Guideline for the Graphic Design of Web Application for Children's Interface

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Abstract

There have been numerous studies done on the guidelines of user interface, but only a number of them have considered specific guidelines for the design of children's interface. This paper is about a research on the specific guidelines for children, focusing on the criteria of graphic design. The objective of this research is to study on the guidelines of user interface design and to develop specific guidelines on children's graphic design. The criteria of graphic design are the priority of this research since previous research have proven that graphic design is the main factor which contributes to the problem of usability of web application interfaces, in terms of the overall graphic layout not being in a hierarchical order, not taken into concern the availability of space, inappropriate margin, improper type and font size selection, and less concentration on the use of the colours. The research methodology makes use of the comparison of and the coordination to the guidelines on children's interface and the specific guidelines on the graphic design of web application interfaces. The contribution of this research is the guidelines on the design of web application graphics which are specifically for children.

Keywords: guidelines, graphic design, children's interface design

1. Introduction

Graphic design has become the priority in the design of web application interfaces because it is able to draw the attention of its users in using it easily, especially if the users are children [1]. Graphic design is not only important for the design of user interface, but also influences everyday life according to the change in time, style, age and social aspects. Generally, there are a few examples of graphic design revolution. In the 1970's, there had been a lot of graphic design with floral and globe tones themes. This is due to the surroundings of the community of that era which was psychedelic and was crazy about floral and exhilarating shape designs. Whereas in the 1980's, it was found that many were attracted to bright neon lights with patterns, such as robot design. This may be due to the advent of computers and technology in that era. Moving on into the 1990s, graphic design in a variety of styles started to appear as it headed into the new millennium.

In the current era, the application of the minimalist approach is the new style in exhibiting boldness in designing something. There are many advertising and graphic designs for text and logo which have image diversity with graphical splashes. This style has influenced the interface design of web applications as well as the system, apart from influencing the print media advertising. The widespread existence of various design styles may cause designers to face difficulty in making decisions in the design of interfaces. Thus, the designers require a graphic design guidelines in order to coordinate their needs in line with the change of time, style, age, and social aspects in producing acceptable designs which could be used throughout the region.

Guidelines are an important aspect in designing relevant and suitable interface for the user. There are 10 basic principles in interface design which was introduced by [2] , to provide the designers with guidelines in developing the interface design easily. Meanwhile, [3] has provided 8 general guidelines called the *golden rules* as the basic rules for designing the user

interface. However, the studies conducted by Nielsen and Sheneiderman are taken as the general guidelines to be adhered to, generally, by all designers of user interface.

A recent study carried out by [4] has produced 130 interface design guidelines specifically for children aged 3-12 years. Meanwhile, a study on specific guideline on the graphic design of web application interface has long been conducted by researchers [5] and, [6] Nevertheless, studies on the creation of graphic design guidelines specifically for children have never been conducted.

LAYOUT
1. To provide space in between the components, at least six pixels. There should be 12 horizontal pixels and 18 vertical pixels between the labels and groups of components.
2. Separate lengthy information into groups of simpler information such as using *radio button* or *check boxes*.
3. To align elements of the same type on the left side of each other.
4. To minimize the number of alignment points in the windows.
5. To use the right justification between groups of components or windows in general on the screen.
6. To use white background that is the empty space
7. To use consistent alignment
8. Balanced division of space in the window for dark and bright colours
9. The design of window which does not exceed 50% more space in one dimension

USERS' VISUAL PERCEPTION
1. A colon must be placed at the end of a label.
2. To label names on the objects
3. Align to the left of the components and labels, except for all labels in the group which have different lengths.
4. To name the labels accurately
5. To be consistent in labelling
6. Do not use the same label more than once in the same window.
7. To use font size and type which has easily readable typeface and to use only one type.
8. Do not use more than two or three different font sizes in the same application.
9. Do not use graphic backdrops or "watermarks" behind the text

THE USE OF COLOUR
1. The use of the same color on items which are related
2. To be consistent in the use of colour on objects or text which have the same meaning.
3. To use contrasting foreground and background colour.
4. To use a maximum of between three to seven colors only.

GENERAL INTERACTION
1. To provide the correction of wrong spelling together with the name domain.
2. To lay the foundation of good design
3. To design screen with no need for scrolling
4. To use the interaction scheme according to the standard
5. To use the form according to the standard
6. To avoid using sub-features, only main features are being use
7. Not to ask children about their personal information which may cause them any harm, on the website
8. To acknowledge their success immediately after the information has been accessed
9. To ensure that each feature is of high quality and functions well
10. To provide clear instructions
11. To use the symbols or notations in the manner commonly used.

