An Interactive Android Mobile Application for Children: Hidup Cara Rasulullah

By

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17789

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CERTIFICATION OF APPROVAL

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Approved by,

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Dr. Aliza Sarlan

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
May 2015

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for work submitted in this project, that the original work is my own expect 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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SUCI ASTRINI PUTRI

Abstract

Information and communication technology has enable education sector to evolve throughout the years. Society requires more adaptable and adjustable ways of to changes. Various web technologies also have enable to improve learning activities due to the high usability and availability. As trends of using portable devices are growing rapidly, the possibility to exploit them for the purpose of learning is immense.

Malaysia is inhibited with 61.3% of Muslims. Therefore, informal learning in Islamic context for children is a vital part in any Muslim child development. However, the platform for children to obtain informal learning in Islamic Context is rarely seen. As such, this project will develop a mobile application for android that enables children at the age of four to six years old as well as their parents to learn about Islamic Hadiths in an interactive and engaging manner.

Exploratory study is conducted to evaluate the process of learning Islamic contents for children, which will be the basic user requirements for the mobile application. Survey results shown the majority of Muslim parents provide their children with Islamic education at home through children's books, although the parents are in possession of a mobile device or tablet and have downloaded Islamic applications. However, the participants were not providing their children with Hadiths learning. The majority of parents believe that teaching their children about Dua supplication and remembrance is more essential rather than Hadiths. However, teachers at preschool include animated movies for children to learn about Hadiths. Providing children with animations that contain proper story line will allow children to easily understand and remember the concept and how to supplicate Hadiths into daily lives.

Therefore, this project will develop an interactive mobile application called "Hidup cara Rasulullah" to provide children a better understanding in the concept of Hadiths in daily lives.

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Chapter 1

Introduction

1.1 Project Background

The 21st century marked the growth of technological and social change. The brisk expansion of technology has enabled the world to utilize in a more efficient manner. Technology has brought innovations, ideas, and inventions through new products, business processes, and services that are introduced into the society. It has changed the way people communicate, live and work (Peters, 2007).

Moreover, Carmona(2008) believed that Information Communication and Technology in Education is a motion that brings learning and the society more adjacent. Society requires more adaptable and adjustable ways of to changes. In the current era, formal and informal learning exist in the Internet. The Information and Communication Technologies have become a vital element in today's educational system.

Sharples (2007) mentioned that a range of Web technologies such as blogs, wikis, YouTube, social networking as well as media sharing sites provide improved learning activities due to their direct, usability, harmonious and synergic attributes. Although they were not constructed particularly for educational reasons, social media and Web 2.0 programs have obtained vigorous and increasing research interest. The current applications in academic activities include informal, primary, secondary and the higher education.

As portable devices such as computers and smart phones become more commonly used, Park (2011) believed that there is a chance to exploit them for the sake of learning, and to provide suitable institutional infrastructure for their use. Moreover, technology may generate new shapes and methods of learning.

Moreover, Clough, Jones, McAndrew, & Scanlon (2008) believed that for the past ten years, mobile devices are currently utilized as learning instrument in formal and

informal educational environments, with learners of all age groups. Cough et al. also stated that whilst the rapid development continues, Mobile Learning has become a common platform for instructional designers and practitioners to provide children with informal education.

The applications of Mobile Learning vary diversely, from formal such as classroom learning to informal. Although the ranging forms and growing number of services offered by mobile learning are improving the educational system performance and effectiveness, (Rachel, Cobcroft, Towers, Smith, & Bruns, 2006) believed that the technological and pedagogical constraints are still in its early stage.

Joseph, Corbeil, & Valdes-corbeil (2007) believes that mobile computing/communication devices offer a unique opportunity for teachers and students in different kinds of instructional settings to capitalize on the flexibility and freedom afforded by these devices. However, these benefits demand new pedagogies and new approaches to delivering and facilitating instruction. If appropriately facilitated, mobile learning can benefit learners by providing instructional materials and interaction through their mobile devices wherever and whenever they need it.

As stated by Talha, Nair, & Ismail (2010) in Population and Housing Census of Malaysia by 2010, Islam was the most universally proclaimed religion in Malaysia with the proportion of 61.3 per cent. Therefore, informal learning in Islamic context for children is a vital part in any Muslim child development. However, the platform for children to obtain informal learning in Islamic Context is rarely seen. As such, this project will develop a mobile application for android that enables children at the age of four to six years old as well as their parents to learn about Islamic Hadiths in an interactive and engaging manner.

Data shown below depicts the percentage distribution of the population by religion in Malaysia as of 2010.

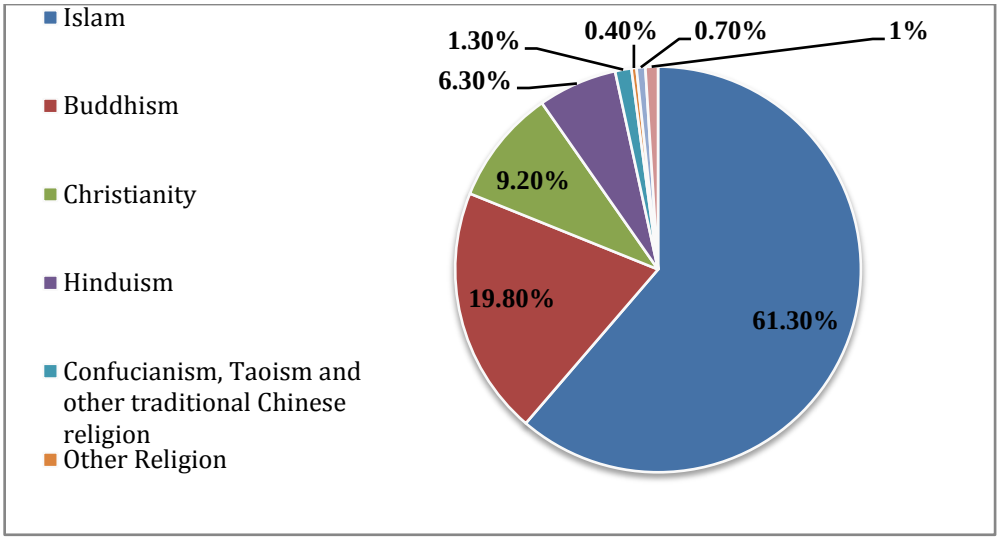


Figure 1: Distribution of population by religion in Malaysia as of 2010

The rest of this chapter will list the problem statement of the project, followed by the objectives section, and end with scope of study.

1.2 Problem Statement

Although Islam is the majority of the religion held by the population of Malaysia, there are very limited mobile applications available for Muslim kids ranging the age of six to twelve to explore more regarding Islamic contents. Most of the Islamic applications being created are intended for the adults in which lacking attractiveness. By developing this mobile application, kids will be able to be more engaged in obtaining Islamic education at home.

Every Muslim shall refer to Hadith and sunnah in every daily activities (Khairul & Zainudin, 2012). Due to the rapid growth of technology, it is imperative to create an effort to facilitate Muslims especially in Malay speaking countries by developing a mobile application to retrieve Malay Hadiths.

Therefore, questions being raised in this matter are as follow:

1. What is the current condition in informal education with Islamic contents for kids in Malaysia?

2. What mobile applications should be developed in helping kids to learn Hadiths in an interactive and engaging way?

1.3 Objectives

I. To conduct a survey to evaluate the process of learning Islamic Contents for children.

The survey will be able to help in evaluating the current condition in Islamic informal learning in Malaysia, and to gather specific needs and requirements to design the android mobile applications intended for children.

II. To develop an Android application for kids at the age of four to six years old to learn about Islamic Hadiths.

The mobile application will be developed based on the functions and features that are suitable for kids to learn and apply hadiths into their daily activities in an enjoyable and interactive way.

1.4 Scope of Study

The study focuses on developing an Android based mobile applications for kids at the age between four to six years old to gain knowledge about Islamic Hadiths as a part of self-learning.

Interviewing teachers at Taska and Tadika Mutiara Islamic Montessori in Sri Iskandar, Perak will be conducted to evaluate the current learning condition for Islamic contents in Malaysia. “Hidup Cara Rasulullah” will be intended for Muslim kids living in Malaysia, as the main language will be in Arabic and Bahasa.

The project will be conducted within two semesters, which is divided into two parts. FYP 1 and FYP 2. In FYP 1, the author is expected to conduct preliminary research regarding Islamic Hadiths as a part of self-learning in Malaysia, and to develop a story board of the application that is to be developed.

Chapter 2

Literature Review

2.0 Introduction

This section will discuss on the literature review conducted for this study which start with the presentation of learning of mobile apps followed by review of Islamic mobile apps in the market.

N.Jamaliah, Zaidi, M.Yamani, & Zulkifli (2012) stated that the implementation of mobile application in Quran and Arabic learning is more preferable to be used during the leisure time and it is more suitable to be used with the current children lifestyle for self-learning as it will enhance effectiveness in learning. Therefore, N.Jamaliah, Zaidi, M.Yamani, & Zulkifli believed that a new design of mobile application for kids to learn Quran and Arabic need to be developed which will be used as assistive tools learning. The research shows that based on the sample of 26 j-Qaf students, 87 % of the students are very keen in using ICT applications such as computers and the Internet to help enhancing their Quran reading skills. Therefore, ICT plays a big role in attracting the students' attention and interest as well as increase their motivation to learn Al-Quran through an interactive platform.

