

The Design and Development of Multimedia Interactive Social Skills Module (MISSM) Application

Z. Ibrahim^{1*}, M. Alias¹, R. Roslan¹, N. Kassim¹, M. Juliana¹, I. A. Bahrudin²

¹Centre of Diploma Studies, Universiti Tun Hussein Onn Malaysia Kampus Pagoh, Hab Pendidikan Tinggi Pagoh, KM 1, Jalan Panchor. 84600 Panchore, Johor, Malaysia

²Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Batu Pahat Johor, Malaysia

*Corresponding author's email: zuraidai@uthm.edu.my

ABSTRACT: The assistive technology based on mobile application shows a tremendous effect in enhancing teaching and learning of social skills for children with Autism Spectrum Disorder (ASD) in a western country. However, the existing assistive technology is not suitable for the Malaysian context due to the content that does not represent Malaysian cultural diversity. Furthermore, the cultural norm is essential in the development of individual social skills. Firstly, this paper aimed to develop a mobile application based on the cultural norm of Malaysians. The design and development of the mobile application in this study follows the ADDIE instructional design model. Secondly, the mobile application was named as Multimedia Interactive Social Skills Module (MISSM) application. Thirdly, a pilot study was conducted using a pretest-posttest design for 2 weeks' duration (N=30). The finding indicates that there was a significant evidence of enhancement in social skills from the used mobile application ($M=41.02$, $SE=1.78$) than before exposed ($M=35.68$, $SE=2.36$), $t(29)=-4.22$, $p<0.01$, $r=0.62$. Therefore, a locally culture-sensitive content for assistive technology contributed to a better understanding of social skills and contributes support to the use of technology based approach in teaching and learning of children with ASD in Malaysia.

Keywords: *MISSM Application, Social Skills, Social Competence, Children with ASD, Autism*

INTRODUCTION

Nowadays, assistive technology based on the mobile application had shown a tremendous effect in enhancing teaching and learning of social skills of children with ASD [1, 2, 3]. However, the existing social skills module on mobile application tend to be generic and often designed for western culture as default [4]. Therefore, it is not suitable to be used for children with ASD in eastern cultures such as Malaysia. Moreover, the teaching and learning process of children with ASD are challenges for educators [5, 6]. This was due to the content was not suitable for Malaysian cultural diversity. Therefore, the cultural norm of Malaysians was embedded within the content of instructional material for social skills to differentiate from the existing assistive technology in the world. It based on the curriculum provided by the National Autism Society of Malaysia

(NASOM) and a combination of three modules for social skills development. It consists of a combination of three sub-modules (Know Yourself, Body Parts and Feeling). In addition, the development of new assistive technology was needed to support the use of a technology-based approach for teaching and learning of children with ASD in Malaysia.

METHODOLOGY

The design and development of MISSM application in this study is based on the ADDIE instructional design model (Analysis, Design, Development, Implementation and Evaluation). ADDIE is a systematic process in assisting the development of an effective instructional material for the constructive environment that combines learning and instructional theory with an impressive design [7]. Details of each phase were discussed as follows:

2.1 Analysis

According to Aldoobie (2015), there were four criteria's to follows to have good planning and implementation of the instructional material. There were: (i) learners' evaluation, (ii) instructional material guideline, (iii) identification of aims and goals for the outcome and (iv) a specific learning outcome.

2.2 Design

There were three strategies need to be applied in the design phase; (i) an assessment design, (ii) mode of delivery and (iii) instructional strategy. In designing a mobile application for children with ASD, the way they learn is different from typical children. Therefore, the design and development will follow the guideline provided by Pavlov (2014) that emphasize presentation, navigation and interaction and the design principle for autistic children by Hussain et al. (2016).

2.3 Development

In the development phase, a mobile application was constructed using all the information gathered during the analysis and design phases. The content, activities, rewards, audio, animation and navigation were embedded and assembled based on the storyboard constructed in design phase. In this phase, the process starts with three simple steps; (i) prototype development,

(ii) finalization of instructional material, and (iii) pilot testing.

2.4 Implementation

The next process is the execution of using the MISSM application in the teaching and learning of children with ASD registered at the NASOM centre. Three things needed to be considered were; (i) educator training, (ii) learners' preparation, and (iii) environment setup. There were 30 participants selected from NASOM Teluk Pulai centre that categories as mild and moderate level of ASD. The pilot study adhered a pretest-posttest design through teaching and learning using MISSM application for two weeks. The sample from the pilot study shows the diversity of race among them that represent children with ASD population in Malaysia.

