

BORANG PENGESAHAN STATUS TESIS

JUDUL: DEVELOPMENT OF AN INTERACTIVE BOOK: "BUKU TEKNIK MEWARNA SAYA"

SESI PENGAJIAN: 2015/2016

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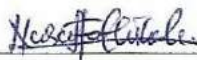
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**DEVELOPMENT OF AN INTERACTIVE BOOK: “BUKU TEKNIK MEWARNA
SAYA”**



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**DEVELOPMENT OF AN INTERACTIVE BOOK: “BUKU TEKNIK MEWARNA
SAYA”**



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

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2016

DECLARATION

I hereby declare that this project report entitled
**DEVELOPMENT OF AN INTERACTIVE BOOK: “BUKU TEKNIK MEWARNA
SAYA”**

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

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Date : 11 AUGUST 2016

DEDICATION

I dedicated this project to my treasured and beloved parents for their endless pray the best for me and also always give support. They also have been source of my strength to continue and doing my best for this project.

I also dedicated this project to my respected supervisor that has guided me a lot through this development of project. My supervisor also give a lot of supports and encouraged me all the way to finish this project successfully,

Dr. Mohd Hafiz Bin Zakaria (UTeM)

To my evaluator who gives a good feedback and advices for the improvement on this project to produce a good project,

Dr. Ahmad Naim Che Pee @ Che Hanapi (UTeM)

Last but not least, a lot of thanks to my beloved friends who always help me when I need it from beginning until the completion of this project.

ACKNOWLEDGEMENT

Bismillahirrahmanirrahim.

Firstly, my deepest gratitude goes to Allah S.W.T for giving me time, strength and patience to complete this project. Throughout this entire process development of this project, He give strength to me when I need it to overcome difficulties and problem. He also the best planner for me to develop this project according to what have been planned.

I would like to thank to people who give me support, strength and guide me through this development of this project. Without them, I will not successful in this project. I appreciate my supervisor, Dr. Mohd Hafiz Bin Zakaria who had guided me from the beginning till the end to complete this project successfully. Thank you for all the kindness and support.

I would like to express my thanks for my beloved parent for the endless pray and support to me. They also give strength to me to complete this project without feeling tired.

I would like to deliver my thanks to my friends that always taught me and give opinion on me. Thanks to their willingness to sacrifice some time for me to complete this project successfully.

I appreciate this faculty for giving me a project where it can help me to express my skill and sharpen my talent that will be a great help for me in future. Knowledge and other skill that I had learned from this development of project will benefit me a lot.

Thank you.

ABSTRACT

Coloring is the process or skill of applying a substance to something so as to change its original color. Coloring activities have many advantages and benefits for children. Every children should take interest in coloring activities as it have many benefits that they will gain from it. In Malaysia, children who are interested in coloring need to spend some money to attend coloring workshops to learn technique of coloring. There is no syllabus in primary school that related to technique of coloring using colored pencils. Therefore, within this interactive book, “Buku Teknik Mewarna Saya”, users will get knowledge and information that equipped with interactivity. Multimedia elements such as video, audio, animation, graphic and text are included in this interactive book and express in interactive ways. The users will be able to interact with this interactive book and gain many knowledge and can apply in their coloring. Technique of coloring is the main module for this interactive book where the children can get many great information about technique of coloring and other topic related coloring. Adobe InDesign CS6 is the main software that are used to develop this interactive book. Throughout the development of project, users are more enjoy this interactive book as it have interactive activities such as quiz and game that can test the user knowledge about the coloring. However, this interactive book have some weaknesses that need improvement to deliver a best product to user.

ABSTRAK

Mewarna adalah satu proses atau kemahiran menggunakan bahan atau sesuatu untuk menukar warna asal. Aktiviti mewarna mempunyai banyak kelebihan dan faedah bagi kanak-kanak. Setiap kanak-kanak perlu mengambil kepentingan dalam aktiviti mewarna kerana ia mempunyai banyak manfaat yang boleh diperolehi. Di Malaysia, kanak-kanak yang berminat dalam aktiviti mewarna perlu menghabiskan wang bagi menghadiri bengkel mewarna. Tiada sukatan pelajaran di sekolah rendah yang mengajar tentang teknik mewarna menggunakan pensil warna. Oleh itu, melalui buku interaktif “Buku Teknik Mewarna Saya”, pengguna akan menimba pengetahuan dan maklumat yang dilengkapi dengan interaktiviti. Buku interaktif ini dilengkapi elemen multimedia seperti video, audio, animasi, grafik dan teks. Para pengguna juga akan dapat berinteraksi dengan buku interaktif ini dan boleh menimba ilmu dan menggunakannya bagi aktiviti mewarna. Teknik mewarna adalah modul utama yang digunakan untuk buku interaktif ini di mana kanak-kanak boleh mendapatkan banyak maklumat yang menarik mengenai teknik mewarna dan topik berkaitan mewarna. Adobe InDesign CS6 adalah perisian utama yang digunakan untuk membangunkan buku interaktif ini. Melalui projek ini, pengguna suka menggunakan buku interaktif ini kerana ia mempunyai kuiz dan permainan yang boleh menguji pengetahuan pengguna mengenai warna dan teknik mewarna. Walau bagaimanapun, buku interaktif ini mempunyai beberapa kelemahan yang perlu diperbaiki bagi menghasilkan produk yang terbaik untuk pengguna.

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CHAPTER 1

INTRODUCTION



1.1 Project Background

Nowadays, children are not interested in coloring because they did not learn and not in topic in early primary school. In the rising technology era, children are more interested in games rather than coloring that needs some time to spend to complete a page. We always think that coloring is not important in our daily life, but with coloring we also can get benefit from it. Teachers also think that coloring will be easy for children to learn. An adult also did not know about basic theory colors. Apart from that, there is not much information of coloring techniques for kids. In addition, the essential for children is the interactive book that can simply download and view with your tablet.

The proposed project will be name “Coloring Techniques for Early Primary School”. By develop this interactive book, it can help user in learning techniques in coloring.

1.2 Problem Statement

- Students in Phase 1(standard 1, 2, 3) not exposed in learning of techniques in coloring.

Students just coloring as they pleasure as they did not learn about basic of coloring. If they interested in coloring, they need to learn on their own.

- In the rising era technology, students prefer online games in coloring.

Nowadays, digital media technologies may be the reasons why student prefer online game from online sources than coloring activities. They are comfortable using gadget for playing games. The coloring activities are now forgotten as they are not interested and not exposed in it.

- Teachers in primary school did not teach techniques in coloring.

There is no syllabus that cover coloring activities in “Pendidikan Seni Visual” class. Topic that covers in the class are basically drawing, make patterns and designs and handicrafts. So with this interactive book, it will be a great help for student and their teachers also.

1.3 Objective

- To investigate the techniques and skill in coloring.

Research facts and findings information from internet and other resources about coloring that will be contents for this interactive book.

- To develop an interactive book that can help user to learn techniques in coloring. This interactive book will provided contents in techniques in coloring as the main contents. Many related information about coloring will be cover in this interactive book also.
- To evaluate whether this application can assist in enhancing coloring. Testing phase that will be held in PSM 2 can determine whether user can engage with this interactive book.

1.4 Scope

- Target user – Early Primary School student (Phase 1)

The target user for this application is Early Primary School student (Phase 1) where the range of the age is 7 to 9 from children. This is because this range of age is suitable to apply interest in coloring techniques.

- Application module –Different techniques in coloring module

This application has main module to make it work perfectly. The module is ‘Techniques in Coloring’ module. The main function for this module is. From this module, user will learn and engage with the lesson that provided in the interactive book.

1.5 Project Significant

This interactive book will be a great help for user to learn and gain knowledge from the module that are provided with lesson such as video. User does not need to find information in coloring from other resources because this interactive book will cover all information in coloring that will be easy for user to get it.

1.6 Expected Output

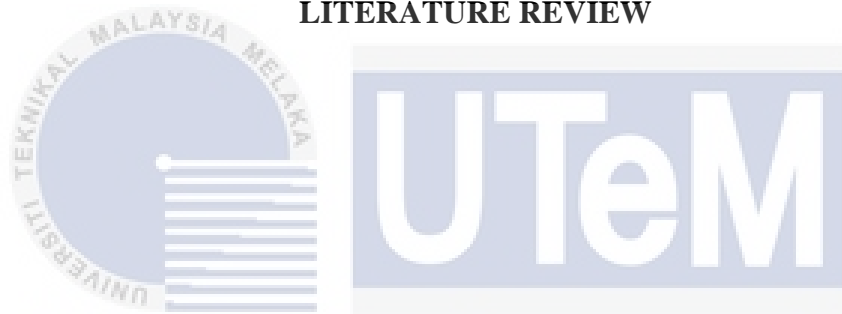
The expected output for this project is an interactive book that will be a great help for user in learning techniques in coloring and many more topics related in coloring. The interactive book also should be able engage with user as it will be provided interaction as a part of this book.

1.7 Conclusion

As a conclusion on this chapter, before the development of this system starts, the purpose of this project is to develop a Techniques in Coloring for Early Primary School that will provide great lesson for target users. In this chapter also highlight the problem statement, objective, scope, project significant and expected output of this project that will be a reference to this system. The next chapter is consist of literature review, fact and finding, project requirement, milestone and methodology of this project.

CHAPTER II

LITERATURE REVIEW



2.1 Introduction

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This chapter will focus on literature review and project methodology that will be used during the development of this system. A lot information is needed to complete this project. The solution for completing this project by searching Internet and get references from books. Literature reviews is reviews of a published article and journal to help in application development process.

This chapter also will discuss about fact and finding about this system such as domain, existing system, and technique. Besides that, project methodology also will be review in this chapter. In methodology, it will discusses approaches that are required to complete this development of project. Lastly, project requirement will be list in this

chapter of literature review. Research were done to provide information and as a reference for the developer to offer a better interactive book that will be used in the future.

2.2 Domain

What is an interactive book?

Interactive books is a book that user need to interact and engage with its contents. Its offer many advantages to user such as giving user an opportunity to interact with its contents by making them have a great experience and at the same time have fun with it. Comprehension of the contents of interactive books is one result in produce good interactive book. To meet the needs of user, the interactive books are designed accurately and aligned with local and state authorized tests. Contents of interactive books such as graphically impressive, interactions natural and the result of this is the process of learning is enhanced. Examples of interactions such as short video, audio clips interactive maps and graphs and others.

How to develop a good interactive book?

Many criteria have to consider before developing good interactive book. According to Aras Bozkurt and Mujgan Bozkaya(2015), interactive book are essentially made up from various interactions such as interactions among digital book elements, interaction between environments, interaction between digital book and user and interaction with other users or online communities.

Why do we need multimedia in learning process?

Multimedia elements consists of images, audio, video, animation and text. Using multimedia sources will bring great impact to users. Multimedia will provide opportunities to user to express their knowledge. Next, multimedia applications also can offer valuable learning opportunities as they engage with students. Hence, student or user can increase their knowledge with implementing multimedia in learning process.

What is Coloring?

Coloring is the process or skill of applying a substance to something so as to change its original color.

Who learns Coloring?

In Malaysia, coloring activities only based on the effort of the student to learn it. IF they want to learn it, they can search internet or attend coloring workshops. There is no syllabus in primary school that teach the techniques in coloring using colored pencil. So, coloring activities should applied to kids since age of 3 years old and above. Nowadays, adult also interested in learning coloring techniques.

2.3 Existing System

There are many existing system such as interactive book and website that are available in Internet. The one that we will focuses on is the syllabus in “Pendidikan Seni Visual” subject in secondary school. There are topics that covers in this subject such as

drawing, create shape and make building, create patterns and design and traditional crafts knowledge. This topics covers in year 1, 2 and 3 in early primary school. The outcome of the topics, for example are collage, crayon drawing, ‘capan’, origami, webbing and others. So, the students does not exposed in learning techniques of coloring in school because there is no syllabus that covered this topic.

HURAIAN SUKATAN PELAJARAN PENDIDIKAN SENI VISUAL KBSR
Tahun 1





| Bil | Bidang | Hasil Pembelajaran | Cadangan Aktiviti Pembelajaran |
|-----|------------------------------|--|---|
| 3. | Membentuk dan Membuat Binaan | <p>Asas membentuk dan membuat binaan.</p> <p>Aras 1</p> <p>i. Mengetahui dan bermain dengan bahan yang mudah dibentuk seperti:</p> <p>a. tanah liat</p> <p>b. plastisin</p> <p>Aras 2</p> <p>i. Menghasilkan bentuk mudah dengan:</p> <p>a. melipat</p> <p>b. menggunting</p> <p>c. mencantumkan</p> <p>Aras 3</p> <p>i. Menggunakan bahan kuitipan yang sesuai untuk menghasilkan binaan mudah yang kreatif.</p> <p>ii. Menyata dan memperagakan hasil kerja sendiri.</p> <p>iii. Mengumpul hasil kerja.</p> | <p>Cadangan teknik seperti:</p> <p>a. binaan mudah</p> <p>b. hiasan diri (<i>ornament</i>)</p> <p>c. topeng mata</p> <p>d. origami mudah</p> <p>Cadangan bahan seperti:</p> <p>a. botol plastik</p> <p>b. tin</p> <p>c. kotak</p> <p>d. kad bod</p> <p>e. gabus / tudung botol</p> <p>f. klip kertas</p> <p>g. plastisin</p> <p>h. tanah liat</p> <p>i. kertas warna</p>  <p>topeng mata</p>  <p>hiasan kepala</p>  <p>origami</p>  <p>hiasan diri</p> |

Figure 2.1: Syllabus in subject Pendidikan Seni Visual Year 1

Another existing system is Colors Theme by kiddyhouse website. This website consist of lesson to teach color to children by song, stories, art activities and color flashcards. The objective for this website is to offer great experience of coloring to user. Next, this website provide printable book about colors to user. Then, this website also offer worksheets that students can get it by clicking on the link provided. The main contents of this website is they provide links to other activities that are related to color

such as learns about colors and numbers activity. Educators or teachers also can get their advantages by surf in this website because it have provided lessons for teachers.



Figure 2.2: Interface of kiddyhouse website

There is also similar system that has been created by Crayola which is Crayola Color Alive application. This application main feature is the augmented reality that can be view it from tablet. This interactive book are compatible with tablet with iOS or android as a platform. In addition, this application also provide few coloring pages that you need to print out. User also can interact with the feature of animated effects after scan the coloring page. This application need Internet connection to use the available feature in this application.



