Android Application for Children Learning Malay as Second Language

By

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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the

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Approved by,

_____

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UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK

May 2012

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work in my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

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HASLINDA BT MOHAMADDIAH

ABSTRACT

With the proliferation of technology, this paper represent a framework for learning Malay language as second language for early age children using Android based. This approach is to suit the evolution of technology to make learning for children is mobile. Using this application, learning process can be done regardless of place and time. This application is to encourage children who learn Malay language as second language to learn language using technology. This application also focusing to the students in early age; might be from kindergarten to primary schools. The concept play and learn is implemented in this application to give excitement in learning language. Children also can learn by their own using this application as it is user friendly and understandable by children.

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CHAPTER 1

INTRODUCTION

1.1.   Background of Study

In a world with thousands language, a universal language is important to make communication between two parties successful. Language is a cognitive system of symbols for the expression of thought and indication of decent (Tham S.C.,1990). A good communication is a communication that using a language that can be understood by different parties. Different countries have their own different races with various cultures, languages and dialects. Language is a symbol for a heritage and culture for a nation.

Living in 21st century, English language seems to be one of the important language or known as business language. However, the popularity of a language is not a benchmark for a person to abandon their own native language. Parents especially in German, Korea, Japan and others are really emphasize their children to learn their respective national languages. In Malaysia, tough Malay is a national language but the perception seen Malay language as not much as national language as it is language of Malays.

Diversity of races in Malaysia cause national language become less important compare to respective native language. The rejection of Malay language is not so much about the language but rejection of the insidious racial indoctrination that continues to go on. Student should been exposed to their national language since children regardless of their mother tongue. Malay language should be used and known by everybody in the Malaysia because people in anywhere speak in Malay language to communicate between different races. It is the importance of having a national language whereby

people can easily communicate with each other and convey the message rightly. In Malaysia, language is a unification platform for different races that lived in this nation.

Malay language is a family of Austronesia language has 200 million over speakers around the world including Malaysia, Indonesia, Southern Thai, Southern Philippines, East Timor, Brunei and others as their medium of communication eventough it is differ in dialects. Since the 15th Century, the Malay language is known as lingua franca during the *Sufis* and Muslim traders' process of introducing Islam to the native people in the region and in the creation of colonies comprising Eastern and Western trade groups (Mehmet O., 2011). It shows the importance of Malay language during that era where every trader have to speak in Malay language to trade between each other. Interestingly, China has its own radio channel in Malay known as *Siaran Radio Bahasa Melayu CRI* that managed by its own citizens since 1959. Now, how the new generation value and preserve the beauties of the language comes into an argument.

Learning language need a lot of memorization and practice. It is a good approach for parent to encourage their children to learn language since early age. It is because an early age child, they have a good ability to memorize and very easy to catch up what they have learned. Learning language will be more interesting using multimedia aid as it is provide a visualization for children to easily remember what they are learnt. The intention of exposing children using Android to learn language is not to replace the existing educational system but it is an alternative to create excitement in learning language for children that will be more fun and interesting. The mobility and ability to support multimedia content is the factor of the booming in Android mobile phone. Instead of learning by using traditional way such as using flash card, courseware module, television, computer and others, learning can be more convenient using Android smartphone as it provides high mobility.

1.2.   Problem Statement

1.2.1   Malay Language as Second Language

Majority of the Malaysian are able to speak at least in two languages which are Malay and English. For the group of people who not using Malay language as their mother tongue, they are able to speak probably in three languages including their native language. As Malaysian, we should proud with our own language and culture as an attraction for the tourists to visit Malaysia. Other than Malaysian, students who study in this country for instance, they are compulsory to take a course to learn the national language of that country as one of the requirement by the university. Research has shown that a person who learnt foreign language can deepen the understanding of a culture indirectly. Master in foreign language is an added value for an individual but for Malaysian, Malay language is not a foreign language as it is a must for an individual as Malaysian. In learning language, memorizing and practicing is important to make us understand the usage of word correctly and fluently. According to the winner of Bahasa Melayu International Public Speaking Contest – Deputy Prime's Minister Trophy, Olga Vadimovna, a Russian young lady said that, it was difficult at first to speak but when she started making friends with Malaysian, speaking Malay language became easier (Vadimovna O., 2007). In Malaysia, even though Malay is a national language but it is taught as second or third language in vernacular education system's schools. Malay language has to compete with other language such as English, Chinese, and Tamil.

1.2.2   Existing of Vernacular Education System

Least number of vernacular secondary schools in Malaysia has driven the massive number of applicants from non-Malay to enter Malay schools. It is one of a good approach to encourage students to speak in Malay. However, students should have

strong foundation of Malay language in order to survive in Malay schools because most of the subject's syllabuses are taught in Malay language. Sometimes, teachers are having a lot of difficulties in teaching and communicating with the students as they cannot understand the Malay language very well. It gives trouble for teacher as learning process cannot be done smoothly and they might not even understand what the teachers are taught.

Children learn language in formal way since their preschool education till secondary school. They are learning language steps by steps from the lower level to the higher level. Sometimes, children are having difficulties in communication when they are entering Malay primary school or *sekolah kebangsaan* from non-Malay pre-school due to different intermediate language. Some students have to place in intensive class to learn basic language in writing, spelling, reading, and counting until they are able to master the language. In intensive class, teacher will be using a very slow approach in learning language in order to train them as a beginner.

It is important for students to have strong foundation in language since they are child. According to Edmonds (2007) children can have an almost universal success rate at achieving near fluency and perfect accents in learning language during the critical period which is before age of puberty or seven years old. This paper proposes an interactive application to learn Malay language as second language. This application also integrates with the current syllabus that emphasize on the daily usage of language for recognizing alphabets, numbers, objects and some more.

1.2.3 Lack of Awareness

This application is apparently to support the appeal of *Dewan Bahasa dan Pustaka (DBP)* Malaysia to elevate the race dignity through language. DBP is the government

body which responsible for coordinating Malay language in Malaysia. Malaysia government also has set up several acts to emphasize the usage of Malay language in the country such National Language Act 1967, Educational Act 1996, and others. Preservation of culture is important for the young generation as nowadays language has been mixed up with the trends and is losing their originality in term of writing and pronunciation. The usage of proper language also has been taken lightly by the young generation due to western influences. Language is one of the medium to unite the diversity of races, culture and religion in a nation and it is can be achieved successfully through good communication. A good communication skill reflects the confident level and intellectuality of an individual towards the language itself. People can be connected among each other through communication by using universal language which can be understood by most of the people. If not, people have to use sign language to communicate among each other and it does not reflect the evolution of millennium era.

1.3. Objectives and Scope of Study

The objectives of this project are shown as follow:
1. To encourage student learn Malay language at early age
2. To support the appeal of *Dewan Bahasa dan Pustaka* (DBP) Malaysia
3. To expose student with the amusing technology

The main objective of this project is to develop a mobile application using Android which will be used for students in early age to learn Malay language as their second language. Since the applications is designed to attract children to learn language, thus the first task for this project is to study about the nature of children, the development of process and the ability of children in this particular age.

This application is an additional learning tool for students who learn Malay language as their second language. Learn second language can be as easy as the first by using visual and audio aids which indirectly catch the student's attention that can make learning

language is fun. Targeting student in this application is student in early age whereby it is suitable for kindergarten to primary schools children. By using this application, learning can be more attractive and interesting as it suits with the children development and learning style.

1.4. Feasibility of Study

1.4.1. Schedule Feasibility

This project is taking two full semester of study to complete including the research study and prototype; and it is about seven to eight months of time. For the first three months, it is use to conduct the research study and the remaining months is focusing on the development of the system. The overall activity and milestones during the project timeline will be attached in the appendix at the end of this documentation. The time constraints somehow will limit the time to build the most advance application. In this early development, the system will follow the requirements during the planning phase.

