CERTIFICATION OF APPROVAL

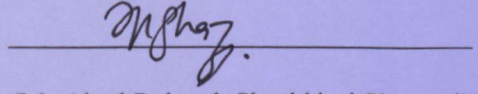
Multimedia Courseware Designated for Children on How to Perform Solah "Jom Solat"

By

SH FATIN FARHANA BINTI TUAN EMBONG

A project dissertation submitted to the Information Communication & Technology Programme Universiti Teknologi PETRONAS in partial fulfilment of the requirement for the Bachelor of Technology (Hons) (Information & Communication Technology)

Approved by,



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UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

January 2012

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JANUARY 2012

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CERTIFICATION OF ORIGINALITY

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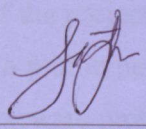

SH FATIN FARHANA BINTI TUAN EMBONG

ABSTRACT

This paper is on **Multimedia Courseware Designated for Children on How to Perform Solah.** The purpose of this report is to record all the data gathered throughout author's study and research for this project. This project is a courseware based project and the targeted user is preschool children age between 5 to 6 years old and this courseware will teach the children on how to perform Solah. The courseware prototype will be a demo based typed of courseware and it is developed using video software which are the Sony Vegas, Adobe Flash and Adobe After Effect. Meanwhile, the objective of the project is to develop a guideline for courseware designated for children, to develop a prototype from the guideline and then to conduct a user experience testing on the courseware prototype. The project looks at the related works by researchers from various scope of study which includes Multimedia, courseware general guideline, the best method to educate preschool children and researching on children learning style. This project is carried out using ADDIE Instructional Design Model. A User Experience Testing session was conducted with the target audience, which are preschool children. Based on the result of the study, a guideline in developing courseware for children is proposed. The result of the User Experience Testing showed more than half of the preschoolers would like to use the courseware repeatedly. To conclude there is high potential to maximize the usage of Multimedia in order to be a teaching medium for preschool children. The courseware can be used as a teaching aid for the parents and teacher in teaching their children to learn Solah in effective and enjoyable way.

ACKNOWLEDGEMENT

First and foremost, I would like to express my greatest attitude to Allah for giving me the strength and strong will to complete my final year project.

I would like to express my utmost gratitude and many special thanks to my beloved supervisor Miss Ainol Rahmah Shazi binti Shaarani for her understanding and support in time of my hardship in order to complete this project. Thank you for all of her guidance and assistance that enables me to conduct this project successfully. Thank you for the faith and for believing in my potential.

I would like to thank my co supervisor Dr Wan Fatimah binti Ahmad for all her advices and words of encouragement to me during my completion of this project. Thank you for all the ideas and for supporting my work.

To my family especially my parents and siblings, thank you for loving me unconditionally and supports me throughout my life and for being there with me without hesitation. I cannot find the appropriate words to describe my deepest appreciation for their faith in my ability to attain my goal.

I wish to express my sincere appreciation to everyone that had helped me throughout this project completion especially to all of my friends. I really appreciate every contributions and supports from each of you.

Finally, again I would like to thank everyone and may Allah the Almighty bless all of you.

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LIST OF ABBREVIATIONS

STM ..... Short Term Memory
LTM ..... Long Term Memory
ZPD ..... Zone of Proximal Development

CHAPTER 1

INTRODUCTION

1.1 Background of Study

In the education environment, the use of technology to support the process of teaching and learning has become widespread. There are many mediums or techniques that have been developed to ensure the process of teaching and learning to be more effective. The technology provides many tools that can motivate and excite the students. Other than that, multimedia courseware can also be used to complement traditional learning processes. The advantages of multimedia include the combination of the various media such as animation, video, sound and gaming atmosphere. There were also simulation programs that will enable the student to engage in a situation that they can never experience in their real life (Futrell & Geisert, 2000). With the growing of technology as stated above, even the young children will find the traditional teaching method which is using chalks and blackboard or classroom training less interesting. This is because those children have been growing up in such environment where television and internet usage is a common thing for every household.

As the advancement of technology is rapid and aggressive, computers are no longer considered as a new device in our daily life. Nowadays, the computer usage has become a part of the school institution facilities. Even now the computers managed their way into the pre-school institution as well. This result more children between the ages of 5 to 6 years old have become more familiar with the operation of a computer and the elements of multimedia in their learning. For this project, a study will be conducted to identify a courseware guideline designated for preschool children. This project is an effort to gain a better understanding in developing a courseware for Muslim Kindergarten Children.

The multimedia courseware is expected to be interesting due to the combination of images, animation and sound presented. This courseware will be able to be play repeatedly at the computer according to the preschoolers need. The advantage of this

courseware is it is user friendly and will be able to be used by the children easily. At the end of this project, the prototype can be used as a teaching tool that will be able to assist the teachers and parents in teaching them how to perform Solah. This is an alternative way for the teachers and parents apart from the traditional method which is memorizing all the Solah movement and supplications.

Hopefully, it will benefit the preschool children as well as providing them entertainment at the same time. In Malaysia, the market value for a good quality Multimedia product is needed due to the increasing demand of Islamic courseware.

1.2 Problem Statement

Parent's involvement in their children learning helps to produce fast result of the children development. As world is facing globalization, the current trends is both of the parents are working. Parents are too busy and find that it is hard for them to spend their time sufficiently in order to support and teach their children at home. Modern children require a new way of learning Solah effectively as the current technique used by the preschool institution is using the old method which is to read and memorize all the Solah movements and supplication.

Therefore, there are three main problems regarding the proposed title:

i. Parents are too busy to involve in their children learning due to work commitment.

ii. There is insufficient supply of quality Multimedia courseware to teach the children on how to perform Solah

iii. There is no specific guideline on developing a courseware design for preschool children

1.2.1 Problem Identification

There are few problems identified during the conduct of the project:

i. Courseware design for children

Children learning style and learning preferences are different from the adult. Thus, this requires the author to conduct a research on children psychology. Not only that, the study will also cover the design suitability on children aged between 5 to 6 years old. It is also important to produce a courseware that is enjoyable by the children because they learn better when they are having fun.

ii. Communication with the preschooler

For this project, the target user of the prototype is the preschool children aged between 5 to 6 years old. Therefore, all of the needs and preferences of the user must be considered. However, as these children are too young and they cannot express themselves, it requires the author to collaborate with the teachers or parents. Therefore, the teachers and parents will involve during the surveys and will be interviewed on behalf of the children. The reason is because they are the closest person with the children and therefore they will know better what the children's needs are.

iii. Questionnaire

To create a set of good questionnaire, the survey must contain all the important information's that will provide valuable information to this study. The questionnaire respondents will be the parents or teacher of the preschooler.

1.2.2 Significance of the Project

This project will be based on findings from the journals, websites, books, questionnaire and user experience testing. Based from the findings, the author able to come out with a courseware guideline designated for the children. The author is required to develop a prototype of the courseware as a benchmark for the user experience testing purpose. The courseware guideline will be implemented within the courseware prototype. The usage of this courseware is expected to shorten the learning curve of the preschool children in learning Solah. Apart from that, the courseware developed has the potential to be a teaching tool for the preschool children.

1.3 Objectives and Scope of study

1.3.1 Objectives

The main objectives of this project are:

i. To come out with a courseware guideline specifically design for preschooler based on children learning style and psychology
ii. To develop a courseware prototype designated for children based on the guideline
iii. To carry out a user experience testing on the prototype

1.3.2 Scope of Study

The scope of study for this research work are :

i. The target user is Malaysian preschooler aged between 5 to 6 years old
ii. The prototype will be using Bahasa Malaysia as it main language
iii. Curriculum structure : 13 Rukun Solah

CHAPTER 2

LITERATURE REVIEW

2.1 Multimedia

One of the focuses today is on the application of computers as an educational tool. In the education sector, multimedia is a computer-based technology that is rapidly gaining popularity as an instructional medium. The definition of multimedia may be varies as different persons have different view on the definition of multimedia. In multimedia, it is not compulsory to be computerized based. However, computers can offer most of the presentation easily without any interruptions or problems (Mike & Sandra, 2001). Therefore, computers are widely chosen as one of the device for instructional medium.

In general, multimedia is defined as delivering a presentation of information by using multiple types of media such as audio, graphics, animation and text. Multimedia is an art of medium that will allow the viewer to experience and engage with image, sound and symbols (Packer, 1999). Thus, multimedia is able to tackle the differences in individual learning style. This is supported with some research findings that concluded multimedia is a multisensory based which mostly involving the sense of auditory (ears), visual (eyes) and kinesthetic (hands). It also may include the sensory of taste and smell in certain cases (Grimes & Potel, 1991).

However, there are definitions by researchers stated that presentation of content that only rely on the combination of text and graphics is also defined as Multimedia (Xuhua Jiao & Cheng Chen, 2011). However, from the author point of view the statement that said any combination of media is enough to define multimedia is not true. The reason is because common text book also have the combination of text and graphics but can this regular text book is categorized as multimedia?

In a nutshell, multimedia is delivering or conveying the message or information to the audience by using combination of more than one form of media and the combination is able to tackle different audience effectively. This can be achieved by knowing what type of media that we should combine based on the type of audience and what type of information that is going to be delivered.

2.2 Benefits of Multimedia

With the development of information and communication technology (ICT) field, various type of multimedia has been developed. Multimedia enables new way of learning instead of the traditional teaching mode like the usage of the traditional blackboard or any classroom learning style.

In Malaysia, most of the learning process is still based on the mode of traditional chalk-and-talk method. This makes the learning environment become restricted and not flexible and the multimedia learning strategy is still remains untouched (Teoh & Neo, 2007). This traditional learning and teaching mode made the effort to gain and retain the student attention become one of the common challenges faced by the teachers. As a result, it is found difficult to engage the student with the learning that is being conducted during class. Learning is a process that requires attention and it is known that multimedia able to offer a variety of application, software or even courseware that is very effective at keeping the audience interest. This is because learners found that using multimedia learning with the elements of video, audio, graphics, feedback question and answers will keep the learning interesting, exciting as well as of fun, therefore it encourages learners to play and use the program repeatedly (Hick, 1997). There was a study on Interactive Media Learning entitled Students' Attitudes and Learning Impact in an Animation Course conducted by Teoh and Neo from University Multimedia stated that students admitted that it was interesting and engaging when they learn with interactivity and multimedia. Among of the favorable and top feedbacks received from the students were "I find learning interesting and

engaging" and another comment is "From the start it was clear what the objectives of the module" (Teoh & Neo, 2007). From this study, it is understand that once the student is interested with the multimedia presentation, they are motivated to know more and unconsciously able to learn more. According to Li and Ren (2011), "Interest is the best teacher to promote student learning motivation" (p.433). The results of this research support the statement that multimedia have the potential to motivate the student to learn more when the lesson or knowledge that will be conveyed contains the element of multimedia.

Multimedia can be made up of combination of any type of media. Thus, there are varieties of way to manipulate the different type of media to suits different learning styles of the user. Therefore, there is a possibility that multimedia can play an important role which can suit the individual learning style if the design of the Multimedia is based on the user's preferences and need. When the teaching mode suits the learning styles, student unconsciously will find that learning is fun and entertaining. Fun learning environment will enable students to engage with the learning process and they are seems to be more open to the learning experience and this is applied for both adult and children (*"Design for adult,"* 2011). In conclusion, learning can be fun when it is suits with the user's personal learning preference.

In the other hand, Multimedia is functioned to perform demonstration before the learners have to perform the real activity. The demo may include video, graphics, animation and audio which will make up a simulation. There are many industries that using multimedia simulations as a teaching material.

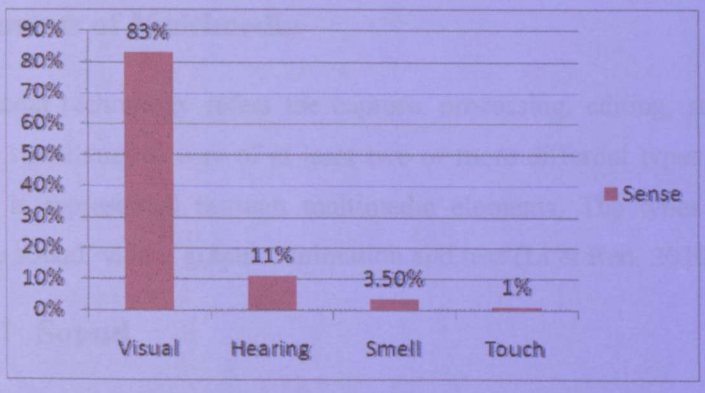


Figure 1: Human retrieval of information based on sense

Based on Figure 1, an analysis from a large number of experiments made by a psychologist on how human access to information provide result that the highest number of human retrieved information with the percentage as many as 83% is from visual, followed by hearing with 11%, next is sense of smell with 3.5% and lastly followed by sense of touch with 1% (Hu, Liu & Wu, 2009). This is the reason why most industries or areas using multimedia to simulate the work or job before allowing their staff to involve with the real working environment because most of the simulation supported hands on training other than having visual elements and audio that allow them to understand the simulation better.