Figure 2.3: Crayola Color Alive 4D experience

2.3.1 Comparison of Existing System

Table 2.1: Comparison of Existing System

| Application | Advantages | Disadvantages |
|--|--|--|
| Pendidikan Seni Visual in Early Secondary School | <ul style="list-style-type: none"> Teachers as the guide for this subject. | <ul style="list-style-type: none"> No syllabus cover coloring techniques topic |
| Colors Theme | <ul style="list-style-type: none"> Many interactions in this website | <ul style="list-style-type: none"> Certain link are not identified Requires internet to view websites. |
| Crayola Color Alive | <ul style="list-style-type: none"> Free Give user 4D experience Could run in iOS and Android platform | <ul style="list-style-type: none"> Only can view it from tablet. Internet connection is needed |

2.4 Project Methodology

Multimedia development model must be involve in this development phase as a problem solver in this industry.

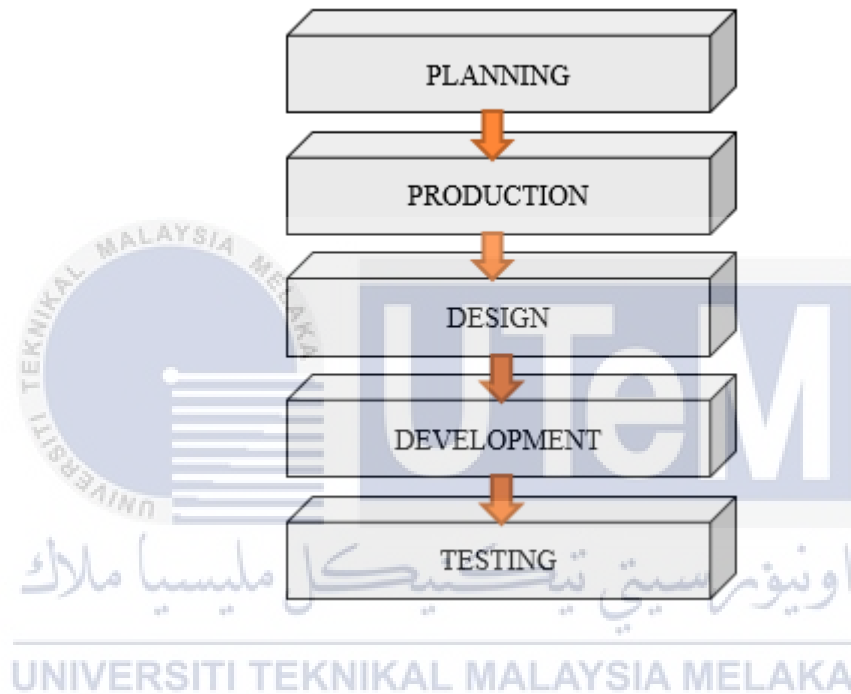


Figure 2.4: The Process of Multimedia Authoring

1. Planning

- Define scope and objective of this project

In this phase, the scope and objective of this project will be documented in proposal.

- Discussion with supervisor

In this step, the discussion will be done to determine whether the project will be proceed.

2. Production

- Listing requirements for interactive book

In this phase, the requirement will be identify and research to proceed with the development of project.

This requirements will be documented in Chapter 1 and 2.

3. Design

- Design interface of the contents for interactive book

In this step, we will proceed with the design interface and discussion with supervisor whether design will suitable with the interactive book.

- Documentation

In this phase, chapter 4 will be proceed with design of interface for this project.

4. Development

- Start development process

This step is the main as it is important for this project where the interactive book will be developed in this phase.

5. Testing

- This phase will be conducted in PSM 2 where the testing phase begin.

In this process, a test will be conducted to ensure the achievement of objective project.

- Documentation

Chapter six will be documented after the test is conducted.

2.4.1 Instructional Design

Educational goals, flowchart, details course content and metaphor will be explained in this instructional part.

2.4.1.1 Educational Goals

The goal for the “Buku Teknik Mewarna Saya” is shown below:

- User will be able to learn Technique of Coloring
- User will able to practice and enhance their Technique of Coloring
- Interactive multimedia elements can help in better understanding for user.



2.4.1.2 Flowchart

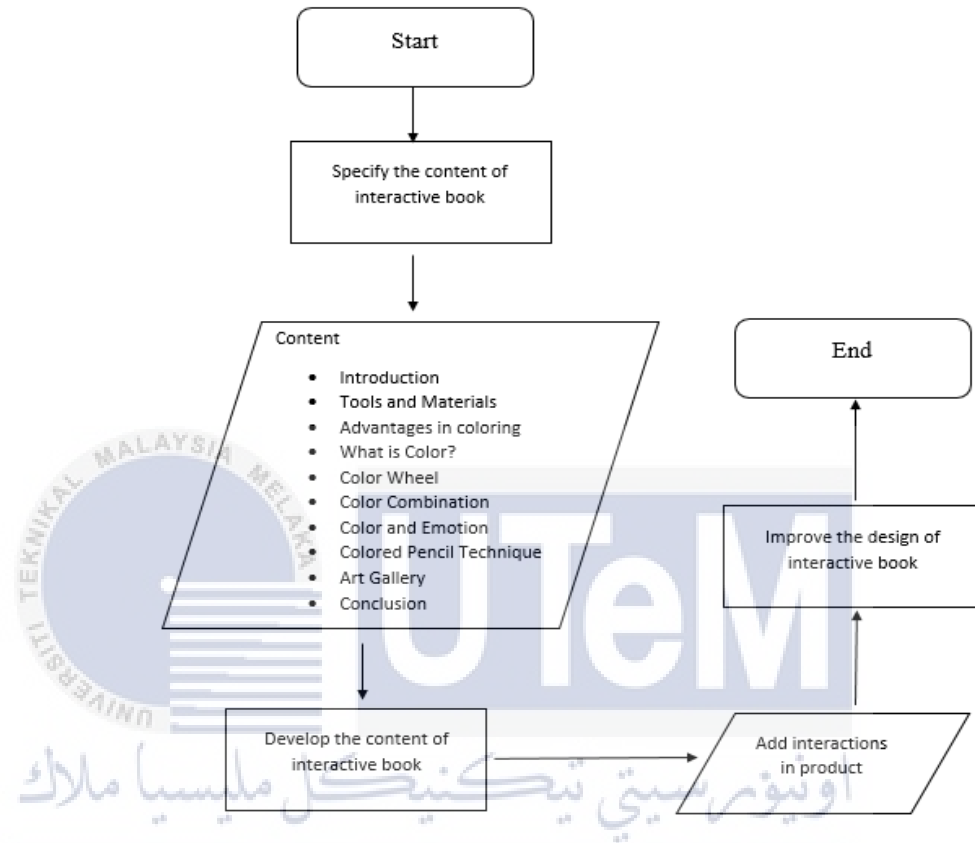


Figure 2.5: Flowchart of development of product

2.4.1.3 Comprehensive Flowchart of product content

There are eight content that will be cover in this interactive book. Eight topic of content is in the form of interactive gallery, pop-up, video and etc. Development of product will be follow the flowchart activities that has been specified above. Details of content below will be explained in detail and give better information that user need.

Table 2.2: Topic of content

| Topic | Title |
|---------|-------------------|
| Topic 1 | Pengenalan |
| Topic 2 | Alat dan bahan |
| Topic 3 | Kelebihan mewarna |
| Topic 4 | Apa itu warna? |
| Topic 5 | Roda Warna |
| Topic 6 | Kombinasi Warna |
| Topic 7 | Warna dan Emosi |
| Topic 8 | Teknik mewarna |
| Topic 9 | Galeri Seni |

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2.4.1.4 Metaphor

Multimedia elements such as text, graphic, video, audio and animation will be used in this development of interactive elements. These elements will be a great feature if the developer uses them properly. The result is better functionality and good quality of interactive books will be produced. The theme for this interactive book is color and related topics about color. Color can attract user attention to view and learn from this interactive book.

2.5 Project Requirements

2.5.1 Software Requirement

- Project Development:
 - Adobe InDesign CS6 – To create and design the interface of interactive book.
 - Adobe IllustratorCS6 and Adobe Photoshop CS6 – To create and edit images.
 - Audacity - This software is required to record and edit audio for lesson.
 - Adobe Premier Pro CS6 – To edit video for lesson.
- Project Documentation:
 - Microsoft Office- Software that is required for writing report and documentation of this project.
 - Microsoft Project - Software is required to create Gantt chart for scheduling.
 - Microsoft Power Point - Software that are used for project presentation.
- Other Software:
 - Adobe Acrobat Reader Pro - This software is used to create, edit and view Portable Document Format (PDF)

2.5.2 Hardware Requirement

Personal Laptop

- Brand: Toshiba
- Processor: Intel ® Core™ i5-3210U CPU @ 2.50GHz
- RAM: 4.00 GB
- System Type: 64-Bit Operating System
- Operating System: Windows 7

2.6 Conclusion

This chapter have explained about literature review and methodology that are required for developing this project. This research is about identifying type of project that will be built by making research from other available project. This chapter also include requirement that will be used to implement this project. This project methodology will help in developing this interactive book by following the reference model that are explain in detail from this chapter. Next chapter will discuss more detail about project analysis that will be in chapter three.



CHAPTER III

ANALYSIS



3.1 Introduction

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This chapter will discuss about the process of developing the product that occur in analysis phase. In this analysis phase, a general idea about the process that involved for developing this product. Requirement of this project such as user requirement and system requirement are explained in detail in this analysis phase.

Throughout this analysis phase, the product that will be delivered is better in quality and in accordance with predetermined requirement. The importance part of this phase is to sets out the phases, activities and tasks needed to deliver a project. First step to develop this product is to explain in detail about requirement that are needed such as

software, hardware and user. A detailed of requirement analysis will lead to the success of this project.

3.2 Current Scenario Analysis

This current scenario analysis is a way to lead in build good future by identifying the problem in current situation. This part will determine the outcome of the product that will be developed. Data and information in this part will be analyses first, and then explained in detail about strength and weakness of the current system. This part will lead to produce a better product.

a) Crayola Color Alive

This coloring book is to be used with an application that can be downloaded from Play Store and App store. This app provide coloring pages that user can print out to start use the app. If you want to get more coloring pages, you need to purchase it from Play Store and App Store. This application will bring out kids interest in coloring activities. This application is compatible with tablet only. Kids need to color the coloring pages first before use this application. This application will bring 4D experience for kids.

Next, amazing animated effects are provided in this application such as a Fire-Breath, Ice-Blast and others effects. Then, within this application, user can save the character from the coloring pages. This application need Internet connection to use the available features in this application.

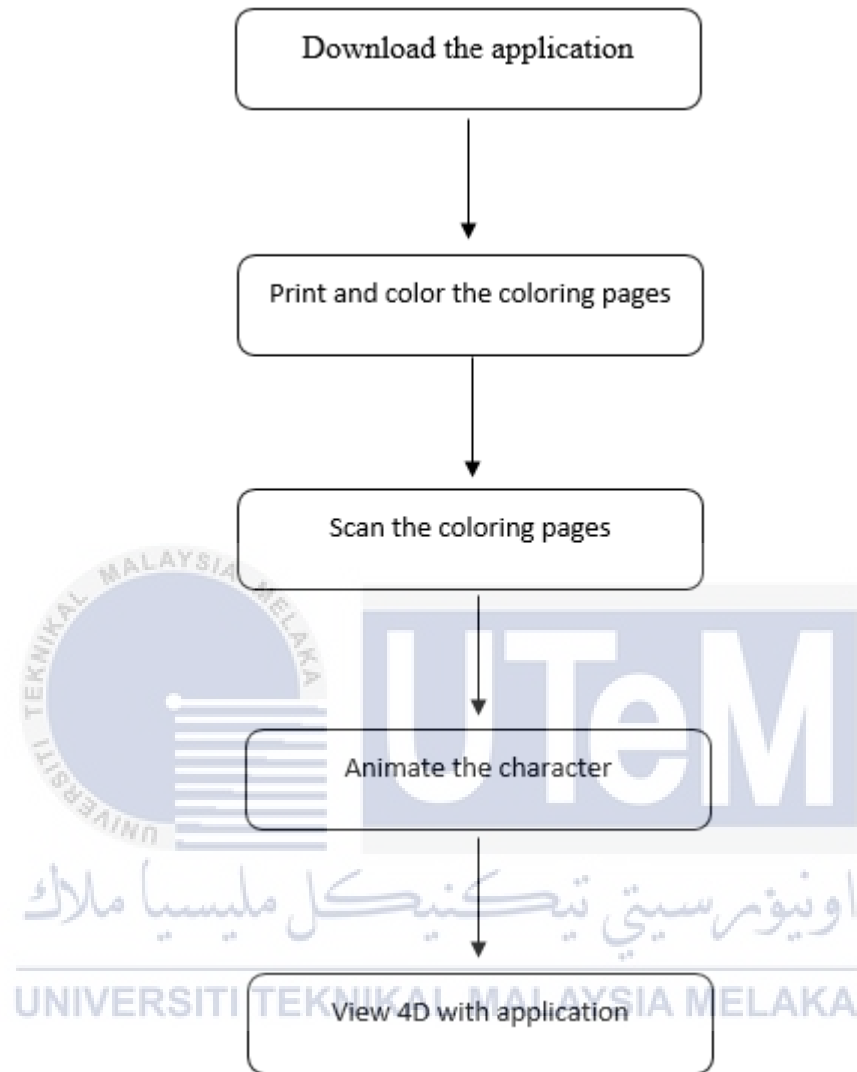


Figure 3.1: Flowchart of application

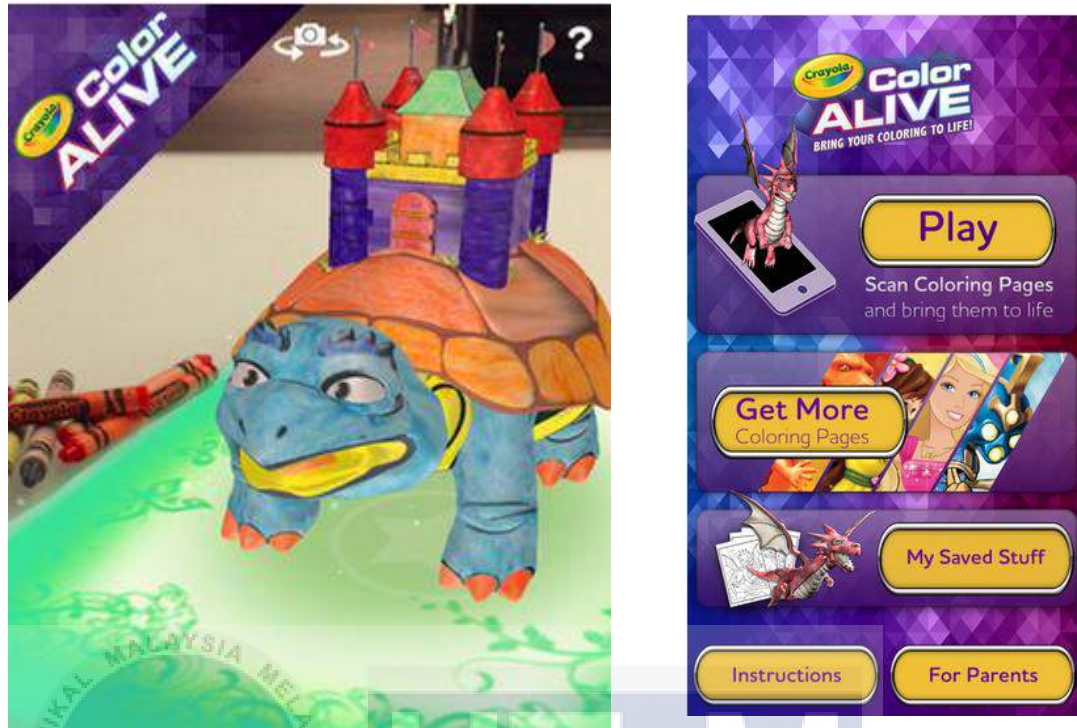


Figure 3.2: Crayola Color Alive application



Figure 3.3: User interact with Crayola Color Alive application

Table 3.1: Advantages and Disadvantages of Crayola Color Alive Application

| Advantages | Disadvantages |
|---|--|
| <ul style="list-style-type: none"> • There is an interaction between user and the application. | <ul style="list-style-type: none"> • Technique of coloring are not available. • Internet connection is needed. • Need to purchase if user want more coloring pages. |

b) Website for Colors Theme

This website is from kiddyhouse.com. This website teach colors to children through songs, stories, art activities and color flashcards. This website is suitable for kids and teachers. There provided worksheets. There is a few interactivity from this website. . The main contents of this website is they provide links to other activities that are related to color such as learns about colors and numbers activity. Educators or teachers also can get their advantages by surf in this website because it have provided lessons for teachers.

