A FRAMEWORK OF MOBILE EDUCATIONAL APPLICATION FOR EARLY READING AMONG KINDERGARTEN CHILDREN

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ABSTRACT

This study aims to formulate a framework of mobile educational application for early reading among kindergarten children. This study uses a design and development research (DDR) involving two phases. In the first phase, the design and development phase, the framework is formulated by obtaining experts' consensus using Fuzzy Delphi Method (FDM) involving 14 experts in early childhood education and mobile learning. A mobile educational application for early reading among kindergarten children, *Adik Jom Baca*, is developed according to the framework using prototyping method. In the second phase, the implementation and evaluation phase, *Adik Jom Baca* is evaluated in terms of usability and impact. Usability testing is carried out using the Modified Nominal Group Technique (NGT) involving 30 experts working as a kindergarten teacher. The impact assessment is carried out using Non-Equivalent Control Group Design involving 10 kindergarten children. The main finding of this study is the framework of mobile educational application for early reading among kindergarten children. A mobile educational for early reading that meets the child's development, *Adik Jom Baca* is developed according to the framework. Usability testing has shown that, *Adik Jom Baca* is useful in nurturing early reading skills among kindergarten children. Furthermore, the impact assessment showed that, *Adik Jom Baca* was able to provide a positive impact in nurturing early reading skills among kindergarten children. Overall, this study contributes a novel knowledge that are valuable to the research community, as a benchmark for educators and parents as well as being a reference to mobile educational application industry.

KERANGKA KERJA APLIKASI PENDIDIKAN MUDAH ALIH BAGI BACAAN AWAL DALAM KALANGAN KANAK-KANAK TADIKA

ABSTRAK

Kajian ini bertujuan memformulasikan kerangka kerja aplikasi pendidikan mudah alih bagi bacaan awal dalam kalangan kanak-kanak tadika. Kajian ini menggunakan pendekatan kajian rekabentuk dan pembangunan yang melibatkan dua fasa. Dalam fasa pertama, fasa rekabentuk dan pembangunan, kerangka kerja aplikasi pendidikan mudah alih bagi bacaan awal dalam kalangan kanak-kanak tadika diformulasikan dengan mendapatkan kesepakatan pakar menggunakan kaedah Fuzzy Delphi yang melibatkan 14 orang pakar dalam pendidikan awal kanak-kanak dan pembelajaran mudah alih. Aplikasi pendidikan mudah alih bagi bacaan awal dalam kalangan kanak-kanak tadika, Adik Jom Baca dibangunkan berdasarkan rangka kerja tersebut menggunakan kaedah prototaip. Dalam fasa kedua, fasa pelaksanaan dan penilaian, Adik Jom Baca dinilai dari aspek kebolehgunaan dan impak. Ujian kebolehgunaan dijalankan menggunakan kaedah Kumpulan Nominal Terubahsuai yang melibatkan 30 orang pakar terdiri daripada guru tadika. Penilaian impak dijalankan menggunakan Kaedah Rekabentuk Kumpulan Kawalan Tidak Setara yang melibatkan 10 orang kanak-kanak tadika. Dapatan utama kajian ini ialah kerangka kerja aplikasi pendidikan mudah alih bagi bacaan awal dalam kalangan kanak-kanak tadika. Daripada rangka kerja tersebut, aplikasi pendidikan mudah alih bagi bacaan awal yang menepati tahap perkembangan kanak-kanak, Adik Jom Baca dibangunkan. Ujian kebolehgunaan mendapati bahawa aplikasi pendidikan mudah alih bagi bacaan awal dalam kalangan kanak-kanak tadika, iaitu Adik Jom Baca, berguna dalam memperkembangkan kemahiran bacaan awal dalam kalangan kanak-kanak tadika. Penilaian impak menunjukkan bahawa aplikasi Adik Jom Baca memberi impak positif dalam memperkembangkan kemahiran bacaan awal dalam kalangan kanak-kanak tadika. Secara keseluruhan, kajian ini menyumbang pengetahuan baharu yang bernilai kepada komuniti penyelidik, menjadi penanda aras yang kepada pendidik dan ibu bapa serta menjadi rujukan kepada industri aplikasi pendidikan mudah alih.

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DATEC	Developmentally Appropriate Technology for Early Childhood
DDR	Design and Development Research
FDM	Fuzzy Delphi Method
ICT	Information and Communication Technology
NAEYC	The National Association for the Education of Young Children
NGT	Nominal Group Technique
TPACK	Technological, Pedagogical and Content Knowledge
UNESCO	United Nations Educational, Scientific and Cultural Organization

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CHAPTER 1

INTRODUCTION

1.1 Overview

This chapter presents the overview of the present study. It illustrates the background, problem statements, questions and objectives of the study. Additionally, this section highlights the significance of the study, its scope and conceptual framework. This chapter is crucial in understanding the issues concerning the problems, theories related and the direction of the study.

