Mobile Coloring Book

Renato N. Canilang¹, Christian Jose Z Macho², Hannah Ross A. Doloque³, Laila G. Sevillena⁴, Carla Carmela P. Perez⁵

Pangasinan State University

Abstract – Mobile Coloring Book is an educational and entertaining android application that the children needs. Specifically, the study attained the following objectives: (1) To identify the features of the developed mobile application; (2) To identify the algorithms in checking the color of the developed mobile application; and (3) To evaluate the level of acceptability of the mobile application in terms of User Interface, Ease of Use and Ease of Learning. The researchers used descriptive and developmental research design. The study was conducted through the prototyping model. The developed mobile application was determined acceptable with the overall computed mean of 4.50 an interpreted as “Excellent”. It was evaluated by 30 students randomly selected in the IT and CS department.

Keywords – Coloring application, Coloring book, Mobile application,

INTRODUCTION

A coloring book is a type of book containing line art to which a reader may add color using crayons, colored pencils, marker pens, paint or other artistic media. Coloring books are generally used by children, though coloring books for adults are also available. Traditional coloring books and coloring pages are printed on paper or card. Some coloring books have perforated edges so their pages can be removed from the books and used as individual sheets.

Coloring is not just for fun but also helps children to learn, gain more knowledge, express their feeling and enhance their skills and self-esteem. Children themselves should have self-motivation so that they would help themselves to enjoy the fun world of color games. It is apparently a simple and inexpensive way to relieve stress and an alternative to stressors ultimately aiding in reversing the effects of anxiety.

Learning and most probably, the mastery of advanced technology are very essential because it is the foundation and basic steps in children’s development and learning.

Technology plays a vital role in the modernization of civilization. It is everywhere and affects the everyday lives.

To become a successful and productive member of society in 21st century, a young child need an opportunity to develop the early “handling technology” skills and that is similar to the “book-handling” skills that are associated with early literacy to develop.

Types and uses of technology find its way into mainstream culture. Computers, tablets and mobile devices were used which involves application of tools and materials that enhance children learning and development.

The developed application “COLORDRAW: Learning Tool for Preschool” unpublished on March 2013 emphasized that when used appropriately and with caution, the active use of technology can support and extend traditional materials in valuable ways. Playing this android game gives an opportunity to explore their creativeness and experiences with technology.

Children can play anywhere. Games for children are very important. It is an opportunity to gain self-worth. Appropriate experience with technology allow children to control the medium and outcome of experience to explore the functions of digital tools and pretend about how these materials might be used in real life (Fisher, M.A & Gillespie, C.S., 2003).

For that reason, the researches came up with the development of an android game entitled “Mobile Coloring Book” to provide handheld application that the children can play, enjoy and learn. The purpose of this study is to expand the learning methods of the children, teaching methods of the parents and teachers and upgrade the traditional way of coloring.

OBJECTIVES OF THE STUDY

The study aimed to develop Mobile Coloring Book with the following specific objectives: To identify the features applied in the Mobile Coloring Book, to identify the algorithms in checking the color in the developed mobile application, and to determine the level of acceptability of the developed application in terms of user interface, ease of use, and ease of Learning.
MATERIALS AND METHODS

The researchers used descriptive and developmental research design for the study. Prototyping was used as a software development methodology. Prototyping has the following phases:

Planning

In this phase, the researchers established and identified the requirements needed to develop the study. It includes the project objectives, data to be gathered, features to apply and design to satisfy the users’ needs.

Requirements Gathering and Analysis

In this phase, the researchers gathered all the data needed for the development of the application, analyzed the gathered data to be used for the next phase.

Design

The researchers created flow chart which illustrated the flow or process of the application. The researchers also designed the interface of the application which includes the objects, the input and output of the app and the minimum hardware and software requirements needed to implement the application.

Code Generation

During the phase, the researchers transformed the design into working application. The researchers used Java programming language for the development of the application.

Testing

After the development, the application was tested and evaluated the application by the 30 students of BSIT and BSCS as respondents which were selected randomly.

Implementation

After the successful testing and evaluation, the developed system is ready to be implemented in this phase for the users.

Maintenance

After the implementation, the developed system will maintain by the researchers for some changes and updates that the users may request.

Data Gathering Procedures

The acceptability level of the developed application was determined by computing the weighted mean of the survey. It was evaluated by 30 students of BSIT and BSCS of Pangasinan State University, Lingayen Campus. Each descriptive response is given point value as follows:

<table>
<thead>
<tr>
<th>Point Score</th>
<th>Rating</th>
<th>Descriptive Rating</th>
<th>Descriptive Equivalent Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4.20-5.00</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>4</td>
<td>3.40-4.19</td>
<td>Very Good</td>
<td>Acceptable</td>
</tr>
<tr>
<td>3</td>
<td>2.60-3.39</td>
<td>Good</td>
<td>Acceptable</td>
</tr>
<tr>
<td>2</td>
<td>1.80-2.59</td>
<td>Fair</td>
<td>Not Acceptable</td>
</tr>
<tr>
<td>1</td>
<td>1.00-1.79</td>
<td>Poor</td>
<td>Not Acceptable</td>
</tr>
</tbody>
</table>

Data Gathering Instrument

Survey instrument was used to assess the level of acceptability of the Mobile Coloring Book. Each of the items of the questionnaire indicates to determine the level of acceptability of the developed application. The internet and library research was used as a tool in gathering ideas regarding the study such as the design, related studies and resources which helped in the development and completion of the study.