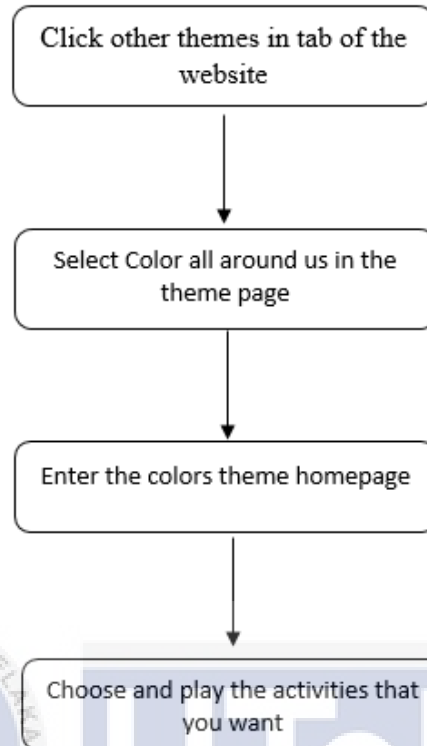


Figure 3.4: Flowchart of website



Figure 3.5: kiddyhouse website interface

Table 3.2: Advantages and Disadvantages of Colors Theme Website

| Advantages | Disadvantages |
|---|---|
| <ul style="list-style-type: none"> Many resources from this website about color. | <ul style="list-style-type: none"> Certain link are not identified. Requires internet to view websites. |

c) Syllabus of Pendidikan Seni Visual textbook

In this subject, kids are learning art activities from their teachers in the primary school. Students are not provided with textbook for this subject. There are topics that covers in this subject such as drawing, create shape and make building, create patterns and design and traditional crafts knowledge. In the topic of drawing, there are a few technique that is similar to technique in coloring. There is no specific topic that teach about coloring technique.

HURAIAN SUKATAN PELAJARAN PENDIDIKAN SENI VISUAL KBSR
Tahun 1

| Bil | Bidang | Hasil Pembelajaran | Cadangan Aktiviti Pembelajaran |
|-----|------------------------------|---|---|
| 3. | Membentuk dan Membuat Binaan | <p>Asas membentuk dan membuat binaan.</p> <p>Aras 1</p> <p>i. Mengetahui dan bermain dengan bahan yang mudah dibentuk seperti:</p> <p>a. tanah liat b. plastisin</p> <p>Aras 2</p> <p>i. Menghasilkan bentuk mudah dengan:</p> <p>a. melipat b. menggantung c. mencantum</p> <p>Aras 3</p> <p>i. Menggunakan bahan kutipan yang sesuai untuk menghasilkan binaan mudah yang kreatif. ii. Menyata dan memperagakan hasil kerja sendiri. iii. Mengumpul hasil kerja.</p> | <p>Cadangan teknik seperti:</p> <p>a. binaan mudah b. hiasan diri (<i>omament</i>) c. topeng mata d. origami mudah</p> <p>Cadangan bahan seperti:</p> <p>a. botol plastik b. tin c. kotak d. kadbod e. gabus / tudung botol f. klip kertas g. plastisin h. tanah liat i. kertas warna</p> <p>topeng mata</p> <p>hiasan kepala</p> <p>origami</p> <p>hiasan diri</p> |

Figure 3.6: Syllabus in subject Pendidikan Seni Visual Year 1

Table 3.3: Advantages and Disadvantages of Syllabus in subject Pendidikan Seni Visual Year 1

| Advantages | Disadvantages |
|---|---|
| <ul style="list-style-type: none"> Teachers as the guide for this subject. | <ul style="list-style-type: none"> No syllabus cover coloring techniques topic |

3.3 Specific Technique

3.3.1 Widget

The widget that provide by Adobe in Adobe InDesign is the interactivity features such as interactive for PDF, digital publishing, printing and proofing, book and others. There is also many interactivity that can be created in this software such as pop-up, video, audio, animation and flash. This software also compatible with other design software such as Adobe Illustrator and Adobe Photoshop.

3.3.1.1 Type of Widget

In this Adobe InDesign software, user can create many interactive elements. The details of the interactive elements are shown as below:

i.Link page

For this widget, user can use the button to link the destination page. Button also can have multiple event. This widget can be a great help to ease user in using this interactive book. User can simply tap the button to go to their desired destination page.



Figure 3.7: Example of the link page widget

ii. Interactive Gallery

In this widget, Adobe Flash is used to produce this interactive gallery. In this gallery, user can simply tap the button in the gallery to go to next picture. This interactive gallery is used when the picture is more than two and need to view entire collection of picture that are related to the topic.



Figure 3.8: The interactive gallery widget inside Interactive book

iii. Pop-up

This widget are created from button event. User can simply move the cursor of the mouse to the button to get the information from it. This interactivity elements will be intriguing to the kids and can get their attention.



Figure 3.9: Example of Pop-up

iv. Video

From Adobe InDesign we can simply drag the video to page. This media elements will give user tutorial on technique of coloring. This media also will be a great elements for students as a method in learning.



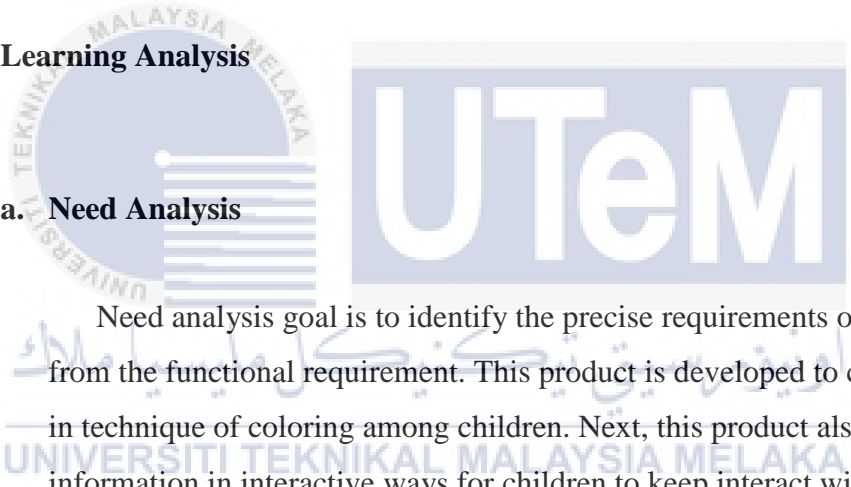
Figure 3.10: Show the video element

3.4 Requirement Analysis

Requirement analysis is a process that had been used in the area of engineering. The definition of requirement analysis is the process of determining user requirement for a new or modified product or system. This requirement must be explained in detail and relevant to produce a successful product. The development of this product must follow the requirement that are listed before. Requirement analysis is an important aspect in the development process.

3.4.1 Learning Analysis

a. Need Analysis



Need analysis goal is to identify the precise requirements of the product from the functional requirement. This product is developed to cover the lack in technique of coloring among children. Next, this product also will give information in interactive ways for children to keep interact with the interactive book. Besides that, it is developed to enhance coloring technique among students. Within this interactive book, children can gain knowledge and also discover an experience from interaction in it.

b. User Analysis

The target user for this project is primary school in phase 1 in Malaysia. They did not learn and exposed in technique of coloring and their more interested in gadget nowadays. So, within the preferences from this target user,

this product will meet their expectation. This product will have interaction available and involving technology to view and experience the interaction. The product will be in pdf format and can ease user to download and save it through electronic device. Multimedia elements play an important role to be used in this product.

c. Technical Analysis

The product is technically are developed based on laptop or tablet. This product can be access anywhere and anytime after the user download the pdf format of this interactive book. The interactive elements that are available in this product such as video, text, audio, and image. There is also quiz to test the user knowledge after the lesson.

d. Resources Analysis

There is module that will be covers in this interactive book. All the information and elements that involve in this module will be analyses first before it is implemented. The multimedia elements that in this interactive book such as video and image are created and taken b own.

3.4.2 Software Requirement

i. Adobe Photoshop CS6

Adobe Photoshop is a photo editing software that developed and published by Adobe Systems. This software based on raster image.

This software can support Windows and OS X platform. This application is needed to edit picture that are taken by camera to use in Adobe InDesign as a background of certain pages.

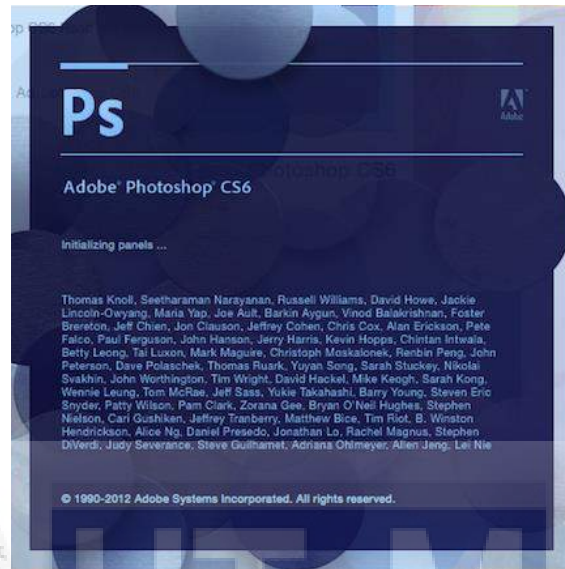


Figure 3.11: Adobe Photoshop CS6

ii. Adobe Premiere Pro CS6

Adobe Premiere Pro is a video editing software that are created based on timeline. This software also used by professionals because of it tools and features for video editing. This software is used to edit the video that can be used in the interactive book.



Figure 3.12: Adobe Premiere Pro CS6

iii. Adobe Illustrator CS6

This software have similar function as Adobe Photoshop. This software is vector graphic editor. This software is suitable to create logo, icons and more. This software is most needed after Adobe InDesign software in this project. Adobe Illustrator is used to create new object and background in this project.

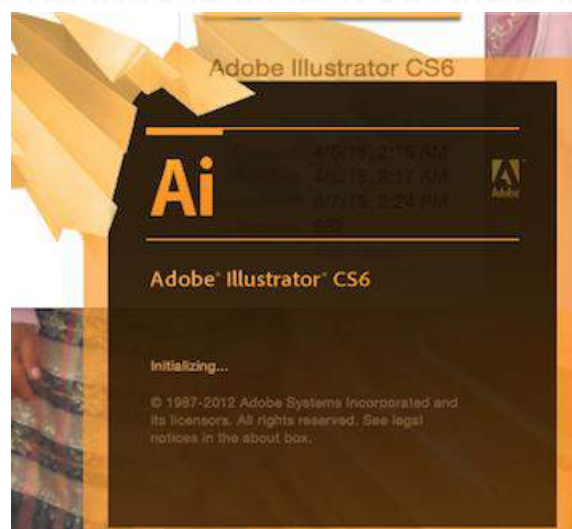


Figure 3.13: Adobe Illustrator CS6

iv. Adobe InDesign CS6

This software is a desktop publishing software that are produced by Adobe Systems. Many works and books can be create by using this software. This software is the most important for development of this interactive book. This software can support all the widgets that are listed before.



Figure 3.14: Adobe InDesign CS6

3.4.3 Hardware Requirement

Table 3.4: Hardware requirement

| Hardware | Description |
|------------------|---|
| Laptop | This laptop is from Toshiba. This hardware is in the development of this product. This device also used all the software that are been specified above. |
| iPad | This device used to run the product. |
| Mouse | Mouse is needed for perform work well and easy. This device is most needed when editing process. |
| DSLR Camera | This camera is used to record video for tutorial and also capture image for reference and as background of pages in interactive book. |
| External Hardisk | This hardware is used for back up all file and documentation that are related to this project. |
| Printer | This device is used to print out documentation such as report. |

3.5 Conclusion

In conclusion, this chapter is about analyses all the requirement that needed in this development of product. Current system scenario can be a good reference to produce a better product in future. The requirement analysis provide the detailed of solution and idea to achieve project objectives.

The next chapter will cover the project design including system architecture, preliminary design, storyboard design, user interface design, navigation design, output and input design and other related to design of project.



CHAPTER IV

DESIGN



4.1 Introduction

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This chapter will discuss about design phase for the development of product based on the requirement analysis that have been done in the previous chapter.

Design phase plays an important role in the development of product. This design phase will explain in detail about design process, design architecture, preliminary design, concept design, storyboard design, color design, topic layout and shooting video. All the elements of multimedia such as text, video, audio, images and animation are included in this product will be explain in detail in this chapter.

4.2 Design/ product process

Design process is where a designer or developer follow series of steps that are specified in the documentation. This process goal is to overcome the problem and come out with a solution in developing the product. Thus, this design process is important to meets the certain criteria that developer need to accomplished in the development of product.

