ENHANCEMENT OF SOCIAL SKILLS BY USING MULTIMEIDA INTERACTIVE SOCIAL SKILLS MODULE APPLICATION AMONG STUDENTS WITH AUTISM SPECTRUM DISORDER

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Kalsom Binti Hj. Ruzali, my dearest mother, Ibrahim Bin Hood, my dearest father, Muhammad Rosyawaluddin Bin Roslan, my beloved husband, Professor Dr. Maizam Binti Alias, my mentor and guidance in life, and Associate Professor Dr. Lee Ming Foong, my saviour in life

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ABSTRACT

Social skills deficits involving students with ASD hinder the development of social competence via the mainstream school environment. This is because students with ASD learning capability for social skills was behind the average expectation of their typical peers. However, they can increase their knowledge and skills with the help of assistive technology such as mobile applications. Using the existing educational material, however, was not suitable for local students due to the different cultural norm. Therefore, the purpose of this study was to develop and investigate the effect of specifically-tailored culture-based social skills modules on mobile application and paper for teaching and learning of students with ASD that integrate more comprehensive component of social skills in a single study. The social skills modules were tested using quasi-experimental study on students with ASD from National Autism Organization of Malaysia (NASOM) for 18 weeks with 1-hour intervention session per week. The study involved three groups (N=74; n1=27, n2=25, n3=22) using specifically-tailored culture-based social skills modules on mobile application and paper that were compared to a control group using existing social skills module. Social Skills Knowledge Test (SSKT) and Social Skills for ASD (SS-ASD) instruments were used to measure knowledge of social skills and social skills respectively on students with ASD. The finding indicated that specifically-tailored culture-based social skills module irrespective of media (mobile application or paper) effectively enhance social skills among students with ASD. In conclusion, integrating cultural norm into teaching and learning material for social skills will enhance social skills development and ease inclusion in a mainstream school to develop independent living in the future.

ABSTRAK

Masalah kemahiran sosial dikalangan pelajar *ASD* menghalang perkembangan sosial mereka di persekitaran sekolah arus perdana. Ini kerana kemampuan pelajar ASD mempelajari kemahiran sosial adalah dibawah purata terendah jika dibandingkan dengan rakan sebaya mereka. Walaubagaimanapun, mereka dapat meningkatkan pengetahuan dan kemahiran dengan berbantukan alat bantuan teknologi seperti aplikasi mudah alih. Namun, penggunaan bahan pendidikan sedia ada tidak sesuai untuk pelajar tempatan kerana budaya yang berbeza. Oleh itu, kajian ini bertujuan untuk membangunkan dan mengkaji kesan modul khusus kemahiran sosial berasaskan budaya tempatan menggunakan aplikasi mudah alih dan kertas untuk pengajaran dan pembelajaran pelajar ASD yang menggabungkan komponen kemahiran sosial yang lebih komprehensif dalam satu kajian. Modul kemahiran sosial diuji menggunakan kajian kuasi eksperimen pada pelajar ASD daripada *National Autism Organization of Malaysia (NASOM)* selama 18 minggu dengan sesi intervensi selama 1 jam setiap minggu. Kajian ini melibatkan tiga kumpulan (N=74; n1=27, n2=25, n3=22) yang menggunakan modul khusus kemahiran sosial berasaskan budaya tempatan menggunakan aplikasi mudah alih dan kertas kemudian ia dibandingkan dengan kumpulan kawalan yang menggunakan modul kemahiran sosial sediaada. *Social Skills Knowledge Test* (SSSKT) dan *Social Skills for ASD* (SS-ASD) digunakan untuk mengukur pengetahuan kemahiran sosial dan kemahiran sosial pelajar ASD. Hasil kajian mendapati bahawa modul khusus kemahiran sosial berasaskan budaya tempatan tanpa mengambil kira aspek media (aplikasi mudah alih atau kertas) berkesan meingkatkan kemahiran sosial dikalangan pelajar ASD. Kesimpulannya, pengintegrasian budaya tempatan ke dalam bahan pengajaran dan pembelajaran untuk kemahiran sosial akan meningkatkan kemahiran sosial pelajar ASD dan memudahkan kemasukan mereka di sekolah arus perdana untuk hidup berdikari di masa depan.

