A Novel Reading Technique Application: Exploring Arabic Children Experience

Maram S. Alhafzy, Ebtesam A. Alomari, Hind H. Mahdy, and Maysoon F. Abulkhair

Faculty of Computing and Information Technology, King Abdulaziz University, Jeddah, Saudi Arabia
{maram.alhafzy,ebtesam07}@yahoo.com, hind_mahdy_07@hotmail.com, mabualkhair@kau.edu.sa

Abstract. Computers and many of their applications are extremely vital and play a crucial role in the children's education and knowledge building. This paper discusses the results of a study about Arabic-speaking children's interaction with an Arabic application. Then, researchers collected information to study how these children reacted and felt when they were interacting with this Arabic reading application.

Keywords: Children, Reading, Arabic Application.

1 Introduction

A child's reading skills are definitely essential to his or her success in school and work. Reading can be an entertaining activity for children, and it helps them to recognize new words from the atmosphere around them. This skill may be improved through different techniques such as traditional and technical. In the technical method, children can use computers, specialized devices and other tools to support them in reading.

Most of the earlier researches, presented that computers and many of their applications, which support and target children, are truly important and play a crucial role in the children's education and knowledge building. However, there are some problems and weaknesses in those software tools and applications offered for kids. This problem is that there are few Arabic websites and applications.

Some Arabic applications' and websites' interfaces are crowded with numerous images and sounds, which distract the attention of the child from the educational content. In addition to that, some of them focus only on text more than images and sounds. Furthermore, some children's applications provide difficult terms and vocabularies without considering their age which lead to non-attractive and ineffective application for children.

On the other hand, some of the children's websites do not have an appropriate format. Their designers use different font types and sizes; consequently, children face difficulties while navigating among their windows and activities. Moreover, most of

A. Marcus (Ed.): DUXU/HCII 2013, Part II, LNCS 8013, pp. 3–10, 2013.

Arabic tools are old, traditional, and not built based on new studies. In contrast English tools motivate children to learn and enjoy their time through fun activities.

It is certainly important to measure and determine the reading level of the children. However, depending on our knowledge, there are no software applications to assess the kid's reading skills. Additionally, the early assessment will help to detect the child's reading difficulties and help the parents and teacher(s) to know the child's educational progress level.

This paper is organized as follows; next section presents reading strategy. Section 3 displays brief description about the application. Section 4 discusses the literature review. Section 5 illustrates the research questions. Section 6 explains the methodology. The results and discussion are presented in section 7 and 8. The last section is the conclusion.

2 Reading Strategy

The "Let's Read" application designed for kid's ages from 3-7 years old. Application activities are based on experts in childhood department. These activities include the following: phonics awareness, character recognition and word recognition, as shown in fig.1.

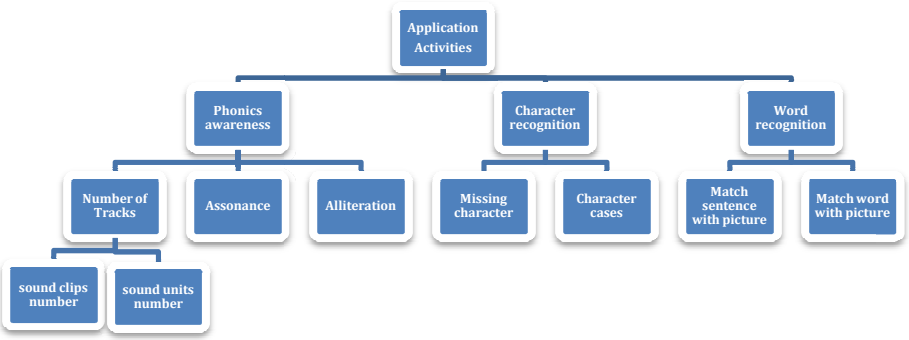

Fig. 1. Activities Hierarchical

3 "Let's Read" Application

The child will interact with application by using the mouse, because developers note from previous studies that using the mouse in movement and selecting objects will be more efficient for children and easier than using the keyboard. As well, through the designing process, designers consider designing and selecting pictures that are suitable for the content and that are in a good size as shown in fig.2, 3.