1.4.2. Resources Feasibility

Since this project is run in Android OS, it is feasible to use Android phone as to test the application in real environment instead of run in the computer. By using real hardware, the real output and user interaction can be monitor clearly. Eventough learning via computer is almost the same with via Android mobile phone but it could develop different nature of environment and excitement. Other than that, this project is being developed by using Adobe Flash Professional CS5.5 which can support high quality of multimedia input to create excitement for children.

1.4.3. Technical Feasibility

The project is more technical feasible from the point of the developer view, by taking into account the familiarity with application and technology, project size and compatibility with the existing way of teaching and learning language for early age children.

For familiarity with application and technology, both developer and the users are familiar with the Android application thus the system is easy to use by the end user. Since the developer is a beginner in building an Android application, a lot of reading and frequent discussion has to be made with the other developers in the online forum to gain more ideas and improve programming skills

Discussing about the project size, it is consider quite moderate from the beginning requirement given and the estimation of the developer. The compatibility with the children learning concept is taking into account as an end user, the learning concept has to suits the learning level at that particular age. The learning style also has to be more colorful and interactive as to retain the user's attention.

CHAPTER 2

LITERATURE REVIEW

2.1 Importance of Learning Language

Language is a cognitive system of symbols for the expression of thought and indication of decent (Tham, 1990). Malay language is synonym with Malay citizens as their mother tongue. However with diversity of races, Malay language is a universal language that can make communication possible between people (Viacheslav, 2008). Since the 15th Century, the Malay language is lingua franca during the *Sufis* and Muslim traders' process of introducing Islam to the native people in the region and in the creation of colonies comprising Eastern and Western trade groups (Mehmet, 2011).

Second language is referring to any languages learn by a person as an additional language to the first. Second language is not necessarily being the second as it is also incorporate the learning of third or subsequent languages. Learning second language is not contrasted with learning foreign language as it do not gives much different in term of learning acquisition (Gass & Selinkar, 2008). However, national language should not be categorized as foreign language because it is not foreign but it is the person who treats the language as a foreign. Second language of learning might be influenced by the first language's pronunciation and syntax to gestures acquired by the individual, for instance pronunciation of "/t/" sound of French speakers who spoke English as a second is different from monolingual French speakers (Cook & Vivian, 2008). Children are more likely achieve native-like fluency compare to adult because in the early age, they are still in the adaption of language phase whereby the essence of the mother tongue is not that strong yet.

2.2   Schools Education

Institutionalized teaching and learning is a curriculum in system of schooling which established according to a predetermined purpose of the schools. Formal learning system education in schools develop for many reasons such as to develop reasoning about perennial questions, cultivate the intellectuality behavior in early age, master the methods of scientific inquiry, create positive mind of thinking, and model a democratic society (Webb, DL, A Metha & KF Jordan, 2010).

Some parents prefer to start their children school education at age of 6 before going to formal education system. According to statistic by Ministry of Education Malaysia till 31st January 2012, about 3.53% children enrolled for preschool education, compared to children enrolled for primary school and secondary school are 53.19% and 43.28% respectively. This shows that, there is little number of children has basic education in literacy competencies during their early age. According to Barnett (2008), preschool education plays a vital role in shaping children learning development and rapid growth. The aim of preschool education is to educate citizens with high-level skills and competency in a global society. The education system in Malaysia is organized to reflect the ethnic diversity in consideration of the various ethnic groups (Akiko, 2007).

Besides that, the first language acquired by children is considered as their mother tongue (Aishah, 2008). In Malaysia, Malay language is taught in all schools regardless the education system applied. There are three types of vernacular education systems that have been introduced in Malaysia since 1786 by the British Colony that is National School (Sekolah Kebangsaan), National-type Chinese School (Sekolah Jenis Kebangsaan Cina), and National-type Tamil School (Sekolah Jenis Kebangsaan Tamil). The problem with this education system is the national language is being taught as second language in the National-type schools due to their language acquisition at home. The idea of introducing learning Malay language using Android is arise to make learning Malay language become more effective and convenient for the minority people.

2.3   Children Learning Style

When discussing about children development, it is usually about physical, mental, social and emotional development. In learning language, mental and social development plays an important role to develop their ability to memorize and practice. Although children are not been taught second language since toddler, the ability of learning second language at early age is possible and would be a great advantage for a child. During the first three years of life, the foundations for thinking, language, vision, attitudes, aptitudes, and other characteristics are laid down. Consequently, it would be a waste not to use a child's natural ability to learn during his or her most vital years, when learning a second language is as easy as learning the first (Kotulak, 1996 & Dryden & Vos, 1997).

The more fun it is to learn a language, the more a child will want to stay with it. Learning while playing is the best way to learn because it creates emotional attachments, and emotion is the door to learning (Dryden & Vos, 1997, Jensen, 1994, Dryden & Rose, 1995). Biologically, learning is easier if it is made emotional or fun because emotional brain in our body is located in the center of the brain and it stores memory (Dryden & Vos, 1997, Jensen, 1994, MacLean, 1990).

Children ability in memorization is high since infant and it is develop from time to time when they get older. They learn how to speak informally from their observation on how the adults' spoke and each day, children can learn on average 10 to 15 new words (Landauer & Dumais, 1997). Adults or parents have to show good attitude and speak nice words in front of children since they are observing and might be following what the adult's did. Somehow, they are not yet in the phase of understanding what are the meaning of those words but based on latent semantic analysis, children are using guessing technique when meet unfamiliar word to guess the meaning of the word by action (Landauer & Dumais, 1997).

2.4 Interactive Learning

Interactivity via visualization and practicing in learning will help children in learning second language faster. Children can easily memorize thing when they learn by doing, talking, playing, link with numbers and pictures, and through pictures and sounds (Dryden & Vos, 1997, Dryden & Rose, 1995, Gardner, 1983). Visual or multimedia content are highly motivated students to learn because they are amusing and interesting. Previously, web based application become a phenomenon when people start to adapt interactivity in learning in schools. Applying web based application for educational purpose is not a new concept. Through the computer technologies, computer based learning and teaching become more interactive and interesting (Andreas, 1999).

2.4.1 Review on Online Games for Young Children

2.4.1.1 Little Pim

Figure 1: Little Pim Homepage

Description from the site : "Little Pim was created in 2006 by Julia Pimsleur Levine, a mom who grew up bilingual and was looking for fun ways to introduce her young son to learn French language. Pimsleur Levine was inspired in part by having grown up in the language teaching business. Her father, Dr. Paul Pimsleur, created one of the most popular and acclaimed audio teaching language methods for adults. Pimsleur Levine

created a series that delights kids as much as any purely entertainment show, and treats play and learning as seamless activities. The Little Pim DVDs and products all make language learning fun and easy for babies, toddlers, preschoolers, and their monolingual or bilingual parents. Little Pim is the most comprehensive series available today for introducing a foreign language to young children between the ages of zero and five. The series has won 22 awards, including iParenting, Mom's Best, Creative Child and Mr. Dad. "

Little Pim purpose is to be a website that teaching foreign language for children. However, by using DVDs, it makes Little Pim less mobile as is has to be connected to a laptop or television.
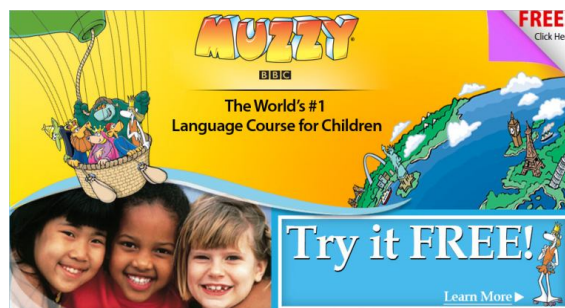
2.4.1.2 MUZZY

Figure 2: MUZZY Homepage

Description from the site : " The Early Advantage family of programs, such as MUZZY: the BBC Language Course for Children, focus on the inborn abilities of all young children to receive, process, and learn by leaps and bounds. Through our programs, parents can realize their dreams of providing their children the early advantage of rich educational experiences in the early years of life. Early Advantage's products are attuned to the "window of opportunity" years for learning that science now shows can give a child an advantage for life. Early Advantage is itself growing by leaps and

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bounds, as it looks to answer some of the educational needs of families with young children and seeks to find new and exciting ways to help children learn. "

MUZZY is using a natural immersion approach, surrounding learners with visual, aural and contextual language, modeled on the way we learned our first language. The design is effective for visual/spatial, verbal, kinesthetic, musical and logical/mathematic learners.