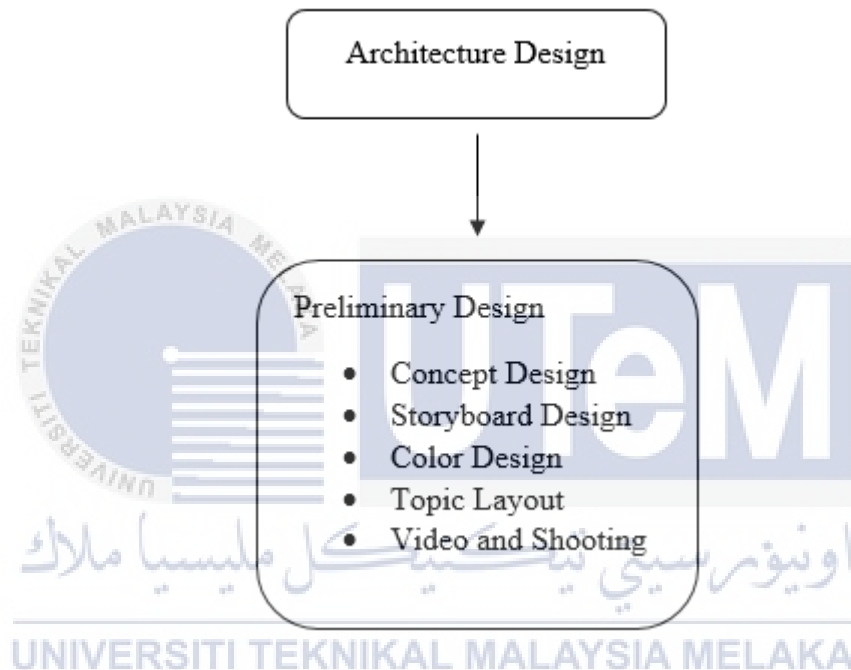


Figure 4.1: Flowchart of design process

4.3 Design Architecture

Design architecture will explain about the workflow for the content of interactive book development. The module that are needed for this product will be included in this workflow. This interactive book can be used in all platform as the result of the product is in pdf format. User need to have the Adobe Reader in their device to view this product.

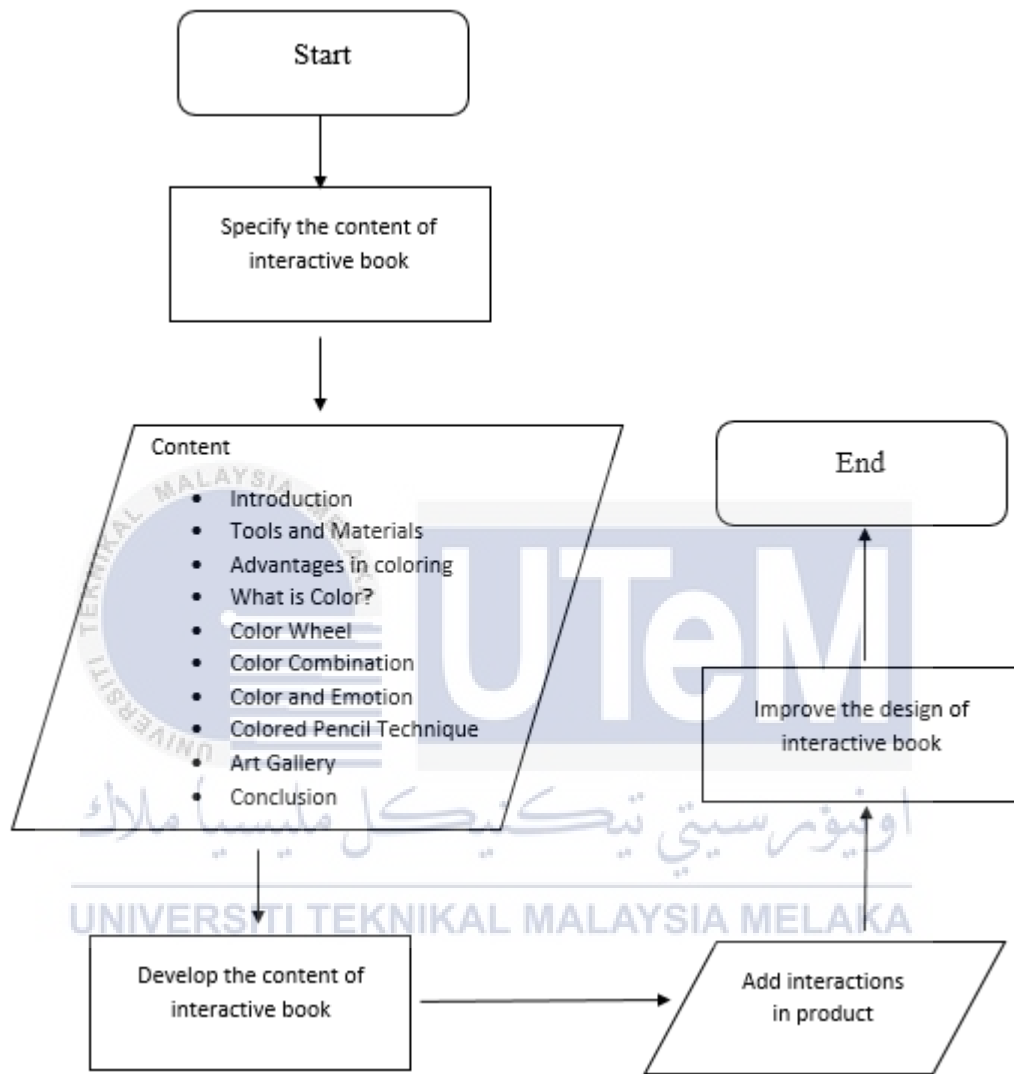


Figure 4.2: Flowchart of development of product

4.4 Preliminary Design

Preliminary design also be known as conceptual design where the high-level design concept is specified and created. The goal for Preliminary Design is to outline how the product will be delivered the function that have been specified in the requirements. The defined interfaces for the products will be explained in storyboard design. There is also concept design, color design and other design process.

4.4.1 Concept Design

Concept design is about planning on solving design problem that related to the development of product. The main reason for developing this interactive book of Techniques in Coloring is to attract and give knowledge to user about basic in coloring and expose in technique of coloring using pencil color. Adobe InDesign is the main software to develop this product after consideration of the tool that can help in design and developing the content.

First step is by planning the concept of the product by outline work breakdown structure. Work breakdown structure (WBS) is created to list the detail of multimedia elements that are needed for the product. In this WBS multimedia elements are compiled by topic. Second step to achieve the concept design is to deliver the idea by sketching or drawing. Next, creating the proper design by using Adobe Illustrator CS6. The work breakdown structure is shown in Figure 4.3.

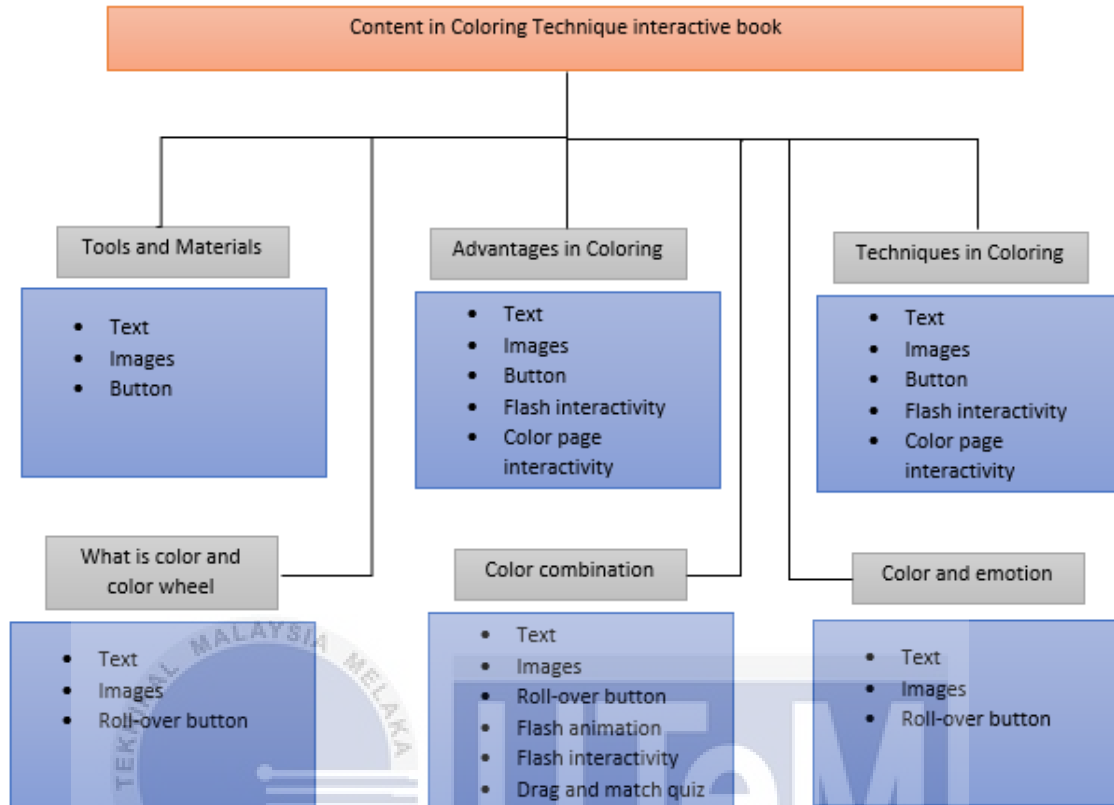

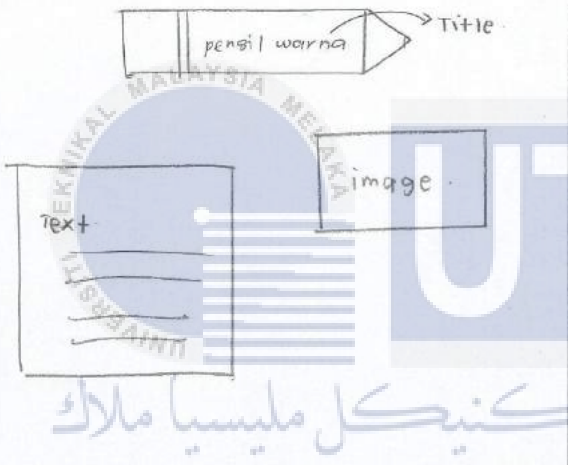
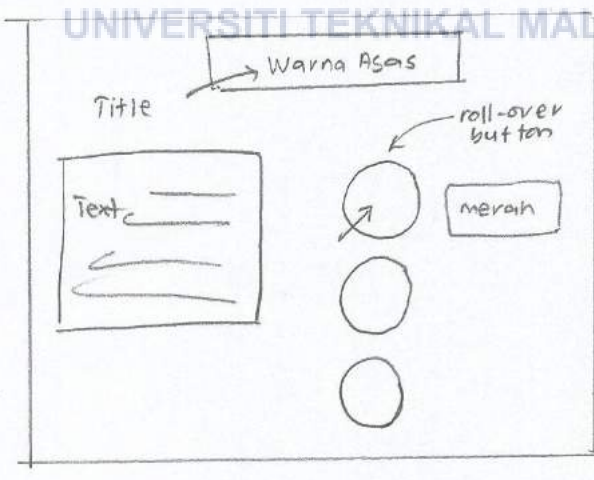


Figure 4.3: Example of Work Breakdown Structure (WBS)

4.4.2 Storyboard Design

Storyboard is a visual organizers. There is a series of illustrations or drawing that are demonstrated for the product. Storyboard design is sketch on A4 paper before proceed to Adobe Illustrator CS6 for create the real design. Table below show the sketch and interface design for interactive book.

Table 4.1: Storyboard Sketch

| Image | Explanation |
|---|--|
|  | <p>This is the sketch for the page of chapter that has sub in it. Each page has title at the top and image has text of title on it. There is button to link between the pages. Button can help user to go to desire page that they want.</p> |
|  | <p>This sketch is the sub of the topic. There is text that explain about the topic. Image also can help user to understand the topic.</p> |
|  | <p>This sketch is about another interface that has roll-over button as an interaction for this page.</p> |

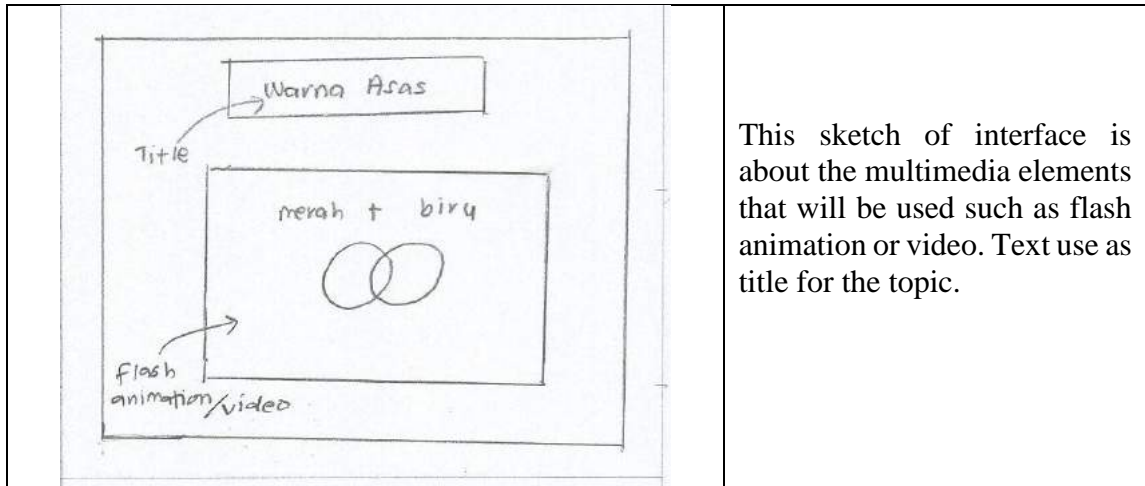


Figure 4.4: Design of first page



Figure 4.5: Design that has background image, text and title



Figure 4.6: Design that has imaged, title and text

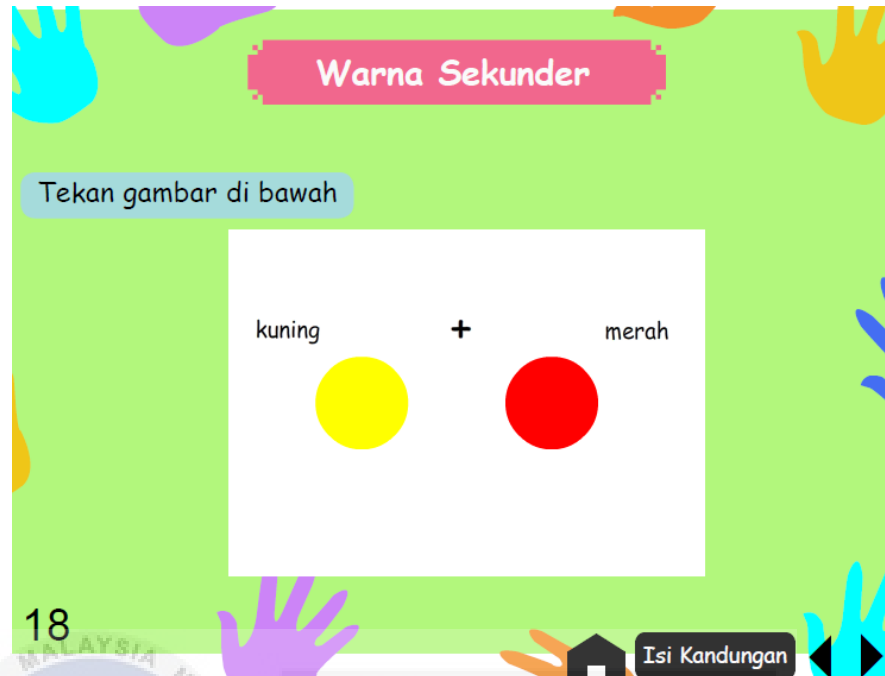


Figure 4.7: Design layout that consist swf only

4.4.3 Color Design

Text color are important aspect as it help in grab user attention to read the information. Many people doesn't prefer light color of font. Text used in this product in black and white color. White color for title text and black color for the content. This color are selected because the image background color usually colorful. So, this color can give the user the feeling of familiar with the interactive book.