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ABBREVIATIONS

AAC	Augmentative and Alternative Communication
ABA	Applied Behaviour Analysis
ADHD	Attention Deficit Hyperactivity Disorder
APA	American Psychology Association
ASSC	Autism Social Skills Checklist
ASD	Autistic Spectrum Disorder
ASSP	Autism Social Skills Profile
AT	Assistive Technology
CRC	Convention on the Right of the Child
CRPD	Convention on the Right of Persons with Disability
DID	Different-in-differences
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, Fourth edition
DSM-V	Diagnostic and Statistical Manual of Mental Disorders, Fifth edition
DSW	Department of Social Welfare, Malaysia
EFA	Education for All
GoM	Government of Malaysia
GTP	Government Transformation Programme
IEP	Individual Education Plan
ILM	Individual Learning Materials
KPM	Kementerian Pelajaran Malaysia
LINUS	Literacy and Numeracy Screening
M-CHAT	Modified Checklist for Autism in Toddlers
MaHTAS	Management of Autism Spectrum Disorder in Children and Adolescents.
MISSM	Multimedia Interactive Social Skills Module

MOE	Ministry of Education
MOH	Ministry of Health, Malaysia
MWFCD	Ministry of Women, Family and Community Development, Malaysia
NASOM	National Autism Organization of Malaysia
NECIC	National Early Childhood Intervention Council
NGO	Non-Governmental Organization
OKU	Orang Kurang Upaya (Person with Disabilities)
PDD NOS	Pervasive Developmental Disorder Not Otherwise Specified
PECS	Picture Exchange Communication System
PWD	Person with Disabilities
SCAN	Suspected Child Abuse and Neglect
SCC	Social Compass Curriculum
SEIP	Special Education Integration Programme
SEN	Special Education Needs
SSKT	Social Skills Knowledge Test
SS-ASD	Social Skills for ASD
SSC	Social Skills Checklist
SSRF	Social Skills Rating Form
TEACCH	Treatment and Education of Autistic and Related Communication-Handicapped Children
TOM	Theory of Mind
TOS	Table of Specification
TSSA	TRIAD Social Skills Assessment
UNESCO	The United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund

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LIST OF PUBLICATIONS

Journals:

(i) Journal Title: The Design And Development Of Multimedia Interactive Social Skills Module (MISSM) Application.
Authors: Ibrahim, Zuraida; Alias, Maizam
Source : Online Journal for TVET Practitioner
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Status: In progress

(ii) Journal Title: A Review on Using Assistive Technology to Enhance Social Skills Competence among Children with Autism Spectrum Disorder (ASD)
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(iii) Journal Title: A Framework for Developing Culture-Based Multi-Modal Mind Games: Improving Social Interaction Skills of Austistic Children
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Proceedings:

(i) Proceeding Tittle : A Review on Using Assistive Technology to Enhance Social Skills Competence among Students with ASD
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Proceeding International Conference on Science, Engineering, Management and Social Sciences (ICSEMSS 2016)

(ii) Proceeding Tittle : Social Skills Competence in ASD Children: A Review on Assessment Instruments
Proceedings International Conference on Teaching and Learning, Language, Literature & Linguistics (ICT4L)
Authors: Ibrahim, Zuraida; Alias, Maizam
ISBN number: 978-967-13637-9-9

LIST OF AWARDS

(i) MISSM Application Prototype - Bronze Medal in IUCEL 2016 competition.

