



**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

**DEVELOPMENT OF AN ELECTRONIC BOARD GAME**

**OF DAM-HAJI FOR ENCOURAGING NEW**

**GENERATION TO PLAY TRADITIONAL GAME**

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electronics Engineering Technology (Telecommunications) with Honours.

by

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**BORANG PENGESAHAN STATUS LAPORAN PROJEK SARJANA MUDA**

Tajuk: DEVELOPMENT OF AN ELECTRONIC BOARD GAME OF DAM-HAJI FOR ENCOURAGING NEW GENERATION TO PLAY TRADITIONAL GAME

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## APPROVAL

This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Electronic Engineering Technology (Telecommunications) with Honours. The member of the supervisory is as follow:

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## ABSTRAK

Permainan papan Dam-Haji merupakan permainan tradisi dikalangan rakyat Malaysia. Malangnya permainan ini telah menurun secara mendadak disebabkan kemajuan teknologi permainan seperti permainan video dalam talian. Permainan video mempunyai banyak keburukan berbanding permainan tradisi kerana ia mendedahkan mereka kepada karakter seksual, elemen keganasan dan boleh menyebabkan ketagihan. Ini boleh membawa kepada tingkah laku agresif, emosi dan mengurangkan tingkah laku prososial mereka. Tujuan projek ini untuk menambahbaik permainan papan tradisi dengan elemen interaktif untuk memperkenalkan permainan tradisi kepada pelajar dan menggalakkan mereka untuk bermain. Arduino Mega digunakan dalam projek ini sebagai pengawal, RG LED untuk memaparkan output, dan pad kekunci sebagai input. Kaji selidik yang mengandungi sepuluh soalan telah dibuat dikalangan pelajar-pelajar untuk mengenal pasti sama ada permainan papan tradisi adalah menjadi pilihan atau permainan papan elektronik. Hasil menunjukkan bahawa permainan papan elektronik adalah lebih diminati dikalangan pelajar berbanding permainan papan tradisi.

## **ABSTRACT**

Dam-Haji board game has been a traditional board game played among Malaysian. Unfortunately, the board game has been declining rapidly as the advancement of gaming technology like online video games. Video games have a lot of disadvantages compare to traditional games because it exposed them with sexualized character, violent element and can cause addiction. This will lead to having an aggressive behaviour, emotions and decreased their prosocial behaviours. This project aims to improvise the traditional board game with the interactive element to introduce the traditional game to the students and encourage them to play. Arduino Mega is used in this project as a controller, RG LED to display the output and keypad as the input. A survey consists of ten questions among the students was done to verify either the traditional board game is preferred or electronic board game. The result shows that the electronic board game is more popular among the students compare to traditional board game.

## **DEDICATION**

I humbly dedicate this works to my lovely mom and dad for their fully support and trust and my friends especially my housemates that always there when I need help. And to my supervisor and my co-supervisor for all their assistance and support.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

This chapter aim on introduces the brief idea of the project. Firstly is about the overview of the project, detailing the objectives, briefly the problem statement, scope and provide outcome of the project. Therefore, the structure of the whole project can be visualized precisely.

#### **1.2 Background**

According to Lopez et al. (2017), in the last few decades, games are played out in the physical world and used real properties. However, nowadays it has changed from the physical to the virtual world. The evolution of science and technology causes changes to the world including the type of games that trending among the school students. The traditional games that are famous previously have been replaced by the modern games such as online video game. Some students play online video games because they are more modern, more convenient, practical and versatile. Students initially play online video games to alleviate tiredness of study, but then they become

addicted and enter a point that they find it hard to stop playing the games. This condition can cause health problems that lead to poor grades.

Beside that, playing video games frequently associated with aggression, violence and sexual morality issues. Violent video games are an offensive risk factor. The longer the players are exposed to violent video games, they are possible to have more aggressive behaviors, emotions and thoughts, and decreased their pro-social behaviors such as empathy. Recently, the World Health Organization decided to add “gaming addiction” to its official list of mental health conditions, claiming that gaming activity could be deemed unhealthy if it substantially interferes with other aspects of the lives of people. For example, the tragic events like terrorist attacks on mosques in New Zealand which really look like the famous game called PUBG. At 3 million players in one hour, PUBG has the highest peak numbers of players. Moreover, some video games have characters with improper animation that can cause sexual morality issues especially when it plays by the underage player. This will cause normativity and students will be influenced with the western culture.

The revolution of new technologies is a great thing especially for students but the things that need to be considered is their disadvantages that will affect their life. Traditional games are far better than modern games for students development but to make it more enjoyable there should be some improvement or modern changes to encourage them to play traditional games. Therefore in this project we will develop a modern traditional games to attract students to play traditional games.