Colorful images and background are used in this interactive book. User can feel “heavy” tendency to dark background. It is because color can attract user attention rather than color white and black. Thus, text and images also play an important part to consider when developing this interactive book. Figure below show the example of color design used in the interactive book.

Warna Tertier

- Dikenali sebagai "tertiary color" dalam bahasa Inggeris.
- Dihasilkan dengan menggabungkan 1 warna asas dan 1 warna sekunder.
- Mempunyai 6 warna bagi warna tertier.
- Cara yang senang bagi mengingat nama bagi warna tertier ialah dengan meletakkan warna asas sebelum warna sekunder.
- Contoh : biru - violet
 asas - sekunder
- Dash (-) perlu diletakkan bagi warna tertier.

Tsi Kandur

Figure 4.8: Example of using the white text for title

Mari Belajar Teknik Mewarna
Menggunakan Pensil Warna

37

Isi Kandungan

Figure 4.9: Example of using the black text for colorful background

4.4.4 Topic Layout

The title of content will use the same image and font style to make sure the user know easily the content of this interactive book.



Figure 4.10: Design of each chapter in the interactive book

4.4.5 Video and Shooting

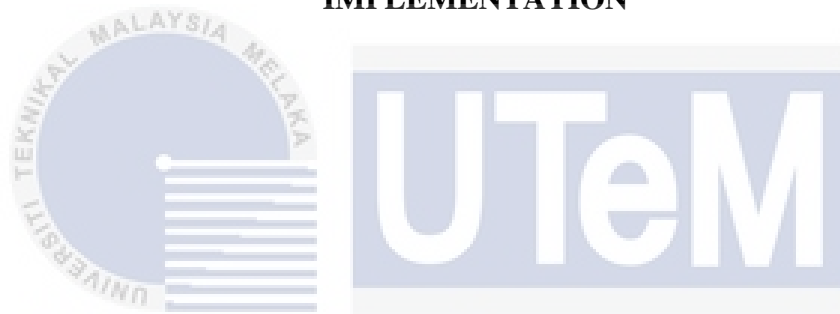
Images and video are the multimedia elements involved in this part. This images and video are recorded and capture using Nikon DSLR.

4.5 Conclusion

In conclusion, design phase is important phase in the development of interactive book. Architecture design can help to understand the workflow on the product works. This phase will helps to ease the workflow in the implementation phase. In next chapter will explain about the implementation for this product. Implementation will be explain in detail about the process for developing the product.

CHAPTER V

IMPLEMENTATION



5.1 Introduction

Implementation is the phase where the carrying out or execution of a plan, a design for the product. In this phase, the interface of the product is being properly developed and the contents of the interactive book such as multimedia elements will be created and integrated to complete the product.

Implementation phase will explain about media creation that consists of production of text, production of graphic, production of animation and production of video. Media integration, production configuration management also will be cover in this chapter.

5.2 Media Creation

In this part, multimedia elements that will be used such as text, graphic, animation and video will be explained in detailed about the production of the elements. This purpose of this media creation is to help in production process by providing the detailed information that will be need. A good interactive book must be created with specific purpose and with the availability of better interactivity that integrated with good multimedia elements. User can navigate properly through the product. Multimedia elements that will be created in this interactive book listed below.

- Production of text
- Production of graphic
- Production of animations
- Production of video



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5.2.1 Production of Text

Text is the basic multimedia elements that can give and deliver information. Text is the need in the requirement that will be used mostly in explanation. Consideration is needed in this elements in terms of production. Most systems and product need this elements to complete their application. Color, style and family of font are features that will be used in this interactive book will be affected the target user.

Font-family of Comic Sans MS in the regular of style is the most used in the production of text. Century Gothic in bold style is used in the title of the content. This font

are choose because these fonts are convenient and can give the familiar feeling for target user. This font is the most popular Microsoft font for kids. This font also simpler in terms of style and user can view it comfortably from screen or printed form. Larger size of font, 60pt is used for title and 24pt is used for the explanation part.

5.2.2 Production of Graphic

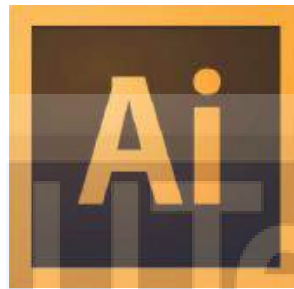


Figure 5.1: Adobe Illustrator



Figure 5.2: Adobe Photoshop

Graphic also will be used in this product. This multimedia elements are created by Adobe Illustrator and Adobe Photoshop. The result of the image in vector and bitmap. Bitmap images are pixel-based while vector image are mathematically-based. Image that are taken by camera also edited in Adobe Photoshop CS6.

Graphic is use as illustration and overview to the explanation. Mostly background that are used in interactive book are created in Adobe Illustrator. The image below are created in Adobe Illustrator CS6 and Adobe Photoshop CS6.



Figure 5.3: Image design using Adobe Illustrator



Figure 5.4: Image design using Adobe Photoshop

5.2.3 Production of Animation



Figure 5.5: Adobe Flash

Animation also important multimedia elements in this development of product. It is because the interaction is the main reason for the animation is created and integrated in this book. Adobe Flash CS6 is the main software to develop animation. 14 animation has been created by using timeline-based on Adobe Flash, Scripting also need in this Adobe Flash to animate the object. The below are the example of animation that are created using Adobe Flash CS6.

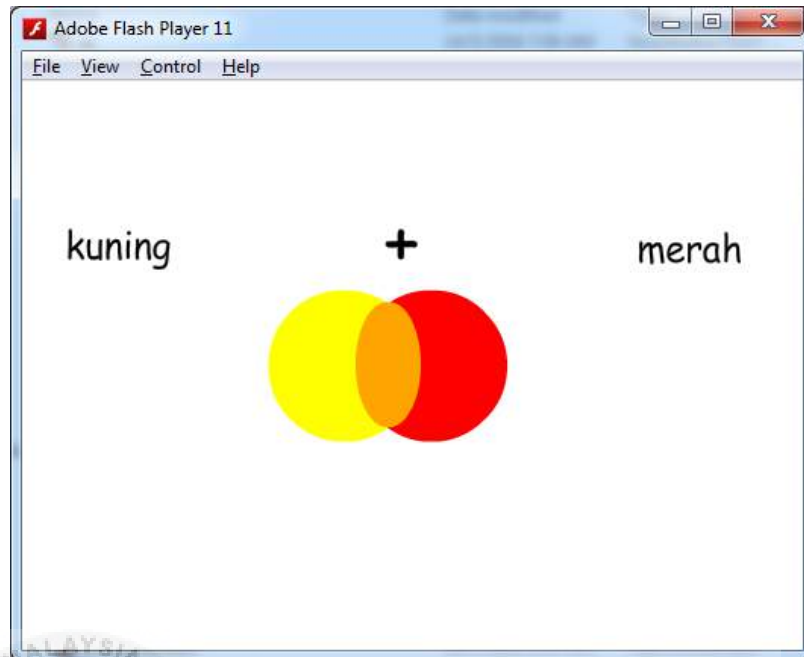


Figure 5.6: Simple animation created using Adobe Flash



Figure 5.7: Coloring page created using Adobe Flash

5.2.4 Production of Video

Video also created and integrated in this development product. For every technique of coloring, video are used to explain the technique. This is because in the video, there will be audio and subtitle. Audio is to attract user attention and subtitle is for explanation. Adobe Premier CS6 as the main software for video editing as this software have great features.

This production of video take place in small room with lighting by using DSLR camera. After shooting process, editing process will take place and the result of video in .flv format. Lastly, this video will be placed in the interactive book after the explanation part.

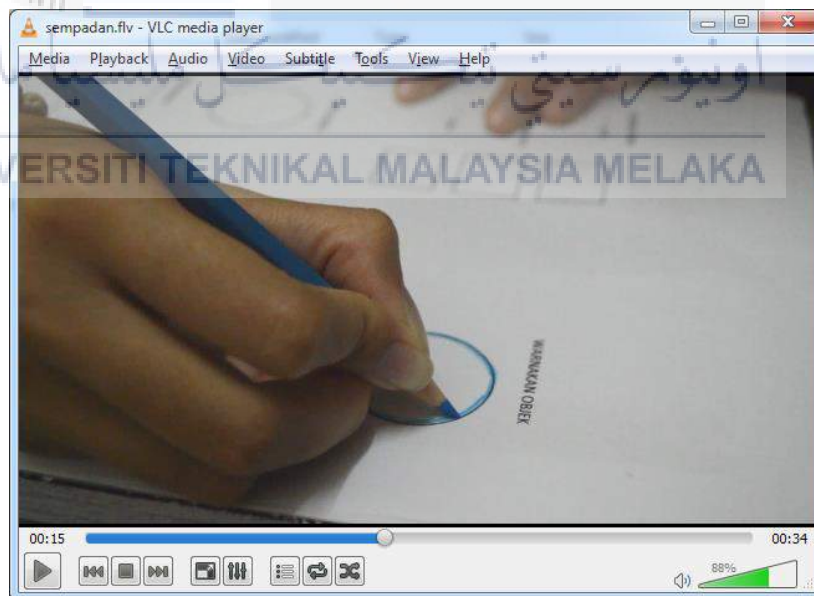


Figure 5.8: Video result after edited in Adobe Premier CS6

5.3 Media Integration

Variety of software are used for creation of multimedia elements. Adobe InDesign CS6 is where the integration process take part. All elements of multimedia such as text, graphic, animation and video will be integrated in this software. Arrangements of multimedia elements will be done manually in Adobe InDesign by using layout tab. Then, the interactive book will be save in pdf format. Device that have Adobe Reader can view this final product.

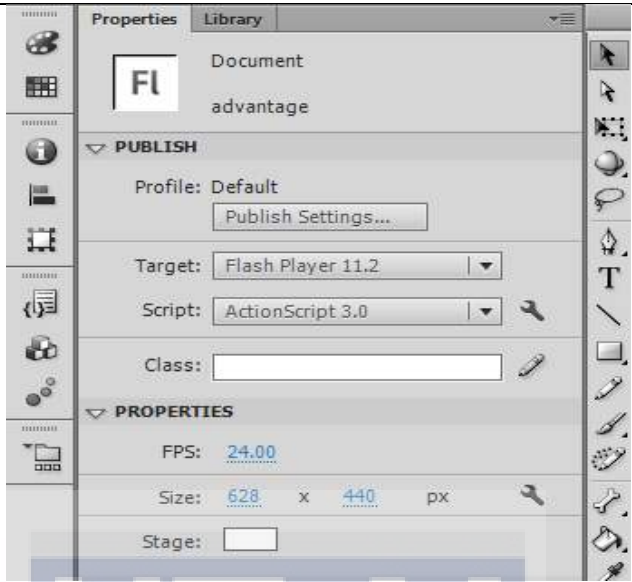
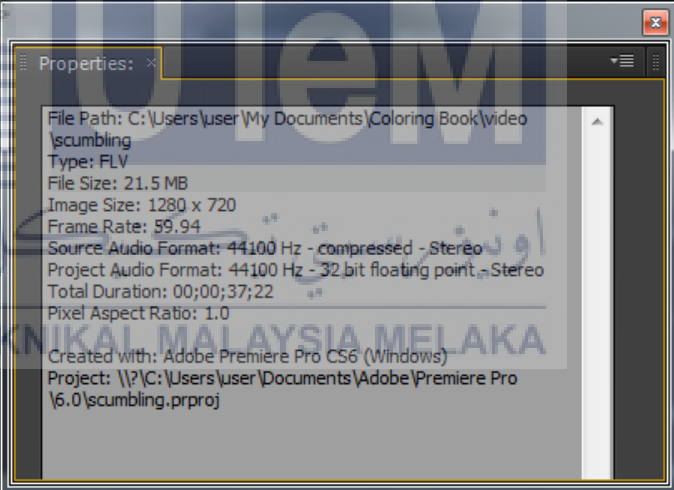
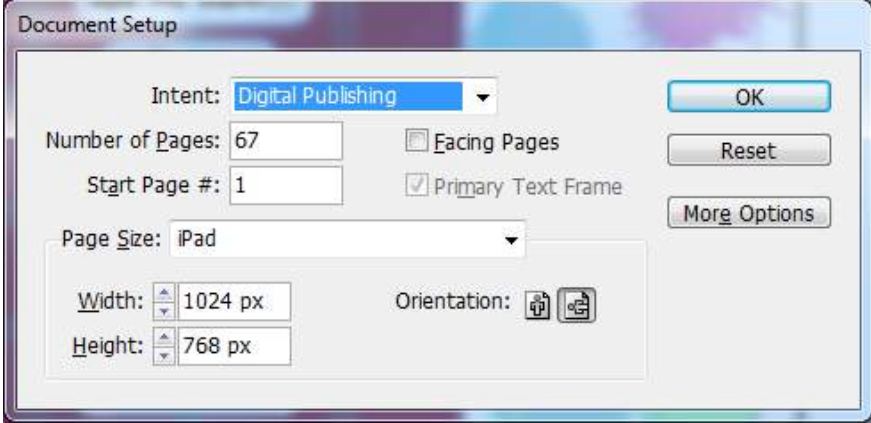
5.4 Product Configuration Management

The purpose for product configuration management is to create and maintain the integrity of product performance and functional. Adobe InDesign CS6 is a software that is used in the creation and integration of this interactive book. Adobe Reader as the software to view and print the result of pdf documents.

5.4.1 Configuration Environment Setup

In this part of configuration environment setup it will cover the setting of software that help in this development of interactive book. Figure are used to explain the setting of software. Table below shows the figure.

Table 5.1: Software and settings

| Software | Settings |
|--|--|
| Adobe Flash CS6 (for .swf format) |  |
| Adobe Premier Pro CS6 (for video editing) |  |
| Adobe InDesign CS6 (for pdf format of interactive book) |  |

5.5 Implementation Status

The phase where the progress in implementation are explained and described. Table below shows the implementation status in the development of product.