(ii) 3MT Thesis Competition – 10th place.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Autism Spectrum Disorder (ASD) is a neurological disorder affecting the function of the human brain in early childhood that classified into two main areas: (a) social communication/ interaction; and (b) restricted, repetitive patterns of behaviour and interest (APA, 2015). Since the awareness of autism in Malaysia is increasing, so thus the enrolment of students with ASD in special education. Currently, most of them are placed in Special Education Integrated Programme (SEIP) located in mainstream school (Toran et al., 2016; Lim, 2015). Currently, there is a higher enrolment of students in SEIP each year (Yan-Li & Sofian, 2018; Nair, 2015; Khalid, Yasin & Said, 2012). However, majority of students with ASD are having difficulty in socializing with their peers and educators that contributes to social isolation within the school environment (Yeo & Teng, 2015; Nair, 2015; Lim, 2015; Omar, Hussin & Siraj, 2013).

Meanwhile, a good foundation in social skills will contribute to a positive outcome on students with ASD such as a healthier relationship with their peers, excellent in academic and had a good mental capability (Soto-Icaza, Aboitiz, & Billeke, 2015). However, further investigation uncovered that most of students with ASD have been identified as having social skills deficits (Zucker et al., 2016; Usher et al., 2015; Golzari et al., 2015; Cervera et al., 2015; Radley, et al., 2014). This happened because, their progress in learning social skills was below the average level during their growing process due to impairments of emotions, behaviour, fact and fiction, belief, feeling and desires (Khantreejitranon, 2018).

Students with ASD that have social skills deficits will have low self-esteem and being bullied by their peers in their school environment (Radwan & Cataltepe,

2016). Sometimes contribute to depression and feel isolated (Myck-Wayne & Ramirez, 2014). In the end, students with ASD are disengaged from society and this excludes them from having an equal right to quality education (Dolah, Wan Yahaya, & Chong, 2011) to develop their full potential. However, students with ASD can increase their knowledge and skills by learning social skills constantly (Khantreejitranon, 2018). Moreover, they cannot learn the same way as typical children and always require additional support in understanding concept or thing (Radwan & Cataltepe, 2016).

Nowadays, mobile devices have become a potential tool for additional support in teaching and learning of social skills for students with ASD (Sani-Bozkurt, Vuran & Akbulut, 2017; Wieckowski & White, 2017; Allen, Hartley & Cain, 2016; Radwan & Cataltepe, 2016). The mobile devices were selected due to flexibility, portability, affordability and huge storage. Moreover, an invention that can be integrated with mobile devices is ideal for enhancing the teaching and learning of students with ASD (Joshi et al., 2015). Currently, the mobile application that integrated within mobile devices have shown a great outcome as an alternative approach in teaching and learning of social skills for students with ASD (Daud et al., 2018; Coccoli, 2014; KPM, 2016; KPM, 2015b; UNICEF, 2014a).

Assistive technology is a term referred to any item/devices/product/software provided to assist individuals with a disability to develop or enhance their potential according to the federal law in the Individuals with Disabilities Education Act of 1990 (Public Law 101-476) (KPM, 2015b). It can also refer to devices such as mobile phone, tablet, the smartphone as a device that had integrated with the application as a software (KPM, 2015a). In this study, assistive technology based on mobile application provides multiple learning approaches that will suit people with learning disabilities such as students with ASD in helping them gaining knowledge contrast with the traditional approach (Yan-Li & Sofian, 2018). Furthermore, playing together on similar technology help in the development of social skills through interacting with each other on common interest and entertaining aspects (Boyd, 2008).

Furthermore, there is also a critical need for specifically designed appropriate education material for students with ASD in Malaysia (Yeo & Teng, 2015). The existing social skills material seldom focus on the cultural aspect and experience in the content. Therefore, to have a positive outcome in the enhancement of social skills for culture diversity students (students with ASD in Malaysia), the content should be

custom-made with cultural aspect integrated specifically for them (Robinson-ervin et.al, 2016). Culture refers to values, belief and behaviour that can be shared by people within the same society through generations by sharing the same traditions (Moore, Shattuck & Al-Harthi, 2005). People learn to communicate and understand each other through language, tradition, value, belief and behaviour (Australian Government, 2013). Hence, cultural norm plays an important role in the development of individual social skills (Ahmad, 2013).