2.1 Learning by using Mobile Applications and Multimedia as the content.

The latest trends in communications and wireless technologies have enabled handheld devices such as Android and Apple iPhones to become widely accessible, convenient, and affordable (Wu et al., 2012). More importantly, each generation of the launched handhelds has built more sophisticated features and supporting applications, such as high megapixel cameras, Wi-Fi, e-mail, productivity software, games and audio/video recording. These developments have encouraged learning instructors and researchers to take a pedagogical view in building software or applications within educational context

for mobile devices that support teaching and learning activities (Kukulska-Hulme, Traxler, & Pettit, 2007).

Rachel et al. (2006) stated that past researches have pointed out that handheld and wireless technologies offer considerable amount of advantage and corresponds to constructing and supporting creative, collaborative, and communicative elements in learning context. Furthermore, Park (2011) believed that Mobile Learning has unique technological characteristics, which conforms to Pedagogical framework. The significant benefits of handheld devices are not solely limited to more access to educational contents. Valk & Rashid (2010) stated that m-Learning may support changes in how learning process would occur, which will later affect the educational outcomes. Therefore, m-Learning not only expand the way in which traditional education processes are being carried; m-Learning accelerates revolutionary learning processes and instructional methods that is effective for learning.

Moreover, Valk & Rashid (2010) believed that mobile devices might facilitate significant amount of learning activities that arise in everyday life, which occurs involuntarily outside of the classroom. Mobile devices is able to facilitate knowledge-centered learning by providing effective and innovative methods by which learners can easily absorb with high-level of understanding – meaning that they have more understanding towards a specific subject matter rather than merely memorizing a big amounts of information – and then use the knowledge for further learning processes (Keskin & Metcalf, 2011).

Keskin & Metcalf (2011) stated that among current mobile learning theories, Behaviorist and Cognitivist Learning are widely used by developers to support informal learning activities. Behaviorist Learning occurs when learners verify the suitable encouragement of the relationship between a particular response and stimulus (Ihnissi, Lu, & Yorkshire, n.d.). While Cognitivist learning occurs when Learning is the possession of the cognitive structures through which human process and stores information (Namatame et al., 2008).

According to Duffy & Jonassen (1991) as cited in Keskin & Metcalf (2011),

cognitive theories focus on the conceptualization of students' learning processes and concentrates on the matters pertaining how information is received, organized, stored, and retrieved by the mind.

In developing a mobile application for learning purposes, developers may integrate the use of Multimedia as application's content. Salim (2009) describes multimedia the field concerned with the computer-controlled combination of digitally manipulated text, graphics, drawings, static and dynamic images, animation, audio, and other media wherein every type of information can be represented, stored, transferred and processed digitally.

Multimedia enable the end users to gain benefits in stimulating the learning process and preserve the information obtained as well as enhancing recognition and comprehensiveness towards the content (Dabbagh & Kitsantas, 2012). Moreover, people tend to be more open towards receiving new information and construct more adequate cognitive models if the information is shown in different manners (Alessi & R.Trollip, 2001). Furthermore, multimedia may enhance enthusiasm level, boost understanding and memorization to the audience (Sampaio & Peralta, 2009). Therefore, the use of Multimedia as the content in developing mobile applications may support learning instructors to present information in an interactive method and dynamic environment.

2.2 Mobile applications with Islamic Content.

In Islam, knowledge is divided into two categories; Islamic and Worldly knowledge. Islamic knowledge is obtained from two major sources, which are Al-Quran and Hadith. According to Al-Qardhawi (2000) as cited in Abdul Karim & Hazmi (2005), for Muslims, both are very important and are considered as guidance in leading to the right path. Abdul Karim & Hazmi further mentioned that the literal meaning of Hadith literally was derived from the Arabic word "Hadatha", which means "story" and "news." Hadith is simply any word, deed, approval, physical or moral characteristics that are the Prophet's attributes (Waheed, n.d., as cited in Abdul Karim & Hazmi).

The rapid growth of Information and Communication Technology has managed

to facilitate developers to create mobile applications within Islamic context. Adhoni & Hamad (2013) mentioned that over the years, various number of Qur'an related applications have been developed to provide accessibility and portability to the Muslim community in reading Qur'an. The applications' features have been escalated with the addition of multimedia technology. Adhoni also believed that fast wireless internet access has allowed users to retrieve a significant number of information regarding Qur'an, Hadith and other Islamic knowledge resources.

Elobaid, Hameed, & Yahia Eldow (2014) revealed that the use Mobile learning has brought positive effects on retrieving Islamic knowledge content, the study of the impact and feedback has resulted that over 40% of the people who previously never had read the Qur'an started to read because the Qur'an was accessible from the mobile phones, which provide users convenience and more access.

However, Abdul Karim & Hazmi (2005) believed that the majority of internet users who browse for Hadith are not satisfied with the information retrieved as the result was lacking of proper interfaces, low relevancy towards the information needed and questionable credibility regarding the Hadith's contents.

2.3 The usability, Learnability and Interactivity of Mobile Applications.

Children embrace the impact of technology as part of self-learning tools outside school. Moreover, children have entered a technological world, which plays an important part in the growth and development process. Tinajero (2011) believes that by the age of five, children is at the vital stage in determining the behavior towards learning processes in the current and future state.

2.3.1 Usability

Usability is one of the key characteristics in a product or application (Diah, Ismail, Ahmad, & Dahari, 2010). Barendregt, Bekker, Bouwhuis, & Baauw (2006) believes that

usability provides many advantages, such as enhanced effectiveness, increased in productivity, improve quality of learning process and increased user satisfaction.

Barendregt et al. (2006) mentioned that most of the issues and challenges in building a system with high usability arise when the functional requirements of the system do not meet end users' expectations. The problems occur when there is a mismatch between the application and the user.

Although usability is a vital element in measuring the success rate of an application especially the ones with educational contents, the pedagogical perspective of the learning materials needs to be taken into account as well (Mike Sharples, Taylor, & Vavoula, 2005). Success of a mobile application can be achieved by properly aligning the technology and educational attributes.

Moreover, Kukulska-Hulme et al. (2007) believed that regarding usability, learning instructors and learners have pointed out issues that the mobile devices possess a relatively small screens compare to a CPU monitor, which do not provide convenient access to typing and reading the contents. Lee (2012) stated that properly planned and designed multimedia systems are relatively effortless to understand, while poorly designed systems may be burdensome to utilize without proper manuals or guidelines.

2.3.2 Learnability

One of the dimensions of Usability Testing is the Learnability; in which enables users to quickly understand about the system's navigations (Lee, 2012). Haramundanis (2001) believed that learnability corresponds to the type of information that is designed and developed. The five main attributes of learnability are:

- Memorable
- Logical
- Reconstructible
- Consistent
- Visual

According to Alsumait & Al-Osaimi (2010), assessing the worthiness of a program from children's point of view need to be conducted in a holistic manner that fulfils children's expectation and satisfactions. Bekker & Markopoulos (2000) believed that children tend to utilize technology in their daily activities as a part of leisure and self-learning processes by suitable graphical user interface in which will satisfy the needs of children. Thus, a study by Bekker & Antle (as cited in Diah et al., 2010) reveals that software developers should build a mobile application with proper interface presentations in accordance to the children's cognitive ability. Most children applications are developed by adults who are lacking the knowledge of children's ability and liking, which may cause further problems in terms of the usability of the application. Alsumait & Al-Osaimi (2010) believes that the development of children's e-learning applications require more heuristic approach, and designers as well as developers must establish a strong and suitable guidelines to better understand children's abilities and their requirements towards the application.

Van Deursen, Bolle, Hegner, & Kommers (2015) mentioned that developers should categorize the intended users in children's application based on their age and cognitive ability, which are "young (three to five years old), mid-range (six to eight years old) and older (nine to twelve years old) children". Van Deursen, Bolle, Hegner, & Kommers shows that children in the age of three to five and six to eight prefer applications to have animations and sound with large text fonts and fewer wordings.

2.3.3 Interactivity

There are three dimensions to measure children's fun towards a computer system or application, such as Expectations, Engagement and Endurance (Read, Macfarlane, & Casey, 1999).

Downes (2002) believes that learning process through computer-based game playing and interactive activities will be more effective if the children are in the environment in which they feel comfortable with. Therefore, the impact of electronic-based self-learning which occurs at home has a big difference compare to traditional classroom learning. Downes further elaborate that children have shown more interest in

doing the educational games due to the features that challenged their creativity, excitement, discovery, unexpectedness and overcoming obstacles.

Interactivity from multimedia learning perspective is a two-way communication and activity between a learner and a multimedia learning system, where the output of the system is based on the learner's behavior (Barendregt et al., 2006). However, Rosen, Whaling, Carrier, Cheever, & Rokkum (2013) believes that the multimedia learning system per se does not consider one to be interactive; however, the system contains attributes and features that enable learners to be engaged. Therefore, in order for the learning system to be interactive, the learner must show responses towards the activities presented.

2.4 The comparison with the existing Islamic mobile applications for children

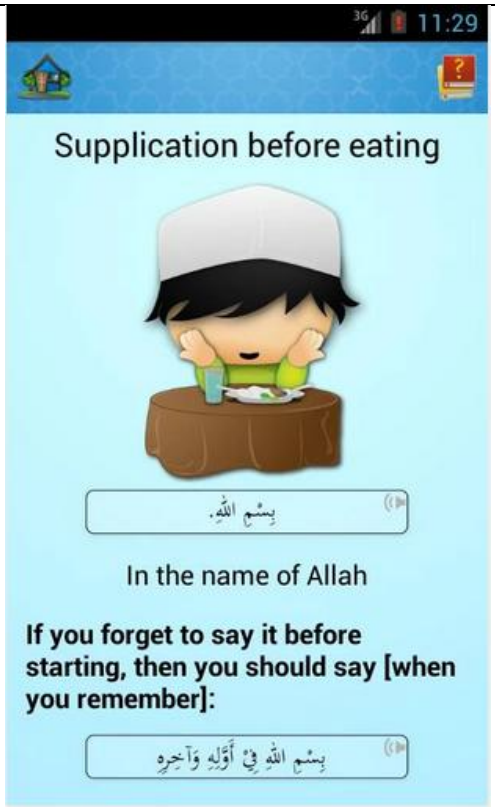
There are various numbers of Islamic mobile applications available for kids in Android and Apple iOs platform. This research focuses on development in an Android platform. Among the existing applications, "Muslim Kids Series: Dua", "Muslim Kids Series: Wudu" and Kids Dua Series are the most popular ones in terms of the number of people who downloaded the application.