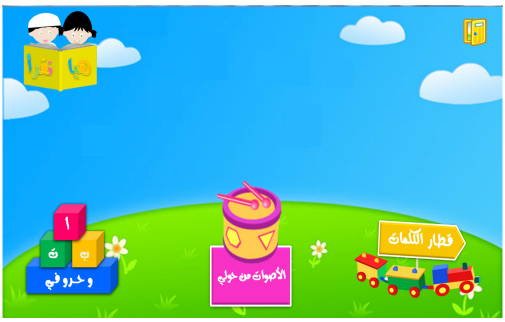

Fig. 2. Activities' Main Window

Fig. 3. Phonics Awareness's Main Window

Furthermore, they try to design large icons, which are clear, easy to select, and help child to navigate easier; they provide an option to return to the previous activity. When children do not solve the activity correctly, the application will give him/her another chance to try. Also, activities' questions are asked by a clear sound instead of written question. Therefore, children who do not have high reading skills can use this application as shown in fig.4, 5.

Fig. 4. Example1 of activity

Fig. 5. Example2 of activity

There are two interactive characters: girl (Basmah) and boy (Basem), as shown in fig.6. Each time children can select which character they would like to help and guide the character to solving the activities' questions.

Fig. 6. Application's Characters the: girl (Basmah) and boy (Basem)

4 Literature Review

It has become obvious that as children's wishes, prerequisites, desires, and needs increase when it comes to technology. To design an attractive application for children, children must be involved in the designing process in a meaningful way. Then again, there are limitations for involving children in all aspects of the designing process, as children often have a difficulty in expressing ideas. The real issue is not whether involving children is advantageous or disadvantageous but how increase their effective engagement in the design process [1].

Websites designed for children are preferred to be convivial, beautiful, vividly colorful, stimulating ,captivating, and memorable. In Designing Websites for Kids: Trends and Best Practices article, Louis Lazaris found best practices that are exclusive to Web design for children's sites. These practices will be explained in the following paragraphs [2].

The website should contain bright, vivid colors, because bright colors will hold a child's attention for a longer period of time, and visually stimulate them in an unforgettable way. Also, it should place the child in a high-spirited, exuberant mood.

The website's interface is preferred to have elements from nature because children's experiences in life are limited; some of the things they are most familiar with are found in nature. Large animated speaking characters are a captivating way to grab a child's attention [2].

Children's website designers can oversimplify navigation and call-to-action areas so that children can navigate easily. One of the most important ways for a children's website to succeed, is to include elements that allow a child to interact with the site in some way, like animation, sound, video and games [2].

According to the analysis of the children's cognition features and combines the basic principle of the software interface designed by X. Pan, he gets the following revelation. The layout is mainly on single window, reducing the disturbing elements of the interface and the operation procedure should be simplified [3].

For children's websites and applications larger font sizes are generally preferred. Bernard, Mills et al found that kids 9 to 11 years old prefer 14-point fonts over 12-point fonts [4].

Research has indicated that input devices are important for the usability of any educational software. Study by A. Donker and P. Reitsma aim to investigate the suitability of the mouse as an input device for young children. The results show that young children are clearly capable of using a computer mouse. It is evident that they can click very accurately on targets, even though they need a lot of time to aim on objects. This indicates that objects in educational software do not have to be much larger than objects in software for adults, unless children are required to respond quickly [5].

A study by S. Atkinson et al about non-keyboard input device (NKID) users. It is recommended that the users should be able to use a combination of methods in order to carry out standard tasks e.g. shortcuts, icons, device buttons to reduce NKID dependency; besides, users should be encouraged to incorporate a mix of screen and non-screen work in their daily work routine [6].

5 Research Questions

In order to study the Arabic-speaking children's interaction with the "Let's read" application, this study addressed the following questions:

1. How much is this application's design and interface suitable for children from 3-7 years old and how far does it help them to improve their reading skill?
2. How much the interface, pictures, characters and their encouragement statements, which are related to the Arabic culture, can affect the Arabic-speaking children and increase their willingness to use the application?

6 Method

Observation and interviews were conducted with children to observe their interactions and their comprehensibility while using "Let's Read" educational application. Five children were interviewed and asked to use the application and perform some tasks.

6.1 Participants

The participants in the study were five children between 3 and 7 years old. All the participating children had a normal vision and 2 out of 5 were boys. All of them knew how to use iPads and iPhones but they had no idea about the new reading strategy that was implemented in this application. Moreover, 2 out of 5 are three year olds; thus, they did not know the alphabet and reading basics.