Table 5.2: Implementation status for interactive book

| Content | Description | Implementation Status |
|--------------------------|---|-----------------------|
| Advantages of coloring | Advantages of coloring page of “Buku Teknik Mewarna Saya” | Complete |
| Tools and Material | Tools and Materials page for interactive book | Complete |
| What is color? | What is color? page | Complete |
| Color Wheel | Color Wheel information and pop-up in color wheel | Complete |
| Color Combination | 5 types of color combination | Complete |
| Color and Emotion | Color and Emotion information by pop-up widget | Complete |
| Colored Pencil Technique | 8 colored pencil technique with video | Complete |
| Activities | Coloring page, drag and drop game, and quiz activities in this interactive book | Complete |

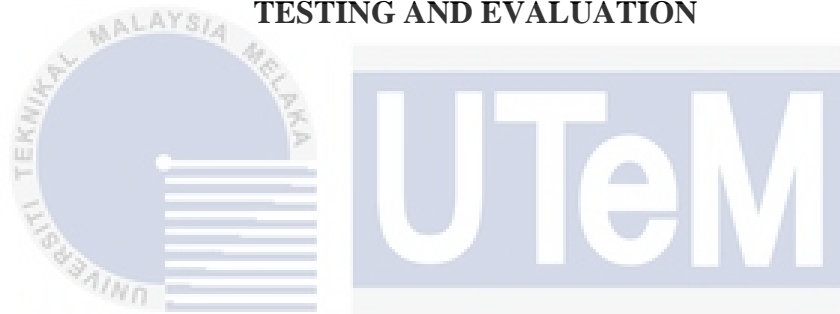
5.6 Conclusion

This implementation part discussed about the media creation, media integration and product configuration management as the process to developing and completing the interactive product. Implementation phase is the final stage of development of product before the Testing phase. Testing phase of the final product will be cover in the next chapter.



CHAPTER VI

TESTING AND EVALUATION



6.1 Introduction

In this chapter, testing will be described and evaluation will be delivered based on the testing that were done with the interactive book. The purpose of testing is to make sure the interactive book as the product meets the user requirements and related specification. Testing and evaluation chapter is based on the third objective for the development of interactive book. The testing will be done to target user that is in Phase 1 in primary school.

Testing and evaluation cover test plan, test strategy and test implementation process. Test plan consists of test organization, test environment and test schedule. Result of the testing and evaluation will be collected and analyses to achieve the third objective whether this product's user will enhancing in coloring.

6.2 Test Plan

Test plan is important as it cover the test organization, test environment and test schedule. This test plan is used by developer to refer in the beginning of the testing process. This test plan will be explained in detail about to meets the requirement and specification of the product.

6.2.1 Test User

Test user will be described about the target user that involved in this testing process. Ten users of phase 1 in primary school are participated in this testing.

6.2.2 Test Environment

Test environment for the user are conducted in Taman Wirajaya, Kuartes Penjara Kajang, where mostly user in Phase 1 of primary school home are located. A room are used as the place for the testing. Testers will be use the product alone and the developer will be ask questionnaire after the user use the product.

Table 6.1 explain about the hardware and software that are used and need for testing process.

Table 6.1: Hardware and software requirement

| Hardware and Software | Description |
|-----------------------|--|
| Toshiba Laptop | This laptop where the user view the interactive book. |
| pdf | Pdf is format where the interactive book is viewed through laptop. |

6.2.3 Test Schedule

A test schedule is very important as the guideline for testing and evaluation process. The purpose of the test schedule is to make sure the process of the testing is conducted according to the plan that have been list out. Test schedule is about time and duration that are used for testing the user. 30 minutes is provided for user in testing process.

Table 6.2: Schedule of Testing Activities

| | Stage 1 | Stage 2 |
|--------------------------|---------------|---------------|
| Number of Testers | 7 | 3 |
| Duration | 3 and ½ hours | 1 and ½ hours |
| Date | 30 July 2016 | 31 July 2016 |

6.3 Test Strategy

Test strategy is a way of testing approached done for this product development. It is created user evaluating the product based on questionnaire and coloring page that they need to color using techniques of coloring. There are two parts of the questionnaire and coloring page, before and after using the product. The purpose of this test strategy is to verify the users are understood about the content of interactive book. 30 minutes are given for each testers to explore the product using laptop.

There are 5 questions for user before the testing are conducted. 12 questions of questionnaire after the user used the product that consists of learnability test and effectiveness test.

6.4 Test Implementation

Test implementations consists of test description where the step of testing process will be explained and test data where the data are analyses after data have been gathered. This implementation is based on the test strategy that have been explained before. The coloring page and questionnaire are being analyses to get the result.

6.4.1 Test Description

User will be using laptop in the testing process where the user can explore and learn about the techniques of coloring. The format of the interactive book is in pdf format where the device nowadays can view pdf format.

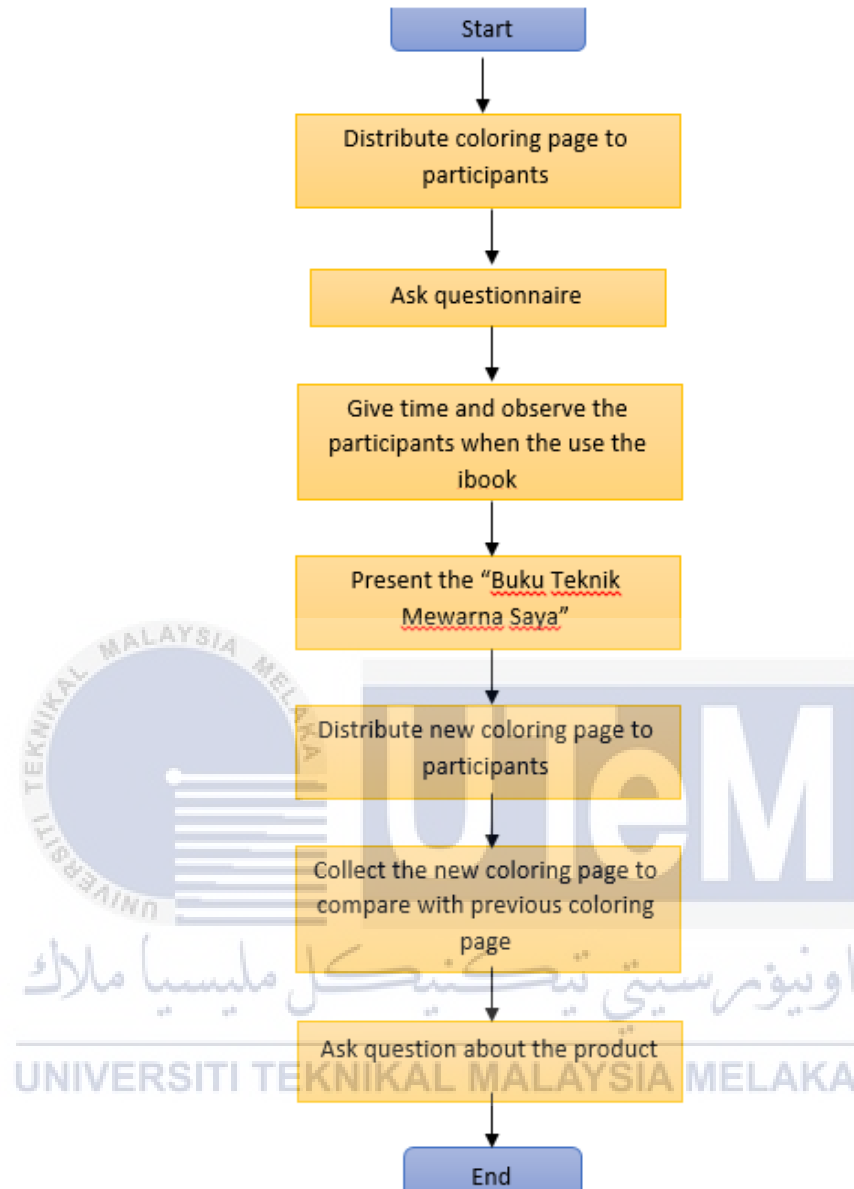


Figure 6.1: Flowchart of Test Implementation

6.4.2 Test Data

Test data is the result that are obtained after the testing process were done and executed on the users or testers. All material that are use such as coloring page and questionnaire are collected and analyzed by the developer for this project. The result from this test data are used to test and evaluate the effectiveness of the interactive book towards the user.

Ten users are involved and participated in this testing process. Figure below shows the testers detail that are involved in this testing of product.

Table 6.3: Respondent and Age

| Respondent | Age |
|---------------|-----|
| Respondent 1 | 8 |
| Respondent 2 | 9 |
| Respondent 3 | 8 |
| Respondent 4 | 8 |
| Respondent 5 | 9 |
| Respondent 6 | 8 |
| Respondent 7 | 9 |
| Respondent 8 | 9 |
| Respondent 9 | 7 |
| Respondent 10 | 9 |



Figure 6.2: Images of Respondent use the interactive book



Figure 6.3: Images of Respondent coloring session

6.5 Test Result and Analysis

Questions about Learnability Test

Yes = 10

No = 0

Table 6.4: Learnability Test

| Question/ Tester | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 |
|---------------------|-----|-----|-----|----|----|-----|
| T1 | 10 | 10 | 10 | 10 | 10 | 10 |
| T2 | 10 | 10 | 10 | 10 | 10 | 10 |
| T3 | 10 | 10 | 10 | 10 | 10 | 10 |
| T4 | 10 | 10 | 10 | 10 | 10 | 10 |
| T5 | 10 | 10 | 10 | 10 | 10 | 10 |
| T6 | 10 | 10 | 10 | 10 | 10 | 10 |
| T7 | 10 | 10 | 10 | 0 | 0 | 10 |
| T8 | 10 | 10 | 10 | 10 | 10 | 10 |
| T9 | 10 | 10 | 10 | 10 | 10 | 10 |
| T10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Percentage | 100 | 100 | 100 | 90 | 90 | 100 |

Q = Question

T = Tester

Questions about Effectiveness Test

Yes = 10

No = 0

Table 6.5: Effectiveness Test

| Question/ Tester | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 |
|---------------------|----|-----|----|-----|----|-----|
| T1 | 10 | 10 | 10 | 10 | 10 | 10 |
| T2 | 10 | 10 | 10 | 10 | 10 | 10 |
| T3 | 10 | 10 | 10 | 10 | 10 | 10 |
| T4 | 10 | 10 | 10 | 10 | 10 | 10 |
| T5 | 10 | 10 | 10 | 10 | 10 | 10 |
| T6 | 10 | 10 | 10 | 10 | 10 | 10 |
| T7 | 10 | 10 | 10 | 10 | 0 | 10 |
| T8 | 10 | 10 | 0 | 10 | 10 | 10 |
| T9 | 10 | 10 | 10 | 10 | 10 | 10 |
| T10 | 0 | 10 | 10 | 10 | 10 | 10 |
| Percentage | 90 | 100 | 90 | 100 | 90 | 100 |

Q = Question

T = Tester

6.5.1 Question Analysis

Pra-soalan sebelum belajar teknik mewarna

Nama:

Umur:

Title: “Buku Teknik Mewarna Saya”

1. Anda memiliki tablet atau iPad?

- i. Ya
- ii. Tidak

| |
|--|
| |
| |

2. Apa yang anda paling suka?

- i. Buku dengan teks
- ii. Buku dengan teks dan gambar
- iii. Buku dengan teks, gambar dan video
- iv. Buku dengan teks, gambar video dan kuiz

| |
|--|
| |
| |
| |
| |

3. Minat aktiviti mewarna?

- i. Ya
- ii. Tidak

| |
|--|
| |
| |

4. Ingin belajar Teknik Mewarna?

- i. Ya
- ii. Tidak

| |
|--|
| |
| |

5. Pernah menggunakan buku elektronik atau buku interaktif?

- i. Ya
- ii. Tidak

| |
|--|
| |
| |

Pra-soalan selepas belajar teknik mewarna

Nama:

Umur:

Title: “Buku Teknik Mewarna Saya”

A. Ujian Pembelajaran

| No. | Soalan | Ya | Tidak |
|-----|--|----|-------|
| 1. | Saya boleh menggunakan buku interaktif dengan mudah. | | |
| 2. | Gambar, video dan elemen lain membantu dalam pembelajaran teknik mewarna. | | |
| 3. | Saya memahami dan akan menggunakan teknik mewarna dalam lukisan dengan baik. | | |
| 4. | Buku ini senang difahami dan mudah digunakan. | | |
| 5. | Arahan mudah yang digunakan dalam buku interaktif ini amat membantu. | | |
| 6. | Saya suka menggunakan buku interaktif ini. | | |

B. Ujian keberkesanan

| No. | Soalan | Ya | Tidak |
|-----|---|----|-------|
| 1. | Buku ini membantu saya untuk memahami teknik mewarna dengan lebih berkesan. | | |
| 2. | Widget seperti video membantu saya dalam memahami isi buku interaktif ini. | | |
| 3. | Saya tidak perlu rujuk internet dan sumber lain. | | |
| 4. | Kuiz dan permainan membantu saya dalam memahami isi buku interaktif ini. | | |
| 5. | Adakah buku interaktif ini menyediakan semua maklumat yang diperlukan dalam teknik mewarna. | | |
| 6. | Adakah buku interaktif ini menarik minat anda untuk belajar dan menggunakan teknik mewarna dengan lebih baik. | | |

Helaian mewarna

NAMA:

UMUR:

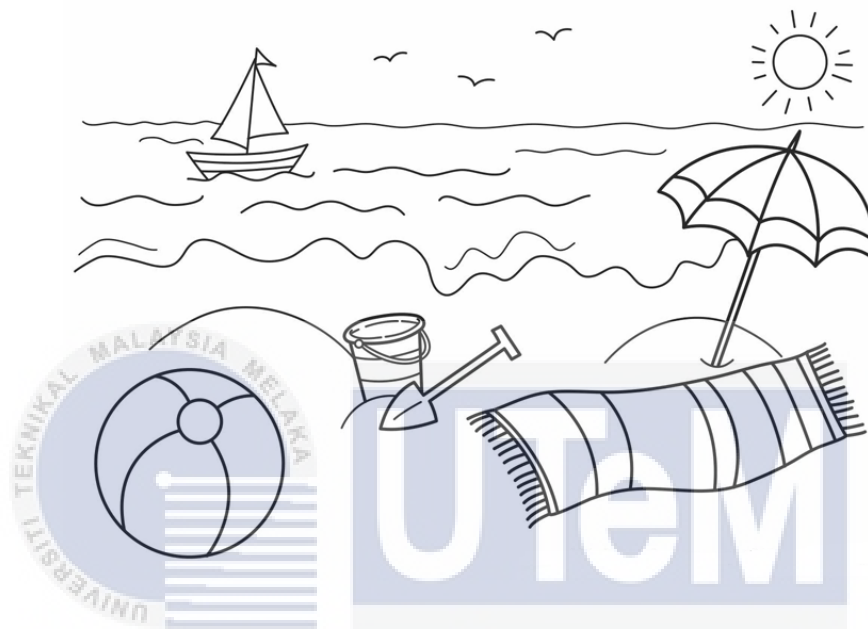


Figure 6.4: Images of coloring page for testing

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6.6 Analysis Testing

Analysis testing take place when the testing process are done and data such as coloring page and questionnaires have gathered. Result of analysis testing will be described in detail in a form of graph and pie chart. This result will be determined whether the objectives of the product are achieved or not.