Each application has Islamic contents, either Dua or Wudu supplication and remembrances. The applications are user friendly for children at any age between three to twelve years old. The applications enable user to read the Arabic letters of each content complete with the translations and audio recital.

However, all of the applications were lacking of interactive activities that may assess user's understanding towards the contents of each application. Each application merely displays the contents with static drawings, the Arabic letters as well as its translation. Moreover, the existing applications are available for children to learn either Dua or Wudu. There is no mobile application developed for children that has Hadith content.

2.4.1 Muslim Kids Series: Dua

Main page



Content of each Dua

Description:

"Muslim Kids Series: Dua" is a mobile application designed to help Muslim kids in supplications and remembrances of Dua in their daily activities. The application is equipped with audio recitation and attractive static illustrations.

Figure 2: Muslim kids series: Dua snapshots and descriptions

2.4.2 Muslim Kids Series: Wudu

Main page

Content of each Wudu steps

Description:

"Muslim Kids Series: Wudu" is a mobile application that enables children to learn the steps of Wudu featuring attractive illustrations, audio guidance for du'a (prayers), and reference of valid Hadith. The application is a suitable learning tool for kids under parental guidance.

Figure 3: Muslim kids series: Wudu snapshots and descriptions

2.4.3 Kids Dua Series

Main page

Content of the Dua

Description:

"Anak Dua Sekarang" is the latest version of Anak Dua Seri developed by QuranReading.com. Similar with Muslim Kids Series: Dua, the application features translated Arabic letters of the Dua, and the application will help children in supplications and remembrances of Dua in daily activities. The users will be divided into three types of groups based on their ages. Group one consists of one to three year olds children, while group two consists of four to six year olds. Group three will consist of children at the age of seven to nine. The application also provides children with audio recordings and illustrations to help them in reciting the and understand the supplication of Dua.

Figure 4: Kids Dua Series screenshots and descriptions

Chapter 3

Methodology

3.1 Research Methodology

Research methodology is a set of actions taken in order to fulfill research objectives. In completing this research, the author includes System Development Methodology as part of completing the research objectives.

There are two types of research methodologies. Quantitative approaches are concerned with the element of 'what' is in the research, while qualitative approaches are focused on an insight into the deeper question of 'why' a specific problem occurs. Therefore, the most suitable approach for this research is qualitative methodology.

Qualitative research methodology analyses data, which is not presented numerically only. Instead, the method highlights the use of human experiences. This method of research can be done through conducting survey and interviews.

There are three phases as a part of the research methodology for this project, as listed in the following page. The first phase consists of exploratory study as a part of requirement gathering to assess the current conditions of Islamic learning processes in Malaysian primary schools. The exploratory study is conducted to assess parents' awareness in technology as a part of their children's learning processes.

The second phase of the project is the system development phase. The requirement gathered from the first phase will be referred to as a guideline in developing the application. The application will be developed using Android Studio.

The third phase comprises of unit testing, system testing and user acceptance testing to assess the success of the application and to ensure that the application meets user requirements.

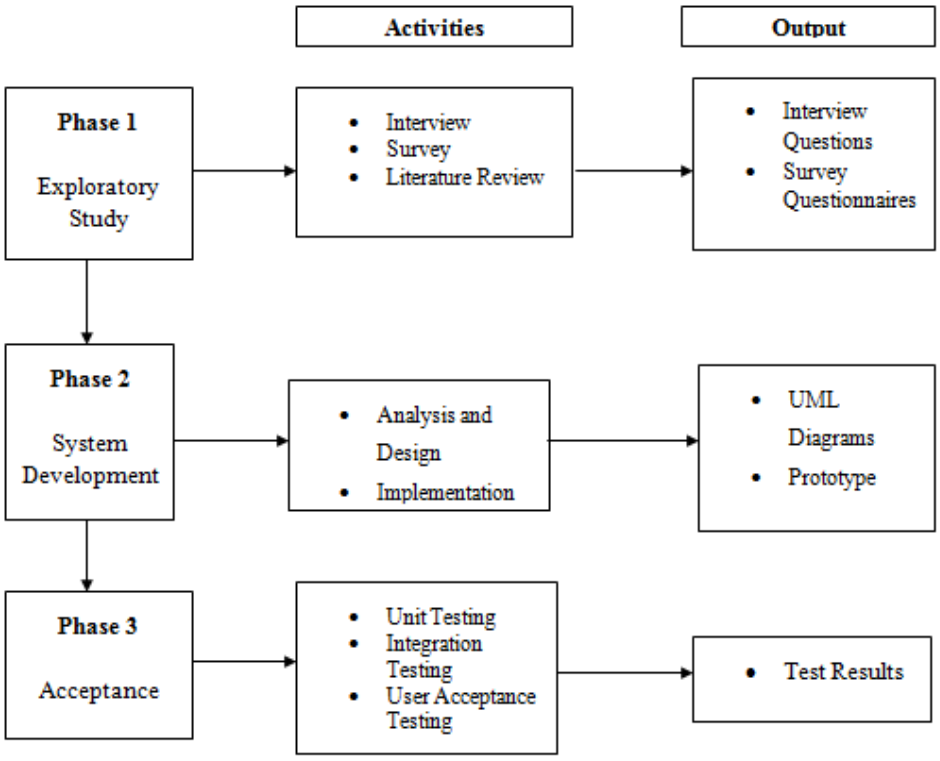


Figure 5: Research Flowchart

3.1.1 Exploratory Study

3.1.1.1 Interview

In order to obtain the expert's perspective towards how Islamic Contents are being delivered to children at school, Interview is conducted. The interview session was held in Tadika in Sri Iskandar on March 10th 2015, with two of the teachers. By using Interview as the knowledge capturing technique, the tacit knowledge can be acquired from the expert's experience. Combining past studies' findings as well as the interview session output will produce more reliable result for the research.

3.1.1.2 Survey

For the survey, a sample of thirty Muslim parents will be given a set of questionnaires regarding the current condition in delivering Islamic contents as a part of their respective children's self-learning. The ratings of respondent are represented in likert scale with additional statement to obtain a more precise and effective method to measure the result.

3.1.2 Data Analysis

The information collected from the survey is analyzed by using Microsoft Excel to generate results in a form of pie chart. The interview session is recorded and verbally written in a form of a comprehensive report as a part of the requirement gathering in the system development.

Reading materials regarding Islamic teaching pedagogy is essential in determining the proper way to design the application. The materials will give a deeper understanding regarding the concept of Islamic teaching pedagogy to children in which will be implemented through Graphical User Interface.

3.1.3 System Development Methodology

3.1.3.1 Rapid Application Development – Throwaway Prototyping

RAD-Prototyping is a system development concept in which will be developed faster and of higher quality through requirement gathering using workshops or focus groups. However, in Interviews and surveys will be conducted to collect information as a part of the research method.

Horvat (2011) stated that Rapid prototyping has been recommended as a practical method in most domains in design and engineering because it provides a vigorous interaction between end users and developers, resulting in early understanding of the functional requirements.

Moreover, the main goal of using prototype model is to overcome the limitations found in waterfall model. In waterfall model, requirement gathering occurs at the earliest stage of the system development. Thus, any changes made once the system is developed will be costly and troublesome. Prototyping method, however, generate a rapid design by accommodating updated requirements from the end users.

3.1.3.2 Planning Phase

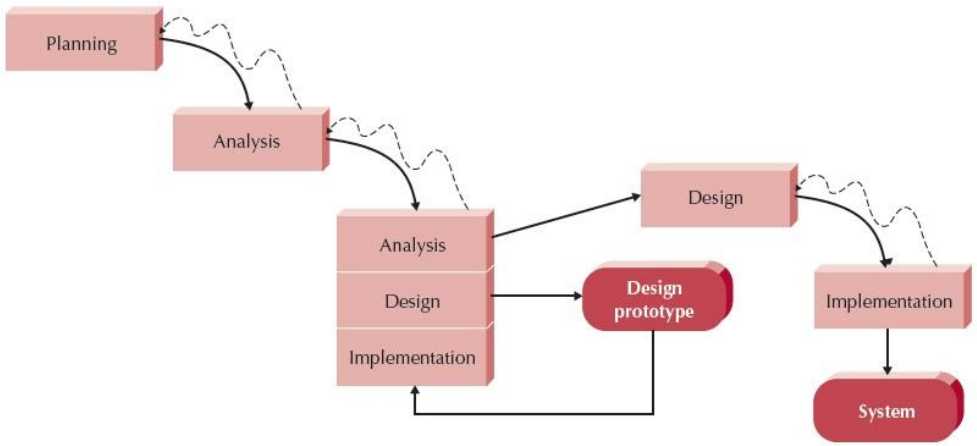


Figure 6 Throwaway Prototyping Diagram

Planning phase is the first phase in developing through prototyping. During the planning phase, all the requirements of the application are collected through survey and interviewing experts to ensure the application meets user requirements.