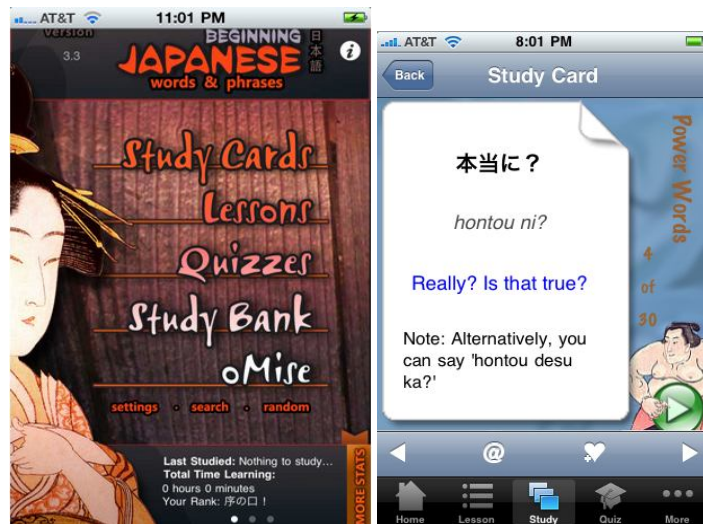### 2.4.1.3 Learn Japanese phrase in iPhone (thejapanesepage.com)

Figure 3: Learn Japanese in iPhone

Description from the site: "Although this will be helpful for those traveling in Japan, it isn't designed to be a travel phrasebook, but a conversation phrasebook. It is best for those who want to quickly learn conversational Japanese with correct pronunciation. The words and phrases encountered here are among the most used in everyday conversational Japanese. Nothing can take the place of a good textbook and this is certainly not an attempt to do so. We highly recommend getting a textbook to keep your learning structured and regular. A great way to learn vocabulary and grammar is to

memorize phrases and to know when to use them. Listening and repeating the words and phrases also help improve pronunciation and listening comprehension."

This application can be made as reference in order to build the Android application for children Malay language as second language. Eventough the concept is a bit different but it promotes the same learning intention which is language. However, this application is only focusing only on learning instead of activity and learning module to test the user's ability.

2.5   Android versus J2ME

Java 2 Micro Edition or known as J2ME is widely used in the early mobile development fields. J2ME is Java platform designed for embedded system such as mobile phone, personal digital assistant (PDA), consumer electronics and other embedded devices. J2ME is best support for device that operates with little as 128KB of RAM and limited processor power. Today's mobile phones and entry-level PDAs use Mobile Information Device Profile (MIDF) combined with Connected Limited Device Configuration (CDLC) as the J2ME run-rime environment. Due to rapid growth of mobile environment, more new platform are being introduced by telecommunication company, such as Android for Android phones, iOs for iPhones, BlackBerry OS for BlackBerry to suit current market trends.

Alliance Members (2011) has claimed that Android was introduced by the Open Handset Alliance on the November 5th 2007 before Google Inc. has purchased it and continues updating the software. Android receive a lot of appraisal from other developers upon its introduction (Lawson 2008). An Android system consists of five major components which are Linux Kernel, Android runtime, libraries, Application framework and applications. The kernel acts as an abstraction layer between the hardware and the bottom stack. The runtime Android is layer that includes set libraries that require by Java libraries to optimized the mobile device function including

optimized graphics powered by accustom 2D graphics library, 3D graphics based on the OpenGLS ES 1.0, data storage, media supports for common audio, video, image formats, camera GPS, compass and accelerator (hardware dependent) and rich development environment including a device emulator, tools for debugging, memory and performance profiling and a plugin for the Eclipse IDE. An application framework is a skeleton which all android developers should follow. The most upper layer in the system architecture is a core set of application which includes calendar, email client, SMS program, maps, contacts, browser and others
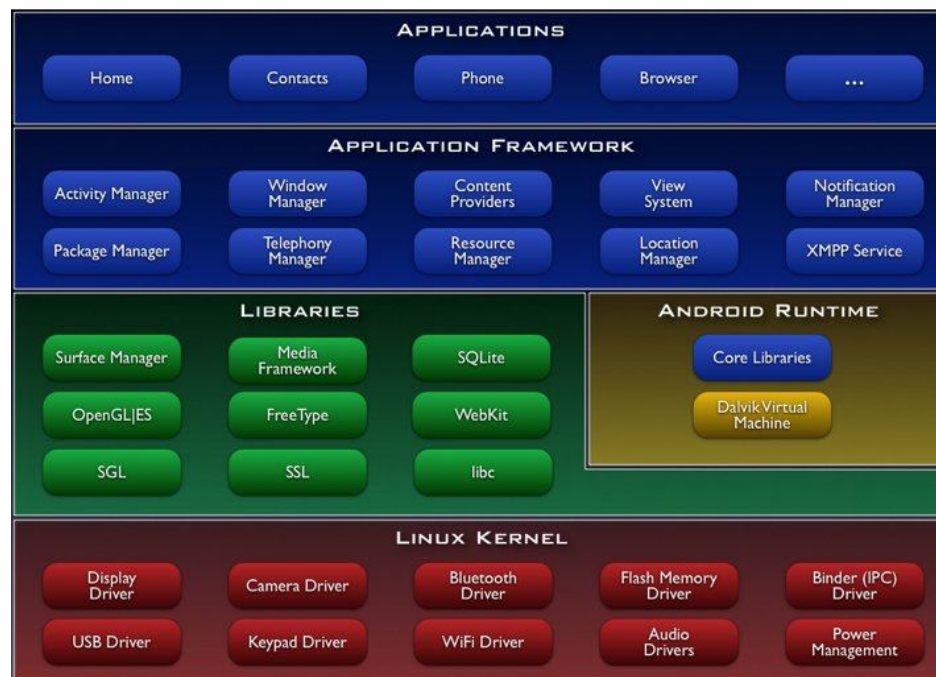

Figure 4: The Android Architecture Platform

2.5.1   Benefits of Android

During the early introduction of Android, according to Gartner Inc. it is about 0.5% market share available in the market. From year to years, Android becomes more popular as the features are keeps improving to be the best smartphone in the world.