### **1.3 Problem Statement**

Game had become part of people's life especially students. Students that addicted to video games and online gaming tend to become inactive in their daily routine, lower the likelihood of pro-social behaviour, and exposed to violent element. One of the reasons is that students nowadays are not exposed to the traditional games that have a lot of advantages compared to modern games. Besides, students nowadays are digital natives as they grown up with technology. So the traditional games must be transformed into modern traditional games to attract them to play.

### **1.4 Objectives**

The main objectives of this project are:

1. To design an Electronic Board Game of Dam-Haji for new generation
2. To evaluate the Electronic Board Game of Dam-Haji by using statistical analysis.

## **1.5 Scope of Work**

Dam-Haji is a traditional game that has been played by our society for a long time. This project will provide an Electronic Board Game of Dam-Haji to encourage new generation to play traditional games. Electronic board game means that this board game using electronic component such as RG LED, 74HC595 shift register and Arduino Mega. The mechanism to play this game is using keypad to control the colour of the LED which represents the movement of the game. Arduino software is used to set all the LEDs based on the system that applied to the games.

The cost to develop the board game of dam-haji is only about RM200 because the components used are common components and not expensive. This board game need the player to know the basic concept of entering the coordinate to play the games, and the design of the board game with the instructions provided will be easily understood by the player.

## **1.6 Project Contribution**

The motivation for this project is to introduce the young generation to the traditional games by innovate the game using digital element that makes the games looks modern and interesting. Students today love to play games, and they always serve with video games that makes them become passive and lack of social skills. This Digital board game which in forms of hardware will give them feel more realistic as they able

to touch the game physically, and improve their social skills because this game can only be played by two person at one time. This board game can be used at schools and institution as an activity for students to release their stress and as tools to learn to play Dam-Haji game.

## **1.7 Thesis Structure**

In Chapter 1, it will explain briefly about the main purpose of this project. This part will focus on the problem that causes the idea to do this project, the objectives, the project contribution and its limitation.

Next is chapter 2. This chapter is about the research that is related to this project from various sources. This information will support the project during the development process and helps to overcome various problems.

Chapter 3 is about the methodology. It will explain the method used to develop this project. This chapter also includes the flow chart of the project, Gantt chart and the material or component used.

In chapter 4, this section will explain about the expected result and discussion that we obtain based on the method used. All the data collected and the data analysis

were discussed in this chapter. The result will be compared with the expected result to ensure the objectives of the project achieved or not.

In chapter 5, the conclusion is made based on the result and works that have been done in Bachelor Degree Project (BDP 2).

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This project need a lots of information based on research from various sources in order to make it successful. The sources include books, articles, journals and webs. During the research most of the articles and journals are from Scopus, IEEE Xplore Digital Library and Google Scholar. A few keywords are used to find the related information such as board game, electronic board game, online video games, and traditional games. This data and information is very useful in designing the board games to fulfill the objectives. Some of the journals and articles provide information about the projects that related to this project and their problems that need to be overcome during develop this project.

#### **2.2 Past Related Research**

The past research will focus on the board game or electronic board game. The selection of the research materials are depends on the product that will be develop and the main components that use. The sources must be reliable such as books, articles, journals and websites that are authorized.

### 2.2.1 E-Congkak: The Development of an Electronic Congkak Board Game to Promote Traditional Board Game to Younger Malaysian Generation

According to Hafizan et al. (2018), E-Congkak is the improvise version of the traditional board game played among Malaysian known as Congkak. This board game is develop to be an electronic based board game that gives the most multimedia-based games the interactive element, but still maintain the human element and the traditional kinesthetic. The main component of E-Congkak consists of Arduino Mega and micro-controller. IC74595 Shift Register is used in this project and will receive signal send from Arduino to 7-Segment. The used of IC74595 will reduce the use of digital pins to send data to only 12 pins instead of using IC7446, 96 pins is used for configuration and 192 pins for direct connection configuration. A push button is used on each hole for the player to decides to select the hole, and LEDs are used to indicate the turn of the game, while a buzzer is use to indicate the effect of picking up the pebble and putting it in each hole.

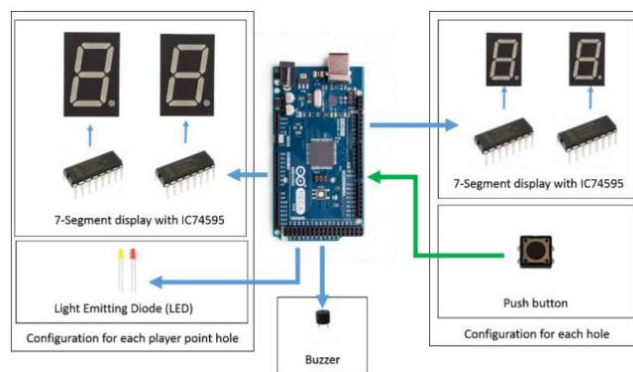


Figure 2.1: Block Diagram of E-Congkak