

Article 3

Interactive Android Phonic Reading for Preschool Children

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Abstract

The learning process at preschool level becomes more important in early education for children. Suitable learning tools need to be used by teachers in order to enhance the learning process. Due to that reason, this Android phonic reading application has been developed for preschool children since the technology can attract and engage children's attention. This application is known as 'Kenali ABC' and focuses on the phonic reading approach. This application has been tested using the usability test on the targeted users including preschool children, preschool teachers and Universiti Teknologi Mara (UiTM) lecturers as the experts. The results of the usability test indicate that the application has potential to be used as an alternative method in reading using phonic technique.

Keywords: *Android application, phonic reading, preschool children*

Introduction

Nowadays, children are continually gaining the reading skills and other significant knowledge at the preschool level. Preschool children develop their early reading skills at different paces and different paths. Some of them excel while others struggle in their learning.

Children's reading development depends on the understanding of the relationships between letters and its sounds. One of the teaching techniques for reading is known as phonic. Phonics emphasizes the association between the sound of spoken language and printed symbols (Cecil, 2011). It offers interactive approach of learning process and provides an effective method of teaching and learning strategies to develop children's phonics knowledge and skills (Su & Hawkins, 2013). Previous studies demonstrate that phonic technique improved reading skills development (Giti & Hadis, 2015; Shelly et al., 2016; Taylor et al., 2017). By introducing children with effective phonics approach at preschool level, teachers provide children with a solid reading foundation for their lifelong learning.

With the advancement of today's technology, teaching and learning at preschool should also be in line with the emerging technology that offers more attractive and attentive environment (Dina & Pierpaolo, 2016). Definitely, enjoyment plays an important role in engaging children in learning (Andriani et al., 2016).

Using the traditional methods such as using books, flash cards and slides presentations or coursewares, children can have a visual and auditory learning with their teachers. The effectiveness of these materials depends on how teachers inspire the children and how attractive the materials are. Unfortunately, some of these approaches limit the interactivity between children and the learning material itself. Thus, some children are unable to obtain the knowledge due to time constraint in the learning period at preschools.

In order to provide better learning method at preschool, children need to be exposed with an efficient reading method such as the interactive android phonic reading for free and easy learning. Instead of learning it at school, they can also use it at home or any other places (Gao

et al., 2011). If preschool children rely solely upon what teachers teach at school, they will have difficulties in understanding what they had learned if they do not have time for independent practice at home. Even worse, they can easily forget what they had learned at school.

Thus, this paper focuses on the development of Android-based phonic reading application that provides interactivity elements and suitable design for children. The application can help the children to have a flexible learning process where it can be done at any time and regardless of the place. The target user for this Android phonic reading is preschool children aged 5 to 6 years old.

A research performed by Hollands et al. (2013) reveals that Android application can attract children to learn, thus improving self-learning of the children (Rosetto & Dutra, 2016). Therefore, it can meet the demand of personalized learning for preschool children (Gao et al., 2011). On the parent part, they can easily observe the progress of their children and ensure that the reading skill development is right on the track.

The development of Kenali ABC application features the concept of learning through play as the main idea, in line with the nature of children who love to play at their age (Qi & Yonghai, 2015; Andriani et al., 2016). The purpose of implementing the concept is to motivate and encourage the children in learning to read. This application provides basic phonic skills practice, including recognizing the letters, learning upper-case and lower-case letters, and they can explore several activities to test their reading skills as well.

The Development of ‘Kenali ABC’ Application

To design the interface, there are some functional requirements which need to be followed. The design adopted the criteria presented in the framework created by Andriani et al., (2016) such as engaging, touch-based interface, provide clear instructions, use simple language, and respond with encouraging messages. The flow of the application is done on storyboard and a flowchart form. This section explains the storyboard, flowchart, software specification and interface design.

i. Storyboard

Storyboard design is important at the beginning level of designing process. It is used to determine the suitable and logical design, and the format for this mobile application. A full illustration of the storyboard can show how the interface will look like and how the application works. The storyboard for this mobile application is developed in sketching design including the visual and auditory elements. The mobile application that has been developed might not fully coincide the storyboard due to some improvement made during the development process.

ii. Flowchart

Flowchart is used to signify the sequences of movements involved in this application. This flowchart explains the process that needs to be done from the beginning to the end of the development. It shows how the interface, button and icon should link to other pages in this mobile application.

iii. Software specification

Table 1 shows the software involved in the development of this mobile application.

Table 1: Software Requirements for the Development

Software	Description
Balsamiq Mockup	This software is used to design the interface after the paper sketching is done. It is a built-in wireframe, icons, labels, texts and buttons that makes the process of designing the interface and linking of each page easier.
Android Studio	This software provides a variety of layouts to be used by developers
Adobe Photoshop	Adobe Photoshop has many functions that are useful to edit or create images

iv. Interface design

The interface design involves several steps as shown in Figure 1. The steps start with sketching the interface on paper, followed by transferring the design into Balsamiq Mockup software. The background image, buttons and icons are created using Adobe Photoshop. Then, the development in Android Studio involves XML and Java programming language.