RESULTS AND DISCUSSION

The following are the features of the developed application: 1) Categories, the mobile application has different categories to play with, namely, Animals; Disney; Shape; and Alphabets. 2) Lock feature, in each category, the user/player needs to unlock the other items by coloring the present object correctly. 3) Reward points, a corresponding reward points will be given to the players when the object is colored correctly.

In terms of checking the color, the player may input invalid or not. The game needs a variable to hold the player’s answer. The player’s answer was compared with the real color of the given object. After the player submitted the answer, the game gives a feedback based on the ratings.

The acceptability level for Mobile Coloring Book was evaluated and determined based on the following indicators: (1) User Interface; (2) Ease of Use; and (3) Ease of Learning.
On screen
text of the
game is easy
to read

4.20
Excellent
Acceptable

I feel
comfortable
on the game
background

4.30
Excellent
Acceptable

The game
controls are
straightforwa
rd and easy to
use

4.20
Excellent
Acceptable

I find
attractiveness
to the button
images and
animation in
the game

4.00
Very Good
Acceptable

I find
attractiveness
to the
background
design

4.30
Excellent
Acceptable

Weighted
Mean
4.20
Excellent
Acceptable

The table 1 shows that in terms of User Interface, the developed application obtained a total weighted mean of 4.20 with a descriptive rating of “Excellent” and interpreted as “Acceptable”. It means that the users/players are satisfied with its interface which explains that the screen text is easy to read, they are comfortable on the game background, controls are easy to use, and the buttons, design and animation are found attractive. Rouge (2017) states that whatever the device, it has to have a ‘user interface’, this could be as simple as a telephone keyboard, but whichever form it takes, it is the way in which a user interacts with that device and it’s therefore its vital to get it right.

Table 2. Acceptability of Mobile Coloring Book in terms of Ease of Use

<table>
<thead>
<tr>
<th>Ease of Use</th>
<th>Mean</th>
<th>Descriptive Rating</th>
<th>Descriptive Equivalent Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.50</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>The game is simple to use</td>
<td>4.50</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>The game is user friendly</td>
<td>4.50</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>I find myself comfortable and enjoying to play this game</td>
<td>4.50</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Weighted Mean</td>
<td>4.50</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
</tbody>
</table>

The table 2 shows that in terms of Ease of Use, the developed application obtained a total weighted mean of 4.50 with a descriptive rating of “Excellent” and interpreted as “Acceptable”. It means that the game is simple to use, user friendly and enjoying to play. Morettini (2011) states that we only get one chance to make a great first impression–and the user interface in many cases is that first impression.

Table 3. Acceptability of Mobile Coloring Book in terms of Ease of Learning

www.sajst.org
Ease of Learning & Descriptive Rating

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Mean</th>
<th>Descriptive Rating</th>
<th>Descriptive Equivalent Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>I learned to use the game quickly</td>
<td>4.70</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Each category is manageable</td>
<td>4.90</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Weighted Mean</td>
<td>4.80</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
</tbody>
</table>

The table 3 shows that in terms of Ease of Learning, the developed application obtained a total weighted mean of 4.80 with a descriptive rating of “Excellent” and interpreted as “Acceptable”. It means that the game is easy to learn and manageable.

Table 4. Summary of Acceptability of Mobile Coloring Book

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Mean</th>
<th>Descriptive Rating</th>
<th>Descriptive Equivalent Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Interface</td>
<td>4.20</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>4.50</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Ease of Learning</td>
<td>4.80</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Weighted Mean</td>
<td>4.50</td>
<td>Excellent</td>
<td>Acceptable</td>
</tr>
</tbody>
</table>

The Table 4 presents the mean of each indicator for acceptability of Mobile Coloring Book. It shows that the Ease of Learning garnered the highest mean at 4.80, while the lowest mean at 4.20 was computed for the User Interface Indicator. With an overall mean of 4.50, it was concluded that the developed mobile application is acceptable. It only illustrates that the application is easy to use, looks good, the designs is attractive, and easy to learn. Kassim et al. (2012) emphasized that various determinants of user satisfaction have been assessed and investigated on how users perceive their acceptance rate on the fit of the information system (referring to the mobile application) characteristics and user needs.

Table 5. Hardware and Software Requirements

<table>
<thead>
<tr>
<th>Software/Hardware</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Android 5.0</td>
</tr>
<tr>
<td>RAM</td>
<td>1 GB</td>
</tr>
</tbody>
</table>

The table 5 represents the minimum hardware and software requirements that are needed for the implementation of the mobile application to meet the best performance and to work properly.

CONCLUSION AND RECOMMENDATION

Based on the findings or results of the study, the following conclusions were made: The features of the developed mobile application are appropriate and effective for learners or children which found attractive and enjoying and can be boost their self-esteem. The algorithms used in checking the colors is reliable and made the application more challenging and fun. The developed mobile application is acceptable with an overall mean of 4.50 with a descriptive rating of “Excellent”.

More categories. It is more challenging and fun if the application has more categories so it is recommended to the future researchers to add more exciting categories. Multiple objects. It is recommended to the future researchers to add feature such as multiple objects to color at the same time for the better learnings.

REFERENCES


Rounge (2017). “Why good user interface design is so Important” retrieved from https://www.rouge-media.com/blog/good-user-interface-design-important/