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Based on recent study by the same analyst, Android has hits half of the market share which is 52.5% in the third quarter of the year 2011 compared to other operating system such as Symbian, RIM, iOs, Microsoft and others (Petty, 2011). This study shows that Android has gained its momentum to move forward in the mobile phone industry and beat other OS's market shares.
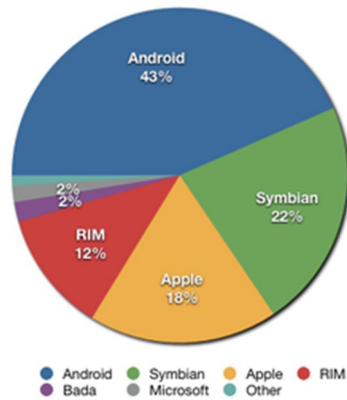

Figure 5: Share of worldwide 2011 Q2 smartphone sales to end user by operating system

Year	Symbian	Android	RIM	iOS	Microsoft	Bada	Other OSs
2011 Q3	16.9%	52.5%	11.0%	15.0%	1.5%	2.2%	0.9%
2011 Q2	22.1%	43.4%	11.7%	18.2%	1.6%	1.9%	1.0%
2011 Q1	27.4%	36.0%	12.9%	16.8%	3.6%	N/A	3.3%
2010	37.6%	22.7%	16.0%	15.7%	4.2%	N/A	3.8%
2009	46.9%	3.9%	19.9%	14.4%	8.7%	N/A	6.1%
2008	52.4%	0.5%	16.6%	8.2%	11.8%	N/A	10.5%

2007	63.5%	N/A	9.6%	2.7%	12.0%	N/A	12.1%

Table 1: Total mobile OS market share

Android has its own market where a large number of developers writing application ("apps") that extend the functionality of the device. Google run an online store which known as Android Market to download mobile apps published by third party developers. About 370,000 apps has been listed in Android Market and up to 7 billion of downloaded have been made by users till November 2011. Apart from that, Android is one of the OS that provides up to 67% of free apps in the market (Wehner, 2011). More than half of the total listed apps in the market are free for download from various category including entertainment, tools, sports, arcade & action, education, lifestyle, and others. It shows that Android market has large market compares to others OS.

App Store	Percent Free Applications
Android Market	67%
Windows Phone Marketplace	52%
Samsung Apps	39%
Apple App Store	37%
BlackBerry App World	26%
Nokia Ovi Store	26%

Table 2: Comparison of free applications

CHAPTER 3

METHODOLOGY

3.1   Throwaway Prototype

The project will be using Throwaway Prototyping that is falls under the rapid application development (RAD) based methodology. Throwaway prototyping based methodology is similar to prototyping methodology with difference that it will be done at different phase of system development life cycle (SDLC).

Throwaway prototyping is basically intended to help users to visualize how the module looks after it being built. This type of methodology is also known as Dummy (mock-up) prototype as it will be a presentation before implementing the real finish module. The objective of this is to ensure that the system requirements are validated and clearly understood by end users together with the developer. The phases of this methodology are based on system development life cycles which consist of 4 phase which are planning, analysis, design and implementation. As for throwaway prototype, it will relies on few design prototypes during the analysis and design phases before continue with the implementation phase.
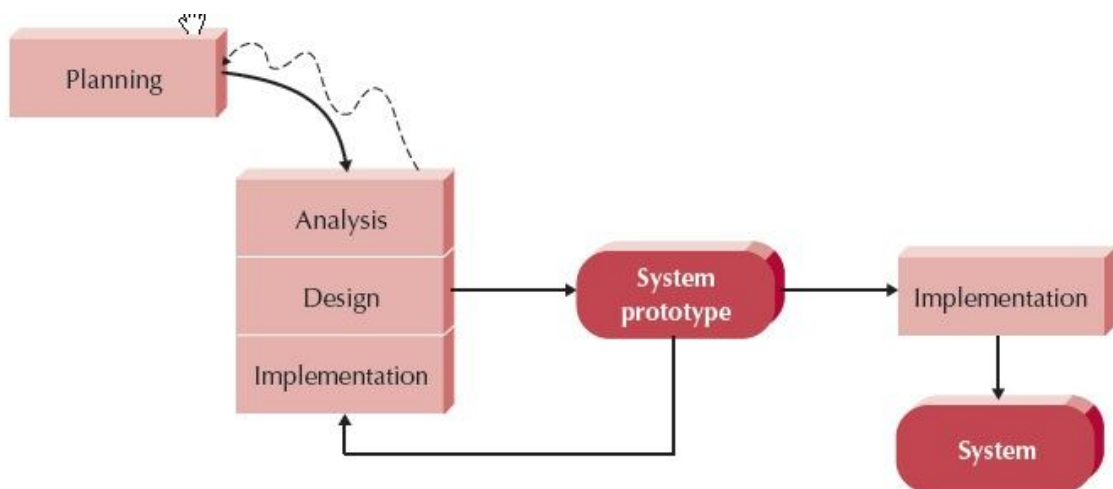
Figure 6: Throwaway prototype

There are many advantages of using Throwaway prototype for the development of the application. Before system prototype are being finalized, a simple working model will be constructed to visually shows user what their requirements may look like when they are implemented into finishing product. It helps to reduced time and cost of the development process instead of shows the user the final prototype which is not meeting their requirements. Making changes in the early development really a cost effective as small changes may affect the overall performance of the system. Building a right product and product right are the goals for any system development to avoid any waste in monetary or time factors.

User involvement throughout the system development is important as system made must meet the end user's requirement because they are the target users who will use the system. The developer build a system is meant for the end users, thus end users play an important role in the process development. A meeting should be done frequently to ensure that the product developed is on the right track with the right specifications. The presence of prototype is to prevent misunderstanding and miscommunication between the end user and developer along the development progress in order to produce a high quality product that satisfies the user's desires. In throwaway prototyping, the prototype is being discarded eventually rather than becoming part of the delivered system.

3.1.1 Quick Design

The design method used in the quick design phase this project is storyboarding. The storyboarding method focuses attention on the people who will use the application. The storyboarding is visualized through drawing and screenshots of how the actual prototype will work. Having an overview about the system works is very helpful in helping users to explore, understand about the behavioral requirements of the system. The storyboard

will also be able to show actions the user can take, or requests the user make on the system, information displayed and action users can take in order to use the system.

Easy Malay provides three main modules that can develop basic Malay language skills for children who learn Malay language as their second language. Learning language involves a lot of memorization and practice to make the children understand more about the concept and usage of words. Each module is designed based on the capabilities of the student in the early age to support the children development process. In the early development of the application, the modules chosen includes "numbers", "objects", and "colours" that can be used in daily life. The module chosen is high in level from one module to another module to stimulate the development process of learning language. The module chosen is based on the school children level and the fundamental knowledge for learning language instead of having vocabulary, adverbs, conjunctions and others because it requires a lot of process and quite complicated.

For "numbers" module, children will be able to recognize Malay alphabets and number. This module is simple module because Malay and English alphabets are using the same symbol but it might be hard for those children for instance that only learn Chinese or Tamil because they are using their own symbol that totally different. The difference between English and Malay numerology is the pronunciation but learn number in Malay is not that hard and it is understandable. In "object" module, it will teaches recognizing common objects in the surrounding such as "house = *rumah*", "bicycle = *basikal*", "car = *kereta*" , "tree = *pokok*" and others. This module will involves more catchy graphics as to ease children's memorization and capture the children's view. In "colours" module, the basic 12 colours will be taught with the correct pronunciation and activity provided will helps children to remember those colours.

