



Faculty Information and Communication Technology

**THE DEVELOPMENT OF RESPONSIVE KID-FRIENDLY WEB
FRAMEWORK (KIDSSTYLE)**

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**THE DEVELOPMENT OF RESPONSIVE KID-FRIENDLY WEB FRAMEWORK
(KIDSSTYLE)**

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**A dissertation submitted
in fulfillment of the requirements for the degree of Master of Computer Science
(Multimedia Computing)**

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DECLARATION

I declare that this dissertation entitled “The Development of Responsive Kid-friendly Web Framework” is the result of my own research except as cited in the references. The dissertation has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature :



Name :


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Date :

20/07/2016

APPROVAL

I hereby declare that I have read this dissertation and in my opinion this dissertation is sufficient in term of scope and quality for the award of Master of Computer Science (Multimedia Computing).

Signature : 

Supervisor Name : WAN SAZLI NAIKRUDDIN

Date : 20/7/2016

DEDICATION

This dissertation is dedicated to my beloved parents, who taught me to keep fighting until the end and always think positive all the time. They also taught me that no matter how big your problems are, it can't be solved without the effort.

ABSTRACT

No matter which era we are living in, a child's education must be prioritized. The speed of mobile devices produced in this current day is extremely fast paced, therefore forcing mobile manufacturers to produce multiple devices with different shapes and sizes to stand out among its competitors. That is why it is harder to develop applications and websites that can accommodate all types of devices in the market that have different resolutions and sizes. This is where responsive design comes in for developers. This project aims to provide a responsive and children friendly web framework to lighten the burden of educational web developers. Children friendly elements are proposed and added into the framework for testing and results of the finding will be analyzed in the result and discussion chapter. The final conclusion will then be made in the last chapter.

ABSTRAK

Pendidikan awal kanak-kanak sangat dititik beratkan dalam kehidupan tanpa mengira arus peredaran masa. Hampir setiap hari, teknologi mudah alih dihasilkan dengan pantas, menjurus kepada pengeluaran peralatan teknologi mudah alih yang dihasilkan dalam pelbagai bentuk dan saiz untuk bersaing dengan berbagai jenis jenama yang ada. Oleh sebab itu, kesukaran untuk membangunkan aplikasi dan laman web yang dapat menampung kesemua jenis teknologi mudah alih yang mempunyai resolusi dan saiz yang berbeza. Dengan itu, reka bentuk yang responsif perlu digunakan dalam pembangunan laman web kini. Projek ini bertujuan untuk menyediakan rangka kerja web yang responsif dan sedang difahami kanak-kanak di samping meringankan beban pembangun laman web pendidikan. Elemen yang mudah difahami oleh kanak-kanak telah dicadangkan dan ditambah ke dalam rangka kerja bagi menguji dan keputusan tersebut akan dianalisis dalam bab penghasilan dan perbincangan. Kesimpulannya akan dibincang dalam bab yang terakhir.

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LIST OF ABBREVIATIONS

CSS	Cascading style sheet
MMCD	Multimedia mobile content development
HCI	Human computer interaction
GUI	Graphic user interface
ADDIE	Analyze, Design, Develop, Implement, Evaluate
HTML	HyperText markup language
IT	Information technology
UI	User interface
UTeM	Universiti Teknikal Malaysia Melaka
FTMK	Fakulti Teknologi Maklumat dan Komunikasi

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CHAPTER 1

INTRODUCTION

In this project entitled “The Development of Responsive Kid-Friendly Web Framework”, research on how to develop kid-friendly and responsive website design is being conducted. Besides, the responsiveness of the website on all types of personal computer and smart devices with different resolution is being considered.

Kids and adults are different in many ways; appropriate HCI aspects will make the website more user-friendly to kids. A few elements to make playing experience more engaging for kids on smart devices will be explained. Kid’s friendly website and elements will also be introduced in this project.

Through this project, the word “kids” will refer to the target audience which is children from ages five to six years old.

At the end of this project, information and details gathered will be analyzed. Recommendation on the best responsive mobile website which is kid-friendly will be illustrated. A prototype built from the analyzed data will be developed to further support the finding in this project.