1.2 Background of study

One of the governments of Malaysia's (GoM) goals is to ensure equal access to education for all children to develop their full potential (KPM, 2016). Special education is known as "*Pendidikan Khas*" which caters for students with Special Education Need (SEN) (Mohamad Taib, 2015). Students with SEN are those categorized as having visual, hearing, speech, physical, learning and various disability (Yan-Li & Sofian, 2018). They can enrol in school through three options: (a) Special Education Schools, (b) Special Education Integrated Programme (SEIP), and (c) Inclusive Education Programme (Nair, 2015).

Students with visual and hearing impairments are assigned to special education schools dedicated to their impairment. Meanwhile, students with learning difficulties are assigned in Special Education Integrated Programme (SEIP) and Inclusive Education Programme located in mainstream education schools (Yan-Li & Sofian, 2018). Students with learning difficulties are those classified as Autism Spectrum Disorder (ASD), Down Syndrome, Intellectual Disabilities, Late Global Development, Attention Deficit Hyperactivity Disorder (ADHD), Dyslexia, Dyscalculia and Dysgraphia (Yan-Li & Sofian, 2018). The total enrolment of students in SEIP was 61,418 by KPM in 2018 and it keeps on increasing each year (Yan-Li & Sofian, 2018; (Nair, 2015) Khalid, Yasin & Said, 2012). Beside, SEIP aims is to enhance social skills among students with SEN with their educator, peers and society through activities in the school environment (Mohamad Taib, 2015).

Since the awareness of autism is increasing in Malaysia so thus the enrolment of students with ASD in SEIP (Toran et al., 2016; Lim, 2015). Moreover, students with ASD's problematic behaviours were the biggest challenge for educators to handle in

teaching and learning process (Nair, 2015). However, the most important difficulty that majority of students with ASD are facing is difficulty in socializing with peers, educators and society within the mainstream education environment that contributes to social isolation (Yeo & Teng, 2015; Nair, 2015; (MaHTAS, 2014); Omar, Hussin & Siraj, 2013). This phenomena also happened globally (Lindsay et al., 2014; (Lim, 2015).

This happened because ASD is a complex developmental disability in children (MaHTAS, 2014). Therefore, students with ASD may fall behind in terms of communication, social interaction and behaviour compared to typical children during their childhood (Dolah et al., 2012). Currently, there is no clear definition of the exact causes of ASD and cure is yet to be discovered (Neik et al., 2014). Furthermore, ASD is a diverse disorder whereby each individual will suffer different or multiple impairments from different classification (Lim, 2015). Hence, it was also concluded by Baron-Cohen et al. (1985) that most of the students with ASD had insufficiency in social cognitive that has been explained in the "Theory of Mind" for social development of a child. The Theory of Mind refers to the capability of understanding other's mind, belief, behaviour and action. Moreover, they find socializing with people as disturbing because they cannot process the situation and display appropriate action nor making a choice and express themselves (Dolah, Wan Yahaya & Chong, 2011). Consequently, these contributed to social skills deficits that most students with ASD experience nowadays (Zucker et al., 2016; Yeo & Teng, 2015; Usher et al., 2015; Golzari et al., 2015; Cervera et al., 2015; Radley, et al., 2014).

Normally, most people develop social skill during the growing process in their life (Soto-Icaza, Aboitiz & Billeke, 2015). However, students with ASD are not capable of learning skills naturally because they have difficulty understanding other people's action, thoughts, feeling and belief (Kim et al., 2016). However, evidence stated that students with ASD are visual thinker and have an eye for details (Joshi et al., 2015). Some of the students with ASD are excellent in computer skills, having a photographic memory and highly skilled in mathematics (Gentry et al., 2015). Moreover, students with ASD also possess attitudes such as honesty, reliability and perseverance trait. Hence, these traits contribute to excellent productivity for future employment that can contribute to students with ASD independent living (Gentry et al., 2015).

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VITA

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