3.2   Project Action

3.2.1   System Conceptual Framework

The conceptual framework comprises two main stages is shown in Figure 8. The first stage is the early analysis, which consists of problem identification and objective determination. The second stage is the application development. The main objective of this proposed system is to encourage students to learn language and memorize necessary vocabularies that will be using often in their daily lives. The approaches and lessons are based on the preschool and primary schools in Malaysia that teach Malay as their second language. Thus, the content of the lessons and games are age-appropriate. Prototype will be tested to the real users to see the result and feedback from them.
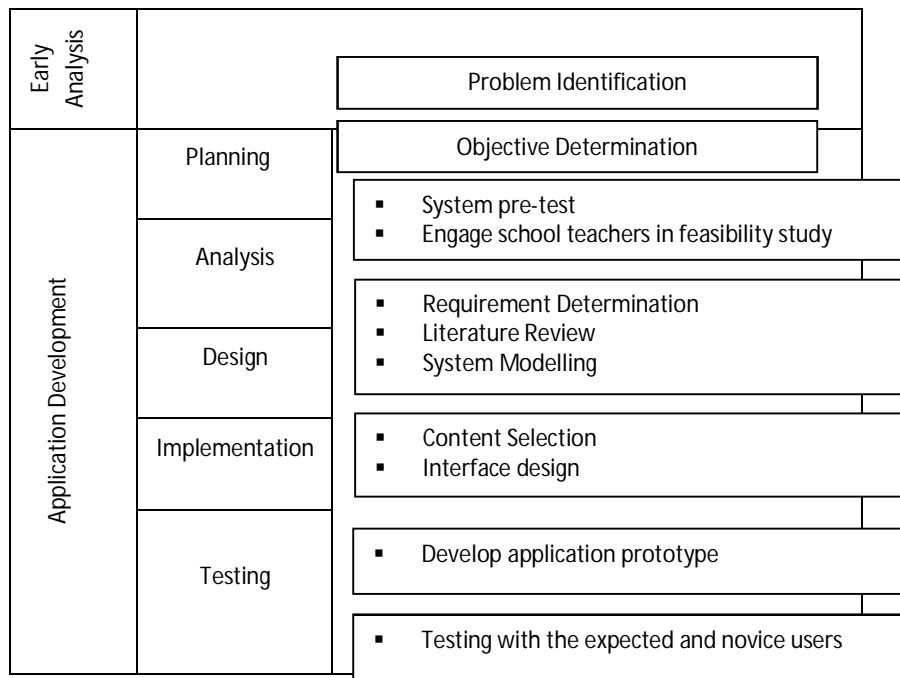
Figure 8: System Framework

3.2.2 UML diagram

The use case diagram represents the system flow from the beginning till the end of the application. There are three sections in the diagram which are module, learning and exercise. In module section, user can choose the preferred module and it will leads to the learning process. Once the user completed the learning, there are few interactive exercise that user can go through to complete each module.
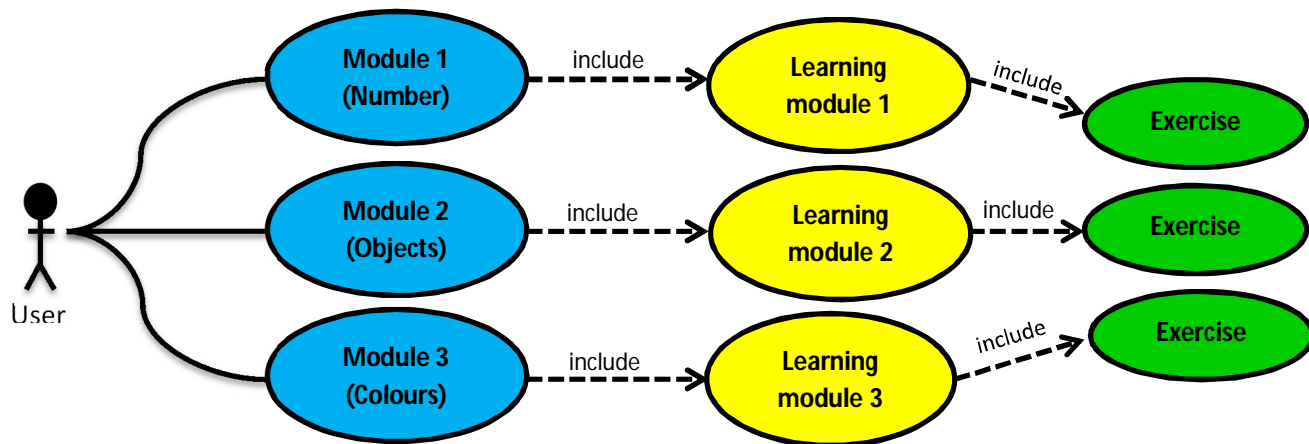

Figure 9: Use Case Diagram

3.3 Tools Requirement

Tools requirement as for the development of the system are shown below:

3.3.1 Software

- Adobe Flash Professional CS5.5
- Adobe Photoshop CS4

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- Free Sound Recorder

3.3.2 Hardware

- Android device version 2.3 or above

CHAPTER 4

RESULT AND DISCUSSION

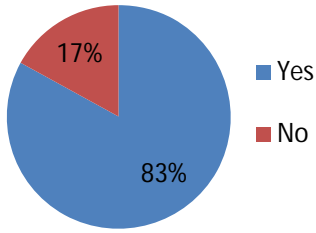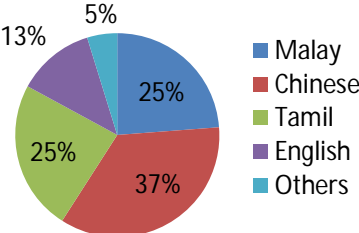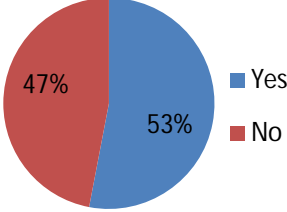## 4.1 Analysis of data
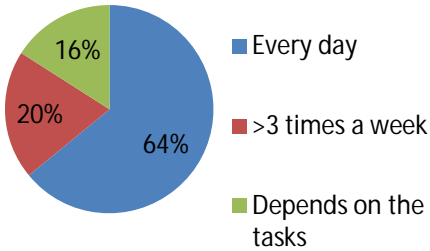
4.1.1   Data Gathering

The main method for data gathering for this study is through survey and questionnaires. The available existing system and technologies that provide the almost the same functionality are being studied to see the efficiency of the system. There is a lot of apps exist in the Android market that offer basic learning for study languages such as French, German, Arabic, Korea, Japan, Mandarin and others but unfortunately, there is no such apps for learning Malay language. This method of survey is effective in this research as it allows a bird-eyes' view of the other's system that promotes language studies. Through the survey, it allows developer to see the best approach for developing the system and determines the suitable method to make learning language more interesting and effective for the target users.
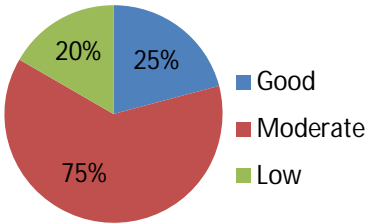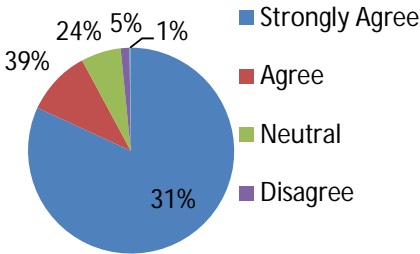
To get feedback from the users about the system, set of questionnaires is being constructed to gather data from the target users. Data gathered is important to support the system whether it is gives a positive respond from the correspond users or not. And overview from the expecting target users. A good system is a system that builds to suits the user needs and preferences in order to ease their daily lives. Through questionnaires, data can be collected swiftly from a large number of respondents. Since this application is using smartphone, this questionnaire also constructed to get the feedback from the parents as children are not relying to teachers in schools only to learn language. Data gathered is important to measure until what extent this application will be used by children and teacher as part of the learning process.

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Since the propose system is to learn Malay language as second language, primary target user is student at early age; could be kindergarten or primary school students that speaks Malay as their second language. Vernacular schools such as Chinese and Tamil are the main target for gathering the information. The questionnaires also been distributed to the parents, teacher and anonymous respondent who have different family background and living area to see the trend of the data gathered. In particular schools, about 20 to 40 students were chosen randomly from different classes to participate in this study. It is important to have different level of thinking because they might expect different from the system.

4.1.2 Analyzing the Results of Questionnaires

No	Result	Analysis
1	**How often do you use internet?** 16% 20% 64% ■ Every day ■ >3 times a week ■ Depends on the tasks	Based on the result in this question, it shows that majority of the respondent are frequently use internet in their daily lives. The usage might be for playing computer games, social networking and other that will explain in the other question. Internet is something that really important and even small kids nowadays know on how to operate using Internet.