3.1.3.3 Analysis, Design and Implementation Phase

The Analysis phase has been conducted in the early stage of the research methodology. Once the data has been collected through requirement gathering, the system is ready to be designed. Developing UML diagrams such as Use Case and Activity diagram will be conducted during design phase.

The tools and software used throughout the development phase are as follows:

- Android Studio
- Adobe Photoshop Elements 8.0

Software Language

- Java
- XML

Hardware

- Android Smartphone
  Types: Lenovo A889,6" screen, version 4.2

The Implementation phase is divided into two cycles. During the first cycle, the requirements are first developed as small units and then integrated to form a full application.

The first implementation phase will contains several prototyping cycles as well, depending on the number of changes needed to be made towards the application. Once the prototype is presented, feedbacks from target user will be received and the improvements will be made.

3.1.5.4 System Phase

System phase is the last phase of throwaway prototyping methodology wherein the application is fully developed.

3.1.5.5 Gantt chart and Key Milestones

No	Project Details	Weeks													
	FYP 1	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	**Requirement Phase**														
	Problem Identification														
	Preliminary study on Project Background														
	Define Objectives and Scope of Study														
	Phase 1														
2	**Project Analysis**														
	Literature Review														
	Research Findings														
	Conduct Survey and Interview														
	Data Analysis														
3	**Project Design**														
	Identify the functionalities and contents														
	Sketch the Interface design														
	Establish Storyboard for the application														
	Submission of Interim Report														
	Proposal Defence														

Figure 7: FYP 1 Gantt Chart

No	Project Details	Weeks													
	FYP 2	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
4	**Project Implementation**														
	System Development														
	Completion of the Mobile Application														
	User acceptance testing														
	Submission of Progress Report														
	Phase 2														
	(System prototyping)														
5	**Project Analysis**														
	Gather feedback from target user														
	Identify the recommendation application data														
6	**Project Design**														
	Modify and improvise the application														
7	**Poject Implementation**														
	Develop the complete application														
	Complete the whole application														
	Conduct the unit testing														
	Conduct the system testing														
8	**Project System**														
	User acceptance testing														
	Project deliverables														
9	**Pre-Sedex**														
10	**Submission of Technical Paper**														
11	**Submission of dissertation (Soft bound)**														
12	**Oral Presentation**														
13	**Submission of Project Dissertation (Hard Bound)**														

Figure 8: FYP 2 Gantt Chart

Chapter 4

Result and Discussion

4.0 Introduction

This section will discuss the result of the project research. Interview and surveys are conducted to generate the user requirements. Moreover, use case and activity diagram are shown to visualize the design of the mobile application. As the final product, the prototype of "Hidup Cara Rasulullah" is shown.

4.1 Survey Result

A set of questionnaires were distributed among 30 muslim parents whose children are enrolled in Mutiara Islamic Tadika and Taska Montessori at Sri Iskandar, Perak, and/or Universiti Teknologi Petronas' Lecturers. The total number of male participant is 11 while the total number of female participant is 19. The result of the survey will be discussed further in this chapter. The questionnaires were divided into four sections.

The first section of the questionnaires captures the basic information of the participants, which are their sex, age, education and current occupation. The second section captures participants' awareness in Information and Communication Technology, while the third section discusses about each participant's children's self-learning process towards Islamic contents at home. Furthermore, the fourth section captures participants' expectations towards the proposed mobile applications that will be developed. The fourth section gives a great contribution in gathering user requirement which will be needed in the system development life-cycle.

4.1.1 Parents' Awareness in Information and Communication Technology

Question 1: Do you own any smartphone or tablet devices?

Result was calculated after a survey has been conducted to identify the number of parents owning a smartphone or tablet devices. Result shows that 76.67% of parents are in possession of a smartphone or tablet devices, while the remaining 23.33% chooses to use other type of phones. 30% of the participants who own the smartphone are Male, and 46.67% are Female, while the number of male and female participants who do not own any smartphone respectively is 6.67% and 16.67%.

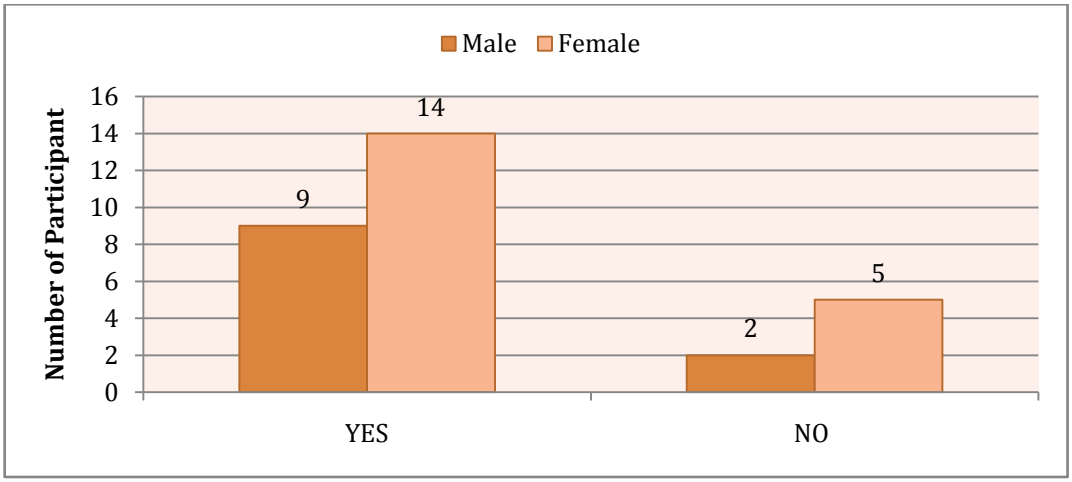


Figure 9: Parents owning smartphone devices

Question 2: How often do you use the application?

Out of all parents who possessed a smartphone or tablet devices, only 16 people answered that they have downloaded Islamic related applications, which is only 53.33% out of the total participant. The other 23.33%have never downloaded any Islamic applications.

4.1.2 A Child's self-learning process towards Islamic contents at home.

The survey was conducted to assess parents' awareness towards their children's self-learning process in Islamic education at home. This section is vital to the research as the author would get parents' perspective about the process of informal education in Islamic contents at home.

Question 4: Do you provide your children with Islamic education at home?

The participants were divided into three groups, which are Housewife, Professional and others. 53.33% of the participants which are Housewives provide their children with Islamic education at home, while the other 6.67% did not. As for Professionals, only 6.67% provides Islamic Education at home while the 23.33% of them chose not to. Moreover, 6.67% of parents with other type of occupations provide the education while the other 3.33% do not.

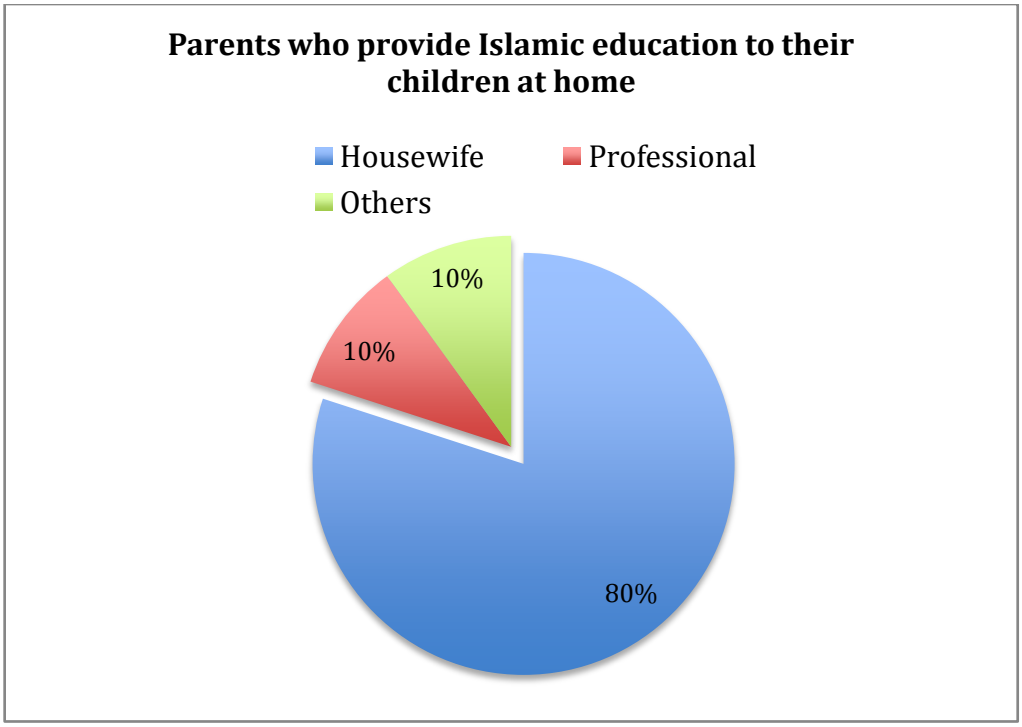


Figure 10: Parents who provide Islamic education to their children at home

Question 5: What is your main source in providing your children Islamic education as a part of their self-learning process?

The result shows that 16.67% of the participants choose Internet as the means in providing children with Islamic education, 20% for Television, 26.67% chooses children's book while 6.67% for others.