In this era, multimedia is not only about games and the usage of multimedia has become widespread. Multimedia has become an option other than the old teaching mode because students find that multimedia is able capture and retains their attention. It also proves that the multimedia elements able to motivate the student to learn more. Multimedia also is able to meet different learning style if the learners need is considered carefully. Moreover, simulation in multimedia helps to equip the learners with the training needed before they proceed with the hands on activity.

2.3 Elements of Multimedia

The multimedia technology refers the capture, processing, editing, storage and display in a simultaneous way of at least two or more different types of media. Multimedia is represented through multimedia elements. The types of media elements are sound, video, graphic, animation and text (Li & Ren, 2010).

2.3.1 Sound

Sound will make use of the sense of auditory to enhance and let the user to understand and at the same time it provides the sense of enjoyment. An audio is a sound that has been digitalized such as by capturing sound into an input device like personal computer via microphone or CD-ROM (Brown, 2003). The purpose of having audio effects like the hand clapping sound and music like background sound work as a strategy to emphasis important points or certain crucial segment of the program or movie. (*"What is multimedia,"* 2002). Apart from making the multimedia entertaining, sound also enable user to focus on the important parts of the message that contained within the multimedia presentation. In conclusion, sound is an important component in multimedia which can add liveliness to a multimedia presentation.

2.3.2 Graphic

Graphics are crucial to the success of a multimedia project as it is able to make a multimedia program look elegant. Three types of most commonly used in graphics format which are GIF (Graphics Interchange Format), JPEG (Joint Photographic Experts Group) and PNG (Portable Network Graphics). There are two types of graphics either bitmapped or vector. Basically, bitmapped graphics are images that are mapped to the monitor or screen and made up of pixels while vector graphics is derived from mathematical formulas to create the image (*"Graphic images, sounds,"* 2010). Bitmap can be created from scratch using paint or any drawing

program. It also can be captured using screen capture program and then paste to Paint or other application. Or it even can be created from photo, artwork or television image by using scanner or video capture image that allow the image to be digitized. Once the bitmap is created, it can be used in many creative ways (*"Introduction to multimedia," n.d.*).

2.3.3 Animation

A graphics image that is moving or can change is called animation. Still images or pictures can be created into animation when it is using real time visuals that enable the image to move. With animation, the multimedia program becomes alive and added power to the multimedia project. There are two main types of animations which are being used in multimedia applications. The first type of animation is a linear animation or known as 2D and the other type of animation is 3D or three dimensional objects which are created using a mathematical model. However for younger generation like preschooler they did not value either the multimedia is in 2D or 3D, as long as they can understand the message. According to Gladwell (2000), "The kids stopped watching. If they couldn't make sense of what they were looking at, they weren't going to look at it" (p. 101). But of course 3D offers more interactivity and presents the object more realistically. However in designing animation for children, perhaps the issue of ensuring the animation makes sense from the children's point of view is more crucial rather than to use complex animations which could confuse the children.

2.3.4 Text

One of the simplest ways to communicate message or instruction is by adding text. In Multimedia, there will be text in some form anywhere in the multimedia presentation in which is used to communicate the information to the user. By using the correct text and word it helps the developer to convey the idea and message to the user (*"Introduction to*

multimedia," n.d.). Text also plays an important role in highlighting any important points but the number of text on screen must be limited. Reading text on screen is different from reading text in print as it is difficult and takes longer time because people read text on screen with 28% slower pace than reading from printed material like books (Golas, Orr, & Yao, 1993). Selection of text is crucial in a multimedia presentation. Among the guidelines are to use different effects and colors of font to differentiate the text. Since 2 years old young kids can start to learn based on colors as it builds good relationship in their brain, it is better to have them start early as it is good for their learning abilities (Baras, 2011). Different colors is not only able to create fun atmosphere but also enable the user to get to the main point easily as well as making the multimedia interesting, this guideline is suitable if the multimedia is designed for children.

2.3.5 Video

Video adds another dimension to multimedia. Video for demo purposed helps user to understand the message to be conveyed in better way as the user will be able to understand the content of information even if they never experience it before. This is because video can provide good and clear steps by steps illustration. Video is very useful as it can improve presentation, illustrating a proper technique and widely used in the advertisement to promote new product (Brown, 2003). Video provides flexibility to the user where it can be viewed anytime and anywhere. The video clip can replay on computer's monitor if it stored in a storage device like hard disk, CD-ROM or other storage device (*"Introduction to multimedia," n.d.*).

In conclusion, there are six elements of multimedia discussed in this section. There are sounds, graphics, videos, animations and text. It is important to know the details and usage of each components of the multimedia so that a quality multimedia can be produced.

2.4 Courseware General Guideline

2.4.1 Attention Span

A learner's attention is focused when their attention is not split by the multimedia application. When the learner is forced to perceived information that is far apart, for example when the content of information and the visual is presented at different time will result to the split attention (*"Multimedia learning,"* 2008). One way to fix split attention is by applying the redundancy principle where the concept is to avoid any duplication of way conveying information at the same time. Avoid presenting the same information in multiple formats when multiple media is integrated together. As an example, when displaying graphic, avoid using text. Another example is when a narrated voice is play learners will tend to read the text and did not listen carefully to the audio. Cueing can be a good solution to grab the user attention. A simple pointer or other visual cue can be used to call the user attention instead of using text (Malamed, 2010).

2.4.2 User Control

Different people learn at different pace, some student can learn faster than the others and vice versa. The process of learning will be under the learner's control whenever they perform interaction with the presentation, this include the simple action by start or stop the presentation. To enable the learner's to learn based on their pace ability it can be done by segmented or breaking down the presentation into smaller segment. Thus, allowing the learner to select which segment that they want to choose compare to longer segments that offer less control (*"Multimedia learning,"* 2008). Other than that, user control allows the user to repeat or review any section based on their need (Mike & Sandra, 2001).

2.4.3 Technique

One technique to ensure the learner to focus their attention is by using narration or story telling method. It is better to have the narration and animation presented together due to the learners will learn more rather than having the presentation and narration separately (*"Multimedia learning,"* 2008). It is discovered by Neuroscience that with story the brain is able to structure, retain and access the information. Story assists memory by putting information into meaningful context and storytelling can build and relate the connections between separated pieces of information (Norfolk, Stenson, & Williams, 2006). In developing multimedia courseware for children, story based techniques makes the content become interesting and entertaining apart from gaining information.

2.4.4 User interface

While designing the multimedia user interface, give the users only what they need to do instead of showing of the capabilities of the multimedia technology. In designing Multimedia courseware for children, they did not have the capability to digest complex material. Among the key point in designing the user interface is to keep the user interface consistent. Having consistency in the user interface encourage the user to have an accurate mental model, this will lead to lower cost of training and support. This is also following one from eight of the Shneiderman's "Eight Golden Rules of Interface Design" that a good interaction design must strive for consistency. Other than consistency, the design should be made simple and must be communicated clearly to the user (Ambler, 2010). Simplicity can be applied by designing a screen where all the options are clearly visible. This reduce the short term memory load being used by the human as short term memory load is limited and can decay over time (Cowan, 2009). Last but not least, is to have a help function

like a help documentation section or help button. This is supported and proposed by Nielsen that helps and documentation will be helpful. It may be a good option to provide the help and documentation even though it is better if the system can be used without one (*"Heuristic evaluation," n.d.*).

2.4.5 Metaphor

In any user interface design, one of the important challenges is to assist the novice user to become proficient in a short time and to become an expert user afterwards without the need of training aid (Marcus, n.d.). In multimedia metaphors means to map a familiar object or process to a target system so that user can learn, use, remember and at the same time enjoy the system quickly with effectiveness and in a complete package (Erickson, 1990). The role of metaphor in the user interface is to facilitate learning, orientation as well as forming and maintaining the concept of the program. Some of the icons that are using metaphors for the preschooler are stated as below (Bock, 2011) :

- Conventional graphics: Pencils, books and arrows that go back and forth.
- Media icons : Play, Pause and Stop are generally understand by the children because they are familiar with the usage of media Web sites like YouTube
- Short action words: Play and Go are commonly understood by the young users.

2.5 Children Learning Style

2.5.1 Information Processing System

Information processing is the idea that all learning are related to stimuli and responses and it focus more on internal process or mental that intermediate between the stimuli and responses (Schunk, 2000). Researchers also assume that information processing involve all cognitive activities.

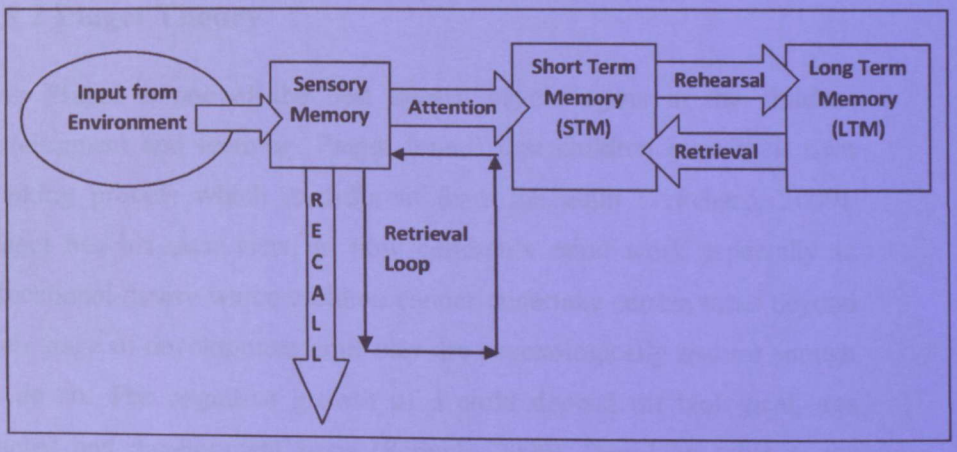


Figure 2: Dual Memory Model

From the classical model of memory by Atkinson and Shiffrin, there is Dual-Memory model that explain on the idea of information processing in memory. Based on the Figure 2, there are three main types of memory which are sensory memory, short term memory and long term memory.

The first stage is where the information input is detected by the sensory organ. Then, the inputs is received and stored in sensory memory. Next, the information will be transfer to the short term memory (STM) via attention. After that if the process of rehearsing or recalling the same

information happened and then the STM will become a long term memory (LTM). However, if the rehearsal did not occur, the information will lost from the STM and memory of that information will decay or undergoes replacement process (Mcleod, 2007).

One of the strategies to ensure the information is available in LTM is making the information meaningful. When the information is meaningful, even the knowledge that already lost before can be encoded (Mcleod, 2007).

In this project, the author will make the multimedia content meaningful by connecting the new information with existence knowledge that the children have.

2.5.2 Piaget Theory

Jean Piaget is one of the best known psychologists in the children development and learning. Piaget founds that children have their own thinking process which is different from the adult (Pritchard, 2009). Piaget has his own view on how children's mind work especially in educational theory where children cannot undertake certain tasks beyond their stage of development until they are psychologically mature enough to do so. The cognitive growth of a child depend on biological, age related and development basis (Schunk, 2000). Based on table 1, the developmental stage theory by Piaget are composed of four stages which are sensorimotor, preoperational, concrete operational and formal operations.

Period	Age	Characteristics of the stage	Example
Sensorimotor	Birth to 2 years	Simple reflexive behavior which are spontaneous and represent an attempt to understand the world.	Sucking fingers
Preoperational	2 to 7 years	Use of symbolic taught begins and imagination also begin to develop. Also demonstrate irreversibility (Once things are done they cannot be changed). Essentially egocentric.	They believe 10 coins spread out in a row are more than 10 coins in a pile
Concrete Operational	7 to 11 years	Begin to develop logical thought and show some abstract thinking. Less ego and take others point of view.	Honesty is returning money to the person who lost it
Formal Operations	11 to adult	Able to think hypothetically and abstractly. Improve reasoning and show idealistic thinking.	Able to answer or predict result.

Table 1: Piaget's Stage of development

As the target user for this multimedia are kindergarten children aged between 5 to 6 years old, the focus will be on the preoperational stage. At the stage of preoperational, children are unable to differentiate between the fantasy and reality (Schunk, 2000). For example cartoon characters

appear as real people. However, as they grow up to the stage of formal operation they will able to think logically and find reasons.