1.1 Research Background

Compared to watching television, playing games for kids will start later. In an article written by Dr. Brent Conrad; a clinical psychologist for TechAddiction it was recorded that nearly half of all two to four years old kids have played video games before. Nowadays, there are quite a number of engaging websites and games to help children strengthen and consolidate their literacy, science and other knowledge during their leisure time. Over twenty five billion two hundred and seventy million (25,270,000,000) websites on the net, ninety nine million six hundred thousand (99,600,000) are interactive web for kids. Among all the websites, there are only a few websites that are responsive and kid-friendly to mobile devices. In 2003, after Bruckman and Bandlow wrote a chapter on “HCI for Kids” in the handbook of Human Computer Interaction, this chapter became popular and the number of HCI papers which included “children” in their content shows an increase.

In order to be successful in this modern world, kids must be computer and internet literate. Since research has shown that children learn best at preschool age and millions of children nowadays can easily reach for cellphone, tablets and computers, the research on how to make website safe and friendly to be used by kids are our major consideration. There are a few current researches about “Responsive Web Design” and “Children’s Interaction with Tablet Application: Gesture and Interface Design” that I make reference from.

The proposed methodology of my project will be Multimedia Mobile Content Development Methodology (MMCD) Framework and Methodology whereby I come up with the creation of idea first, followed by the next few phases in the cycle: analyze, design,

develop and test. The research elements in my project will be determining the suitable website interface design that is responsive and kid-friendly in smart mobile devices.

1.2 Problem Statement

For most children-oriented web application, the developers usually do not implement either child safe or responsive children friendly design. It can be seen when a webpage is resized, all the buttons just shrink to fit into the small screen without taking into consideration how small the fonts and image may become. Some websites even require users to scroll to the left and right to see the buttons that are off screen. First impression is very important. If the website interface is unattractive, the content and resources will be disregarded.

Meanwhile, another problem that we are focusing would be the designs of most mobile phones. They are not designed in a kid-friendly way. Take iPhone as an example, the holding space at the side of the phone is insufficient for a kid to firmly grip the device while playing. Another obvious problem is kids may drop the device. Besides that kids may also unintentionally pressed the buttons that are near to the sides of the device and interrupt their game. Getting stuck or interrupted while playing may be frustrating and it may cause the child to quit playing and subsequently stop them from gaining knowledge.

In the next chapter, the methods in overcoming these challenges will be proposed and explained in detail.

1.3 Objectives

- a) To investigate and conduct research on existing responsive kid-friendly website designs.
 - There are a lot of child-safe website for kids nowadays. In this project, the comparison of existing websites will be used to create a comparison table in terms of responsiveness and kid-friendly elements.
- b) To develop a responsive and kid-friendly framework.
 - An evaluation and analyzation based on the comparison table will be carried out to find the best design. A research on ways to develop responsive and kid-friendly framework websites will also be conducted.
- c) To measure the effectiveness of proposed framework, based on prototype developed.
 - After detailed research and analysis, a website prototype will be developed. The website will be handed over to some children to get their feedback and to validate the research finding at the end.

1.4 Research Questions

- How effective is implementing responsive kid-friendly framework features in a website for mobile devices usage?

1.5 Project Scope

In this session, the target audience and the limitation of the project will be explained.

1.5.1 Target Audience

The target audience for this is toddler from kindergartens aged between five (5) to six (6) years old. At this age, they still have no full control and power to place their hand in a specific position. They tend to be attracted by obvious, specific shapes and colours that may lead them to pressing unnecessary buttons or links.

1.5.2 Content Type

The website that will be used for field study would be abcya.com and funbrain.com. One of these is the Internet's #1 online educational game site for kids of all ages and the other one is listed in the top 15 most popular websites for kids by eBizMBA ranking.

The framework in this project does not include the game content; it only comprises the structure of the framework, CSS, images and animation elements that kids prefer. This KidsStyle Framework is designed based on Bootstrap and has to be used parallel with either Bootstrap or other web templates.

1.5.3 Content Size

We will be focusing on iPhone and iPad content size. During our field study iPad and iPhone were used for testing as we have already gathered information that these two devices are more popular and better preferred than others in the market.

1.6 Research Methodology

The research methodology used is similar like ADDIE model. Further explanation will be done in chapter three.