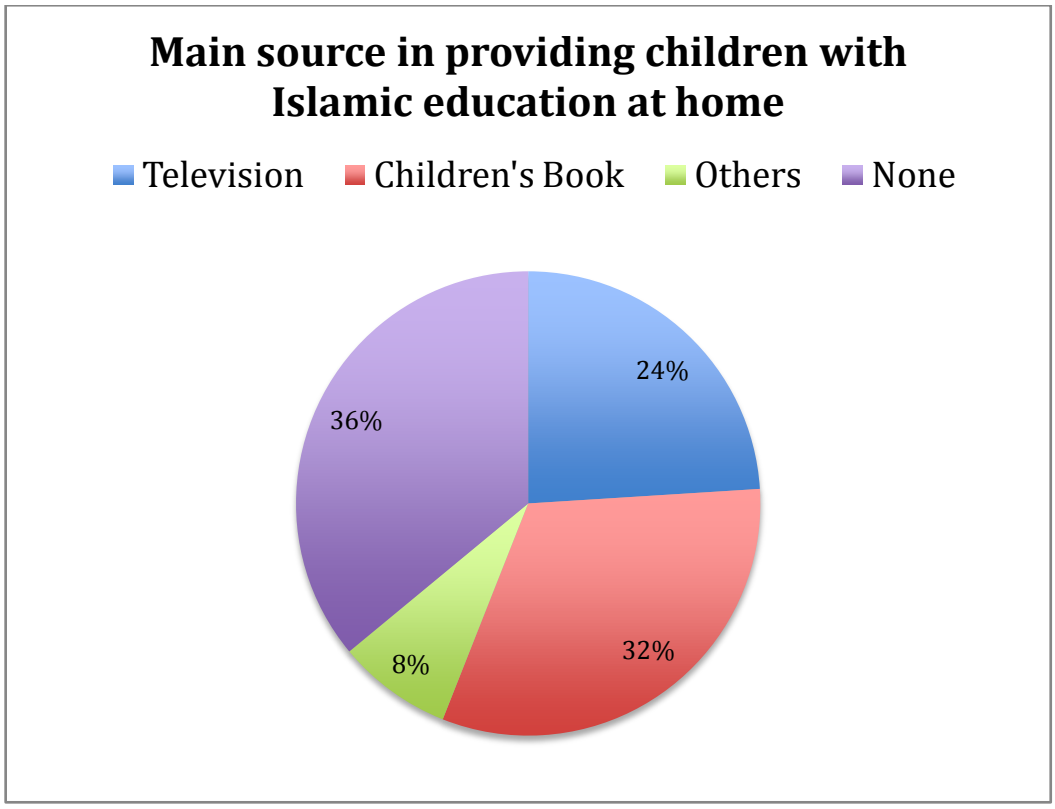


Figure 11: Main source in providing children with Islamic education at home

Question 6: Which learning materials regarding Islamic contents that you feel your children are more aware of?

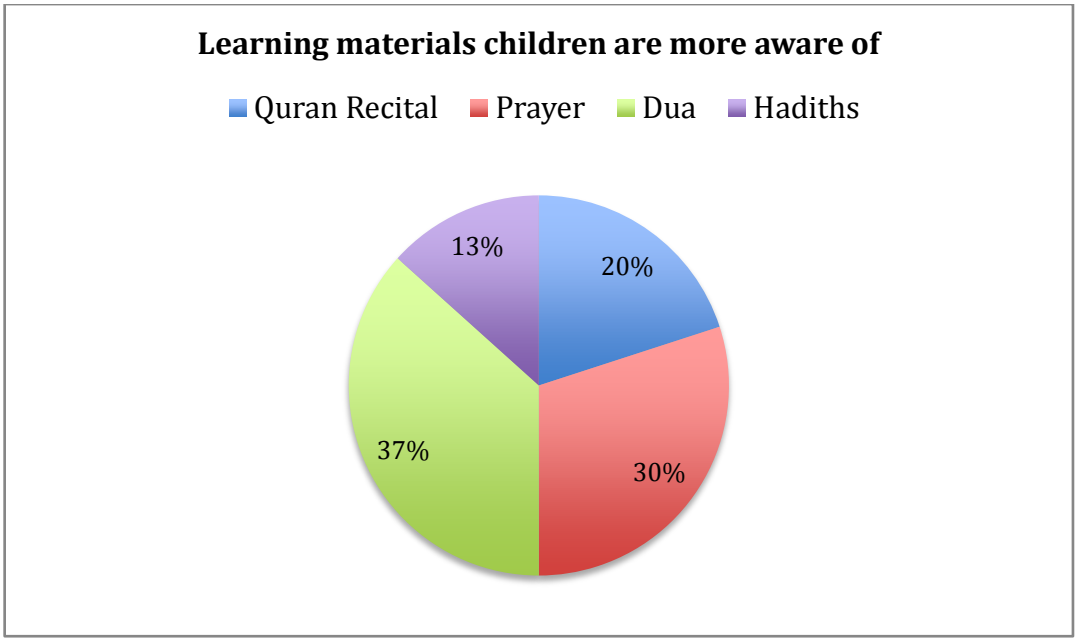


Figure 12: Learning materials children are more aware of

20% of the participants answered Quran recital as the learning material that their children are more aware of, 30% for prayer, 36.67% of the participants answered children is more aware in learning Dua while 13.33% of the participant believes that their children are more aware towards Hadiths learning.

4.2 Discussion of Survey Result.

Survey results shown, that the housewives tend be providing the children more with Islamic education at home compare to the professionals. The majority of Muslim parents provides their children with Islamic education at home through television, although the parents are in possession of a mobile device or tablet and have downloaded Islamic applications. However, the participants were not providing their children with Hadiths learning. The majority of parents believe that teaching their children about Dua supplication and remembrance is more essential rather than Hadiths.

4.3 Interview Result and Discussion

The interview was conducted at Mutiara Islamic Tadika Montessori on March 10th 2015. Suzilani bt Abdul Aziz and Nur Zuraidah bt Johari work as teachers at the school, and is selected to be the interviewee for this research. The duration of the interview was thirty minutes.

Once the interview is conducted, the conversation is recorded and the researcher would take notes of the interviewee answers and comments towards the questions asked. Thus, the information is to be analyzed to conclude an understanding of children's learning process towards Islamic contents at school.

Teachers at Tadika and Taska Montessori teach their pupils about Islam every school day by using English as the main language. According to the syllabus, lesson plans being provided to the children are categorized into different themes each day. The materials vary from Families, Animals at the Zoo, Gardening and Farm Animals. Each lesson plans need to have music to enhance children's amusement towards learning new things. The musical contents need to be enjoyable, consists of simple and straight-forwarded lyrics. Examples of the simple wordings are "Thank you, Allah" or "Alhamdulillah".

The teachers include animated movies for children to learn about Hadiths. Tadika Montessori believes that providing children with animations that contain proper story line will allow children to easily understand and remember the concept of Hadiths and how to apply Hadiths into daily lives. Reading from books is considered inefficient and not effective as children are easily distracted by the surroundings. And once distracted, it is quite a challenge to retain the focus.

Thus, providing children with Hadiths concept can be more engaging by integrating story lines into each Hadiths.

4.4 Use Case Diagram

A use case diagram is developed to identify the main functionalities of the mobile application. The actor in this system will be the user/ player. There are five main modules in “Hidup Cara Rasulullah”. The first module is called “Insert Name”, in which user will be able to key in their name upon opening the application. The second module is “Choose Topics” in which users will be able to select a topic that contains a Hadiths. The topics of each respective Hadiths are “Adab Kebersihan”, “Kasih Sayang”, and “Sayang kepada Ibu”. Once the user select a topic, the next module is “View Story”, in which users will be able to watch a ten to fifteen seconds of simple animations explaining the meaning of each Hadiths. In the fourth module, users will be able to listen to the Hadith recital. The fifth module allows users to engage in interactive activities such as to “Play Quiz” to test their understanding towards each Hadiths/topics explained earlier. Figure 13 shows the Use Case diagram for “Hidup Cara Rasulullah”.

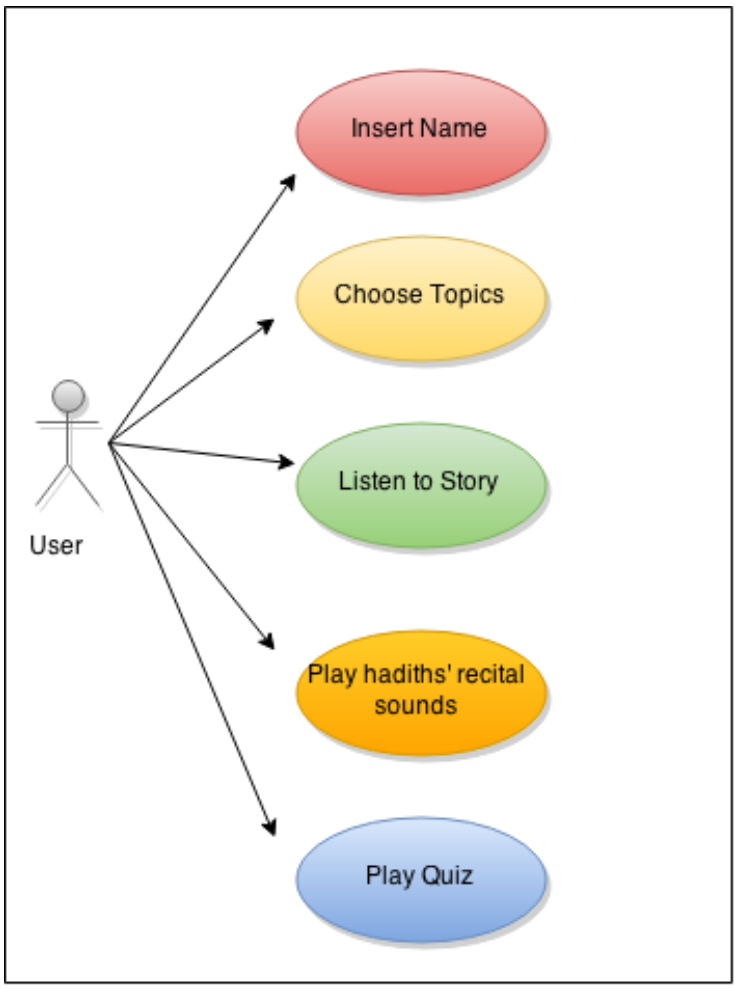


Figure 13: Use case diagram

4.5 Activity Diagram

The activity diagram is developed to describe the dynamic aspects of "Hidup cara Rasulullah". User may enter their name upon entering the homepage. Once the user arrived at homepage, the user may choose a topic which corresponds to a Hadith. Inside each topic, user may play the animations, audio recital of the Hadiths as well as to play quiz to test their understanding towards the topics given. Once the user finishes the activities in the topic, user may end the session or return to the homepage to choose any other topics. Figure 14 shows the activity diagram or "Hidup cara Rasulullah".