2.5.3 Vygotsky's Sosiocultural Theory

Vygotsky's theory is a constructivist approach that emphasizes the social environment as a facilitator on developing child. One of the key concepts of the Vygotsky's theory is the Zone of Proximal Development (ZPD). ZPD is defined as the distance between the student's ability to carry a task under adult guidance or collaboration with more capable peers or in simpler words ZPD defined what child can do independently and what can the child do when assisted by adult or other competent peer. For any difficult task, that the learner cannot perform independently, both teacher and learner will work together (Pritchard, 2009).

ZPD can be aided with intervention more knowledgeable person such as teacher by scaffolding process. Scaffolding is a process where to give support to the learner at appropriate time and at appropriate level to meet the learner's need (Pritchard, 2009). It is appropriate to use scaffolding when a teacher wants to provide the students with some information to complete the task or to help the student on the task they attempt to master (Schunk, 2000).

In this project, to make the ZPD approach success an activity can be planned after using the courseware. The teacher will ask them to demonstrate and correct each other on the correct way to perform Solah. Then, the teacher will correct and provide hints if they forget anything during the session. This is where the teacher role to make the learning become effective.

2.6 Usage of Computer

In Malaysia, owning a personal computer is a common thing. Malaysian government has been conducting many programmes to increase the rate of computer literacy in Malaysia. Among the program are "Satu Rumah Satu PC" during the year of 2003 and the latest programme is "Satu Komputer Satu Malaysia". Since the children are already familiar with the existence of computer, this courseware will be a CD based multimedia program which can be used on computer. The reason is because children are comfortable with computers as it already part of their everyday environment.

Usages of computer also help to develop the motor skills and coordination for children. They are practicing their motor skills when they are manipulating the cursor on the computer screen. This will benefit the children to enhance their body coordination.

Multimedia program that run on computers provide the combination of education as well as entertainment or widely known as edutainment. Modern children will learn better if they are entertained at the same time (Futrell & Geisert, 2000). Computer can be an interesting learning media with the assurance of the courseware developed for children is fun and entertaining.

The effects of computers on children are relatively positive. Using computer in promoting learning in young children is possible. However the usage of computers by the children must be monitored regularly as the internet contains all type of information that could be inappropriate to the children. These children are young generation and in the process of growing. Therefore, the need of guidance from the adult is required so that the children will not misuse the computer.

CHAPTER 3

METHODOLOGY

3.1 Procedure Identification

There are several models to produce as teaching project or courseware based project. To build the prototype, ADDIE Instructional Design Model is chosen for this project. The acronym "**ADDIE**" stands for **A**nalyze, **D**esign, **D**evelop, **I**mplement, and **E**valuate.

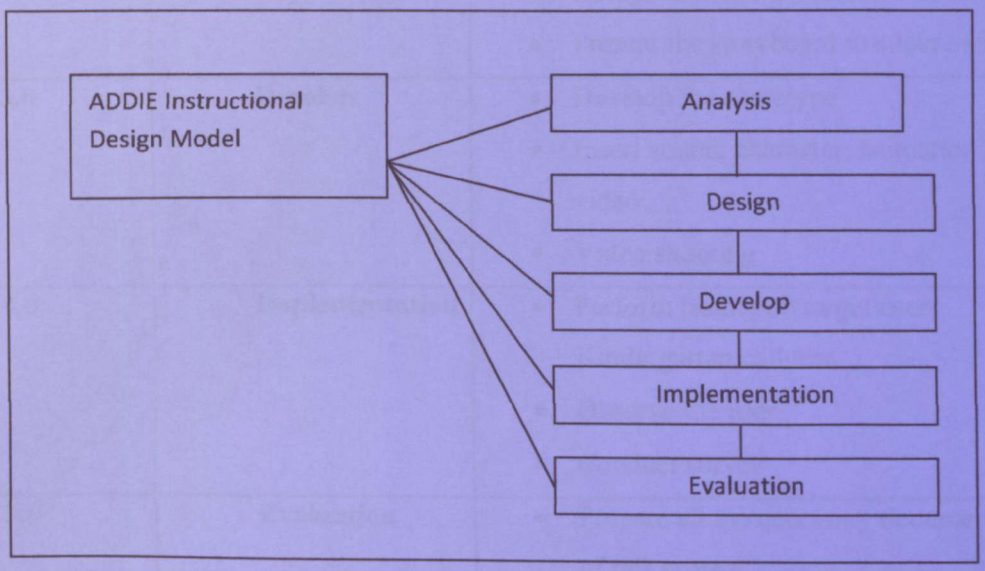


Figure 3: Methodology Implemented

Based on the Figure 3, this model helps to verify each stage and tasks carefully in order to achieve the objective of the research. ADDIE provides a step-by-step approach in designing the course.

3.2 Project Phases

No	Phase	Description
1.0	**Analysis**	• Collect and gather all the information from books, internet, article and journals • Analyze on suitable design • Analyze current courseware available
2.0	**Design**	• Develop story board • Design characters • Design sounds , animation and video • Present the storyboard to supervisor
3.0	**Develop**	• Develop the prototype • Insert sound, character, animation and video • Video shooting
4.0	**Implementation**	• Perform testing on target user- Kindergarten children • Observe the user • Conduct survey
5.0	**Evaluation**	• Prepare all the necessary documentation of this project • Evaluate the result of the field testing

Table 2: Phases of Project Work

3.2.1 Design Details: Flowchart

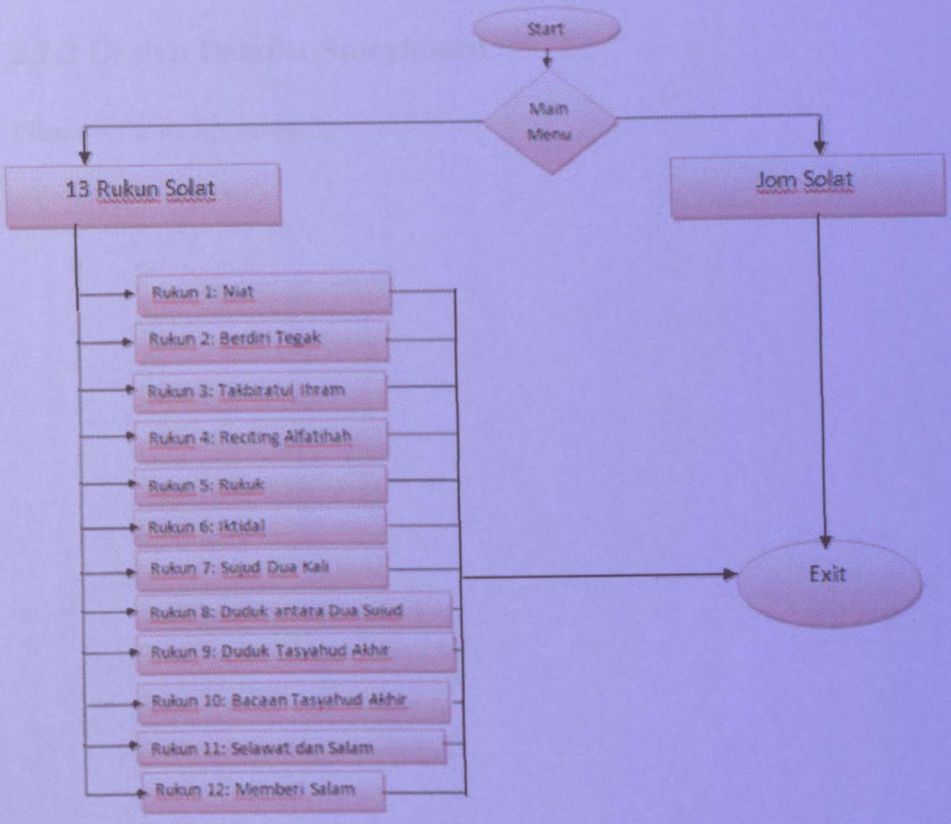


Figure 3: Flowchart of Prototype

The prototype is built with the scope of 13 rukun Solah. There are two main module for this courseware. The first module is called "13 Rukun Solat" that consist the 13 rukun Solah involved are: "Niat", "Berdiri Tegak", "Takbiratul Ihram", "Reciting Alfatihah", "Rukuk", "Iktidal", "Sujud Dua Kali", "Duduk antara Dua Sujud", "Duduk Tasyahud Akhir", "Bacaan Tasyahud", "Selawat dan Salam" and "Memberi Salam". From the menu user can make selection which type of rukun that the user would like to learn first. This enable user to have user control over the learning activities. The second main module is Jom Solat which consist

the whole video that teaches the children from the first rukun until the last rukun.

3.2.2 Design Details: Storyboard

Please refer to Appendix 1.

3.3 Gantt Chart

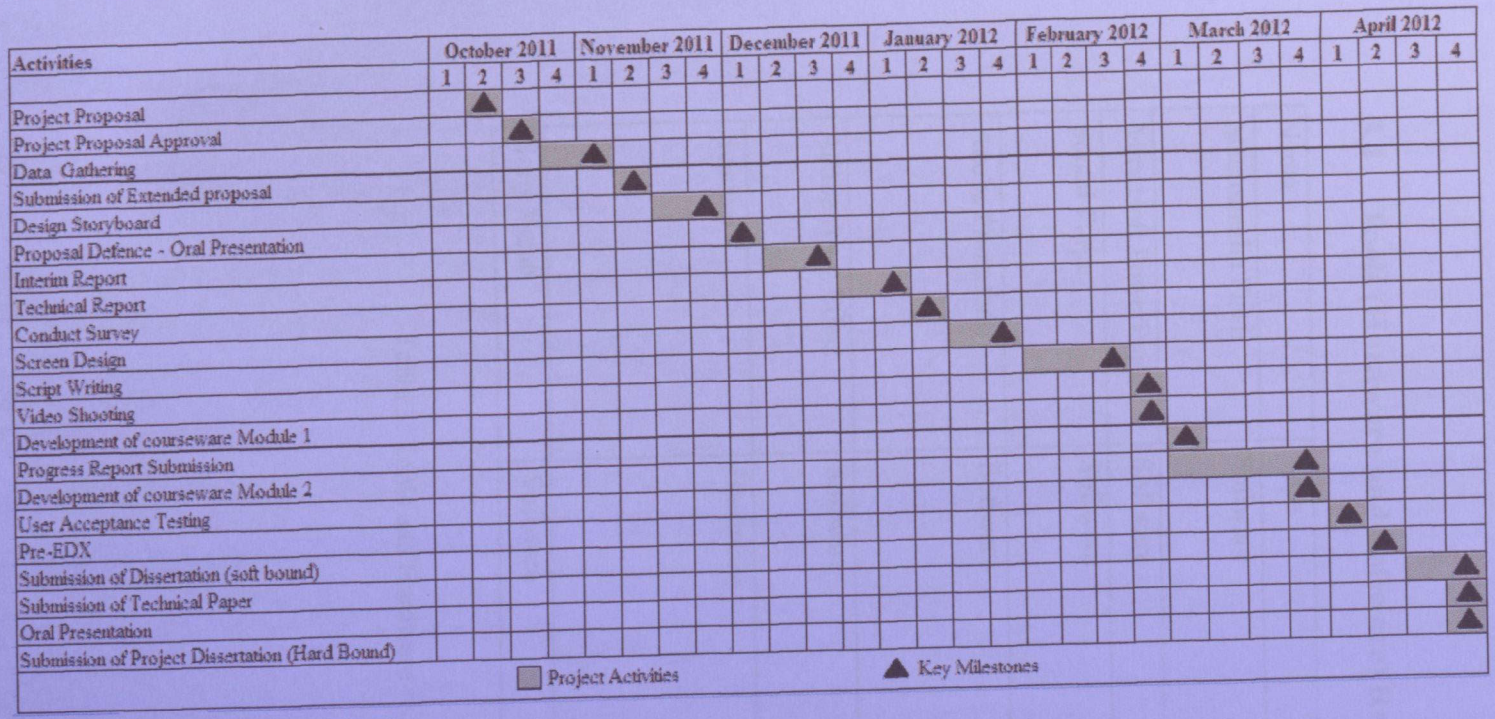


Figure 5: Gantt chart

3.4 Tools (Hardware and Software) Required

Name	Type	Function
Macromedia Flash	Software	To create the animated multimedia content
Microsoft PowerPoint	Software	For presentation
Sound Forge	Software	For sound editing purpose
Adobe Photoshop	Software	To create images and for image editing purpose
Adobe After Effect	Software	To add special effects element
Scanner	Hardware	Digitized static image before it can be used in image editor such as Adobe Photoshop
Sony Vegas	Software	For video editing

Table 3: Tools and Hardware requirement

CHAPTER 4

RESULT AND DISCUSSION

4.1 DATA GATHERING AND DATA ANALYSIS

A survey had been conducted on 18th January 2012 at Tadika Yayasan Islam Terengganu. There are 70 parents of the preschool children involved in this survey. On behalf of the children, the parents will be answering the question due to the children inability to decide on what they need. The other reason is because parent is the closest person with the children and spent most of their time with them. Eventually only the parent will understand their children preferences and need.