1.7 Project Methodology

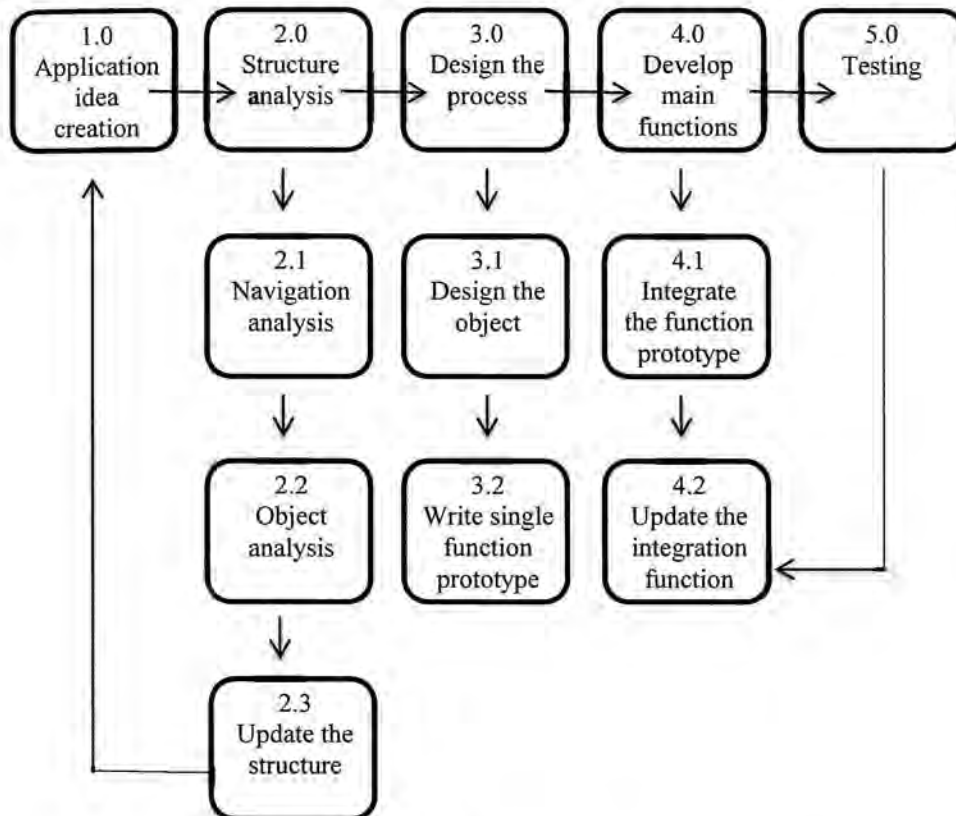


Figure 1: MMCD Project Methodology

The development process of this project uses MMCD (Multimedia Mobile Content Development) that consist of five (5) main phases. Using this MMCD for a website development makes the process easier when converting a webpage into a mobile application for future integration after the final product is done.

1.8 Project Significant

Online education and entertainment are among the important elements that our children need nowadays. Seeing the outside world becoming more and more dangerous, letting the younger kids stay home and learn or have fun is safer than exposing them and making them so vulnerable outside.

There are already a lot of kids-oriented website offering different varieties of programs and games. My most important task is to design a more kid-friendly website framework which will benefit developers utilizing my design and framework.

This project will contribute to the body of knowledge for proper layouts in children educational websites.

1.9 Summary

It is believed that a kid-friendly user interface design is necessary for all kids-oriented website. The elements needed to be taken into consideration while making this project effective is the hand size of children aged five (5) to six (6) years old and the HCI elements in the webpage. This design caters for website browser on mobile devices.

CHAPTER 2

LITERATURE REVIEW

In this section, questions that would be answered normally starts with “what is”. Papers, articles, journals, report, books or other reliable internet sources related to this project will be reviewed. All relevant information will be extracted and written down in this chapter to further support the elements in this project. Citing and giving credits to the sources of information are also very important in this section to ensure the credibility of the content in this research. Through this literature review process, more information, knowledge and experience will be gained on the chosen topic.

The more in depth the literature review process is, the better the understanding one will get. Only with the correct understanding can someone come out with an optimized project.