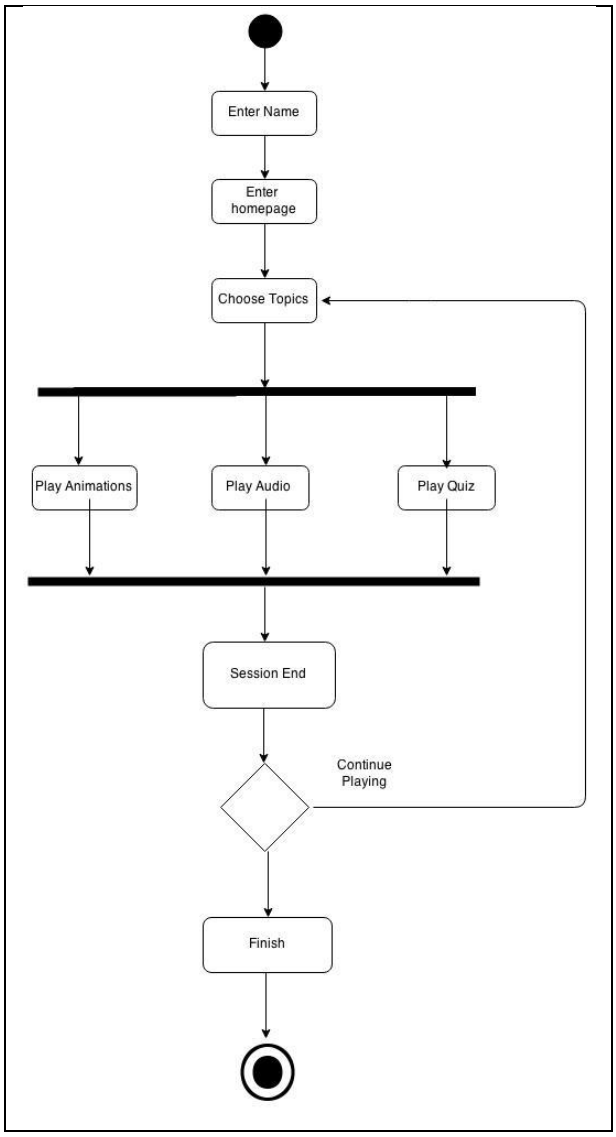


Figure 14: Activity Diagram

4.6 Graphical User Interface and Story Board

The story board for “Hidup cara Rasulullah” depicts the activity diagram by showing each processes in a screenshot. User need to tap “Jom Masuk” button to enter their name, and to enter the house, user need to tap on the door icon. Once user is directed to the main page, user may choose between topics. Each topic contains a reference to a Hadith with the support of animations and audio recital of the Hadith. User may take the quiz to test their understanding towards the topic given as well.

4.6.1 Home

Home page is the first interface that will show once user wish to open the application. The main function of this page is to welcome the users. User will have to click on the arrow button to enter the house and see what is inside. User may click on the Books symbol which contains the About Us information, and Settings.

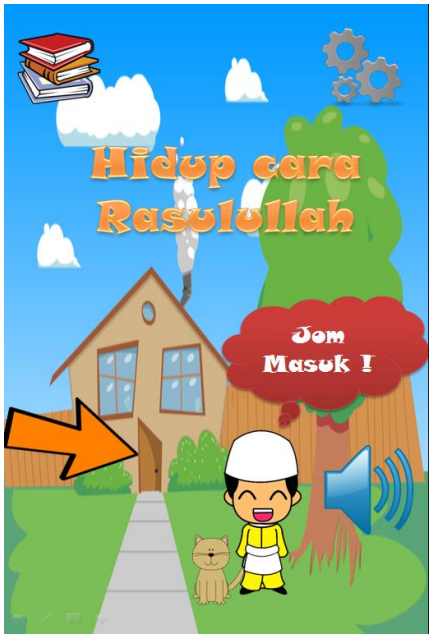


Figure 15: Homepage

4.6.2 Choose Topics / Contents

Once the user entered the home, they will be able to pick out a theme / topics. Each topic represents one hadith. For example, Adab Kebersihan (Cleanliness), tells the user about the Hadith that is related to cleanliness.

4.6.3 Contents

Once user chose a topic / content, they will be directed to each respective content page. Figure bellow shows the content which has a description of the Hadith, a picture showing the illustration of the Hadith, as well as a sound narration about the Hadith which will be played automatically in the background. Moreover, once the user clicked on the arrow button to the right, they will be directed to the second page of the content, in which they can play the Hadith's sound recital, read through the Arabic letters to try supplicating and remembering the Hadith.

Figure 16: Choose Topics

Figure 18: Content A

Figure 17: Content B

4.6.4 Quiz

The quiz is to determine children's comprehension towards the application as a whole in terms of the contents provided. For example, figure shown below is about the content of "Adab Kebersihan". Children will need to tap which picture that precedes the other picture in the question. Once the children answered correctly, there will be a pop up page that says "Tahniah!!" which means congratulations in Bahasa Melayu.

Figure 20: Sampe Question

Figure 19: "Congratulation" Page

4.7 Testing Phase

In this particular phase, the testing of the prototype will be conducted. The testing phase ensures the prototype's content flows run smoothly and according to user's expectations towards the application. Useful features can be further enhanced into the prototype after carrying out the usability testing on users. The User Acceptance Testing was conducted at Tadika Montessori, Sri Iskandar. The user who conducted the test was one ranging from parents to teachers at the school as well as the children. The children are asked to play the application while the author asks several questions informally. Meanwhile, survey questionnaires are distributed to ten adults (ten parents and two teachers at Tadika Montessori).

4.7.1 User Acceptance Testing Interview Result

Five children by the age of four and five are asked to open and play with the application. The children seemed to be enjoying the application. They were highly interested in the sound recital and the story telling function in the application.

The children were asked to play the hadith's sound recital, and try to recite it back. Once they have gone through each of content, children had to enter the quiz and answer the questions given. However, they needed assistance from the adults while doing the quiz.

4.7.2 User Acceptance Testing Survey Result

4.7.2.1 Application's Flow of Navigation

Result shows that 40% of the participants agree that the application's navigation flow is easy to understand. The app provides users with big and colorful arrow as the button to navigate around the application. 37% of the participants chose to be neutral while the 23 % of them strongly agreed that the application is simple and easy to understand.

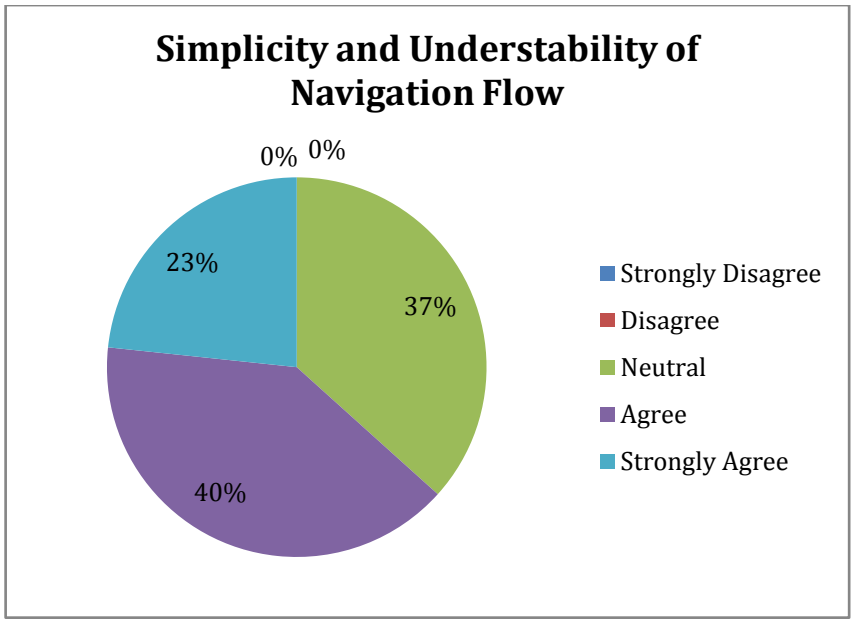


Figure 21: Simplicity and Understandability

4.7.2.2 Children's Engagement within the application

39% of the participants agreed that the children are engaged towards the application while 35% of the participants chose to be neutral. However, 26% of the participants strongly believed that the application is drawing children's engagement.