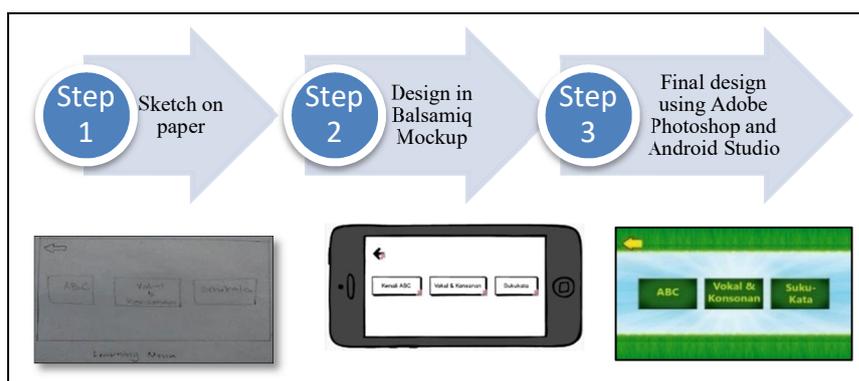


Figure 1: Interface Designing Steps

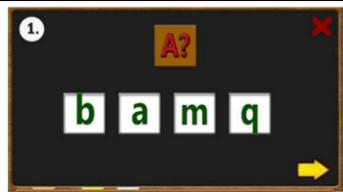
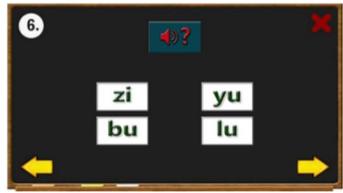
Figure 2 shows the welcoming interface of the application. The suitable design for children is crucial so that the application is engaging, enjoyable and usable for children. The chosen colour, icons, buttons, sounds and interactivity are among of the important criteria that should be taken into consideration when developing mobile application for children.



Figure 2: Welcoming Interface of Kenali ABC

Table 2 depicts some of the modules in ‘Kenali ABC’ application. The application is divided into 2 submodules; learning module and exercise module.

Table 2: Interface Design of the Modules

Learning Module		Exercise Module
		
		

Results and Findings

Once the application has been completely developed, the next step is to test the application in terms of its effectiveness and usability. A total of 20 respondents involved preschool children, preschool teachers and UiTM lecturers as the experts in Information Technology (IT) have taken part in this testing.

This usability testing is very important to the developer so that the strengths and weaknesses of the mobile application can be identified. The scale used for the testing is from 1 to 5. Table 3 shows the scale and its equivalent value.

Table 3: Scale of the Respondent Answer

Scale	Value
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

The testing results in Figure 3 show that preschool children prefer simple but attractive interface for their mobile application. Each criterion that has been tested produces more than 4.4 mean scores out of 5. These scores indicate that the user is satisfied and enjoy the application.

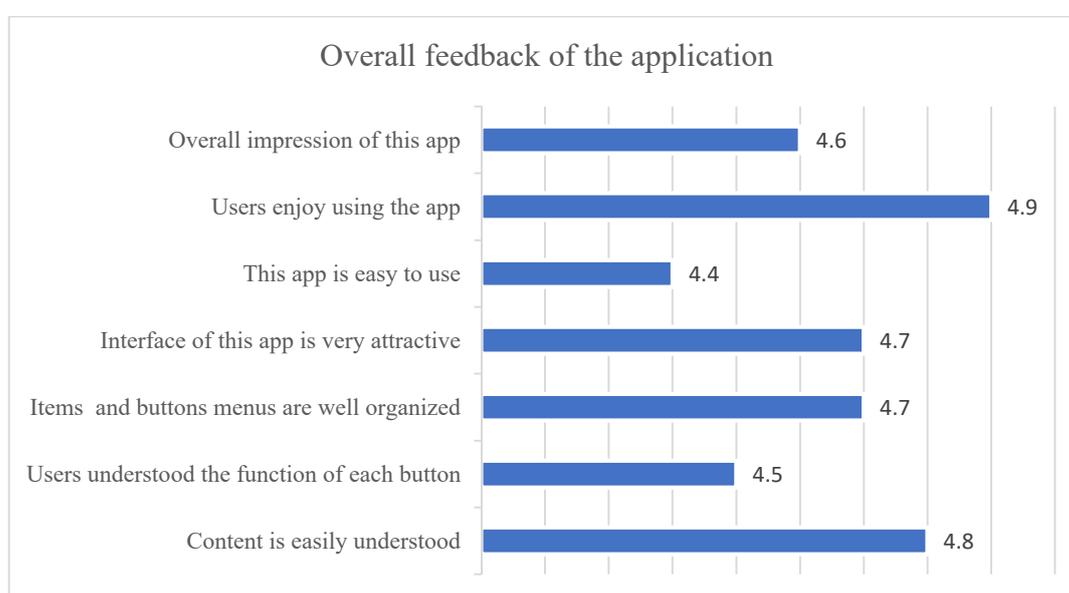


Figure 3: Overall Feedback from the Testing

Conclusion

This project is very significant since we can improve the early learning process especially in reading among preschool children. It may help teachers and parents in guiding the children to strengthen reading skills regardless of the time and place. It is also beneficial to preschool children as a preparation for the next level of education in primary schools. Other than that, preschool children will get interactive experience and have fun while using the application.

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