The Development of Mobile Application for Kindergarten Early Reading: Challenges and Opportunities

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Abstract: Mobile application seem have a great potential for facilitate kindergarten literacy emergence. Research on the affordance of mobile application are rapidly increase but little research on kindergarten early reading. This study explored the challenges and opportunities of development of mobile application for kindergarten early reading. The study found there are three dimension of challenges in development of mobile application for kindergarten early reading namely psychological, pedagogical and technological. Although, the development of mobile application for kindergarten early reading is not a simple task, there are also opportunities to develop an affordable educational application for this target user.

Key words: Mobile, reading, study, task, education

INTRODUCTION

Reading is a foundation of knowledge. Most of knowledge is available in written form. Hence, reading is an important skill to be mastered by every student in the early stage. In Malaysia context, the reading skill in Malay language is crucial in order to enable them pursue in elementary school. However, according to, there are problem in mastering reading and writing skills in Malay language among the primary school students in Malaysia. According to statistics, the failure of students to mastering the basic skills of reading and writing is very worrying. Ministry of Education conducted a survey in 2006, found that 138,271 standard one students in Peninsular Malaysia with 35.52% of the overall failed to recognize and identify letters correctly, spell and pronounce every single word and sentence correctly and understand what is read. Children who fail to establish strong foundation of reading skills in kindergarten always face a difficulties to learning in elementary school (Gunn et al., 2010). This finding support by Haron and Nair which emphasize the weakness of children performance in early education will cause a learning difficulty in a primary school and may extend to secondary school.

MOBILE APPLICATION FOR KINDERGARTEN EARLY READING

The emergent of mobile technology affect to the way learning. The affordances of mobile devices and application provide new learning opportunities in kindergarten education due to the mobile application are capable to provide enjoyment and entertaining learning activities (Korat, 2010). While the researchers still debate the positive and negative impact of mobile technology for young children, the publication of application for early education raise increasingly. An analysis of the education category of Apple's Apps Store illustrated >80% of education category apps are targeted on children with apps for preschool are the most popular category (58%) (Shuler et al., 2012). Compare to personel computer, mobile device with print-based interfaces are more convenience, light and portable (Neumann and Neumann, 2014), ease to use and suitable for children (Aziz et al., 2010), personalize and portability and enable to continuity and spontaneous learning (Kukulska, 2009). Similarly, Mohamad et al. (2012) mentioned the affordances of mobile application include; cost efficient, able to motivate students, suitable for drill and practice exercises and support personel learning environment. Moreover in general mobile application also support various approach of learning, both formal and informal.

CHALLENGES IN DEVELOPMENT OF MOBILE APPLICATION FOR KINDERGARTEN EARLY READING

Mobile application has seen become popular in producing learning material for early childhood in recent years. Yet several research has consistently shown the advancement of incorporating mobile application in early literacy development (Takacs et al., 2015). Although, mobile application are capable to raise student

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engagement, the development of this technology faced some challenges (Flewitt *et al.*, 2014) found new digital technology such as iPads or tablets promise a great potential for literacy emergent but also present a challenges both to teachers and children. By analyzing and synthesizing previous literature, researchers conceptualized the challenges of the development of mobile application for kindergarten early reading into three dimension; psychological (Mahazir *et al.*, 2013; Railean, 2015; Saffarian and Gorjian, 2012; Eshach, 2003), pedagogical (Railean, 2015; Kearney *et al.*, 2012; Sazalli, 2014; Owston *et al.*, 2009) and technological (Chau, 2014; Peirce, 2013).