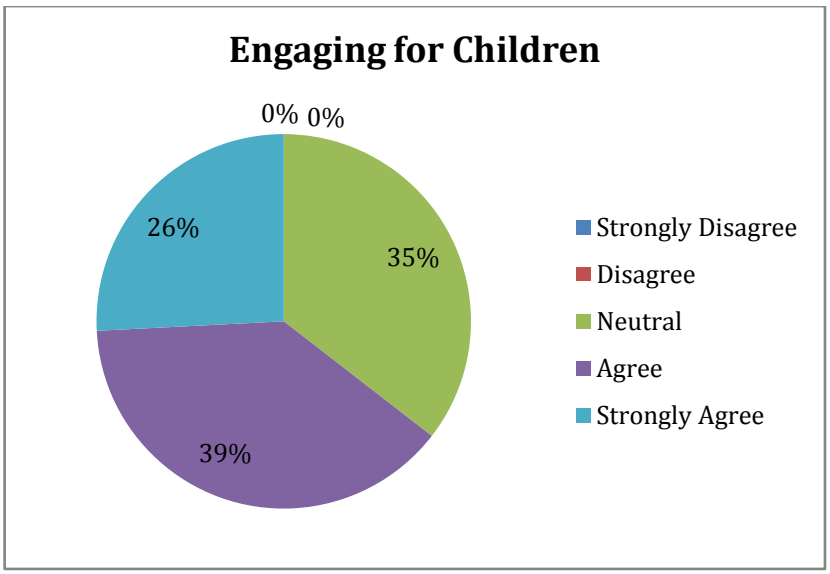


Figure 22: Children's Engagement

4.7.2.3 Reaction Towards the Assessment Method

The assessment method to determine children/user's understandability towards the concept is through performing the quiz given. 40% of the participants agreed that the quiz is simple and easy for children to comprehend. 20 % of them strongly agreed while 30 % chose to be neutral. 7 % answered disagree and 3 % strongly disagreed.

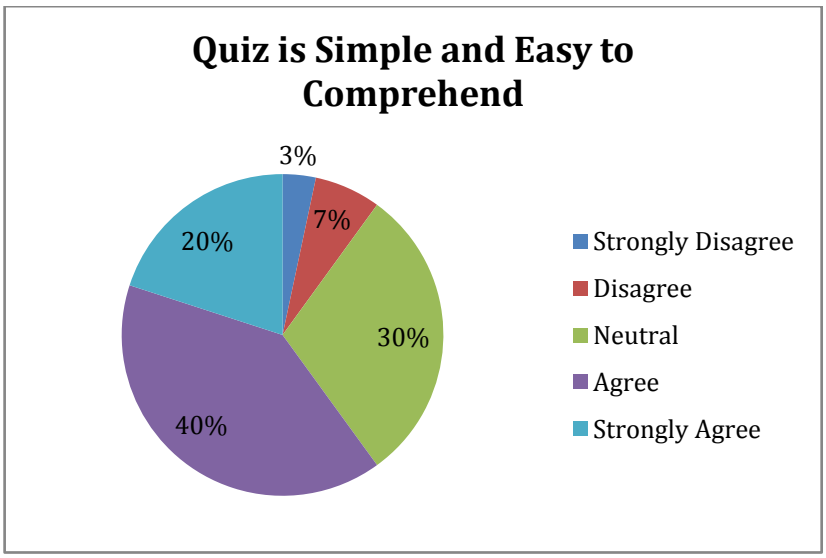


Figure 23: Reaction towards the Quiz

4.7.2.4 Graphical User Interface's Friendliness

40 % of the users strongly agreed that the GUI is friendly, 33% agreed, while 20% chose to be neutral. Meanwhile, 7% of the participants disagreed.

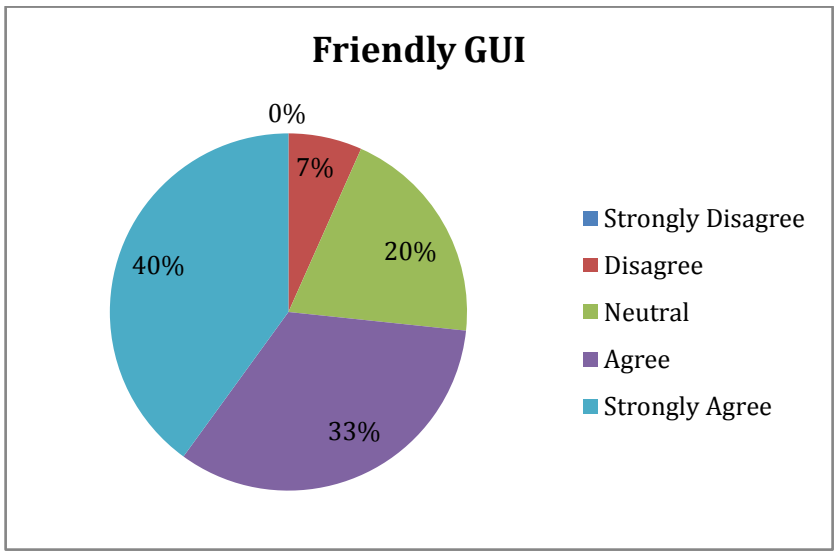


Figure 24: GUI's friendliness

4.7.2.5 User's feedback towards the application as a whole

10% of the participants strongly agreed that they would be using the application in the future. 47% agreed while 33% chose to be neutral. Meanwhile, 7% disagreed and 3 % strongly disagreed.

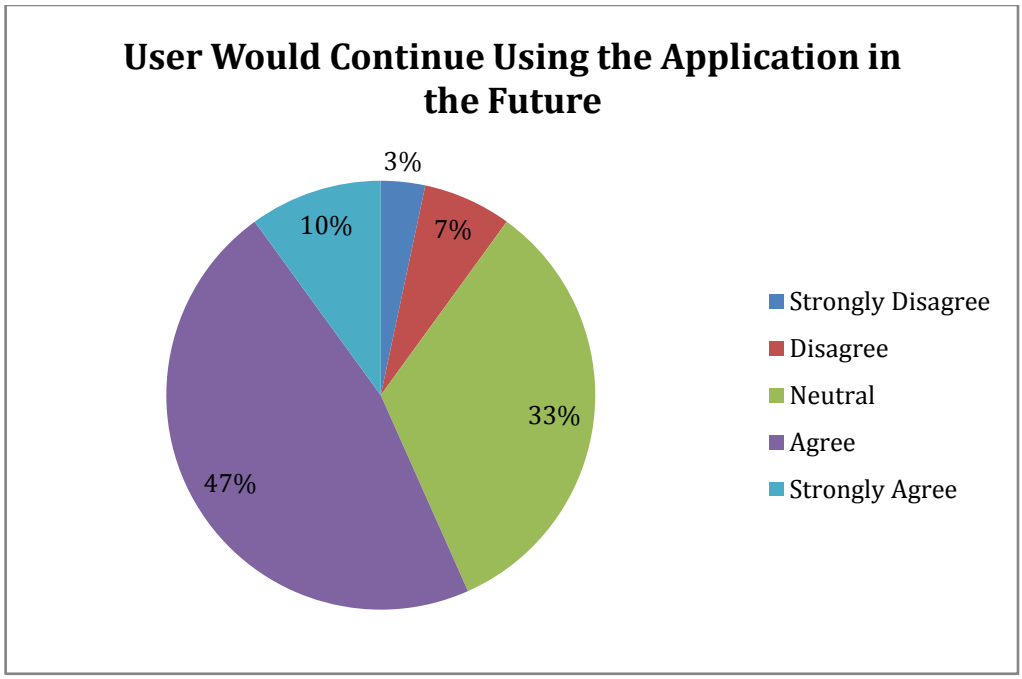


Figure 25: User's feedback towards the application

4.7.2.6 Discussion of UAT's Survey Result

Survey has shown that the majority of the adult participants have positive reactions towards the application. However, they expect future improvements in the application such as more contents, more quiz's questions and more activities in each content.

Chapter 5

Conclusion and Recommendation

There are two main objectives to be completed throughout FYP 1 and FYP 2. The first objective is to conduct a preliminary study to evaluate the process of learning Islamic Contents for children, which will be referred to in developing the mobile application. The second objective is to develop a mobile application for Android for children at the age between four and six years old in supplication and learning the concepts towards Islamic Hadiths, which will be conducted during the period of FYP 2.

The result of preliminary study shown parents provides their children with Islamic education at home by using children's books. Children tend to be more engaged in learning through interactivity and enjoyment in the process. Teachers at preschool include animated movies for children to learn about Hadiths. Providing children with animations that contain proper story line will allow children to easily understand and remember the concept and how to supplicate Hadiths into daily lives. Reading from books is considered inefficient and not effective as children are easily distracted by the surroundings.

Therefore, the mobile application will be having features such as interactivity, learn ability, and usability for children as well as parents. User will be able read the Hadiths and listen to the storyline of each Hadiths as well as to engage in simple quizzes to test their understanding in the concept of each Hadith. The development process will start by week 1 in FYP 2 period, and user acceptance testing will be conducted thoroughly to ensure the application satisfies children and parents' needs.

Future improvements for the project may be to develop the application with advanced level animation to provide children with better understanding towards the concept of Hadiths, as the time needed to build animations is quite consuming. Moreover, developing an application for FYP 2 has strict time constraint which is less than 14 weeks.

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Appendices

Appendix 1: Interview session pictures

Appendix 2: Survey Questionnaires

SOAL SELIDIK

QUESTIONNAIRE

Objektif: Matlamat soal selidik ini adalah untuk mengkaji tahap penggunaan, pelaksanaan dan persepsi terhadap Teknologi Maklumat dan Komunikasi (ICT) di klinik-klinik swasta bersaiz kecil dan sederhana di Malaysia.

Objective: The Objective of this survey is to find out about the current muslim children's self-learning processes and understanding towards the concept of Hadiths in Malaysian household.

