UNIVERSITI TEKNOLOGI MARA

MOBILE TECHNOLOGY-BASED VISUAL SCHEDULE IN INTERVENTIONS FOR CHILDREN WITH AUTISM

NURDALILAH BINTI MOHD RANI

MA

June 2017

ABSTRACT

Children with autism experience abnormal development. As a condition with developmental disorder, they were deficits in a few different cognitive skills. One of them is executive dysfunction, an area that affects a lot on their organisational skill. Due to this abnormality, these children tend to rely on adults to carry out even basic daily tasks. Thus, visual schedule module has been developed from time to time to reduce the children's reliance to adults. Known as visual thinkers, the use of images in schedules has been found effective on children with autism. However, conventional activity schedule consumes time and efforts to be prepared despite needing storage for the large quantity of image analogues. Nonetheless, research has shown that computer instructions have positive effects in educating the children with autism. Therefore, a mobile technology-based visual schedule seems to be a good way to ease the use of visual activity schedule. This research aims to investigate the potential of embedded visual schedule into mobile application towards children with autism users in Malaysia and the possibilities of it being used in educational environments. This research will be significant in the process of designing appropriate instructional multimedia-based tools to assist the intervention of children with autism. To the best knowledge of the researcher, this research is an exploratory study and it will not be compared to other universities. While executing this research, observations were first made to local public schools integrated with special education programs and autism centres that intervene children with autism. Some educational practitioners were interviewed for an in-depth understanding regarding the autism's conditions as well as current practice in education for autism. Then, a total of twenty samples diagnosed with autism participated in the field experiment in order to observe their engagements in completing a task using instructions given from a visual schedule application. Results from the study showed that children with autism interact well with the application and some improvement guidelines were suggested for the development of such programs. Some gaps were detected regarding the designs and discussions were made with the teachers on the design improvements.

ACKNOWLEDGEMENT

My sincere gratitude goes to my supervisors, Dr. Rafeah Legino and to my second supervisor Mrs. Farrah 'Aini Lugiman for their patient guidance and encouragement throughout the completion of this research. Not to forget, I would like to say my gratitude to Mr. Muhamad Fairus Kamaruzaman, my former lecturer who had endlessly been my advisor since my bachelor degree until my master degree. I am also indebted to *Kementerian Pengajian Tinggi* (Ministry of Higher Education) for the financial grant to work, present my papers, and collect my data as well as attending lectures relevant to my field of enquiry to carry out the research.

I am also grateful to the Malaysian Ministry of Education for the permission to conduct the field visit and field experiments to local public schools in Selangor. Besides, I would like to express my further gratitude to the assistance and undivided attentions given by the headmasters and special education teachers of Sekolah Kebangsaan (Integrasi) Raja Muda, Shah Alam and Sekolah Kebangsaan Puncak Alam, Selangor. I am also very obliged and thankful to the principal and teachers of IDEAS Autism Centre who had always welcome my presence at the centre and assisted me with my research.

I am forever thankful to my family, especially my parents, for their understanding and support. Last but not least, thanks to my fellow friends who had been of great support and assistance during my study. Their support has always been a blessing for my success and health during my research.

TABLE OF CONTENTS

CHAPTER ONE
INTRODUCTION

1.1 BACKGROUND OF STUDY

The Malaysian Ministry of Health came out with the ratio of one of 600 children in Malaysia are autistic based on the latest statistic in 2004. The statistic also shows that some 47, 000 people in Malaysia were autistic and the number is expected to increase every year. It is also estimated that four out of every 10, 000 suffer from severe autism. Also, based on the record of students' total enrolment to government-run special education schools, and special education integrated programme (SEIP) in 2012 was around 50,738 including all disabilities. This makes a huge sense for the special education to be given special attention, as Malaysia is making its way to Vision 2020. By year 2020, Malaysia is targeting on becoming a developed country. To become a developed country, one of the criteria is for all children to receive excellent education. All children here means all, including the ones with special needs.

Organisational skills are essential for every individual to lead an independent life. Since individuals with autism in general are having problems with organisational skills and they are facing a big challenge in living an independent life. One of the reasons is because of executive dysfunction that they experience. Executive dysfunction is a drawback for autistic individuals in terms of organisational skills. However, visual schedule is found to be helpful to enhance these individuals' quality of life. Visual schedule has been used in institutions for autistic children including University Kebangsaan Malaysia (UKM)'s Autism Lab and IDEAS Autism Centre (IAC). However, the visual schedules were prepared manually. Although there are a few digital visual schedule applications in the android market, not one local institution was found to be using this technology.

To promote the usage of mobile technology-based visual schedule, first, the practicality of such instruments need to be convinced. Therefore, the objective of this study is to investigate the current practice of using the digital-based visual schedule applications for children with autism on education, and its opportunities in selecting public schools and autism centres and next, to examine the appropriate visual schedule