2	**Are you familiar with smartphones?**	This question explains the familiarity of smartphone among the respondent. Malaysia also not left out in term of technology eventough the market hits in the country a bit late. There is various type of smartphone available in the market such as Android, BlackBerry, iPhone, HTC, PDA and others. Almost the respondents are familiar with smartphone either own personally or by parent.
	17% No, 83% Yes	
3	**What is your medium communication at home?**	Different races have their own native language. Most of the Malaysian are choose to speak their own native language as medium of communication between family members and same races. About 13% of respondent are using English language as their medium of communication including Malay, Chinese and Indian. Using own native language make conversation more effective rather than using other languages that we are not very fluent. However, this is not a resistant for the Malaysian to be able speaks in Malay language as the national language.
	5% Others, 13% English, 25% Malay, 37% Chinese, 25% Tamil	
4	**As resident of Malaysia, do you think learning Malay language is important?**	The result from this question is quite balance as half are agree the importance of Malay language and the other half is declining. People especially in city might not really aware about the national language as for them English language is the most important in the world. Not all people are expert in that language and somehow villagers or town people are really appreciate Malay
	47% No, 53% Yes	

		language because it is easy to communicate with the Chinese and Tamil. This question is reflecting the problem statement highlighted which is lack of awareness from the society to preserve the language and culture of the nations.
5	**How do you rate your Malay language literacy efficicency?** 20% 25% 75% ■ Good ■ Moderate ■ Low	About three quarters of the respondents have moderate efficiency in language literacy. Good indicates the respondents are good in reading, writing and using Malay word correctly depends on situation. Moderate indicates the respondent might be know how to read Malay reading materials and speaks but cannot write. Or it might good in speaking but not in writing. It depends on the respondent on how they rate themselves. The low efficient is the respondent who might do not know how to speaks or clueless in reading Malay.
6	**What is your opinion in implementing the online mobile learning?** 24% 5% 1% 39% 31% ■ Strongly Agree ■ Agree ■ Neutral ■ Disagree	Implementing learning through mobile phone is not a new phenomenon but fro the result, the respondents are not decline the approach of learning using mobile phone. It is a good respond from the respondents as the target users who might use the application in the future.
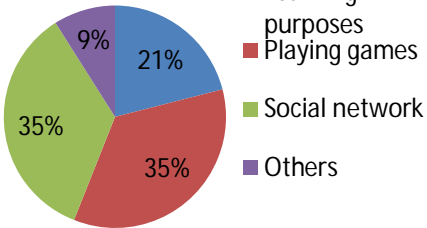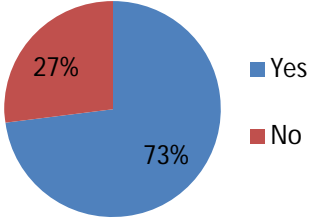
7	**What activity are you doing on the internet?**	This question is to study the interest and preference of the respondent in using internet. Most respondent are using internet for playing games and social networking. Children at early age are good in playing games as their brains are growing and they are more attracted to visual aids. It is a good approach to adapt games approach in learning to make children feels interesting and happy to learn.
	Learning purposes 21%, Playing games 35%, Social network 35%, Others 9%	
8	**Would you prefer to have a mobile version to learn language?**	This question is correspond to the question 6 which to see the overview of the target users. Result from this question is supporting the propose application that being built for learning language. The respondents are prefer to have such application as it is mobile and learning language can be done not only in classroom.
	Yes 73%, No 27%	

Table 3: Analysis of questionnaires' result

4.1.3 Interview

To ensure the reliability of the system, the developer have conducted interview with the teachers at the pre-school. The idea of learning using Android OS is a new attraction for the children as they have to do hands-on exercise by themselves in order to meet the objective of the application. Basically, the children learn a lot from video and audio aids so that the teacher suggests to add more audio in the application. As teacher and parent, she can see the future of this Android application.

4.2   System Prototype Testing

System prototype has been tested at the Pre-school Sekolah Jenis Kebangsaan Tamil, Tronoh Perak before developing the full system. The testing is conducted with 12 students to see their response towards the application and how they are playing with the games provided.

Figure 10: The students during the testing session

The students in that school are about 4 to 6 years old with different skills level. Some can speak in Malay language but some are still not. During the testing session, the students are really excite and eager to play the apps over and over again. Eventough there are not remember the phrase at the first time playing it, somehow they still can follow the pronunciation by the audio correctly. As mention in the chapter before, language is about memorizing and practicing and during that testing, they are really memorize and practice the activities in the application until they get the correct answer.

To suit the children psychomotor abilities, the activities in the application is designed by using click-move-click concept. So that, children can easily adapt with the learning module and activities due to the children's limitation on using the new technology. By

using the concept, learning session can be easy and understood by the children while they can handle the application by themselves.

4.3   Results and Discussion

From the survey result, Easy Malay Application can help the children who want to learn Malay language as their second language as easy as they can. By using Easy Malay, beginner will have three different modules to learn basic pronunciation, writing, and identifying. Children will go through learning process before proceed to the exercise provided to meet the learning outcomes. By the end of each module, children should able to recognize, speak and memorize basic things in Malay language.

4.3.1   Prototype design

Figure 11: Easy Malay Homepage

In figure 11 above shows homepage of Easy Malay. In this application, the usage of wording will be minimized and be replaced by understandable symbol.

Figure 12: Module Selection Page

In figure 12, it shows the module option page. In this application, there are three different kind of module which is number, object, and colour. User can choose the desired module to be learned. Each module has three different activities to test the ability of the children and the effectiveness of the lesson.

Figure 13: Number Lesson

For the first module (nombor), user will learn the number from 1 to 10 with correct pronunciation and spelling. Next and previous button are used to go to the next page or back to the previous page. All pages will be provided with home button at the bottom right to ease user to jump to the module page directly at anytime. It will use the user as

to go back to their desired learning module and choose different module during the lesson.
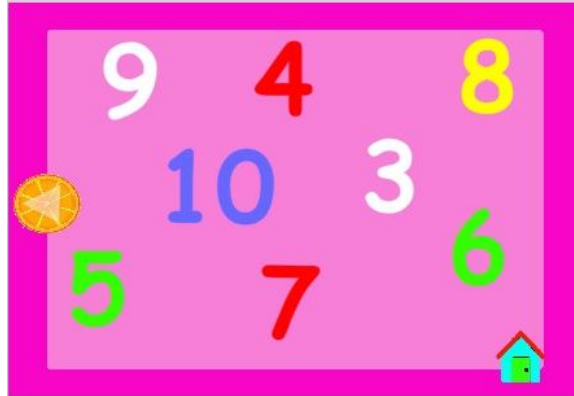
Figure 14: Number Game

For each module, there will be exercise or games that need to be completed by the user. For instance in figure 15, user has to click the number accordingly in ascending order. It help the users to remember back what they had learn before at the beginning of the module. This game can test the ability of the children to recognize number and arrange it in order.

Figure 15: Colour Lesson

Figure 16: Colour Game

Figure 15 is the example of colour module. In this lesson, children will learn how to pronounce the 12 colours in Malay language and should be able to different those colours to answer the game in figure 16.