Sebarang pertanyaan, sila hubungi:

Should you have any queries, please do not hesitate to contact me:

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011-36849010

suciastrini@gmail.com

BAHAGIAN A: LATAR BELAKANG
SECTION A: BACKGROUND

1. Jantina /*Gender :*
   - ☐ Lelaki / *Male*
   - ☐ Perempuan / Female

2. Umur / *Age*
   - ☐ Bawah 30 tahun / *Below 30 years*
   - ☐ 30 - 35 tahun */ 30 – 35 years*
   - ☐ 35 – 40 tahun */ 35 – 40 years*
   - ☐ 40 – 45 tahun */ 40 – 45 years*
   - ☐ 45 - 50 tahun */ 45 – 50 years*
   - ☐ Lebih 50 tahun */ Over50 years*

3. Pendidikan/ *Education:*
   - ☐ Sekolah Menengah */ High School*
   - ☐ Diploma */ Diploma*
   - ☐ Ijazah Sarjana Muda/Bachelor'Degree
   - ☐ Ijazah Sarjana */ Master*
   - ☐ Ijazah Doktor Falsafah */ Doctorate*
   - ☐ Lain-lain */ Others*

4. Apakah jawatan anda sekarang?/ *What is your Job Position?*
   - ☐ Ibu Rumah Tangga */ Housewife*
   - ☐ Profesional */ Professional*
   - ☐ Lain-lain */ others:*_____

5. Adakah anda mempunyai telefon pintar atau komputer tablet? / *Do you own any smartphone or tablet devices?*

BAHAGIAN B:
SECTION B: AWARENESS IN INFORMATIONAND COMMUNICATION TECHNOLOGY

YES/ YA NO/ TIDAK

6. Pernahkah anda memuat turun mana-mana aplikasi yang mempunyai kandungan Islam?/ *Have you ever downloaded any applications that has Islamic Contents (i.e. myQuran, Daily Hadiths, etc.)?*

   YES/ YA NO/ TIDAK

7. Berapa kerap anda menggunakan aplikasi mudah alih yang dinyatakan di atas? / *How often do you use the mobile application mentioned above?*

   Daily / Harian

   Weekly / Mingguan

   Monthly/ Bulanan

   Other, Please state/ Lainnya _____

BAHAGIAN C:

SECTION C: CHILD'S SELF-LEARNING PROCESS TOWARDS ISLAMIC CONTENTS AT HOME.

8. Adakah anda memberi pendidikan Islam kepada anak-anak anda di rumah?

Do you provide your children with Islamic education at home?

□ *YES/YA* □ *NO/TIDAK*

9. *Apakah sumber utama anda dalam menyediakan anak-anak anda pendidikan Islam sebagai sebahagian daripada proses pembelajaran sendiri mereka ?*

What is your main source in providing your children Islamic education as a part of their self-learning process?

1 Internet

□ 2 Television

□ 3 Children's books/ Buku Kanak Kanak

□ 4 Others, Please state / Lain, sila isi_____

10. *Bahan pembelajaran tentang kandungan Islam yang manakah anda rasa anak-anak anda lebih mengetahui?*

Which learning materials regarding Islamic contents that you feel your children are more aware of?

1. Quran recital / Baca Quran
2. Prayer / Sembahyang
3. Dua / Dua
4. Hadiths / Hadith
5.

11. *Bagaimana fasihkah anak-anak anda dalam membaca huruf Arab?*

How fluent is your children in reading the Arabic letters?

1. Very Basic / Sangat Asas
2. Basic / Asas
3. Intermediate / Pertengahan
4. Fluent / Fasih
5. Very Fluent / Sangat Fasih

BAHAGIAN D:

SECTION D: ANDROID MOBILE APPLICATIONS FOR CHILDREN TO LEARN ABOUT HADITHS

		Sangat Tidak Setuju *Strongly Disagree* [1]	[2]	Neutral [3]	[4]	Sangat Setuju Strongly Agree [5]
12	*Saya berasa kanak-kanak akan bertindak balas lebih baik untuk pembelajaran hadith dengan menggunakan teknologi seperti aplikasi mudah alih interaktif berbanding dengan cara konvensional seperti membaca buku atau menonton televisyen* I think children will respond better in learning hadith by using technology such as interactive mobile applications compare to the conventional way such as reading books or watching television.	[1]	[2]	[3]	[4]	[5]
13	*Saya lebih suka aplikasi mudah alih yang mempunyai latar belakang yang berwarna-warni dengan lukisan kanak-kanak kecil* I prefer the mobile application to have a colourful background with drawings of little kids	[1]	[2]	[3]	[4]	[5]
14	*Penggunaan bunyi bacaan Hadith boleh membenarkan anak-anak saya untuk lebih memahami mengenai Hadis* The use of sounds of the Hadiths' recital may allow my children to understand better about Hadiths	[1]	[2]	[3]	[4]	[5]
15	*Penggunaan animasi dan lukisan boleh merangsang anak-anak saya dengan lebih baik dalam pembelajaran tentang Hadith dalam kehidupan seharian mereka* The use of animations and drawings may stimulate my children better in learning about Hadiths in their daily lives.	[1]	[2]	[3]	[4]	[5]

Appendix 3: Interview report

Interview Report: Suzilani bt Abdul Aziz

I conducted an interview at Mutiara Islamic Tadika Montessori on March 10th 2015. Suzilani bt Abdul Aziz works as one of the teacher at the school, and is selected to be the interviewee for this research. The duration of the interview was fifteen minutes.

Suzilani has been working with Tadika Montessori for the past 5 years. Teaching has been a wonderful experience for Suzilani. She has worked in preschools previously. Mutiara Tadika Montessori is an international pre-school. Working with children that came from various backgrounds has encouraged Suzilani to improve her English skills. There are 32 students currently enrolled in Mutiara Tadika Montessori and most of the students in Tadika Montessori came from Arabic countries. Their parents are either working with UTP as lecturers or pursuing their study in Master or PhDs.

Suzilani explained that children are very hard to be controlled especially the ones below five years old. They are lacking of focus in class and tend to have bad mood swings whenever they are hungry or sleepy. Therefore, providing teaching materials to the children has been quite tricky for most of the teachers. However, most of the teachers working in Tadika Montessori are mothers, and they are well experienced with children.

The modules that Suzilani teaches to the student vary everyday including Science, Math, English and Islamic studies. The teachers at Tadika Montessori use computers and television to provide children with an interactive learning environment. For Islamic studies, instead of lecturing the children, teachers use role playing, sing along to songs, storytelling as well as flash cards. It is proven that the children keen to be more interested in role playing and sing along as it requires them to be involved in the activities. The materials for Islamic studies comprise of the prophets' stories, Hadiths, Dua and Sholat.

The interview has revealed that children are more participative towards learning Islamic contents through interactivity and an enjoyable method.

Interview Report: Zubaidah Bt. Abdul Johari

The second interview at Islamic Tadika Montessori on March 10th 2015 was conducted with Ms. Zubaidah Bt. Abdul Johari. Ms. Zubaidah works as one of the teacher at the school, and is selected to be the interviewee for this research. The duration of the interview was fifteen minutes.

Ms. Zubaidah has been working with Tadika Montessori for 3 years. She has 2 kids and she lives in Bandar U, Sri Iskandar. Working as a teacher is a walk in the park for Ms. Zubaidah. She loves kids and they love her as well. Ms. Zubaidah pursued her Bachelor's Degree in Education. And she has an impressive English communication skill.

The children in Tadika Montessori receive various lesson plans and modules from the school. The modules include Math, Science, and Islamic studies. Ms, Zubaidah says she loves teaching Islamic studies to the children. It has not been a boring subject. In fact, Ms. Zubaidah manages to integrate Islamic learning into a fun and engaging activities during class.

For example, Ms. Zubaidah will take the children out to the park, and start singing and playing while she slips in Islamic learnings in a subtle way. She also integrates science with Islam in the children's classroom activities.

Children are taught about "Adab Kebersihan" or how to take care of cleanliness. It is a part of Islamic studies about Hadiths. Children are taught to wash their hands before and after a meal, to wash their feet before getting into the classroom and to take a shower in the morning before they start the day.

"Kasih Sayang" or compassion is being taught to the children by explaining them how to love their friends at school. Children sometimes can be abusive towards others by pushing around, biting and punching. Therefore, Ms. Zubaidah thinks that teaching children to hug and kiss their friends will allow them to feel compassion towards others.

Acceptance Testing Survey for “Hidup Cara Rasulullah”.

The objective of this questionnaire is to determine the fulfilment of functional requirements of the mobile application, “Hidup Cara Rasulullah”. With these user evaluations, future enhancement for the application will be structured.

a. Name :
b. Age :
c. Sex :
d. Occupation :

Survey Questions

Rate these statements with your experience using the application with *1* being *strongly disagree* until *5* being *strongly agree*.

1. The application provides ease of understanding of the navigation flow. It must be easy to learn for both children at the age of 4 to six and the adults.

   1 2 3 4 5

2. The application shall provide consistent information about Hadiths.

   1 2 3 4 5

3. The application shall be engaging for children, and help them focus on the contents of the application.

   1 2 3 4 5

4. The application has a friendly graphical user interface for both children and adults.

   1 2 3 4 5

5. The application’s quiz is simple and easy to understand

   1 2 3 4 5

6. The application enables users to play the music / Hadith's recital

   1 2 3 4 5

7. The application enables users to read the Arabic letters clearly.

   1 2 3 4 5

8. You will continue using the application in the future.

   1 2 3 4 5

9. Please kindly provide any comments or feedback relevant to your experience using Hidup Cara Rasulullah.

   _____

   _____

   _____