TEXT
12. To use relative and simple fonts
13. To place the text on a solid background
14. Not to use animated texts
15. To use simple texts which can be understood only. To minimize the number of texts on the screen
16. To consistently maintain the level of readability
17. To differentiate the content for adults
18. To state explicitly to the users that they are in the information zone for adults
19. To come up with short and clear textual instructions
20. To provide instructions which can always be accessed
21. To assist seasoned readers by providing texts with different explanations

GRAPHIC USER INTERFACE (GUI)
22. To widely present web content on the site
23. To use accurate and not vague labels
24. To make clickable items appear clickable
25. To make simple "rollover" visuals into clickable images
26. To design text buttons which look like they are clickable
27. To be cautious of promotional elements which attract too much attention
28. To differentiate advertisements from content
29. To show the exit
30. To customize the website being developed with the advertisers
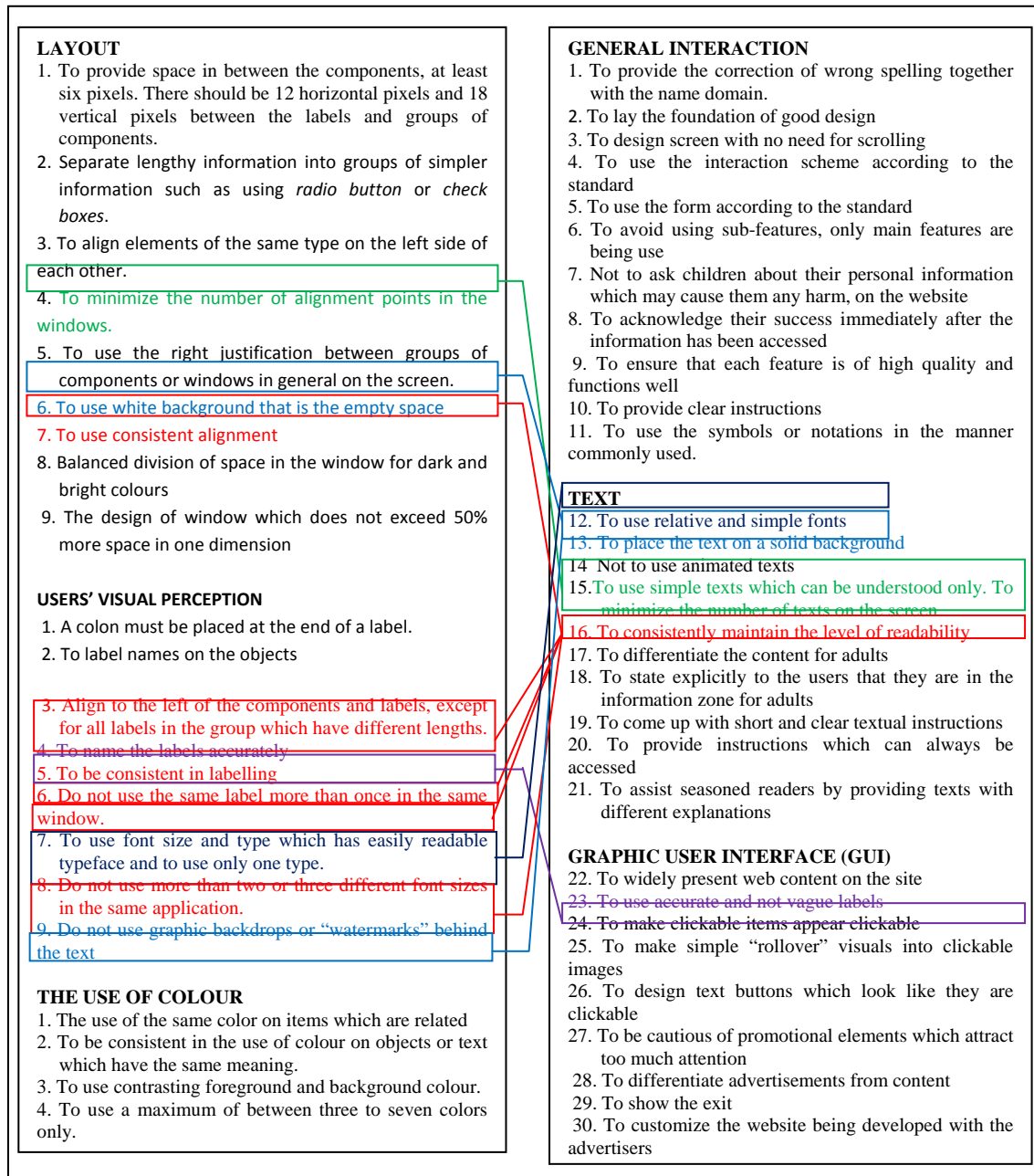
Figure 1. The Coordination Process of Guidelines