The purpose of this survey is to analyze and investigate the elements of multimedia that should be included in the courseware. There are two main objectives for the survey:

i. To get the parent's view on the learning of Solah using Multimedia Courseware

ii. To get confirmation from the parents on the best multimedia elements that should be considered to design the courseware for the preschool children

4.1.1 Demographic

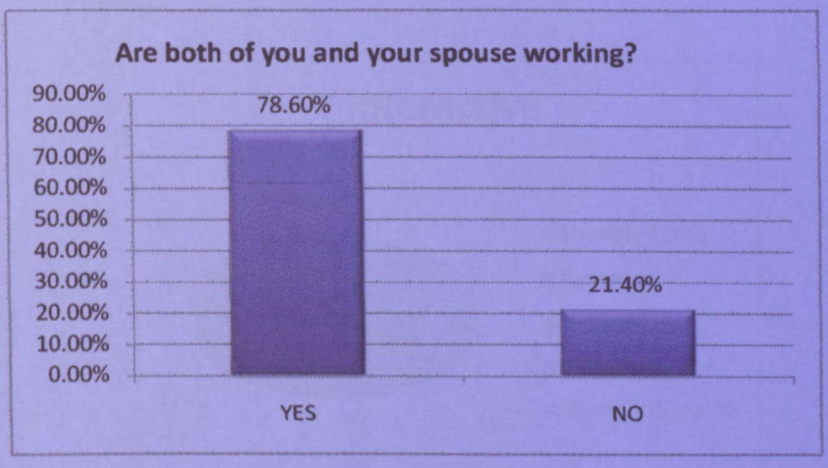


Figure 6: Parents Employment Statistic

Based on Figure 6, the result of the survey showed that 78.60% of the sample is families where both parents are working. This is actually quite a high percentage and it is a reflection of the current trend of families with working parents. This gives impact to the children learning as when the parents are too busy they do not have enough time to be involved in their children learning process due to their work commitments.

4.1.2 Characteristic of Courseware

The respondents were asked SEVEN (7) questions to determine the characteristics that parents want to see in courseware for their children.

The following lists the seven characteristics, and subsequently discusses each characteristic separately:

1. Interactive
2. Animation
3. Image
4. Music
5. Narration Technique
6. Text
7. Video

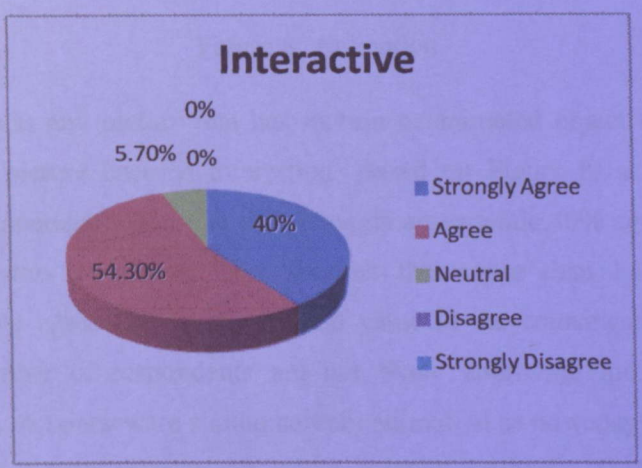


Figure 7: Interactive

From Figure 7, we know that 54.30% of the respondents agree and 40% strongly agree that a courseware design should be interactive. This means an overwhelming majority of 94.30% want interactivity in the courseware. Interactive means that the courseware is able to provide responses when the users interact with the system. Interactive courseware encourages the children to use the courseware repeatedly because it allows the user to control which module they wish to learn. In 'Jom Solat', users control their learning by choosing the topic they wish to focus on. Using interactive courseware improves the learning experience by allowing children to learn while having fun.

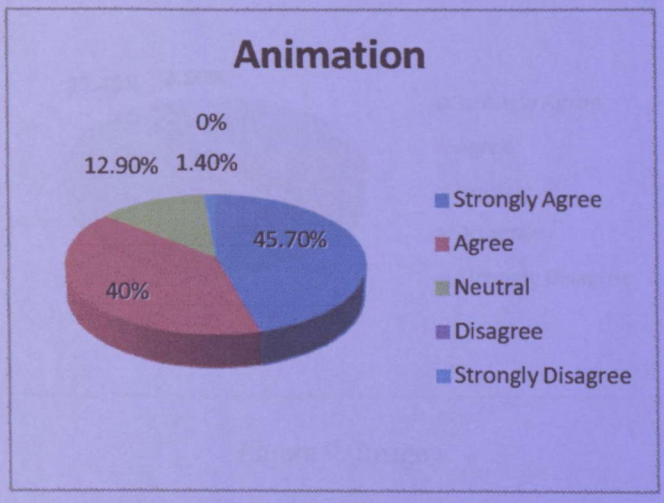


Figure 8: Animation

Animation is any picture that has motion or animated object that made the static picture become interesting. Based on Figure 8, as much as 45.70% respondents said that they strongly agree while 40% agree on the usage of the animation. This showed that more than half of the respondents agree that animation add value to the courseware. Only a small number of respondents are not likely approving the usage of animation. A courseware should contain animation as nowadays, children are exposed with mass media which contain animation such as from television, movies, videos and computer games which proven that

animation is able to retain the children attention span. The reason of animation is attractive is because the animation comes with great color combination and able to resemble living things actions that make it become attractive. In this project 2D animation is used to resemble living things such as the sun, clouds and insects. However, certain respondents disagree with the usage of animation because of their assumption is that teaching Solah should not be animated because it is improper in the Islamic teaching perspective.

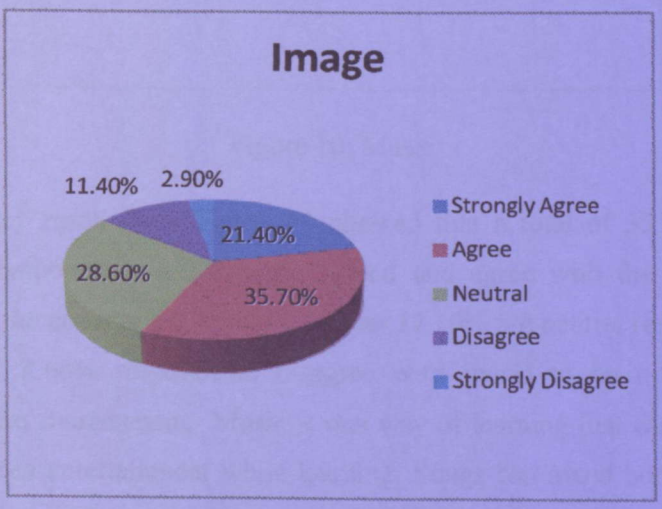


Figure 9: Image

Image is used in the prototype to explain and to show the correct way on how to perform the solah. Based from the respondent's view as per shown from Figure 9, as many as 21.40% respondents are strongly agreed, 35.70% respondent that agree, 28.60% respondents are disagree while 2.90% respondents are disagree with the usage of image. As a conclusion more than half is agree with the usage of image in the courseware. Image is use in the video and provides clearer information to the user. In each of the modules, an image is use to convey information on how to perform each of the Solah. With the usage of the image it will enhance the pictographic memory of the children.

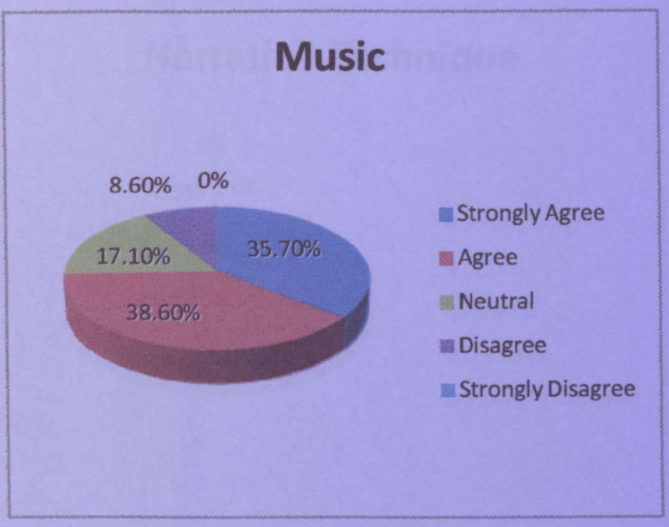


Figure 10: Music

The survey result from Figure 10 showed that a total of 35.70% and 38.60% respondents are strongly agreed and agree with the usage of music in the courseware. While the other 17.10% are neutral respondents and only 8.60% respondents disagree with music to be one of the courseware characteristic. Music is one way of learning that can provide the children entertainment while learning. Songs can avoid boredoms to the children. The song must have meaningful lyrics or informative content so that the children can learn while singing. Most of the time, any wonderful and simple song able to convey informative content that will be planted in the children mind and this is the best way to educate them.

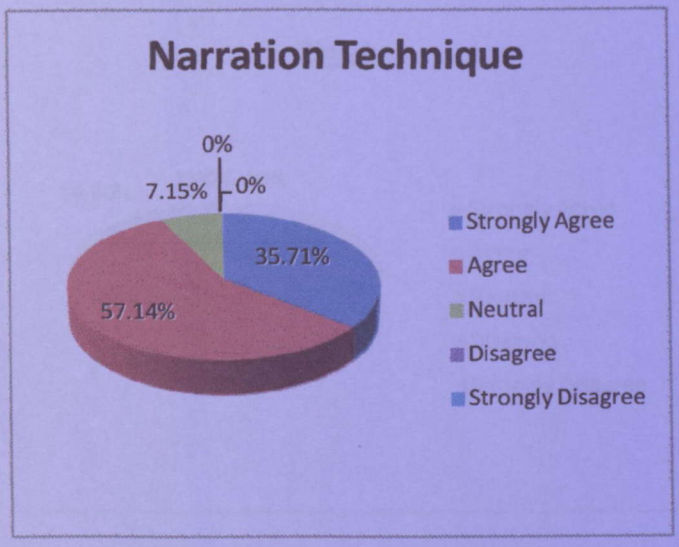


Figure 11: Narration Technique

Most of the respondents agreed with the narration technique to be applied in the courseware. From the Figure 11, as much as 35.71% of the respondents are strongly agreed while 57.14% of the respondents agree with the narration technique. Narration or story telling concept is suitable for children because it link pieces of information together. Narration concept is applicable for children because the children are more interested when the learning process is being carried out through narration or storytelling. They learnt via listening to the narration without they even realized it. Narration enables the children to learn in a fun way thus this avoid the children from boredoms.

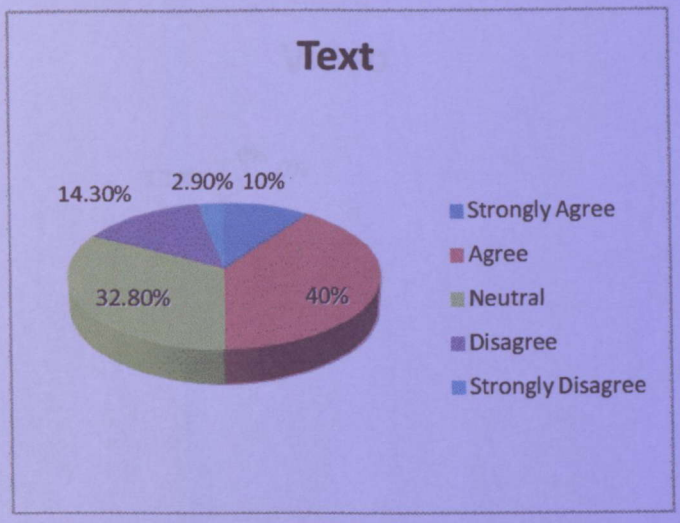


Figure 12: Text

From the Figure 12, the usage of text is supported by 50% of the respondents while 32.80% of the respondents are neutral. As much as 12.30% of the respondents disagree and 2.90% of the respondents are strongly disagree with the usage of text. To conclude more than half respondents agree with the usage of text. Text is used to highlight important points in the video so that the children will not miss any of the important points. However, it is important to avoid lengthy text because children at the age between 5 to 6 years old will be distracted if too many words are included in at the screen.