1.2 Research Background

Reading is an important skill to be acquired by every young child. Through reading, children are able to explore the knowledge behind every book, magazine and other printed materials. Furthermore, their success in school also depends on their ability to

read. However, the journey of learning to read is quite a challenge for young children (Guernsey & Levine, 2016). A study demonstrated that children with the proficiency to read are active, vibrant and competitive in learning activity (Tarasat & Daud, 2014). On the contrary, children with reading difficulties usually have a low self-esteem, unmotivated, unable to cope with learning and are often involved with disciplinary violation (Jamian, 2011; Jusoh, Abd Rahman, Mohd Kiram, & Roslan, 2013).

Many studies have been conducted focusing on the reading problems among young children. A report from the Government Transformation Programme: The Roadmap (Jabatan Perdana Menteri, 2010) demonstrated that in 2008, there are more than 54,000 primary year 1 students (about 31%) around Malaysia who did not meet the targeted literacy skills set by the Ministry of Education Malaysia. Moreover, a study carried out by Jamian (2011) discovered several problems in mastering reading and writing skills even in Malay language among rural primary year 4 and 5 students. Nevertheless, reading difficulty is not an isolated problem since it is also being faced by the school children of many countries around the globe (Haron, 2004). For instance, a study by the Ministry of Education Ontario (2003) identified problems in reading difficulty among children of kindergarten and first grade, which sometimes remain until the third grade in some cases. Furthermore, a report by Annie E. Casey Foundation (2010) recorded that there are one million American children at the fourth grade who have a low basic reading skills. In recent study, two-third of fourth grade American children have been seen not achieving proficiency level in reading skills (Guernsey & Levine, 2015). Subsequently, these children may be at risk of dropping

school since they are unable to catch up with the learning process (Center for Public Education, 2015; Ministry of Education Ontario, 2003; Patel, 2014).

In recent years, many mobile educational applications for early reading among kindergarten children have been made available in the market (Vaala & Levine, 2015). They have become popular learning tools due to their ability to provide engaging instructional experience to young learners (Ok, Kim, Kang, & Bryant, 2016). An analysis conducted by Shuler, Levine, & Ree (2012) demonstrated that there are over 80% of the top selling paid mobile educational applications in the education category of the Apple Apps Store were targeted for young children with the applications for kindergarten children being in the most popular category (58%). Moreover, according to National Association for the Education of Young Children (NAEYC), technology can potentially enhance children performance if it is appropriately used (Donohue, 2014). Nowadays, mobile educational application running on smart devices potentially fosters the reading ability among young children. Additionally, mobile devices with touch screen feature are more suitable for kindergarten learning compared to traditional computer (Neumann, 2014). On top of that, mobile educational application offers a fascinating experience since it provides playful exploration (Plowman, 2016).

1.3 Problem Statements

New advancement in educational technology has changed the landscape of early childhood education. The availability of smart devices featured with interactive and

fascinating applications promises interesting learning opportunities for young learners (Forzani & Leu, 2012). These applications, if appropriately developed, have a great potential to improve early reading skills among young children (Korat, 2010). Several studies have revealed the potential of mobile educational application in nurturing early reading skills for young children. For example, a study by Beschorner & Hutchison (2013) clarified that mobile educational applications offer a novel and attractive approach to facilitate reading, writing, listening and speaking skills. This notion is supported by Yahaya & Salam (2014), which depicts that a mobile educational applications are capable of encouraging and motivating young children to identify letters and spellings. Similarly, Neumann & Neumann (2015) found that mobile educational applications possess a great potential in enhancing children's emergent literacy skills such as alphabet knowledge, print concepts and emergent writing. Moreover, a recent study by Cordero et al. (2015) suggests that mobile educational applications are capable of fostering language abilities such as reading, writing, listening and speaking skills among young children.

However, there are some studies stating that some mobile educational applications do not fit with the needs and developmental level of the children. A content analysis on the existing mobile educational applications in Apple's App Store indicated more than 40% applications for young children that were not appropriately designed (Chau, 2014). Meanwhile, Murray & Olcese (2011) in their study revealed several mobile educational applications that were developed without any strong theoretical pedagogies and frameworks. Additionally, many educational applications in the market have less criteria of high-quality mobile educational applications by their ambiguous interface design, unclear instruction and inappropriate content (More