

MOBILE GAMES APPLICATION FOR ADHD CHILDREN

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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MOBILE GAMES APPLICATION FOR ADHD CHILDREN

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


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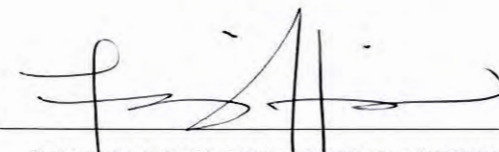
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ABSTRACT

Games industries are involved, as a game in education, training, health and public policy. This paper describes a casual mobile game, aimed at children who diagnose with Attention Deficit Hyperactivity Disorder (ADHD) disease. The mobile game is named as 'Digital Pet'. It can be run on Nokia mobile with resolution of 240 x 256 pixels. Adobe Flash used to create multimedia elements and animations in developing game application. On the other hand, Flash Lite used to develop mobile application. The game requires that the children should feed and play with the pet using a mobile device. This project is to explore the capability of mobile game would help to improve concentrate in children with ADHD. Methodology that used in the project is Agile Model. Each of ADHD children are observed within 30 minutes. Functionality, usability and user acceptance testing will carry on. The testing result reveals that ADHD children can concentrate in playing mobile game. This is because there is an interaction between children and the game. However, paediatricans not encourage parents let their children playing the mobile games. In the nutshell, ADHD children allowed play mobile games but there must be a limitation.

ABSTRAK

Industri permainan yang terlibat, sebagai permainan dalam pendidikan, latihan, kesihatan dan dasar awam. Karya ini membahas *mobile game* yang biasa ditunjukkan bertujuan untuk kanak-kanak yang menjangkit dengan *Attention Deficit Hyperactivity Disorder (ADHD)*. *Mobile game* ini dinamakan sebagai '*Digital Pet*'. Permainan ini dapat dijalankan dalam telefon bimbit Nokia dengan resolusi 240 x 256 piksel. *Adobe Flash* digunakan untuk membuat *multimedia elements* dan animasi dalam pembangunan permainan. Sebaliknya, *Flash Lite* digunakan untuk membangunkan *mobile* aplikasi. Permainan ini menyaratkan bahawa kanak-kanak harus memelihara dan bermain dengan haiwan kesayangan melalui telefon bimbit. Projek ini adalah untuk mengeksplorasi kemampuan *mobile game* akan membantu untuk meningkatkan ketumpuan kanak-kanak *ADHD*. Metodologi yang digunakan dalam projek ini ialah Agile Model. Setiap kanak-kanak *ADHD* diperhatikan dalam masa 30 mini. Fungsi, kegunaan dan ujian penerimaan pengguna akan dijalankan. Keputusan ujian menunjukkan bahawa kanak-kanak *ADHD* boleh menumpukan perhatian dalam *mobile game*. Ini adalah kerana terdapat interaksi antara kanak-kanak dan permainan itu. Walau bagaimanapun, *paediatricans* tidak menggalakkan ibu bapa membiarkan anak-anak mereka bermain *mobile game*. Akhirnya, kanak-kanak *ADHD* membernarkan bermain *mobile game* tetapi perlu ada had.

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LIST OF ABBREVIATIONS

ADHD	- Attention Deficit Hyperactivity Disorder
OS	- Operating System
PC	- Personal Computer
T1	- Tester 1
T2	- Tester 2
T3	- Tester 3

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CHAPTER I

INTRODUCTION

1.1 Project Background

According to Nurul, Ab. and Halian(2009), there are many kinds of mobile services available nowadays such as mobile commerce, mobile banking, mobile messaging, mobile gaming, mobile entertainment and mobile ticketing. This situation makes most of the people have basic demands in mobile devices and slowly adapt to become part of their daily life currently. The mobile services are easily access by user at anytime and anywhere. Among all the mobile services, the most popular application is the games application on mobile phone. Thousands of games application are invented and developed for the user.

Games industries are involved, as a game in education, training, health and public policy. This view has been supported by Chen (2009). Therefore, it is true that games do bring influences not only to social, economy, and culture. Some survey in United Kingdom pinpointed that games is more popular than entertainment such as TV show, movies and music. Games industry, film increased 100% and 30% respectively while music industry decreased to 4.5% by year. Rubijesmin and Judithe (2009) described games with additional criteria providing fun and challenges to players. Players explore and complete tasks that given at the same time of winning the game. This means games could beneficial to children in it social and behavior.

This project is for Nokia mobile with Symbian OS platform about feeding a virtual digital pet. It is originally based on Tamagotchi concept. This game is implemented in Flash Lite 2.1 with Action Script 2.0. First, player can choose an egg from 3 choices. Next, player start feeds his virtual pet and plays with it for a day. To keep virtual pet in a healthy and happy condition, the player will have to feed and take a walk using shortlist time.