Figure 17: Object Lesson

Figure 17 shows the user interface for object module. Children will be taught basic objects that can be found surround them such as table, chair, television, lamp and others. The objective of this lesson is to enable children recognizing the objects that they usually seen or use in their daily lives. By completing the lesson, children should be able to know those objects in Malay language by using correct pronunciation.
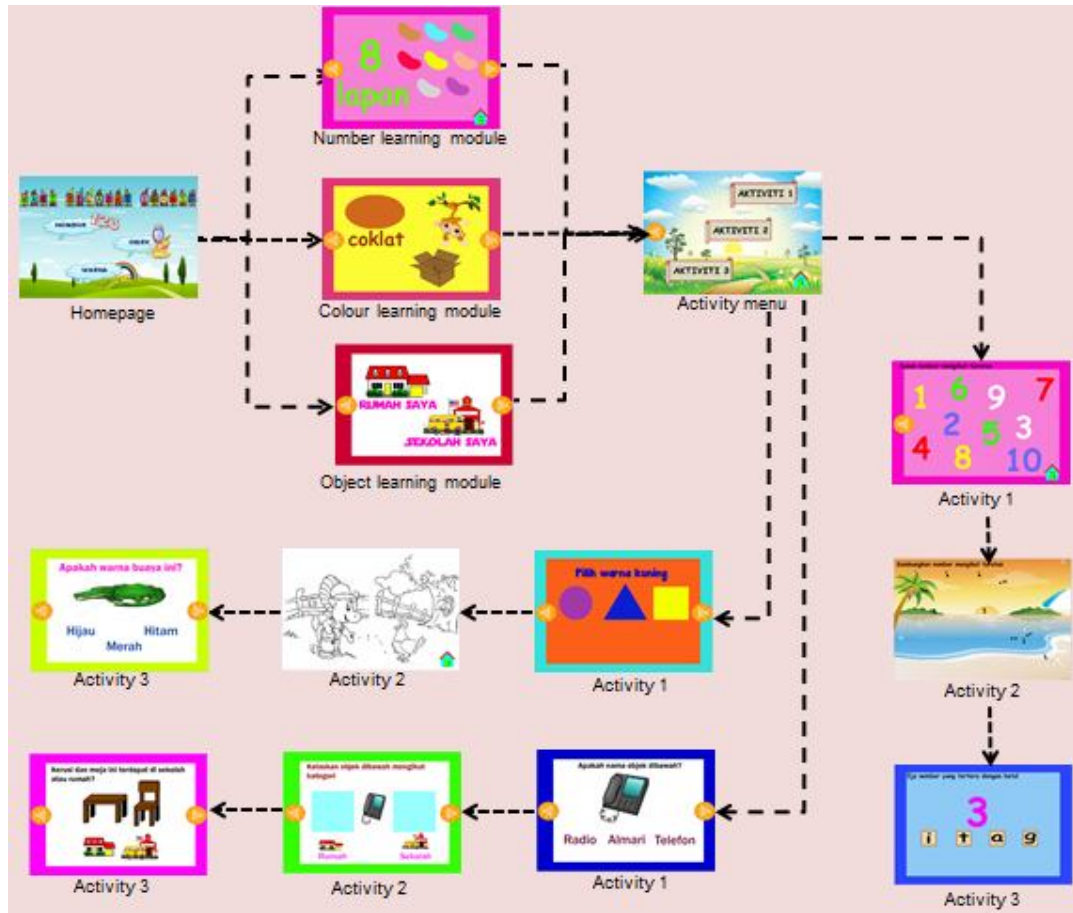
Figure 18: System Flow of Easy Malay Application

In figure 19, it shows the flow of the application for each module that been selected by the user. Each module comprises with learning module and activities as shown in the figure above. The activities designated suit with the children ability and their limitation of using Android application. For number module, the activity comprises of arranging the numbers from 1 to 10 in ascending order, connect the dot according to sequence number and spell the number displayed. For colour module, the activity comprises of choosing correct colour based on the question given, colouring objects and recognizing colour of the objects displayed. For object module, the activity comprises of recognizing object, classifying the object based on the category and grouping the object of same category.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1   Conclusion

Learning language using ICT is not a new approach in the educational system but it is getting popular nowadays as to promote the advancement of technology. With this application, learning session can be done not only in class hour. Learning can be more fun and attractive by using Android application as it is compatible to use with the audio and graphics. By using Android devices, it provides mobility for the children to learn anywhere. This application also solves the problem of students not utilizing their time enough. Instead of playing games for nothing, learning by playing can be more beneficial for the students which indirectly get some input while playing. In future, this application can have more exercise so that children will not only mastering Malay language as their second, but they are able to speak and practice it as their mother tongue. With thrive of technology, children do not have limitation to learn and they also can easily understand what they learn to use in their daily lives. As the result, this application will increase the awareness of learning Malay language among people in Malaysia.

5.2   Recommendation

Due to time constraint of developing the project, there are few recommendations that can be done future improvement of the system. One of the recommendations is to add more modules from time to time. By having more learning module, children can have more option on what module they are interested to learn thus and not limited. Extensive research need to be done to explore more on learning module that suits with the children at early age.

Other than that, the application can be enhanced by adding some features such as score marks. This scoring system somehow will motivate the children in learning since they

will try their best to get highest marks in each game that they are playing. Parent also can observe the level of Malay language acquisition of their children from time to time. The scoring system can be one of the indicators to ensure the effectiveness of the application.

And the last recommendation is by providing more games, so that users will have more options and choose based on their preferences. Since children can easily learn through games and activity, with additional games they can easily remember what they learned after playing over again.

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Russian wins Bahasa Oratory contest. The Star . Retrieved July 31, 2012, from http://thestar.com.my/news/story.asp?file=/2007/3/17/nation/17177259&sec=nation

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APPENDIX – A

The objective of this questionnaire is to conduct feasibility study for the Android Application for Children Learning Malay Language as Second Language. The feedbacks from the respondent are important to measure the level of acceptance towards the project from different point of view.

1. How often do you use internet?
   - ❑ Every Day
   - ❑ More than 3 times a week
   - ❑ Depends on the tasks

2. Are you familiar with smartphones (BlackBerry,HTC,iPhone,Android) ?
   - ❑ Yes
   - ❑ No

3. What is your medium of communication at your home? (can be more than one)
   - ❑ Malay
   - ❑ Chinese
   - ❑ Tamil
   - ❑ English
   - ❑ Others

4. As resident of Malaysia, do you think learning Malay language is important?
   - ❑ Yes
   - ❑ No

5. How do you rate your Malay literacy efficiency?
   - ❑ Good

- ❑ Moderate
- ❑ Low

6. What is your opinion in implementing the online mobile learning?
- ❑ Strongly Agree
- ❑ Agree
- ❑ Neutral
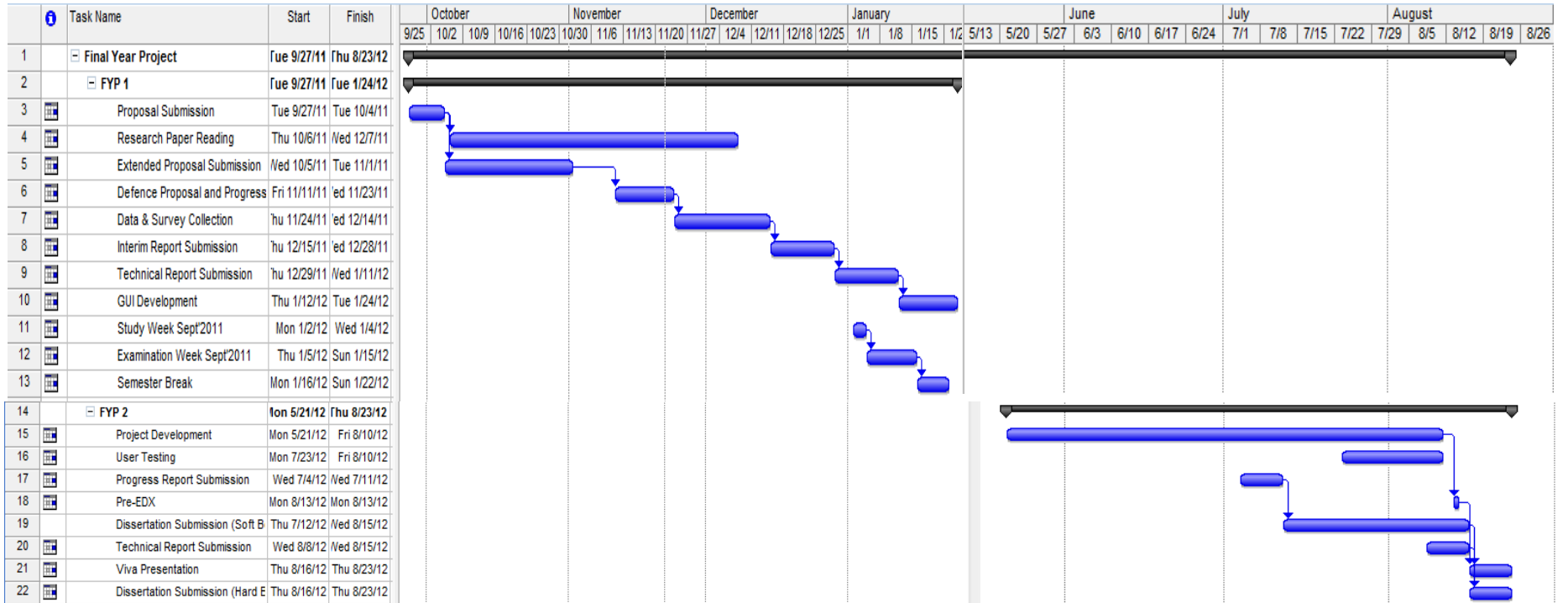- ❑ Disagree
- ❑ Strongly Disagree

