

**BORANG PENGESAHAN STATUS TESIS\***

**MOBILE APPLICATION FOR CHILDREN WITH AUTISM:**

JUDUL : MARI MEMBASUH TANGAN

SESI PENGAJIAN : 2013 / 2014

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MOBILE APPLICATION FOR CHILDREN WITH AUTISM:  
MARI MEMBASUH TANGAN

NUR'AIN BINTI FADZIL

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY  
UNIVERSITI TEKNIKAL MALAYSIA MELAKA  
2013

## DECLARATION

I hereby declare that this project report entitled  
**MOBILE APPLICATION FOR CHILDREN WITH AUTISM:  
MARI MEMBASUH TANGAN**

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

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## **DEDICATION**

Specially dedicated:

To my beloved parents and family member

For my supervisor, PM Dr. Faaizah Bt. Shahbodin

For my evaluators, Miss Syariffanor Bt Hisham

To my friends and who have encouraged, guided and inspired me throughout my journey in education

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Also, to my beloved parents and siblings to give me a full support to accomplish this project. Last but not least, I would like to thank to all my beloved friends who help me to complete this project. All the memorable will be remains.

## ABSTRACT

This project is a mobile education game entitles **MOBILE APPLICATION FOR CHILDREN WITH AUTISM: MARI MEMBASUH TANGAN** and developed using Adobe Flash CS6 Professional and Adobe AIR3.2 for Android. This mobile application can be used by teachers of children with autism to teach basic steps of personal hygiene care at the Autism Centre. The objective of this project is to develop an application which is easy to use by children with autism. The application developed through this project also aims to attract children with autism to learn on mobile platform. This project is to establish the conditions in mind that children learn personal hygiene care is fun and enjoy. This project target user is children with autism at Autism Learning Laboratory aged from 5 to 9 years old. This application was developed based on Multimedia Production Process. This project will be run on smartphone and tablet which easier to bring anywhere.

## ABSTRAK

Projek ini ialah satu pendidikan bergerak permainan bertajuk **MOBILE APPLICATION FOR CHILDREN WITH AUTISM: MARI MEMBASUH TANGAN** dan dimaju menggunakan Adobe Flash CS6 Professional and Adobe AIR3.2 untuk Android. Aplikasi telefon bimbit ini boleh digunakan oleh guru kepada anak-anak autisme untuk mengajar langkah asas kebersihan diri di Pusat Autisme. Objektif projek ini adalah untuk membangunkan satu permohonan yang mana mudah diguna oleh anak dengan autisme. Aplikasi dibangunkan melalui projek ini juga bertujuan untuk menarik anak dengan autisme untuk belajar di platform bergerak. Projek ini adalah untuk mewujudkan keadaan belajar penjagaan kebersihan diri yang menyeronokkan dan menarik. Pengguna sasaran projek ini ialah anak dengan autisme di Makmal Pembelajaran Autisme yang berumur dari 5 hingga 9 tahun. Aplikasi ini dibangunkan berasaskan Proses Produksi Multimedia. Projek ini akan dikendalikan di telefon pintar dan tablet yang lebih mudah dibawa ke mana saja

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## LIST OF ABBREVIATIONS

PSM	-	Projek Sarjana Muda
OS	-	Operating System
ID	-	Intellectual Disabilities
RAM	-	Random-Access Memory
SWF	-	Shockwave Flash
Wav	-	Waveform Audio File Format
GIF	-	Graphics Interchange Format
JPEG	-	Joint Photographic Experts Group
APK	-	Android Application Package
PC	-	Personal computer



## **CHAPTER I**

### **INTRODUCTION**

This chapter gives an overview about this project which comprises the problem statement and objectives of this project. The project developed through this project is a mobile application specifically for children with autism. The content focuses on personal hygiene care.

#### **1.1 Project Background**

Autism can be defined as a group of complex disorders of brain development that are characterized in varying types, by communication problems, difficulties in social interaction and stereotyped styles of behaviour. Most of the children with autism are visual thinkers and learners, therefore, any visual aids during learning is helpful and effective. Although they learn using pictures and any visual aids that related, it is not sufficient to help them because no technology element is used during learning in manual techniques. Children with autism usually respond better to

visual especially in high quality image which has interaction cues than verbal or written instructions.

This mobile learning application project will teach and guide them on how to learn personal hygiene care properly especially washing hands as shown in handheld devices like smartphone or tablet. This learning application can be installed on the smartphone or tablet. This way will enable children with autism to learn and attract their attention longer than usual. In this application, they will be taught steps for washing hands based on the simple animations and instructions to guide them. Then, they need to solve game activities that will be given as their assessment. Motivation rewards will be given after they have finished the activity correctly. These special children should be given the opportunity to learn using latest gadget that are more interesting to increase their performance of brain development.