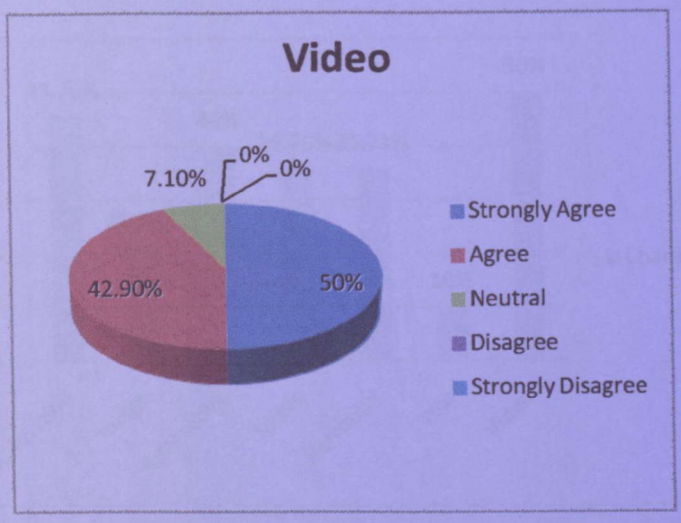


Figure 13: Video

In referring to Figure 13, more than half of the respondents agreed with the usage of video that is embedded in the courseware. A total of 50% of the respondents strongly agreed and 42.90% of the respondents agree. This showed that the implementation of video in the courseware is applicable. The respondents claimed that the video usage is suitable as it helps to demonstrate steps by steps on performing Solah clearly. The preschooler is attracted with the video as if they are watching movie. Thus, the learning becomes interesting and not as dull as the common way of watching the other courseware available in the market.

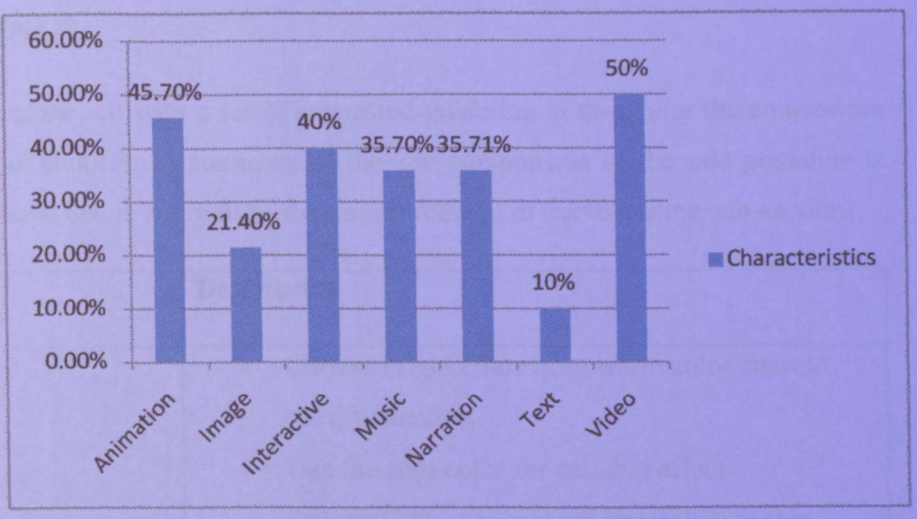


Figure 14: Characteristics of Courseware

Based on the above Figure 14, it listed all the characteristic of a courseware that is suitable for teaching preschooler on how to do Solah. As a conclusion, the highest vote goes to video as much as 50%, the second characteristic is animation with 45.70%. Next is interactive characteristic with 40%. The least needed characteristic of the courseware are text with only 10%.

4.2 FINDINGS

The author has come out with a set of suggested guideline in designing the courseware for the preschool children. A summary of the key components of the said guideline is provided in Table 4 below and will be discussed in detail in the following sub-sections.

Guideline	**Description**
Color	• Choose bright color from warm color chart to attract attention • Use the cool color for calming effect • Colorful colors to make it interesting to the preschool user. • Avoid the usage of dull color like dark brown
Interface	• Follow the "Keep it simple and straight forward principle" (KISS) • Apply consistency throughout the layout or screen
Character Design	• "From Children to Children" concept • A child character ("Arissa") Characteristic of Arissa: o To demo Solah movements and supplications o Having language proficiency suitable for the user age (5 to 6 years old) • A guider ("Abang Mumu") Characteristic of Abang Mumu: o Friendly voice o Clear pronunciation o Use as many as encouragements word

	instead of command words o Acknowledge and praise Arissa's action
Text and Font	• Avoid lengthy text • Color differentiation to differentiate syllable • Fontype: First Grader
Sound	• Include music to entertain the user • Short and precise dialogue or conversation
Graphic	• Use static image to recall information

Table 4: Courseware Guideline

4.2.1 Color

Colors make the courseware presentation interesting. It is important to ensure that the courseware is attractive to grab the preschooler attention. Therefore the usage of color is crucial in order ensure their attention span last longer and to encourage the user to use the courseware repeatedly. Basically, all types of colors are beautiful and attractive and give effect on our psychology. For this project, the prototype will be using colorful colors to make it interesting to the preschool user. The usage of colors has been widely manipulated in order to increase the memory ability. Color has the ability to add message but do not make it too much if it does not add value to your message (Frey, 2009).

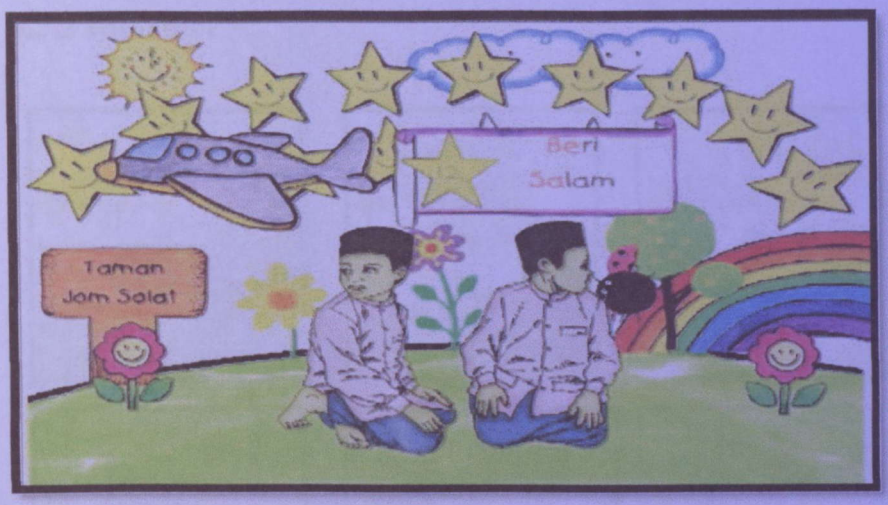


Figure 15: Example of Color Usage

The author found that the color usage create emotional effects to the preschooler. Use bright color to stimulate the children mental alertness. Implementing bright color encourage the children becomes more active. The usage of bright color is to attract their attention. Based on the Figure 15 above, the suggested bright colors are yellow for the stars, neon green for the grass, use bright red and any color from warm colors. Mix the bright color with cool color like blue, green, purple. This color combination of warm color and cool color are able to give calming effect. However, avoid the usage of dull color because it appears as unattractive to the children and do not use contrast font colors for fonts and the background.

4.2.2 Interface

Figure 16: Example of Screen Consistency

For the interface, keep in the mind on the rule of keep it simple and straight forward (KISS). Keep everything on the children's view simple so that it will not appear as a distraction to the children. Apply consistency in term of the screen layout so that it will be easy for navigation purpose. Based on the Figure 16, each of the screen of the prototype applied the consistency principle where all the text position, image position as well as the background are consistence in each of the module.

4.2.3 Character Design

In designing the courseware, the author created the concept of "Children for Children" where the main characters for this courseware are a children and a guider.

Figure 17: Characters

The children character is casted by a 6-year old child named Arissa. Arissa posses characteristics that will encourage the children to learn with her on the Solah steps while watching the courseware. Arissa's role is effective because children are more attracted to their peers rather than adult at the preoperational stage.

There is a guider character in this concept which is carried out by "Abang Mumu". Abang Mumu is the guider or basically act as a teacher that will assist Arissa at performing the Solah movements and supplification. As stated by the Vygotsky's sosiocultural theory that a scafffolding is necessary to assist children. Scaffolding is a process where to give support to the learner at appropriate time and at appropriate level to meet the learner's need. In the courseware, Abang Mumu will guide the next Solah movement and supplications that will be carried out by Arissa. Abang Mumu will make necessary corrections to the Solah movements and supplications if needed.

4.2.4 Text and Font

This project will use fonts to emphasis important points so that the user can grab the information. The font type that will be chosen simulate the handwriting style so that the preschool user feels familiar and they will adapt with the reading. This is in line with the Piaget theory that state the children at the preoperational stage learn by assimilation and adaptation. The font size must be large enough for the children as at this age they are in the process of learning to read. Large font size will help them to understand the wordings easily. Apart from that, it is not suitable to use italic type font as it makes the children read at slower pace. The font used in the prototype is First Grader fontype and is used throughout the courseware. First Grade is choosen because it replicate the children handwriting. Refer to Figure 18.

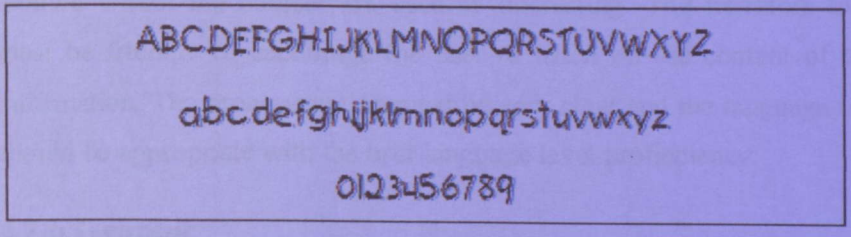


Figure 18: First Grader Font Type

The author used the concept of syllable to ease the children reading. Each syllable is colored so that it will be easiar to be read. Based on Figure 19, the words are differentiated using two colors red and black and are according to syllable concept. All text used must be short and precise. Avoid long or lengthy words so that the time take to read the text is reduced.

رَبِّ اغْفِرْلِي وَارْحَمْنِي وَاجْبُرْنِي وَارْفَعْنِي
وَارْزُقْنِي وَاهْدِنِي وَعَافِنِي وَاعْفُ عَنِّي

Rabbir	Firlii
Warhamnii	Wajburnii
Warfa'nii	Warzuqnii
Wahdinii	Waaafinii
Wa' fu	Annii

Figure 19: Color Differentiation in Text

4.2.5 Sound

The author use combination of female and male voice so that it will be balance throughout the courseware. All the dialogues and narration is keep short and precise so that the user can listen and grab the information to be delivered. Music are included at appropriate scene to make the module within the courseware become interesting. The narrators tone must be friendly to encourage the user to listen on the content of the information. The pronounciation must be very clear and the language use should be appropriate with the user language level profieciency.

4.2.6 Graphic

The author use static image in each of the module to recall back the information that have been delivered.

Figure 20: Usage of Static Image

Based from Figure 20, the static image function as to highlight what activity should be performed for each module. This enable the children to understand what they are going to watch for each of the module. When the user saw the same image few times, it will be stored in their long term memory and the children will remember how to perform the rukun Solah correctly.