7. What activity are you doing on the internet?
- ❑ Learning/Searching for educational materials
- ❑ Playing games
- ❑ Social network
- ❑ Others. Please state ………………

8. Would you prefer to have a mobile version to learn language?
- ❑ Yes
- ❑ No

APPENDIX – B

	ⓘ	Task Name	Start	Finish
1		⊟ Final Year Project	Tue 9/27/11	Thu 8/23/12
2		⊟ FYP 1	Tue 9/27/11	Tue 1/24/12
3	▦	Proposal Submission	Tue 9/27/11	Tue 10/4/11
4	▦	Research Paper Reading	Thu 10/6/11	Wed 12/7/11
5	▦	Extended Proposal Submission	Wed 10/5/11	Tue 11/1/11
6	▦	Defence Proposal and Progress	Fri 11/11/11	Wed 11/23/11
7	▦	Data & Survey Collection	Thu 11/24/11	Wed 12/14/11
8	▦	Interim Report Submission	Thu 12/15/11	Wed 12/28/11
9	▦	Technical Report Submission	Thu 12/29/11	Wed 1/11/12
10	▦	GUI Development	Thu 1/12/12	Tue 1/24/12
11	▦	Study Week Sept'2011	Mon 1/2/12	Wed 1/4/12
12	▦	Examination Week Sept'2011	Thu 1/5/12	Sun 1/15/12
13	▦	Semester Break	Mon 1/16/12	Sun 1/22/12
14		⊟ FYP 2	Mon 5/21/12	Thu 8/23/12
15	▦	Project Development	Mon 5/21/12	Fri 8/10/12
16	▦	User Testing	Mon 7/23/12	Fri 8/10/12
17	▦	Progress Report Submission	Wed 7/4/12	Wed 7/11/12
18	▦	Pre-EDX	Mon 8/13/12	Mon 8/13/12
19		Dissertation Submission (Soft B	Thu 7/12/12	Wed 8/15/12
20	▦	Technical Report Submission	Wed 8/8/12	Wed 8/15/12
21	▦	Viva Presentation	Thu 8/16/12	Thu 8/23/12
22	▦	Dissertation Submission (Hard E	Thu 8/16/12	Thu 8/23/12

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APPENDIX – C

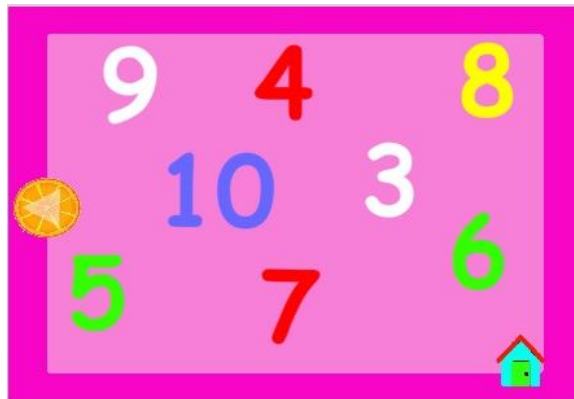**System instruction manual**

1. User can click the "sunflower" button as startup page for this application
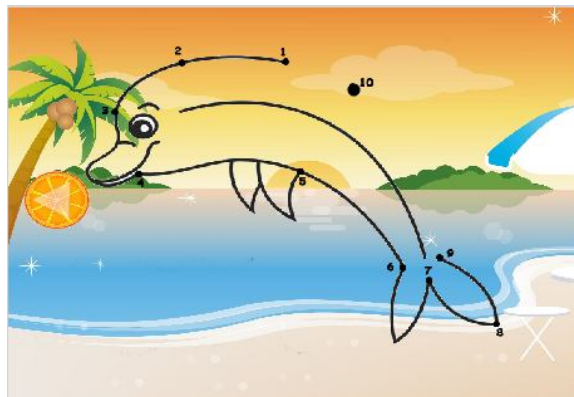2. User can choose the module; number, object and colours

1. **Number selection**

1. Lesson for number in Malay language with the spelling

2. First activity; arrange number accordingly from 1-10 by clicking on the number

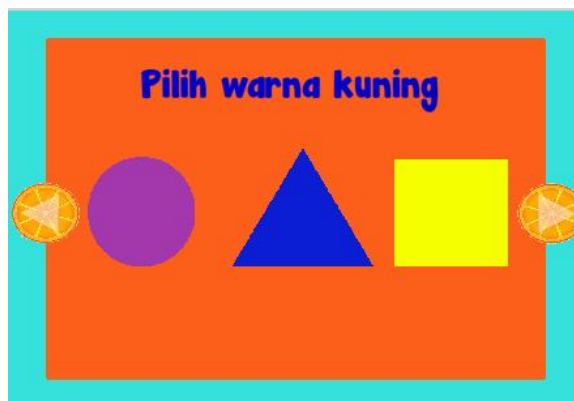3. Second activity; joint the dot accordingly from 1-10 by clicking on the dot

4. Third activity; spell the number appeared correctly by click on the alphabets below
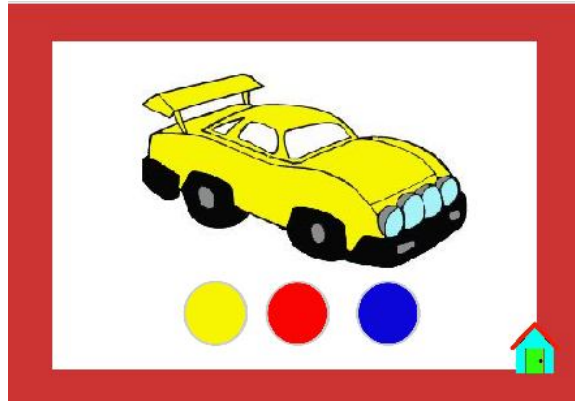
2. Colours selection

1. Lesson for colours in Malay language with the spelling and pronunciation

2. Select the correct colour based on the question given by clicking on the correct colour

3. Click on the three different colours to change the car's colour

4. Select the correct answer based on the object's colour by clicking on the correct answer.

3. <u>**Object selection**</u>

1. Lesson for objects in Malay language with the spelling and pronunciation

2. Choose the correct object based on the keyword given by clicking on the correct object.

3. Choose the correct answer based on the shown object (eg: eraser → "pemadam")

4. Choose the correct object based on the audio