6.2 Procedure

The study was divided into two phases, which were the testing phase and the interview phase. During the testing phase, children asked to play by selecting the characters that helped them, and then they selected their choice of activity. Prior to that, a brief description and explanation were given so that they understood that they could start playing and answering the questions by selecting any activity without any restrictions.

The time given was approximately 20-25 minutes for each child. After the testing phase, the interview phase was conducted immediately to get details on their background and how they felt after using this application.

7 Result

Basically the results presented that the children showed positive attitude towards using the application. Although they liked cartoon characters like SpongeBob and Tom and Jerry, they found the characters in this application more attractive. They liked their names, ‘Basmah’ and ‘Basem’ because they are relevant to their culture. In addition, researchers noticed that girls always selected the girl character (Basmah), they said: “she is beautiful”, and one child said: “I like her dress and shoe color”. Also, we noticed that they tried to act out the characters' way of movement and dancing when they solved the activity correctly.

In addition, most of the children enjoyed listening to the positive feedback when they got correct answers and completed a task. They liked the sound of the character that encouraged them by articulating Arabic sentences. They tried to repeat their sentences because even if they failed in solving the task; the characters encouraged them to try again and told them that they are able to solve it correctly.

Most of the participants knew how to navigate between; for example, they knew how to go back to the previous window or go to the next window. Also, most of them knew how to solve the exercises by clicking on one of the three picture choices after they listen to the exercise's question.

However, we noticed two of participants who were three years old faced some difficulties in using the mouse because they were used to dealing with touch screen devices. Similarly, they do not understand some activities because they still did not learn alphabets. Yet, they understood the functions of the icons such as the repeat the question icon. Additionally, we noticed they wanted to continue playing because they found the colors and pictures very attractive.

Furthermore, most of the participants knew how to use the application from the first time and found it easy to use. They were pleased when they played, and they wanted to continue playing as one child said, ‘‘I want to play again at home” and another child found it is very helpful and asked, “Can I have it on my iPad?”.

8 Discussion

From the study, it shows that the application is easy to use and very eye-catching, the pictures' size and color are suitable for children in this age; moreover, they encourage them to use the application, which helps to improve their reading skills.

Furthermore, the characters' name and design attracted the children because they were related to their culture, and each time they can select the character that they prefer. As well, the characters' interactions and encouragement statements motivated the children to continue.

Although all the questions in this application do not need drag and drop or any tough mouse movements and the icons were large and easy to select, children who are three years old faced struggles while using the mouse as mentioned above in section 7. Consequently, researchers suggested improving the application in order for it to function on touch screen devices, which will make it easier to use and transport than on a laptop or desktop computer. This makes it more available to a large percentage of children that use iPads or other touch screen devices.

9 Conclusions

Computers and many of their applications play a fundamental role in the children's education and knowledge building. This paper presents a study to analyze the usability of using “Let’s Read” application, which aims to improve the reading skills for preschool children. The results of this study showed that the application is easy to use, very attractive and the pictures' colors and sizes were suitable for children in this age. Besides, characters' names and the design were related to their culture and motivated children to use the application. Still, as future work, researchers suggest to improve the application to make it operate on touch screen devices.

References

1. Nesset, V., Large, A.: Children in the information technology design process: A review of theories and their applications. Library & Information Science Research 26(2), 140–161 (2004)
2. Lazaris, L.: Designing Websites for Kids: Trends and Best Practices (2009), http://www.smashingmagazine.com/2011/07/06/best-
3. Pan, X.: Research of iphone application UI design based on children cognition feature. In: 2010 IEEE 11th International Conference on Computer-Aided Industrial Design & Conceptual Design (CAIDCD), vol. 1. IEEE (2010)

4. Bruckman, A., Bandlow: HCI for Kids. In: Jacko, J., et al. (eds.) The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications (2002)
5. Donker, A., Reitsma, P.: Young children's ability to use a computer mouse. Computers & Education 48(4), 602–617 (2007)
6. Atkinson, S., et al.: Using non-keyboard input devices: interviews with users in the workplace. International Journal of Industrial Ergonomics 33(6), 571–579 (2004)