4.3 PROTOTYPE

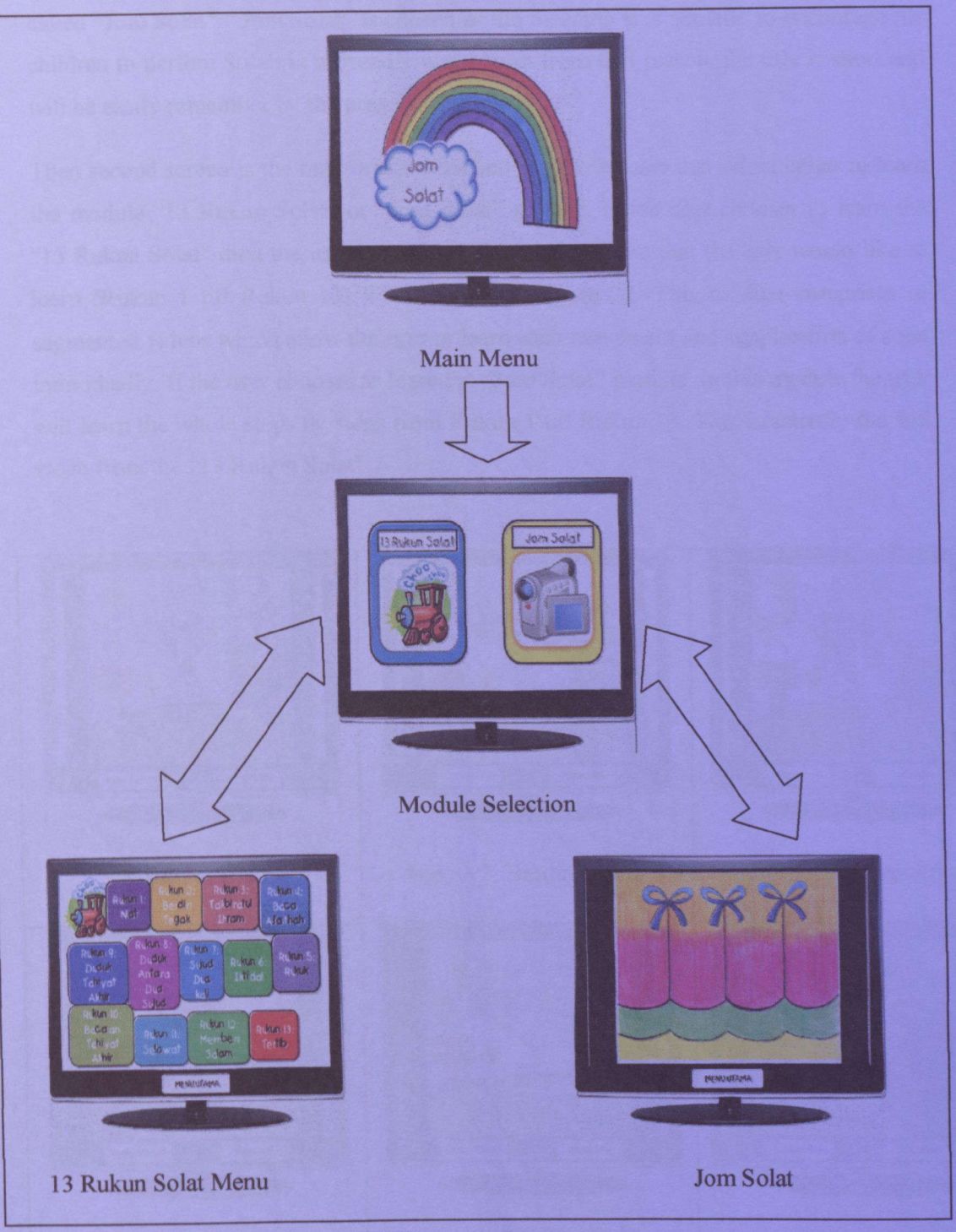
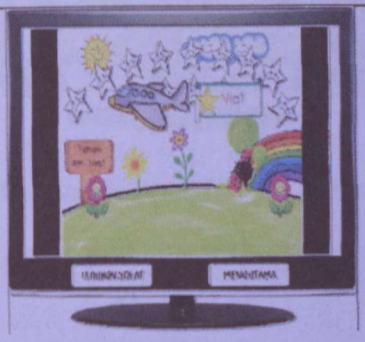


Figure 21: Prototype

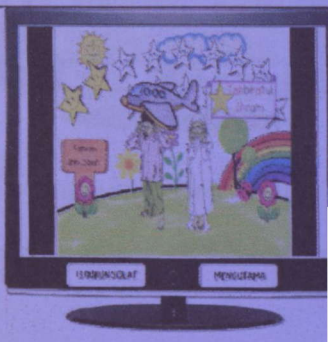
Based from the Figure 45, first of all the user will see the main menu. The courseware is called "Jom Solat". "Jom Solat" is chosen as the meaning it is actually to encourage the children to perfom Solah in a friendly way. Apart from that reason, the title is short and will be easily remember by the preschool children.

Then second screen is the main menu selection where the user can select either to learn the module "13 Rukun Solat" or "Jom Solat" module. If the user chooses to learn the "13 Rukun Solat" then the user can select which rukun solat that the user would like to learn (Rukun 1 till Rukun 13). Please refer to Figure 22. This module comprises of segmented videos which allow the user to learn each movement and supplication of solat individually. If the user chooses to learn the "Jom Solat" module, in this module the user will learn the whole steps by steps from Rukun 1 till Rukun 13. This is actually the full video from the "13 Rukun Solat".

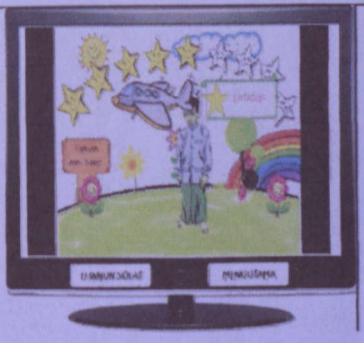


Rukun 1: Niat

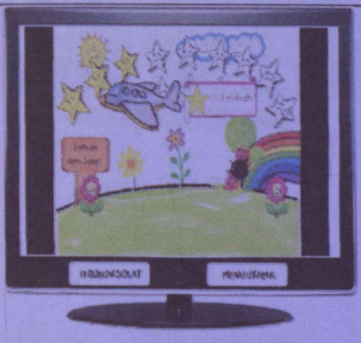
Rukun 2: Berdiri Tegak



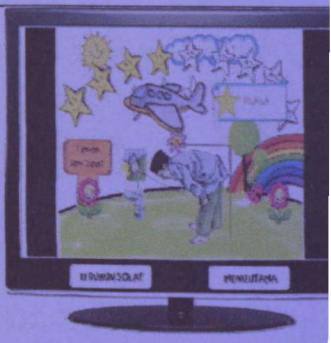
Rukun 3: Takbiratul Ihram



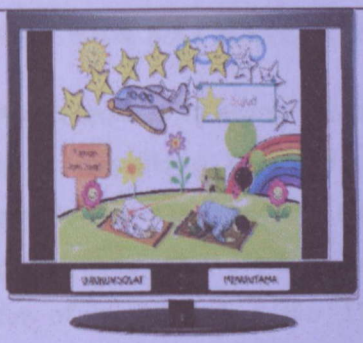
Rukun 4: Iktidal



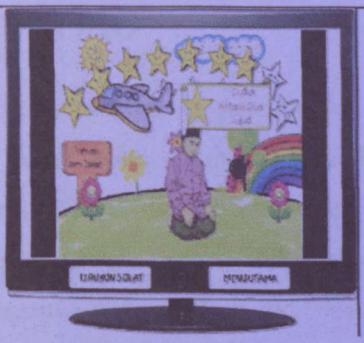
Rukun 5: Al-Fatihah



Rukun 6: Rukuk



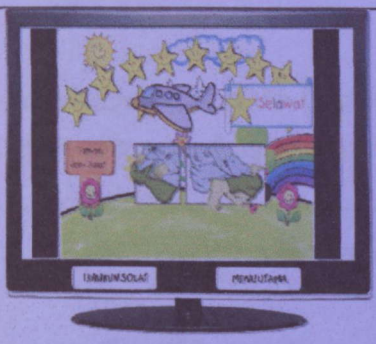
Rukun 7: Sujud



Rukun 8: Duduk Antara Dua Sujud

Rukun 9: Duduk Tahiyat Akhir

Rukun 10: Baca Tahiyat Akhir



Rukun 11: Selawat

Rukun 12: Beri Salam

Rukun 13: Tertib

Figure 22: 13 Rukun Solat

4.4 USER EXPERIENCE TESTING

A user experience testing has been conducted to 15 preschooler children aged between 5 to 6 years old at Tadika Pintar Anak Soleh (Pintas), Tronoh, Perak. All of the 15 preschooler is gathered in a classroom each of the preschooler is individually tested the prototype and they are asses based on certain criteria. Then all of the preschooler watch few of the videos from the "13 Rukun Solat" module and "Jom Solat" module with the aid of projector in the room.

The user is analyzed in three methods:

4.4.1 Interview with the preschooler

During the individual assessment all of the 15 preschool children are assesses in term of their reading proficiency and their computer literacy.

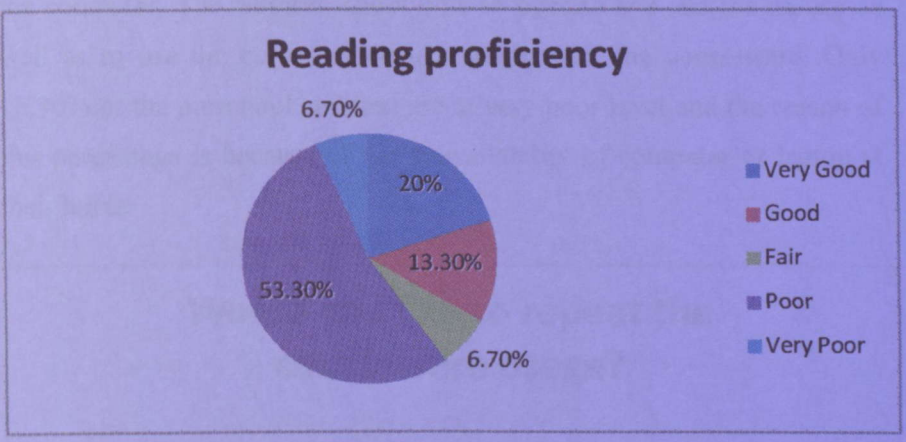


Figure 23: Reading Proficiency

Based from Figure 23, showed that 53.30% of the preschool is actually poor at reading. This concludes that their level of reading is at a low rate and most of them cannot read that well. Thus, the usage of narration in the courseware overcomes this reading proficiency issue. The text usage in the courseware seems to help the children at fair and good level of reading proficiency to read better. This proves that the color differentiation between the syllable help the children to read easily.

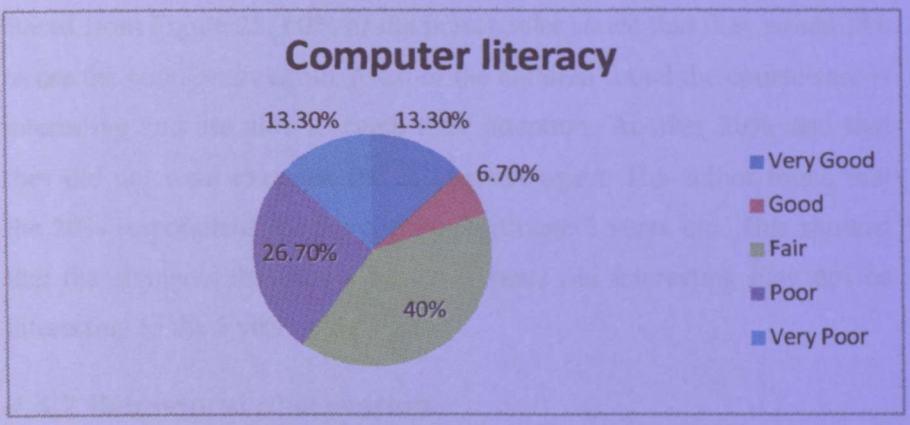


Figure 24: Computer Literacy

Based from the Figure 24, showed that 40% of the preschool children is at fair level in term of computer literacy. This is the highest percentage and showed that most of the children at least have the basic skills in using the computer. The children know how to operate and use the mouse as well as to use the cursor while interacting with the courseware. Only 13.30% of the preschool children are at very poor level and the reason of this percentage is because of the unavailability of computer or laptop at their home.

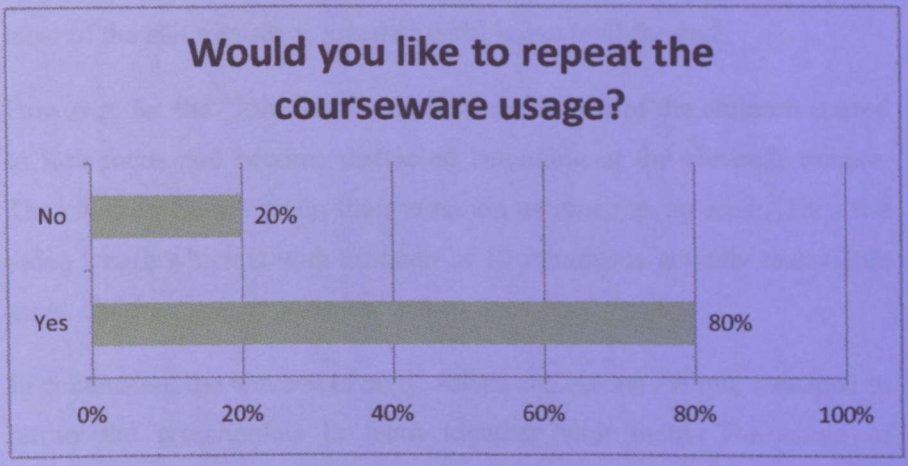


Figure 25: Computer Usage

Based from Figure 25, 80% of the preschooler stated that they would like to use the courseware again. Most of the children found the courseware is interesting and are able to catch their attention. Another 20% said that they did not want to repeat the courseware again. The author found that the 20% respondents are the children with age 5 years old. This showed that the elements that found by the 6 years old interesting may not be interesting to the 5 years old children.