Games-based learning will be applied as a way to develop this learning application. Game-based learning is used to assess their knowledge about washing hands steps and help them to remember what they learn from lesson provided. They need to memorise the visual showed and then they will be assessed activities in the application. The idea is to help them understand and remember what they need to do on simple personal hygiene care. Through the appropriate strategies, children with autism will easily remember, understand and learn something from the lesson. The responses from these children using the application in their learning can be a fixation of this project whether it is effective or not. The responses received will help developer to develop this application project later.

## **1.2 Problem Statement**

Most of the autism centres in Malaysia are using teaching style through the use of visual cards and strip module books. Their teachers will show pictures one by one or step by step and explain details of the pictures. As an example, a teacher teach

them about kitchen,so students needs to identify pictures provided with correct pronouncation in order to facilitate their understanding and acceptance of the topic.Students will repeat what their teacher says and does by matching picture in their strip module book. So, a few of them might bored and lack of focus. In addition,they are quite good in visual aids so they need something that is more attractive and creative with full of colours, clear and has good sound and voice.

In addtion,this traditional method was lack of technology and interactivity. Thus, it needs to be renewed in order to facilitate learning and teaching session in the limited periods. They have opportunity to utilize self-use gadget that brings more enjoyment.Based on personal developer observation, they have high interactivity and focus on long period when given a tablet. They feel comfortable using the gadget and show a positive feedback.

Every children with autism,they are different with each other. So, their acceptance is also different depending on their type of learning. Some of them are fast and vice versa and it is depends on how he or she accepts their learning with their surrounding. It is not an effective way to grab their attention because they will have no interest to learn more.

### **1.3 Objective**

Each project must have objectives to achieve the goals. The objectives play an important role for developer. The objectives of this project are:

- To develop a mobile learning application for children with autism.
- To study the suitability of game based learning in developing mobile application for children with autism.
- To investigate the acceptance of mobile application among children with autism.

## **1.4 Research Questions**

For research question part, basically is about what the developer want to research for this project. The developer has a goal to achieve whether the project is success or vice versa. The main question for this project that around in developer minded is:

- How children with autism can accept learn through a mobile application for this module?

So, it can be identified whether mobile game based learning will help autism children to improve their understanding on personal hygiene care.

## **1.5 Project Scope**

The scope of this project will include target user, content of project and what type of deliverables will be used. The terms are described as following:

### **1.5.1 Target User**

This project is developed especially for autism children within the age range 5 until 9 years old. It is better for them to learn in the early ages so they can independently manage their own basic daily care. Children at this age are fast learners in early ages.

### 1.5.2 Content of the Project

The contents to be developed cover the following:

- I. Developing a mobile learning application about washing hand steps.
- II. Developing two games activity as the understanding and memorizing assessment.
- III. The lesson and activities should contain the voice and sound to guide them.
- IV. Provide voice in Malay Language to facilitate learning.