Psychological: Psychological refers to nature of learners, their behaviour, thought, need, interest and abilities. The application developer should consider the characteristic of young children because they are totally different with adult user. According to Radich (2013) to make sure the application beneficially, it is important to understand the developmental needs of children. Moreover, the mobile application should be educational (McManis and Parks, 2011). Educational meant the objective of learning is clearly to educate, shape new skills or to introduce new knowledge. In the same time, to be efficiency, mobile application must child friendly and ease of use (DATEC, 2000; FRC, 2012; Shoukry *et al.*, 2014). To make it friendly ease of use, the application should provide a simple a clear task which appropriate with this target age users and the application can be use with minimal help from adults. Considering the safety and health of young children, the mobile application must avoid from exposure to the violence or sexualized images (Radich, 2013). Additionally, the mobile application for kindergarten early should be accessible and usable for differing ages, gender, race and abilities.

Pedagogical: Pedagogical focused on how to deliver the content to children through mobile application. Pedagogy in early childhood are essential because appropriately pedagogical approaches are capable to foster early reading skills among young children (Wall *et al.*, 2015). To design an effective learning activities on mobile application is not an effortless job. Every children like to play. Thus, the mobile application for kindergarten should playful, entertaining and enjoyable to use (FRC, 2012; McManis and Parks, 2011; DATEC, 2000; Deterding *et al.*, 2011; Shoukry *et al.*, 2014; Buckleitner, 1985). Beside, according to Burnett (2010) exploration is an interesting way to emerge knowledge. To make it interesting and highly engage, the mobile application should provide learning experience through exploration and allow children to explore freely. By reviewing of

Piaget's theory of children development, this age of users are egocentric. To meet the mind of users, the mobile application should allow children to control the way of interaction. Personalized learning approach are capable to interest children to engage in learning process (Grant and Basye, 2014). The personalize and customize features should incorporated in mobile application for kindergarten early reading to attract children attention and engagement (Shoukry *et al.*, 2014).

Technological: Technological is another challenges in the development of mobile application for kindergarten early reading. Technological refers to the features of mobile technology itself. Interesting features of mobile application helps to increase children engagement (Rhonda and Dube, 2014). The use of multimedia are viable way to make the application interestingly. Multimedia elements such as text, graphic, audio and video not only attractive but assist to better understanding. For example, the appearing text and verbal may help children to recognize a letter compare to text only. Moreover, to provide an effective learning, the mobile application should represent of object and situation with realistic and reflect to real world from children's perspective. Mobile application for early reading use mostly letters. To make sure it's efficiency, the developer should consider the legibility and readability elements (Woods *et al.*, 2005). The legibility are the differences between each characters and the readability are how the word can be read easily (Hojjati and Muniandy, 2014). The mobile application should use appropriate font to increase legibility and apply appropriate font size, measure, length and color to increase readability (AN, 2015; Heikkila, 2012). Game is very familiar to today children. A research by indicate game are capable to sustain children engagement and motivation and viable to improve literacy skills. Gamification defined as incorporate games elements into non games application (Deterding *et al.*, 2011). To make mobile application for early reading interestingly, mobile application should contain some game elements such as score, badge or level (Watson *et al.*, 2013).

Opportunities: Previously, researchers draw attention to the challenges of the development of mobile application for kindergarten early reading. However, there are also opportunities to produce a mobile application for this target group. The rapid development of mobile technology provide a new dimension in kindergarten learning. As reported by Cohen *et al.* (2011), young children most attracted to mobile games and apps. Similarly, children response on learning activities by mobile application demonstrated very positively. Beside,

according to Lee (2013) kindergarten teachers perceived that children at 3-5 years old are applicable to facilitate with mobile application. Moreover, learning content for kindergarten is quite simple and the aim of application is for enjoyment and playful learning (Shoukry *et al.*, 2014).

CONCLUSION

In all, this concept study had aimed to describe challenges and opportunities for the development of mobile application for kindergarten early reading. Research in mobile learning rapidly increase in several years. Due to the advancement in mobile application for education, it seem provide a promise impact to literacy emergent skills among kindergarten children. However, the effectiveness of this technology depend on the quality of the available early reading application in kindergarten. Research on the impact of mobile application for literacy development remain many question especially about the role of this application to foster early reading skills among young children. Furthermore empirical research are need to investigate the impact of appropriate or well design mobile application on early reading skills development.

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