1.2 Problem Statement

Cho, et al. (2002) states that “Attention Deficit Hyperactivity Disorder (ADHD) is a childhood syndrome characterized by short attention span, impulsiveness, and hyperactivity which often lead to learning disabilities and various behavioral problems”. Those children generally have trouble in their concentration, hyperactivity and impulsiveness. They often easily distracted by small stuff and their unable to focus on the task at-hand. This often keeps ADHD children away from successfully finished activities.

ADHD children usually have a problem in their ability to focus and completed the task. They generally not interested in the ordinary games such as cards, Monopoly and scrabbles. They struggle playing in a quiet room. Games with physical training are often enjoyable for the ADHD children. These children always like to run, to jump and to shout in every second. They prefer utilize their energy in doing outdoor exercise rather than sitting quietly in the room.

Therefore, through this project, using mobile phone game technology for increasing the concentrate span of children who have attention difficulty would help to increase their learning capability.

1.3 Objective

In order to ensure the project run properly and smooth, the objective of the project must be stated clearly. The objectives of this project are shown as below.

- To develop mobile game application by using Flash Lite.
The main objective of this project is to design a mobile game application to reduce hyperactive and grab more attention from ADHD children.
- To study games that help in controlling concentration behavior.
The mobile game application contains concentration behavior to trigger children have the responsibility to complete the task in the game. Children learn some human behavior towards action that decided by them.
- To analysis ADHD children capabilities playing games for longer periods.
Games for children with ADHD involve waiting in line or sitting patiently for long stretches require special attention. Games that consists attractive and interactive game can hold an ADHD children's attention for a longer period of time.

1.4 Scope

The scope of the project is only applied on three areas. There are specific users, specific platform and specific functionality. Each are describe as below.

1.4.1 Specific Users

The project implemented is for ADHD children above 7 years old who understand English language. As the games instruction and menu selection in English, target users must have basic vocabulary in order to understand the flow of the games. The menu selection and instruction require them to understand the instruction and make the selection so that they are able to continue with the game.

1.4.2 Specific Platform

This mobile phone game application can be run directly on Nokia with Symbian OS platform. The screen size is 240 x 256 pixels.

1.4.3 Specific Functionality

The following table describes the modules that will be covered in the project.

Table 1.1 Modules of Project

Module	Description
Option	Player able to choose activity to full fill the virtual pet.
Eat	This section is feeding the virtual pet with its favorite food base on maze game concept.
Walk	Player takes the virtual pet for a walk. Player may choose any path reach to the destination.
Instruction	Simple hints to lead players easy participate in this whole game.

1.4.4 Limitation

The project just represents for Nokia mobile with Symbian OS platform. The game is standalone and only for single player. Therefore, this game does not support multiple players through Bluetooth or other wireless device. The game application will not allow gamer to save the previous game record.

1.5 Project Significance

In this section, ADHD children and parents who are the person will benefits from this project.

1.5.1 ADHD children

According to DSM-IV (America Psychiatric Association, 1994), ADHD children suffer from hyperactive, impulsive alone, inattentive alone or combination of this three. Thus, this project is developed to increase their ability to concentrate. Through this project, train them to be 100% concentrated and spend much time to desire for success. The game will indirectly intend to teach children taking responsibility for their own decision or action.

1.5.2 Parents

Parents may have difficulties in maintaining their attention during supervision of ADHD children. They need to spend more time with the children compare to others parents. However, parents sometime unable taking care of children. Therefore, a mobile game may be a suitable tool to let children play and sit quietly while the parents busy with their activities.

1.6 Summary

This project background describes the introduction to the project as a whole. It includes the problem statements, objectives and scope of the project. The problem statements describe the problems related to why this project is developed. The scopes of the project explain the target users, functionality and limitation of the project. As a conclusion, this mobile game application will use Flash Lite platform and can only be use on Symbian mobile phones. This project development is to ensure that ADHD children can achieve 100% great results with little hard work. At the end of project, developer expects a mobile game application for ADHD children will be developed Other details about literature that related with developing the project and methodology will be discussed on Chapter Two.

CHAPTER II

LITERATURE REVIEW & PROJECT METHODOLOGY

2.1 Introduction

A literature review define as “critical analysis of a segment of a published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature, and theoretical articles” (University of Wisconsin Writing Center). First, comparison will make based on the domain of the project developed, existing system, project methodology, software requirement and hardware requirement. Next, summarize the important ideas after understand the relevant projects.

Furthermore, this chapter explains the proposed research methodology which will consists of lots of research component when develop mobile game. Research on published materials like journals, case studies and online library will be done and analyzed critically. Software requirements and hardware requirement will be identified before the game is developed. This is because choose suitable hardware and software are important to ensure that the development process will not be an obstacles.