4.4.2 Behavioral observation

After individual assessment, all of the preschoolers are gathered in a classroom to watch few randomly selected video from the module "13 Rukun Solat" and "Jom Solat" module. Then, the author observed the preschool children behavior.

Among the behavior shown by the children is that they tend to follow the movements of solah showed by Arissa. Unconsciously, they are learning when the followed the steps that is currently demonstrated by Arissa.

Apart from that, the children also say it out loud any supplications that being said by Arissa. For example when Arissa is reciting Al-Fatihah, most of the children say it together with Arissa until the end.

However, for the "Jom Solat" courseware, several of the children started to lose focus and become distracted beginning at the eleventh minute. The children cannot retain their attention as much as an adult. Thus the video length which is with duration of 13 minutes is actually reasonable given children's short attention span.

In conclusion, the characters used, Arissa and Abang Mumu, managed to attract the preschoolers to learn together with them. The usage of metaphor of television allows the children to manipulate the children mind that they are currently watching television programme instead of

learning. Thus, apart from learning the children are able to have fun at the same time.

4.4.3 Interview with the teacher

The author interview the responsible kindergarten teacher that also involve during the user experience testing.

1. Is this courseware is suitable for children aged 5 and 6 years old?
   It is suitable. However, improvement can be done to enhance the courseware and the children said that the courseware is interesting.

2. Is the voice and tone for the narration suit the user?
   Yes, but it is better to have high pitch tone.

3. What do you think on the duration for each of video in the courseware reasonable?
   It is more suitable for 6 years old children as they have more patience and did not get bored easily.

4. What is your opinion on the color usage?
   Interesting, I love the way it is being presented.

5. Is the usage of static image helps the user understanding?
   InsyaAllah, it will be helpful as it helps to illustrate the rukun Solah better.

6. What do you think on the narration technique use in the courseware?
   Yes, when they are in their mood to listen but this courseware is interesting approach. I never experienced this type of Solah learning style before.

7. Is the character in the video able to encourage the children to learn Solah?

   The characters are able to grab the children attention.

8. Is the syllable technique and color differentiation in text usage able to help the children to memorize the supplications?

   The children love colorful objects and it does help the children to read better.

9. What is the children reaction towards the courseware?

   Most of the children said they are happy to use the courseware and would like to use and watch it again.

10. Do you have any comments or feedback on this courseware?

    It is suggested to use proper solah attire (Telekung Solat) to show the real way on how to perform solah.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

In conclusion, this project is a courseware based project which is targeted to be used by the preschool children and this courseware will teach them on how to perform Solah. In Islam, parents are required to encourage their children to start performing Solah by the age of seven years old. Therefore, the preschool stage is the suitable age to start teaching the children on how to perform Solah. The project focuses on the suitable courseware design for the preschool children and to find an effective way to teach the preschool children according to their learning style.

In a nutshell, this courseware has the potential to become a teaching tool in assisting the children in learning Solah at preschool level. It is also can be a tool that helps the parent to teach their children on learning Solah at home. Hopefully this courseware will be able to meet the demand on the quality Islamic courseware in the market.

5.2 RECOMMENDATIONS

Currently, this project is aim for computer usage only. In the future, hopefully this Solah courseware can be portable and flexible where it can be played in other device especially in mobile phone. This is due the advancement of mobile technology and wide usage of smart phones shows the potential to market this prototype as a mobile application. Therefore, it is recommended that to make this courseware available as one of mobile applications.

It is also a good idea to add the game element in this courseware as the children will be able to play game and learn at the same time. The game element will be an added value to this courseware if the children can play games regarding Solah. This is where the edutainment concept will be applied.

Another proposed recommendation is to make it in multi language. The suggested languages to be included are English and Mandarin. This allows the preschooler to have choices of language so that the module can be used by preschooler that is using those languages.

In conclusion, for future works it is suggested to make this Solah guideline available in mobile application to make it portable. Meanwhile the game elements will make it become more interesting and enjoyable for the preschooler. Apart from that, it is suggested to make the courseware available in few other languages.

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APPENDICES

APPENDIX 1:

Storyboard

STORYBOARD: Multimedia Courseware Designated for Children on How to Perform Solat

1

Welcoming Montage

① This is the first thing played for the children. This welcoming montage is only for few minutes as the kick start.

Media : Audio (Music) + Video

2

Main Page

Metaphors - Using television because one of the device that they familiar since young age

- Sun (Clock) - To go to the Learning Niah section
- playhouse - To start Learning Solah section.
- Icon play | Icon pause } Use the color from traffic light Red - means stop green - means go

Color : Green | Color : Red

3

Go to Learning Solah

Cueing technique using hand cursor to guide the user to go to the first section. As children and young and cannot make decision, cueing help to assist them so that they ~~can~~ will not get confuse.

To start ~~the~~ learning, they must click on the hand cursor icon.

For Learning Solah, animation (+) real human will be used as the technique. Further script and scene will be developed in detail.

The user can pause and play anytime during the Learning Solah Section

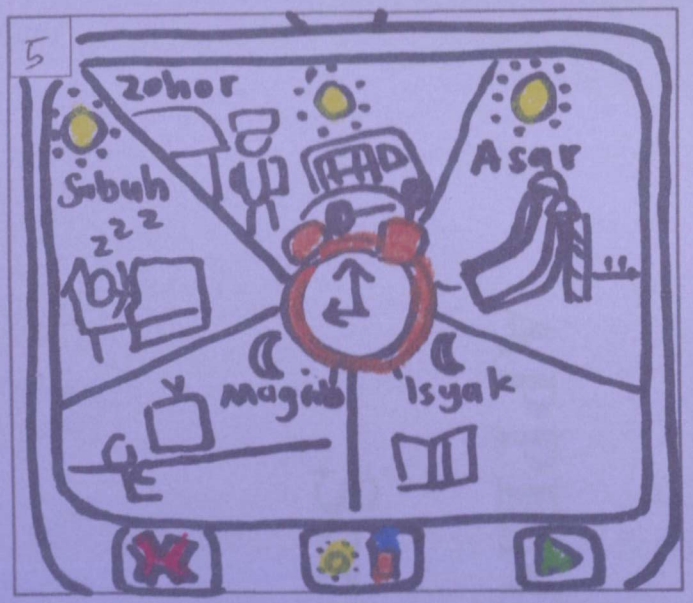
Go to Learning Niah

After that, the user will be guided to the next section which is Learning Niah.

A sun with clock face will represent learning niah ~~to~~ to give understanding to the children that ~~they are the~~ Solah time is different for different type of Solah.

Then it will bring the user to screen 5. Refer to screen 5.

☑ shows that they have successfully learn the section.



Selection of Niah

The user can select which Solah they would like to learn first, second and next. This provide user control.

Once they click on the Solah, it will go to the specific Solah screen.
For example: If the user choose the Subuh. Then it will go to Subuh screen and the user will be taught niah of Subuh.

Media: Audio - When user click, voice will inform what type of Solah that they going to learn.

End

After the user has completed all the section ~~A~~, they will find out that they have been rewarded with 'STARS'. This is as the acknowledgement and to encourage them to repeatedly using the courseware.

☑ ~~will~~ This symbol is as a checklist to recognise that they have successfully learn all the section. This is for psychology purpose of the children so that they know their progress.

APPENDIX 2:

Script

Title: Multimedia Courseware Designated for Children on How to Perform Solah

[Jom Solat]

Scene No: 1 Background : • House • Sunshine clock (12.30 am) • Smiley Cloud, • Mira's house Signature Props: Costume Meow Media: Songs – Pukul Berapa datuk Harimau Note: -	Narrator: Jam sedang menunjukkan pukul 12.00 tengah hari. Meow sedang menunggu Amira. Meraka berjanji untuk berjumpa sebelum mereka bergerak untuk ke Taman Jom Solat. Meow: Pukul berapa? Pukul berapa sekarang? Pukul 1! Tapi dimana adikku sayang? (Menyanyi sambil ke kiri dan ke kanan) Amira: Assalamualaikumm!! Hye meow! Sambil melambai lambai. Meow: Meoww..Meoww.. Amiraa! Kenapa lambat? Amira : (Memeluk Meow) Maafkan saya, Mira menolong emak tadi. Meow: Bagus Amira! Menolong ibu bapa perkara baik. Hai adik adik! Saya Meow! Ini kawan saya Mira! (Melambai ke arah kamera). Hari ini mari kita semua pergi ke Taman Jom Solat! Amira dan Meow: Yeay!!! Sambil menari riang.
Scene No: 2 Background: • Map from Mira's house to Taman Jom Solat • Hot air balloon. Props: - Media: Jom Solat Song Note: Both of them will fly using the hot air balloon from Mira's House to a place called Taman Jom Solat.	Display Jom Solat Song on the screen. Jom Solat Song: Jom Adik kita solat. Kita Solat. Kita Solat. Jom Solat 5 waktu. Nanti Allah Sayang. Jom Adik kita Solat. Kita Solat. Kita Solat. Jangan lupakan Solat. Nanti Allah Sayang.

Scene No: 3 Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • little Flowers Props: Costume Meow Media: - Note: The 13 stars represent the 13 rukun of Solah.	Narrator: Meow dan Mira telah sampai di Taman Jom Solat. Meraka sangat gembira. Meow dan Mira: Yeayy!! (Sambil bertepuk tangan) Meow: Alhamdullilah, terima kasih Allah. Kita sudah sampai di Taman Jom Solat. Mira: Meow, cantiknya Taman Jom Solat ini. SubhanaAllah! Cantikkan Taman ini kawan kawan? Narrator: Selepas ini akan ada misteri yang akan terjadi. Haaa. Jom kita tengok. (Bunyi azan dan perkataan Allahuakbar di screen) Stars: Tolonggg..Tolonggg Kami!! (Suara dan Perkataan dipapar pada skrin). Narrator: Adik Adik, jom lihat dan ikut apa yang akan Meow dan Mira lakukan untuk membantu Encik Bintang Bintang. Meow: Mira, kita perlu menolong Encik Bintang Bintang. Mari kita selesaikan misteri Jom Solat. Mira: Apa perlu kita buat?

	Meow: Jangan risau, jom Meow tunjukkan.
Scene No: 4 <u>Rukun 1: Niat</u> Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 1 Star light up	Sound: Bunyi Kapal Terbang Meow: Mula mula Mira perlu membaca Niat Solat Zohor. Jom ikut Kak Meow. Meow: Sahaja aku Mira: Sahaja aku Meow: Menunaikan Solat fardhu Zohor Mira: Menunaikan Solat fardhu Zohor Meow: Empat Rakaat Tunai Mira: Empat Rakaat Tunai Meow: Kerana Allah Taalla Mira: Kerana Allah Taalla Star: Tink! (Berbunyi dan menyala).

Scene No: 5 <u>Rukun 2: Berdiri Betul/Tegak</u> Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 2 Stars light up	Sound: Bunyi Kapal Terbang Meow: (Memandang kearah kapal terbang) Selepas niat kita perlu berdiri tegak dan berdiri betul betul. Mira: Macam ini? (Kaki tidak tegak) Meow: Hehe, bukan Mira. Ikut Meow. Mira: (Berdiri tegak). Star: Tink! (Berbunyi dan menyala). Meow: Yeay Berjaya!
Scene No: 6 Rukun 3: Takbiratul Ihram Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 3 Stars light up	Sound: Bunyi Kapal Terbang Meow: Kemudian Mira perlu angkat tangan untuk takbiratul Ihram. Cuba Mira angkat tangan dan cakap Allahuakbar. (Meow memberi tunjuk ajar). Mira: (Mira mengangkat tangan dan mengucapkan Allahuakbar). Meow: Pandainya Mira. ☺ Star: Tink! (Berbunyi dan menyala).

Scene No: 7 Rukun 4: Reciting Alfatihah Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars, • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 4 Stars light up	Sound: Bunyi Kapal Terbang Meow: Sekarang kita perlu membaca Al fatihah. Mira: Kakak Meow, jom kita baca bersama sama. (Membaca Al fatihah) Star: Tink! (Berbunyi dan menyala).
Scene No: 8 Rukun 5: Rukuk Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 5 Stars light up	Sound: Bunyi Kapal Terbang Meow: Selepas baca Alfatihah, kita perlu rukuk. Cuba Mira rukuk. Mira: (Rukuk). Tapi kenapa bintang tidak bersinar? Meow: (Membetulkan rukuk Mira) Mira perlu rukuk betul betul. Lurus macam ni. Star: Tink! (Berbunyi dan menyala).