2.5 Evaluation

According to Aldoobie (2015), the evaluation phase involved the formative and summative evaluation. The formative evaluation consists of one to one, small group, and pilot study. Meanwhile, the summative evaluation will be conducted in a different single case study.

RESULTS AND DISCUSSION

The results of this study discuss on formative evaluation phase. Therefore, in one to one evaluation, the materials were examined by the board member of NASOM. The basic information on the effectiveness, strength, weakness and content were being validated. The improvement of MISSM application was being made based on the information given. Meanwhile, in the small group evaluation, the MISSM application was given to the experienced educator and worker at the management office of NASOM for a try-out. They were encouraged to use the product with their children. Afterwards, feedback and suggestion were collected by email to improve the MISSM application. Afterwards, MISSM application undergo pilot study evaluation. The finding indicates that there was significant evidence of enhancement in social skills of children with ASD from using the mobile application ($M = 41.02$, $SE = 1.78$) than before exposed ($M = 35.68$, $SE = 2.36$), $t(29) = -4.22$, $p < 0.01$, $r = 0.62$ in teaching and learning of social skills conducted in NASOM Teluk Pulai centre ($N = 30$).

Finally, this study provides detailed information on the implementation of using the mobile application and intervention material in teaching and learning social skills for children with ASD. In addition, the cultural norms were important in enhancing their social skills while using the mobile application. However, this finding focus on a small sample of participants ($N = 30$) in regards to their demographic differences. Therefore, there is a need to implement a larger scale of samples diversity from different demographics in Malaysia.

CONCLUSION

In order to evaluate the effect of assistive technology on the social skills of children with ASD. MISSM application was being developed as instructional material for their teaching and learning of social skills

based on their existing social skills module (paper-based) in NASOM centre, Malaysia. The necessary step for the design and development of MISSM application had been utilized appropriately to create effortless teaching and learning for children with ASD in Malaysia. In conclusion, there is an enhancement of knowledge in children with ASD during teaching and learning of social skills. However, there is a need for implementation on a larger scale of participants in future for a better result. Hopefully, it can be fully utilized by all children with ASD in Malaysia in future. In conclusion, integrating cultural norms into teaching and learning material for social skills will enhance social skills development and ease inclusion in a mainstream school to develop an independent living for children with ASD in the future.

REFERENCES

- [1] S. N. S. Che Daud, M. Maria, F. Shahbodan, and I. Ahmad, "Assistive Technology for Autism Spectrum Disorder: A Review of Literature," in *Proceedings of International MEDLIT Conference 2018*, 2018, no. March.
- [2] Y. Purnama, F. A. Herman, J. Hartono, Neilsen, D. Suryani, and G. Sanjaya, "Educational Software as Assistive Technologies for Children with Autism Spectrum Disorder," *Procedia Comput. Sci.*, vol. 179, no. 2019, pp. 6–16, 2021, doi: 10.1016/j.procs.2020.12.002.
- [3] F. Murry, "Using Assistive Technology to Generate Social Skills Use for Students With Emotional Behavior Disorders," *Rural Spec. Educ. Q.*, vol. 37, no. 4, pp. 235–244, 2018, doi: 10.1177/8756870518801367.
- [4] S. Sani-Bozkurt, S. Vuran, and Y. Akbulut, "Design and Use of Interactive Social Stories for Children with Autism Spectrum Disorder (ASD)," *Contemp. Educ. Technol.*, vol. 8, no. 1, pp. 1–25, 2017, doi: 10.12738.
- [5] R. S. Nair, "Challenges, Strategies and Success Gained by a Teacher in Teaching Autism Students in a Private Centre," *Int. J. Soc. Sci. Humanit. Res.*, vol. 3, no. 2, pp. 419–425, 2015.
- [6] M. Z. Ghani, A. Che Ahmad, and S. Ibrahim, "Stress among Special Education Teachers in Malaysia," *Procedia - Soc. Behav. Sci.*, vol. 114, pp. 4–13, 2014, doi: 10.1016/j.sbspro.2013.12.648.
- [7] N. Aldoobie, "ADDIE Model Analysis phase," *Am. Int. J. Contemp. Res.*, vol. 5, no. 6, pp. 68–72, 2015, doi: 10.13140/2.1.4687.6169.
- [8] N. Pavlov, "User Interface for People with Autism Spectrum Disorders," *J. Softw. Eng. Appl.*, vol. 07, no. 02, pp. 128–134, 2014, doi: 10.4236/jsea.2014.72014.
- [9] A. Hussain, A. Abdullah, and H. Husni, "The design principles of edutainment system for autistic children with communication difficulties," 2016.