene file consists of the scene that involves in the development of Pendekar Muda Mobile Game. Scripts file consists of the script of C# language to be used for the scene.

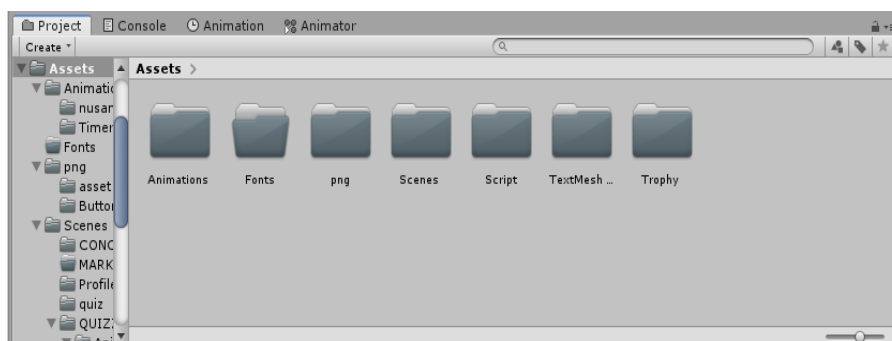


Figure 1.17 Unity Asset

4. Scripting

The script is needed to make sure this application able to have interactions and responses. C# programming language is used to develop the behavior (interaction). Mono Develop that connected to unity are used as C# script development. All the logical and syntax errors of the coding can be checked before run it. The finished-up script then attached to the object to enable the action. Each of the script used for different scene. Figure 1.18 shows C# scripting that involved in this project.

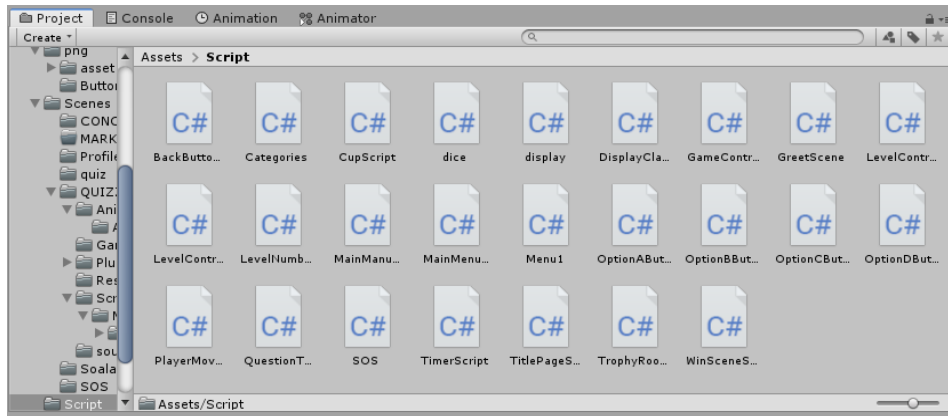


Figure 1.18 C# Scripting

5. User Acceptance Testing

User Acceptance Testing (UAT) also known as application testing or user testing. UAT is a part of a phase for software development which the application is being tested in the real world. It is to ensure the application to run smoothly as the user expected because the most important purpose is to measure the quality of the application. It is also an effective process with a high rate of return and ease as well as effectiveness of program for both parties, let it be the target user or the developers. The user acceptance test has been implemented towards Pendekar Muda Mobile Game application. The test has taken place at SMK Bukit Rangan, Kuantan Pahang. The result shows for all the respondents which are 5 students from 13 to 17 years old. The scales from number one until five were used to show the level of acceptance. Number one represent strongly disagree, while number two represent disagree, while number three represent neutral acceptance, while number four represent agree and five represent strongly agree respectively.

Table 1.9 Result for User Acceptance Testing (UAT)

Target User Question	Result (Average) from Adolescents
No.1	5
No.2	4
No.3	5
No.4	5

No.5	4
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CONCLUSION

After months working on this project, it can be concluded this project is successful and the analysis and findings can be used for other related works. The idea to develop interactive learning version of Patriotism is to bring competitive advantages for user to learn, remember and can improve their spirit of Patriotism. The interactive elements in this application is Rewards Room which user need to answer all the question correctly in order to get the reward. When all the rewards already achieve then it will become a perfect "Pendekar Muda" with a complete Malay outfit. Besides that, the result will be displayed in graphical method that related to their grade of Patriotism. When the user play with this game, they can get to know their level of Patriotism. The result show how efficient the application for the user, where it is successfully delivered and meet the objective.

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