Scene No: 8 Rukun 6: Iktidal Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 6 Stars light up	Sound: Bunyi Kapal Terbang Meow: Sekarang Amira perlu bangun. Ini dipanggil Iktidal. Mira: (Bangun) Meow: Pandainya Mira. Star: Tink! (Berbunyi dan menyala).
Scene No: 9 Rukun 7: Sujud dua kali Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 7 Stars light up	Sound: Bunyi Kapal Terbang Meow: Selepas itu, kita perlu sujud. Mira: (Amira melakukan perbuatan sujud) Meow: Betul tu Mira. Apabila sujud dahi perlu menyentuh tempat sujud. Star: Tink! (Berbunyi dan menyala).

Scene No: 10 Rukun 8: Duduk antara dua sujud Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 8 Stars light up	Sound: Bunyi Kapal Terbang Meow: Selepas sujud, kita perlu duduk di antara dua sujud. Mira: (Amira melakukan perbuatan duduk di antara sujud serta bacaan antara dua sujud) Meow: Pandai! Star: Tink! (Berbunyi dan menyala).
Scene No: 10 Rukun 9: Duduk tasyahud akhir Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 9 Stars light up	Sound: Bunyi Kapal Terbang Meow: Sekarang kita akan menunjukkan cara duduk tahiyat akhir. Cuba Amira duduk. Mira: (Amira duduk bersila). Meow: Eh bukan begitu Amira perlu duduk begini (Membetulkan cara Amira duduk) Mira: Macam ni? Meow: Haa, betul.. Pandai Amira. Star: Tink! (Berbunyi dan menyala).

Scene No: 11 Rukun 10: Bacaan tasyahud akhir Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 10 Stars light up	Sound: Bunyi Kapal Terbang Meow: Mari kita sama sama mebaca tahiyat akhir. (Bacaan tahiyat akhir) Star: Tink! (Berbunyi dan menyala).
Scene No: 12 Rukun 11: Selawat dan Salam Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 11 Stars light up	Sound: Bunyi Kapal Terbang Meow: Setelah itu kita ucapan selawat dan salam ke atas Nabi Muhammad S.A.W. Mira: Macam mana? Meow: (Membaca Selawat dan Salam). Mira: Oh begitu. (Membaca Selawat dan Salam). Star: Tink! (Berbunyi dan menyala).

Scene No: 13 Rukun 12: Memberi Salam Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Costume Meow Media: Note: All the 13 stars in a dim mood. The stars ask for help. Each star will shine after Mira and Meow showed how to do each of rukun Solah. • 12 Stars light up • 13 Stars light up	Sound: Bunyi Kapal Terbang Meow: Sekarang, kita perlu memberi salam. Mula mula ke kanan kemudian ke kiri sambil mengucapakan salam. Mira: (Memberi salam ke kanan kemudian ke kiri) Star: Tink! (Berbunyi dan menyala). Meow: Alhamdullilah! Mira telah pandai solat. Mira: Kenapa bintang ke 13 tidak menyala? Star: Tink! (Berbunyi dan menyala). Meow: Sekarang dah menyala sebab mira Berjaya menunaikan solat dengan tertib. Pandainya Mira. ☺ (Peluk Mira) Meow dan Mira: Jom Solat dan jumpa lagi! (Sambil melambai lambai)
Scene No: 14 Background : • Sunshine Clock (1.30 pm) • Smiley Cloud • Rainbow with 13 stars • Jom Solat Signature • Little Flowers Props: Custome Meow Media: Note: -	Semua bintang bersinar bermula dari 1 hingga 13 kemudian terpapar "Terima Kasih". (Lagu Jom Solat.) Narrator: Jom Solat, Nanti Allah pon sayang.

APPENDIX 3:

List Name

List Name of student Tadika Pintar Anak Soleh (PINTAS)

Teacher's name: Siti Badariah Ibrahim

List name student of 5 years old:

1. Ahmad Muadzam
2. Afiq Rusyaidi
3. Umar Darius
4. Damia Nisrina
5. Dalily Alani
6. Muhammad Al-Azfar
7. Nabil Raihan

List name student of 6 years old:

1. Haziq Najmi
2. Irdina Kamilah
3. Khadijah
4. Mirza Damia
5. Harith Luqman
6. Muhammad Haziq
7. Muhd Hariz Irfan
8. Nur Ain Syahmina

APPENDIX 4:

Interview with the Teacher

Temu Bual bersama guru.

Nama Guru : SM BADARIAH IBRAHIM

Jantina : PEREMPUAN

1. Adakah kaedah pembelajaran ini sesuai untuk kanak-kanak berusia 5 dan 6 tahun?
Sesuai, Cuma perlu diperbaiki dan anak2 saya mengatakan ~~die~~ "best"...

2. Adakah intonasi suara latar yang digunakan sesuai untuk mereka?
Sesuai, cuma jika lebih nyaring lagi best...

3. Jangka Masa video yang dipaparkan bersesuian dengan tahap kosentrasi kanak-kanak ?
Agak sesuai untuk enam tahun kerana mereka lebih mempunyai kesabaran.

4. Adakah penggunaan warna yang digunakan menarik?
Menarik, saya suka gaya ditontonkan.

5. Adakah penggunaan gambar yang digunakan membantu meningkatkan kefahaman kanak-kanak?
InsyaAllah dpt membantu.

6. Konsep bercerita membuatkan pembelajaran solat menjadi menarik?
ya, kefika mood mereka ingin mendengar cefa
tapi untuk video solat ini agak menarik
kerana tidak pernah ada amali solat sebefini

7. Watak di dalam video berjaya menarik minat kanak-kanak untuk belajar Solat?
Watoknya boleh menarik minat kanak[3]...

8. Tulisan menggunakan suku kata membantu kanak-kanak menghafal bacaan dalam Solat?
seperti yang kita tahu, kanak[3] suka warna
warni jadi ianya dpt membantu.

9. Apakah reaksi kanak-kanak semasa melihat video tersebut?
gembira ?
nak tengok lagi?
seronok

10. Adakah anda mempunyai sebarang komen atau pandangan tambahan untuk memperbaiki mutu video ini?
Cuba gunakan sejadah dan telekong untuk
pelajar perempuan HU supaya lebih nampak
apa tujuan sebenar.

APPENDIX 5:

Images of User Experience Testing

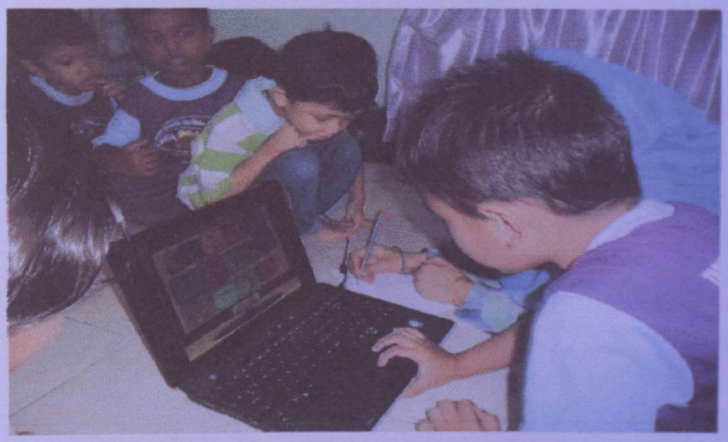


Image 1: During the user experience testing

Image 2: The students and teachers of Tadika PINTAS

Image 3: The students of Tadika PINTAS

APPENDIX 6:

Jom Solat Survey

Jom Solat

BORANG KAJI SELIDIK

Borang Kaji Selidik ini disediakan oleh Sh Fatin Farhana binti Tuan Embong, pelajar tahun akhir, jurusan nformation and Communication Technology (ICT), di Universiti Teknologi PETRONAS, Tronoh Perak berkenaan Projek Tahun Akhir.

Kajian ini dilakukan keatas kanak-kanak Tadika Islam yang berusia 5 hingga 6 tahun. Tujuan kajian ini dijalankan adalah untuk mengenal pasti potensi mendedahkan kanak kanak kepada pembelajaran Solat melalui penggunaan komputer dan produk pembelajaran multimedia menggunakan cakera padat (CD). Walaubagaimanapun, kajian ini memerlukan penyertaan ibubapa atau guru-guru tadika kerana mereka ini adalah golongan yang paling dekat dengan kanak-kanak serta secara tidak langsung memahami kehendak kanak-kanak. Borang kaji selidik ini bertujuan untuk mengumpul maklumat dalam penghasilan produk multimedia khas untuk pengajaran dan pembelajaran Solat khusus untuk kanak-kanak yang berusia 5 hingga 6 tahun. Justeru, jawapan yang tepat digalakkan supaya produk yang dihasilkan akan lebih berkualiti.

Objektif:

- Untuk mendapatkan komen dan pandangan mengenai sistem pembelajaran menggunakan komputer dan multimedia serta tahap penggunaan komputer di rumah.
- Untuk mendapatkan pengesahan pandangan dari Ibubapa dan Guru-guru mengenai kaedah pembelajaran Solat melalui Produk Multimedia Pembelajaran di dalam Cakera Padat (CD)

NAMA PESERTA: _____

(Ibubapa/Guru-guru)

Kepada Ibubapa dan Guru-guru,sila tandakan jawapan di dalam borang kaji selidik ini bagi pihak anak-anak anda.

Soalan 1 – Soalan 14: Sila Tandakan (✓) di dalam kotak yang berkenaan. Pilih satu (1) jawapan yang berkenaan sahaja.

1. Anda adalah seorang...
   ( ) Ibu Bapa ( ) Guru Tadika ( ) Kedua-duanya

2. Jantina:
   ( ) Lelaki ( ) Perempuan

3. Bilangan anak yang bersekolah di Tadika (Berumur 5-6 tahun):
   Nyatakan bilangan: _____

No	Soalan	Ya	Tidak
4.	Adakah anda bekerja?		
5.	Adakah pasangan anda bekerja?		
6.	Adakah anda mempunyai komputer peribadi/komputer riba di rumah?		
7.	Adakah anak anda tahu menggunakan komputer peribadi/komputer riba?		
8.	Adakah anda menyokong penggunaan komputer sebagai alat untuk tujuan pendidikan dan pembelajaran?		
9.	Pernahkan anda menggunakan mana-mana produk pembelajaran multimedia untuk anak-anak anda?		
10.	Pada pandangan anda adakah kanak-kanak berusia 5 hingga 6 tahun berminat terhadap Produk Multimedia Pembelajaran?		
11.	Apakah penggunaan Produk Multimedia Pembelajaran memberi kesan yang bagus kepada kanak-kanak?		
12.	Adakah anda dan pasangan anda mempunyai masa mendidik anak anda mengenai Solat di rumah?		
13.	Adakah anda menyokong pembelajaran solat melalui penggunaan Produk Multimedia dalam cakera padat?		

14. Berdasarkan pandangan anda apakah ciri-ciri penting yang anda rasa patut terdapat didalam Produk Multimedia Pembelajaran.

Ciri-Ciri	Sangat Setuju	Setuju	Sederhana	Tidak Setuju	Sangat tidak Setuju
Interaktif					
Animasi					
Mengandungi lagu					
Video					
Gambar Statik					
Banyak Tulisan					
Suara Latar					

15. Berapa kali dalam seminggu anak anda menggunakan komputer peribadi/komputer riba?
    ( ) Setiap hari
    ( ) 1 – 2 kali seminggu
    ( ) 3 – 4 kali seminggu
    ( ) 5 – 7 kali seminggu

16. Pada usia berapakah anda mula mendidik anak mengenai solat?
    ( ) Bawah 5 tahun
    ( ) 5 hingga 6 tahun
    ( ) 7 hingga 8 tahun
    ( ) 9 hingga 10 tahun
    ( )Lain-Lain(Nyatakan):_____

17. Berapa kerap anda dan pasangan anda mendidik anak anda mengenai Solat di rumah?
    ( ) Lebih kurang 1 jam seminggu
    ( ) Setiap hujung minggu
    ( ) Sekali sebulan
    ( ) Tiada
    ( ) Lain-lain: _____

Soalan 15 – Soalan 16 : Sila pilih 1 atau lebih daripada 1 jawapan yang berkenaan.

18. Komputer peribadi/komputer riba digunakan oleh anak anda untuk...
    ( ) Bermain permainan komputer
    ( ) Melayari internet
    ( ) Produk Multimedia Pembelajaran di dalam CD
    ( ) Portal Pendidikan (Contoh: Skor A)
    ( ) Menyiapkan kerja sekolah

19. Bagaimanakah cara anda mendidik anak anda mengenai solat?
    ( ) Kelas Fardhu Ain
    ( ) Melalui bahan bacaan
    ( ) Menggunakan Produk Multimedia Pembelajaran dalam Cakera Padat
    ( ) Mengajar sendiri di rumah

20. Adakah anda mempunyai sebarang cadangan atau komen mengenai kaedah pembelajaran Solat melalui penggunaan multimedia ?

_____
_____
_____
_____
_____
_____

Terima Kasih atas Kerjasama Anda!