Age of testers

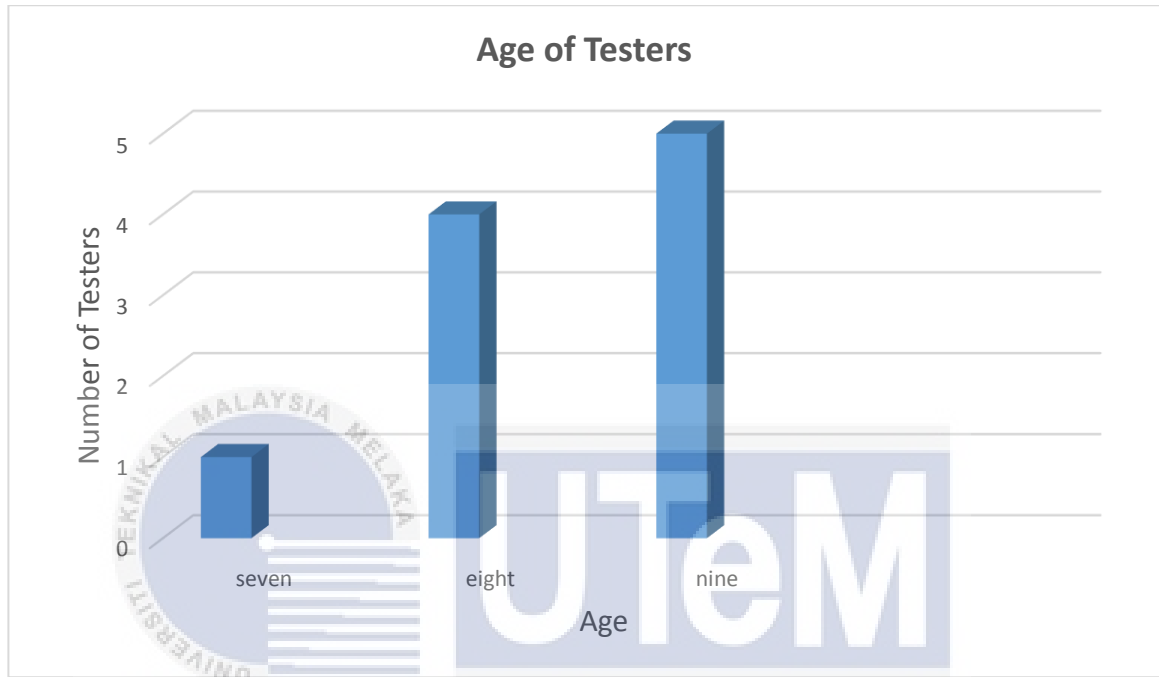


Figure 6.5: Graph of age of testers

The graph above shows that there is 1 person in age of seven, 4 person in age of eight and 5 person in age of nine years old. Total of testers for this testing process are 10 person.

Q5. Have you ever used an electronic book or interactive book?

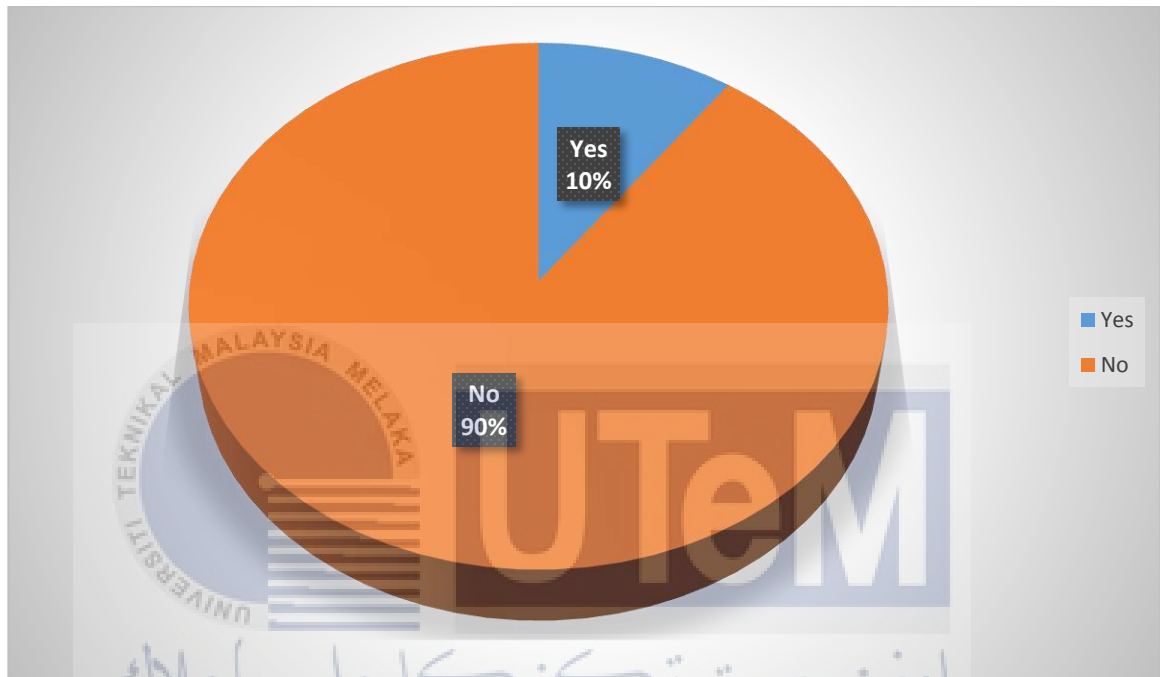


Figure 6.6: Pie chart of questions about whether the user ever use electronic book or interactive book?

The pie chart above shows that only one person ever use an electronic book or interactive book. Almost all tester never knew and never use interactive book or electronic book. So, within this product that have been developed, the testers as a student can get familiar and can get to know about the enjoyment and can gain experience using the interactive book.

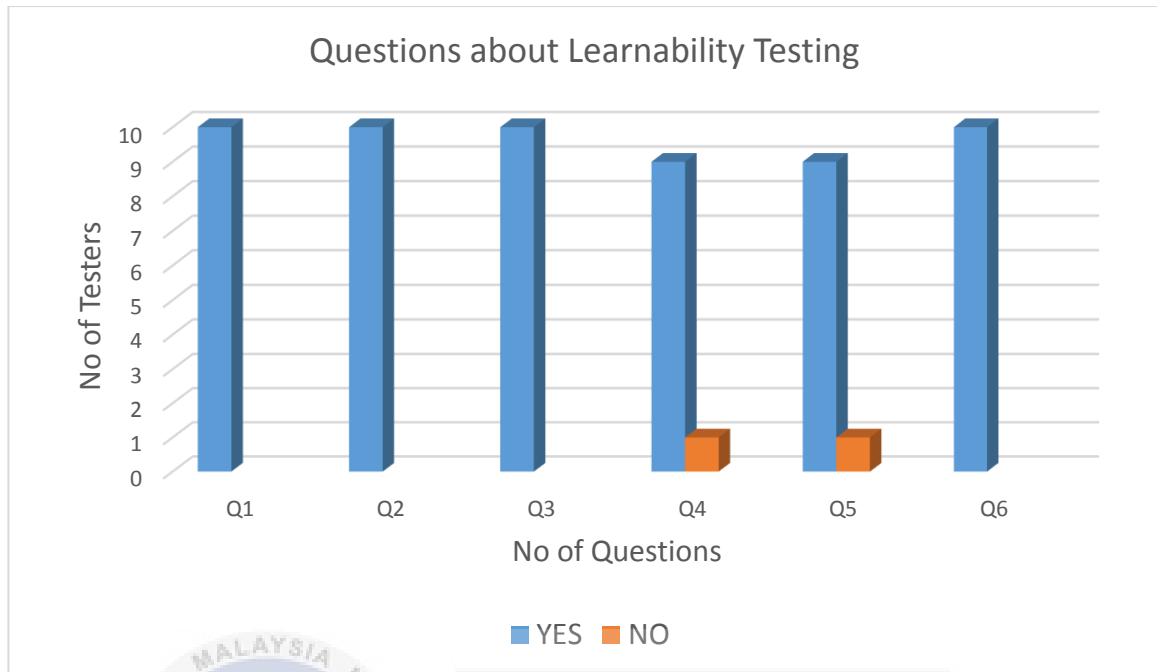


Figure 6.7: Graph of question about Learnability Testing

The graph above shows that all 10 testers agree with question 1, 2, 3 and 6. The highest number of testers agree with the question are 10. Question one about whether testers can use the interactive book without any problem. All testers agree that picture, video and other elements help in learning the coloring technique based on question 2. Question 3 is about whether the user can understand and can apply the techniques in their coloring better than before. All testers agree with the question 3. The most important for this learnability testing whether the testers enjoy using the interactive book. All 10 testers agree that they enjoy using this interactive book and they do not feel bored. The lowest numbers of testers agree with the question are 9 testers. Only one tester does not agree that this interactive book is easy to understand and simple to use based on 4. Question 5 also has the same result as question 4 as one person does not agree with the question about the simple instructions help in using this interactive book.

Within this learnability testing result, developer is believed that it is easy for user to learn and use the technique of coloring as the result shows that the number of testers agree with this learnability questions is between 9 and 10.

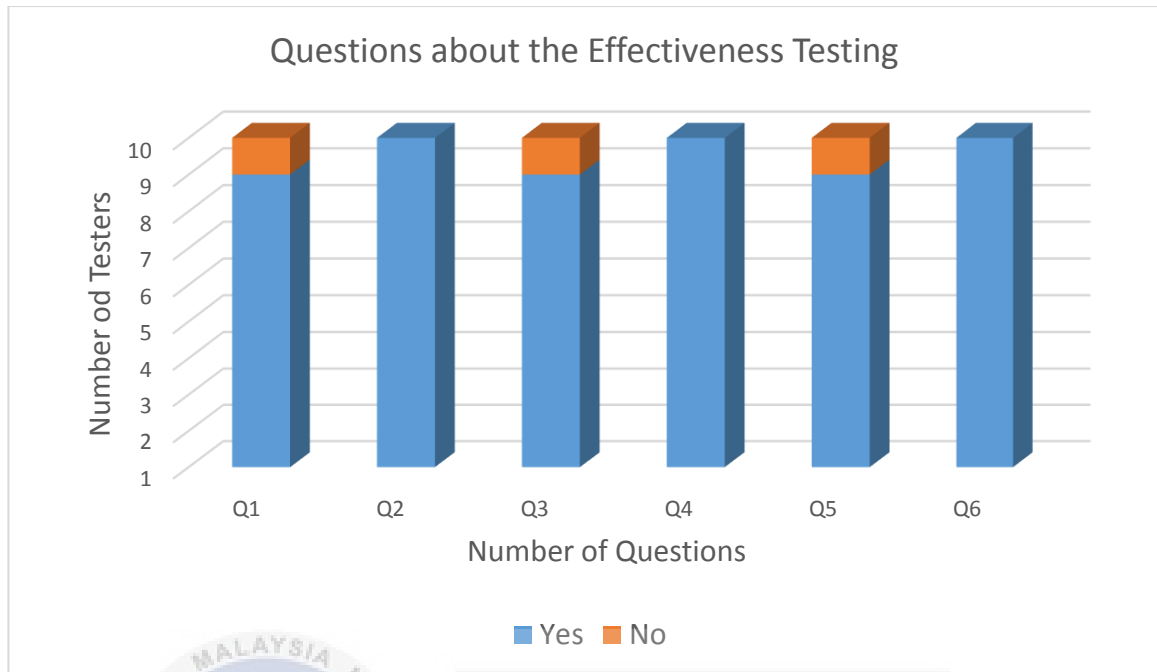


Figure 6.8: Graph of question about Effectiveness Testing

The graph above shows that all 10 testers agree with question 2, 4 and 6. The highest number of testers agree with the question are 10. Question two about whether testers support that the widget such as video makes them understand the content of the interactive book. All testers agree that video can help them understand more about the techniques in coloring based on question 2. Question 4 is about whether the quiz and game in the interactive book helps me to understand the content. All testers agree with the question 4. The developer believe that they enjoy and in the same time the testers can improve their knowledge about the content of this interactive book through game and quiz that are provided. The most important for this effectiveness testing whether the interactive book can attract the testers to learn and apply the technique of coloring. All 10 testers agree that they take more interest in using technique of coloring in future. The lowest numbers of testers agree with the question are 9 testers. Only one testers does not agree that this interactive book help user to understand the technique of coloring more effectively based on 1. Question 3 also have the same result as question 1 as one person does not agree with the question about they do no need to refer internet or other resources.

Based on question 5 only one testers does not agree about this interactive book provide all information that are needed in the coloring technique.

Within this effectiveness testing result, developer is believed that this interactive book need multimedia elements such as video and animation to help user understand more about the contents. Quiz and game also can attract user in using this interactive book as the result shows that the number of testers agree with this learnability questions is between 9 and 10.

| Testers | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 | T10 |
|---------------------------------|----|----|----|----|----|----|----|----|----|-----|
| Number of techniques use before | 1 | 3 | 1 | 2 | 2 | 3 | 1 | 1 | 1 | 3 |
| Number of techniques use after | 6 | 7 | 5 | 6 | 6 | 6 | 6 | 5 | 5 | 6 |

Table 6.5: Number of Technique in Coloring Use by Testers

The table above shows that testers improved in using technique of coloring. The highest number of techniques used in coloring after using interactive book are 6 out of 8 technique from this interactive book. The lowest number of technique in coloring after using and explore interactive book are 5. There are 3 testers out of 10 that get the lowest number. Mostly testers used techniques such as stroke pressure, boundary, hatching, shade, hue, tint, tone and also linear stroke.

The highest number of techniques use before are 3. 3 testers out of 10 only use 3 techniques in coloring before using the interactive book. The lowest number of techniques use before is 1 where 5 out of 10 testers only use it. Stroke pressure is the most technique used for testers before use this interactive book.

Within this testing result, developer is believed that this interactive book can help user to understand and apply the techniques of coloring as the result shows that the number of testers improve in using technique of coloring is between 5 and 6 out of 8 technique of coloring.