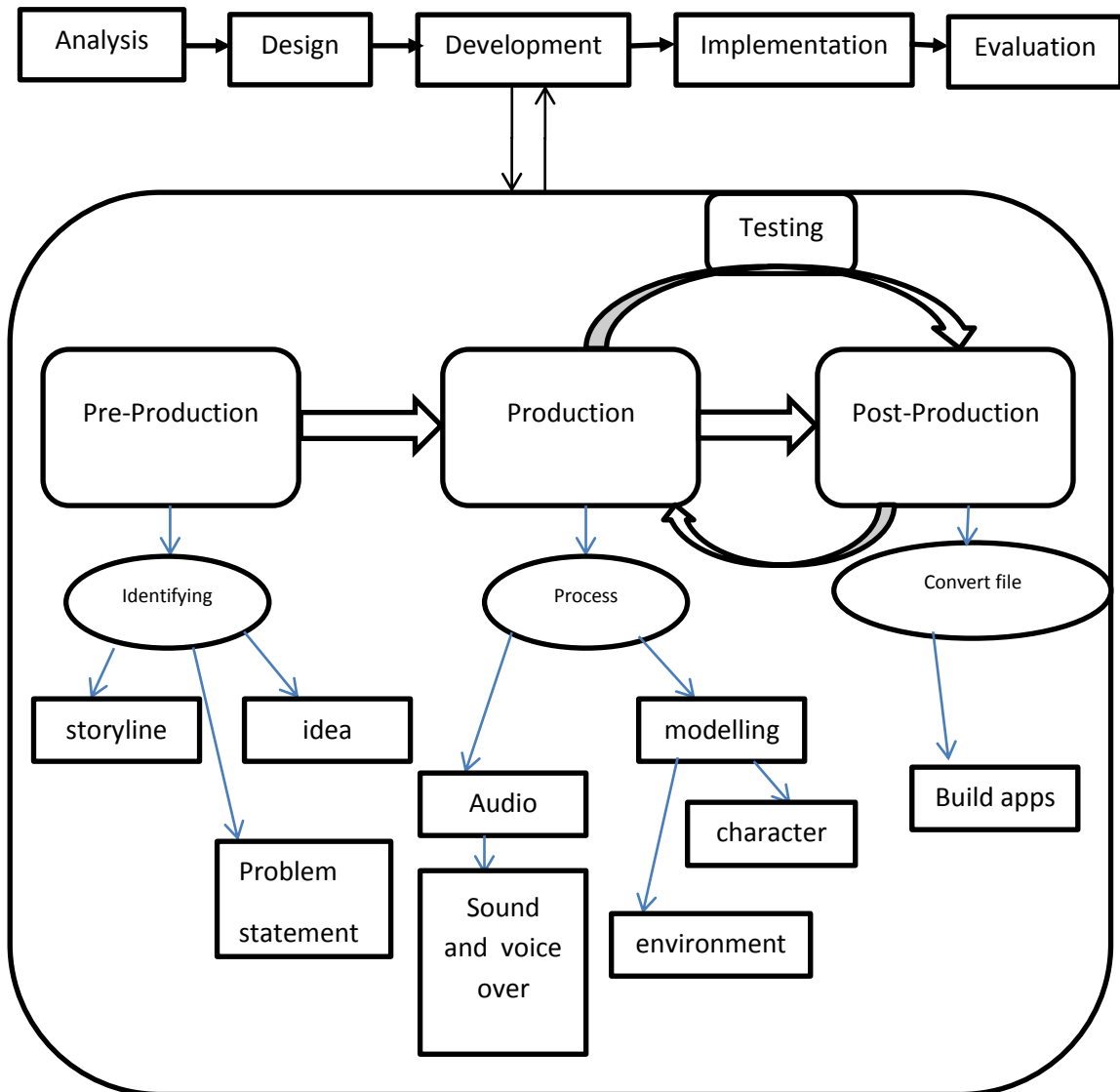
### 1.5.3 Deliverable

The output will be delivered using mobile devices such as smartphone or tablet which are compatible with AIR3.2 for Android.

## 1.6 Project Framework

Figure 1.6 shows the development framework for this project. For whole project methodology is ADDIE model which are Analysis, Design, Development, Implementation and Evaluation. In Development phase, Multimedia Production

Process is used for developing the product methodology. It is suitable method in developing multimedia product.



**Figure 1.6: Developmental Framework**

## 1.7 Project Significance

The significance of this project is on long term periods that can be used by user. It also helps upgrading the learning and teaching system at autism centre to be more efficient and effective.

The significance of the application that will be developed is to give them opportunity toward current technology. Many mobile learning applications currently in the market is positive and attract them in learning process. It is used English as a main language so developer will develop a new application using Bahasa Melayu as a language.

Learning something that involves step by step instructions is quite difficult for children with autism to understand and memorize. They may be confused and gave up to learn more. Therefore, using interactive application, it will help them to pay attention longer in the class.

## **Summary**

This chapter contains the learning content through mobile technology that will be developed. All descriptions in each topic will give clear overview what the project is about.

Next chapter will discuss previous studies associated with mobile application in autism learning.

## **CHAPTER II**

### **LITERATURE REVIEW**

This chapter will discuss details about autism children in application lesson, comparison between existing system in market and techniques that will be used to develop this learning application. In this chapter, several journals and articles related with topics are taken. The main purpose is to gain more knowledge and exposure about this project from past studies.

#### **2.1 Area of Study**

Mobile technology is a worldwide trend that continues to develop rapidly. The use of mobile devices such as smartphone, pc tablet, IPad in learning process is increase the level attention for intellectual disabilities children. Mobile learning application became a trend in the market but there is less learning applications that focus on autism in local context. In Malaysia, few developers created learning applications which focused on autism learning development. Mobile learning generally can be defined as the competence to get or provide educational content in digital learning assets on personal pocket devices such as smartphones, mini tablet,