Thus, the objective of this study is to conduct a research on the production of graphic design guidelines which are specifically for children. The methodology of this study is the comparison and coordination of guidelines in interface design for children and guidelines which

are specifically for the graphic design of web application interfaces. The comparison and coordination are specifically on graphic design elements. Graphic design is one of the main criteria in the design of user interface, which describes the overall graphic layout appearance on the screen, the aspect of space, margins and font type and size selection, as well as the use of colour. The contribution of this study is the guidelines on the graphic design for web applications which are specifically for children.

2. Research Method

The methodology of this study is through the consolidation and coordination of Sections A and B in the background study. The guidelines on children's interface design developed by [4] become the main foundation of this study. Each item in the first guideline which has the same meaning as the second guideline will be removed.

The guideline on children's graphic design is the result of the consolidation and coordination of the guideline on the graphic design of web application interfaces with the guideline for the development of children's interface.

Table1. Guidelines on Graphic Design for Children

General
1. Separate lengthy information into groups of simpler information such as using *radio button* or *check boxes*.
2. The design of window which does not exceed 50% more space in one dimension
3. To provide typos syntax together with the name domain
4. To lay the foundation of good design
5. To design screen with no need for scrolling
6. To use the interaction scheme according to the standard
7. To use the form according to the standard
8. To avoid using sub-features, only main features are being used
9. Not to ask children about their personal information which may cause them any harm, on the website
10. To acknowledge their success immediately after the information has been accessed
11. To ensure that each feature is of high quality and functions well
12. To provide clear instructions
13. To use the symbols or notations in the manner commonly used
Layout
14. To provide space in between the components, at least six pixels. There should be 12 horizontal pixels and 18 vertical pixels between the labels and groups of components.
15. To align elements of the same type on the left side of each other
16. To use simple text fonts and large fonts relatively
17. To place text on solid background that is not on background with images or dynamic background
18. Balanced division of space in the window for dark and bright colours
19. To use simple texts which can be understood only. To minimise the number of text on the screen
20. Not to use animated text
21. To customize the website being developed with the advertisers
22. To use the right justification between groups of components or windows in general on the screen
23. To differentiate advertisements from content
24. To provide a sign or indication to exit the system
25. To be cautious of promotional elements which attract too much attention
26. To differentiate the content for adults
27. To state explicitly to the users that they are in the information zone for adults
28. To come up with short and clear textual instructions
29. To provide instructions which can always be accessed
30. To assist seasoned readers by providing text with different explanations
The Use of Colour
31. To use the same colour with related items
32. To be consistent in the use of colour on objects or text which have the same meaning
33. To use contrasting foreground and background colour
34. To use a maximum of between three to seven colors only
35. To use accurate and not vague labels
36. To label names on the objects
37. To make clickable items appear clickable
38. To consistently maintain the level of readability
39. To add "visual rollover" feature on clickable images
40. A colon must be placed at the end of a label.

Figure 1 shows nine layout guidelines listed by [5] and supported by [13], three items (4, 6 and 7) have been removed and two other items (2 and 9) are taken as the general guidelines. The guidelines on users' visual perception as outlined by [5] show that six items (4, 5, 6, 7, 8 and 9) have been removed. The third item is deemed as overlapping with the first item, thus only two items that are item one and two are taken to complement the guidelines. Finally the guideline on colour as stated by [16] lists four general guidelines for colour. All four guidelines are included as the guidelines for graphic design for students because [4] have not stated specifically about the use of colour.

3. Results and Analysis

Next, the result of graphic design guidelines for students are listed in Table 1, that is 40 items which consist of the general component, layout, the use of colour and students' visual perception. The list of guidelines produced is the rule which could be used by interface designers in developing interfaces which are specifically for children based on the graphic design criteria.

4. Conclusion

This study has produced 40 guidelines for graphic design as a guide in designing children's interface. These guidelines are the result of the review of literature on the guidelines of students' interface design and guidelines on the interface design of web application. Comparison and coordination have been made on each item according to the graphic design structure which have been analysed.

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