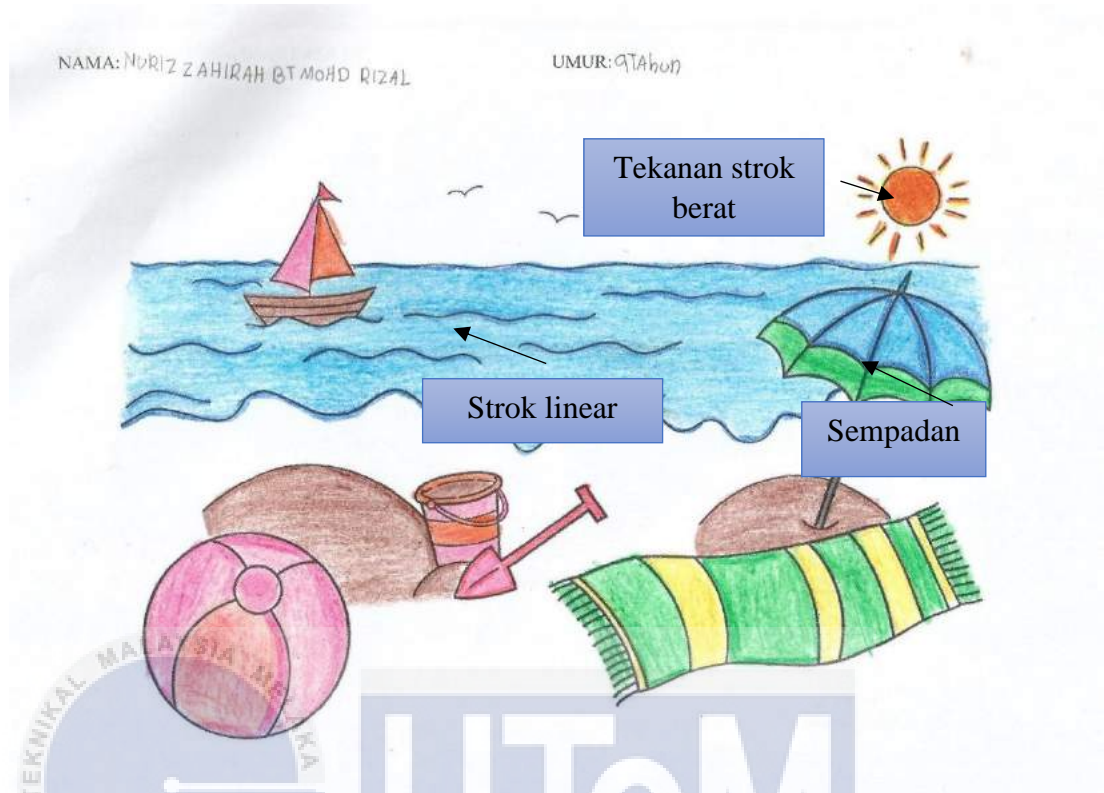


Figure 6.9: Images of coloring page before testing process

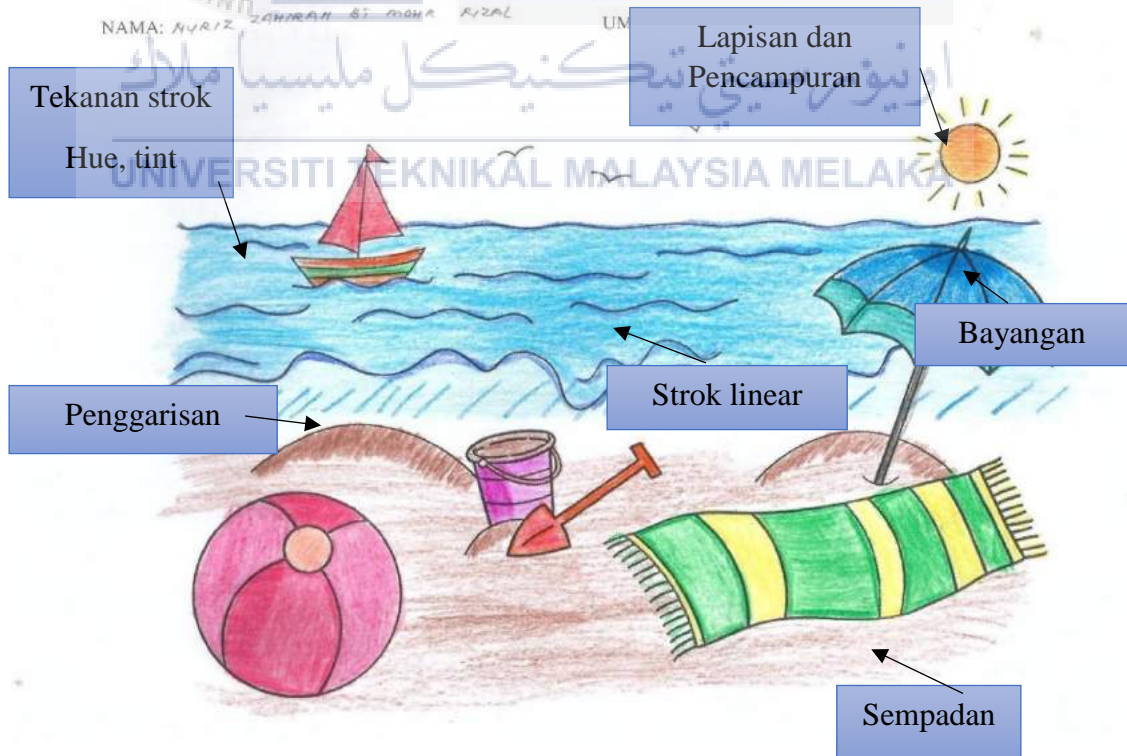


Figure 6.10: Images of coloring page after testing process

6.7 Conclusion

As the conclusion, this chapter explained about the step that are taken by developer to complete the development of this interactive book. A good testing process and evaluation will provide and produce a better product in future. Based on the result and evaluation, developer can know and learn about the weakness of the product and can make improvement to publish or market the better product.

Next chapter will explained the conclusion of this development of interactive book.



CHAPTER VII

CONCLUSION

7.1 Introduction

In this chapter, conclusion of development of interactive book will be explained. This topic will cover about the weaknesses and strength, proposition for improvement and project contribution for this product. Through this chapter, developer will take the information to make improvement to this product for produce a better product.

7.2 Observation on Weaknesses and Strengths

After testing and evaluation process, developer will identify weaknesses and strength of the product based on testers feedback. There are weaknesses and strength of the product that will be explained below.

7.2.1 Product advantages

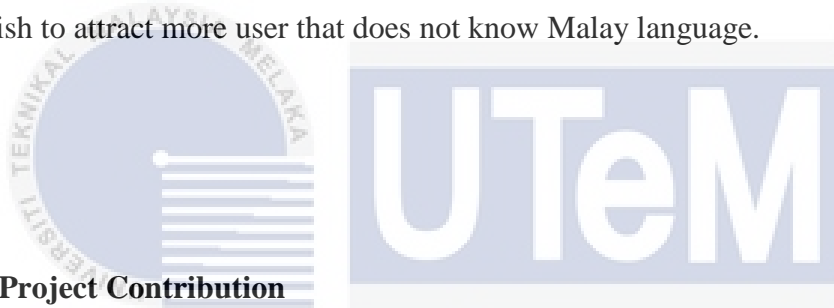
The strength of this product of interactive book is the book is equipped with multiple multimedia elements such as animation through swf format, video, graphic, text and audio. Through this element of multimedia, users can understand more about the content of this interactive book. Next, the main content and other content that are related to coloring with colored pencil are explained in detail. The content also suitable for children who in Phase 1 of primary school.

7.2.2 Product disadvantages

There are weaknesses of game and quiz in this interactive book. The question of the quiz is repeated. Game also have the same content and repeated. For example, in the game of Drag and Match, the question also repeated. Second weaknesses of quiz and game in this interactive book is user need to open back the pdf file if the user want to answer the quiz again. Next, the language for this interactive book in Malay only. Nevertheless, the content of the interactive book still well explained and delivered through multimedia elements.

7.3 Propositions for Improvement

“Buku Teknik Mewarna Saya” interactive book has achieved all three objectives that are outline before in chapter 1 for development of this product. However, improvements can be executed to produce a better product. Improvement can be done in game section where the “Drag and Drop” game from only have one scene into multiple scene for multiple question can be present at one time. Next, provide more questions in quiz page for user can refresh more information from the content. Next, the content or the information from this interactive book can be more informative and more attractive. Lastly, the interactive book can be improved by enable to change the language from Malay to English to attract more user that does not know Malay language.

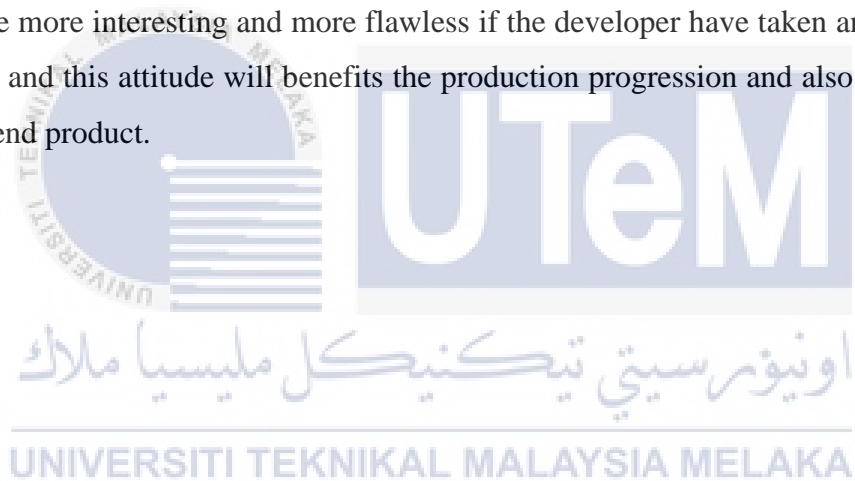


7.4 Project Contribution

“Buku Teknik Mewarna Saya” interactive book is developed and built to give and deliver information about techniques of coloring for Phase 1 in primary school. With this interactive book, it can help users learn about technique of coloring and related topic in coloring. Multimedia elements such as video also help user to understand more about the module. User also does not need to refer any resources, video or any material about technique of coloring using colored pencil because this interactive book almost cover all basic technique of coloring.

7.5 Conclusion

In this chapter, the purpose of development for this interactive book, to help user n learning techniques of coloring and enhance in coloring. The final product of interactive book has strength that will cover the weaknesses of the product. The strength also will complete the requirements of product. Planning as an important part in this development of product as facilitates management by follow the objectives and to minimize uncertainties, facilitate controlling the development process. Development of the product become more interesting and more flawless if the developer have taken an interest in the project and this attitude will benefits the production progression and also the result for a better end product.



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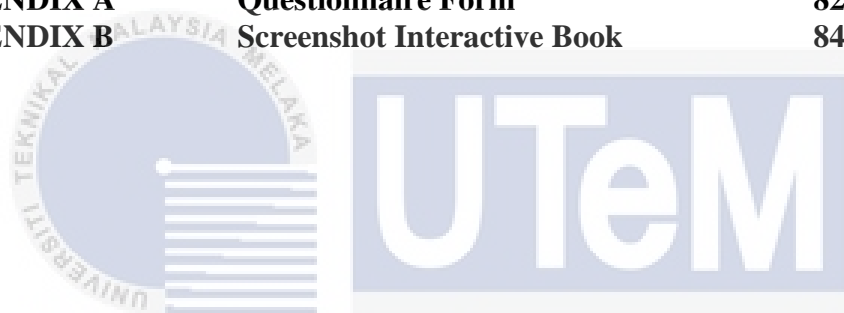
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اونيورسيتي تيكنيكل مليسيا ملاك

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Pra-soalan sebelum belajar teknik mewarna

Nama:

Umur:

Title: “Buku Teknik Mewarna Saya”

1. Anda memiliki tablet atau iPad?

- i. Ya
- ii. Tidak

| |
|--|
| |
| |

2. Apa yang anda paling suka?

- i. Buku dengan teks
- ii. Buku dengan teks dan gambar
- iii. Buku dengan teks, gambar dan video
- iv. Buku dengan teks, gambar video dan kuiz

| |
|--|
| |
| |
| |
| |

3. Minat aktiviti mewarna?

- i. Ya
- ii. Tidak

| |
|--|
| |
| |

4. Ingin belajar Teknik Mewarna?

- i. Ya
- ii. Tidak

| |
|--|
| |
| |

5. Pernah menggunakan buku elektronik atau buku interaktif?

- i. Ya
- ii. Tidak

| |
|--|
| |
| |

Pra-soalan selepas belajar teknik mewarna

Nama:

Umur:

Title: “Buku Teknik Mewarna Saya”

A. Ujian Pembelajaran

| No. | Soalan | Ya | Tidak |
|-----|--|----|-------|
| 1. | Saya boleh menggunakan buku interaktif dengan mudah. | | |
| 2. | Gambar, video dan elemen lain membantu dalam pembelajaran teknik mewarna. | | |
| 3. | Saya memahami dan akan menggunakan teknik mewarna dalam lukisan dengan baik. | | |
| 4. | Buku ini senang difahami dan mudah digunakan. | | |
| 5. | Arahan mudah yang digunakan dalam buku interaktif ini amat membantu. | | |
| 6. | Saya suka menggunakan buku interaktif ini. | | |

B. Ujian keberkesanan

| No. | Soalan | Ya | Tidak |
|-----|---|----|-------|
| 1. | Buku ini membantu saya untuk memahami teknik mewarna dengan lebih berkesan. | | |
| 2. | Widget seperti video membantu saya dalam memahami isi buku interaktif ini. | | |
| 3. | Saya tidak perlu rujuk internet dan sumber lain. | | |
| 4. | Kuiz dan permainan membantu saya dalam memahami isi buku interaktif ini. | | |
| 5. | Adakah buku interaktif ini menyediakan semua maklumat yang diperlukan dalam teknik mewarna. | | |
| 6. | Adakah buku interaktif ini menarik minat anda untuk belajar dan menggunakan teknik mewarna dengan lebih baik. | | |



1. Genggaman tangan yang kuat



Isi Kandungan

اونيورين تيكمي كمال املاك
kombinasi warna?

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Warna Asas

Warna Sekunder

Warna Tertier

Warna Harmoni




Warna Sejuk dan Panas




Isi Kandungan

Warna Asas


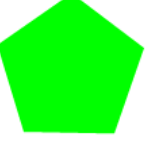

Tekan di bulatan




- Dikenali sebagai "primary color" dalam bahasa Inggeris.
- Warna yang tidak boleh dihasilkan oleh warna lain.
- Apabila warna-warna asas digabungkan, warna-warna lain boleh diperolehi daripada gabungannya.




Kombinasi warna

Isi Kandungan



Tarik dan lepaskan warna dan jenis kombinasinya

Hantar
Ulang

Kombinasi warna

Isi Kandungan



Kuiz Kombinasi Warna

Mula

Kombinasi warna  Isi Kandungan  



sempadan

Tekan di gambar

Langkah 1: warna di garisan sekeliling objek

Teknik mewarna  Isi Kandungan  

