i-SPiKE 2023

INTERNATIONAL EXHIBITION & SYMPOSIUM ON PRODUCTIVITY, INNOVATION, KNOWLEDGE & EDUCATION

"Optimizing Innovation in Knowledge, Education and Design"

EXTENDED ABSTRACT

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Assalamualaikum warahmatullahi wabarakatuh,

First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality . I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH

WELCOME MESSAGE (i-SPiKE 2023 CHAIR)

We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPiKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPiKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPiKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail
Chair
3rdInternational Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPiKE 2023)

MoTSEL: MODEL OF TECHNOLOGY-SUPPORTED LEARNING FOR SPECIAL EDUCATIONAL NEEDS LEARNERS IN INSTITUTIONS FOR HIGHER LEARNING

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ABSTRACT
Established formally in 2016, the Model of Technology-Supported Learning for Special Educational Needs Learners in Institutions for Higher Learning (MoTSEL) has significantly enriched inclusive education in Malaysia, particularly in institutions of higher learning (IHLs). MoTSEL was formulated through extensive needs assessments conducted among 66 SEN learners from eight public IHLs for its development. It was then evaluated and accepted by a panel of 11 subject matter experts (SMEs) through two rounds of the Delphi Technique. The model comprises of six vital components, namely: Academic Affairs, Student Affairs, Library, University Administration, Community, Industrial Networking and Alumni, and a Special Department/Unit for SEN learners. The exemplifications of the model have fueled numerous educational innovations, including E-ESSENCE, a social emotional support for SEN learners, and i-CHO Kit and My-CHO Kit, aimed at promoting understanding of disability needs among other learners via teaching kit. Remarkably, these innovations have been recognized and have won numerous awards, illustrating the tangible impact of the model. Serving as a reference for the Ministry of Higher Education's Guidelines for the Implementation of Inclusive Policy for Persons with Disabilities in Higher Education Institutions, the model led to the establishment of the UiTM Disability Services Unit. Its most notable accomplishment is its role as the foundational framework for the UiTM DSU, underlining its critical contribution in advancing inclusion, accessibility, and equal opportunities in Malaysian higher education

Keywords: Persons with Disabilities (PWDs), university, special educational needs (SEN), support, education

INTRODUCTION: WHAT IS MoTSEL?

The Model of Technology-Supported Learning for Special Educational Needs Learners in Institutions for Higher Learning (MoTSEL) was developed in 2016, and it is considered one of the most comprehensive models for special educational needs (SEN) learners in Malaysian institutions for higher learning (IHLs). The purpose of MoTSEL is to provide a framework for supporting learners with special educational needs (SEN), particularly in institutions of higher learning (IHLs), through the use of technology (Roslinda Alias, 2016).

MoTSEL was thoroughly developed to address the specific needs and challenges faced by SEN learners in Malaysian IHLs. The development process consisted of three phases:
1) needs assessment, 2) model design, development, and validation, and 3) model instantiation or exemplification.

During the first phase, two needs assessments were conducted among eight public persons with disabilities (PWDs) and involved 66 SEN learners in eight Malaysian public IHLs. The purpose of these assessments was to identify barriers, challenges, and needs of SEN learners in IHLs. Additionally, content analysis was performed on the websites of the eight public IHLs, which served as a foundation for the prototype of the model.

In the second phase, the prototype model was designed and developed based on the information gathered from the needs assessments, websites' content analysis, and literature review. Subsequently, MoTSEL was validated through the Delphi Technique, involving a diverse group of 11 subject matter experts (SMEs) from both overseas and local institutions.

The Delphi Technique, as described by Dalkey (1967), involves eliciting and refining the opinions of a group of experts in a specific field. The consensus among the SMEs was achieved in the second round of the Delphi Technique, indicating the feasibility and acceptance of implementing MoTSEL.

The third phase of MoTSEL's development is exemplification, provided insights into the practicality of implementing the model within the context of Malaysian IHLs.

MoTSEL comprises various components, including Academic Affairs, Student Affairs, Library, University Administration, Community, Industrial Networking and Alumni, and Special Department/Unit for SEN learners. These components provide a comprehensive framework for addressing the diverse needs of SEN learners in different aspects of university life.

Overall, MoTSEL serves as a valuable guide for institutions in supporting SEN learners and promoting inclusive education within Malaysian IHLs.

WHY MoTSEL?

By enacting the Persons with Disabilities Act (Act 685) in 2008, the Malaysian government took an important step towards empowering PWDs. This legislation recognizes the many obstacles faced by people with long-term physical, mental, intellectual, or emotional disabilities, which frequently impede their full and effective participation in society. The act aims to reduce stigmatization and promote inclusion by addressing these obstacles. This shift in perception represents an improvement in society's understanding of people with disabilities (PWDs).

Support is one of the elements besides stability and connectedness in ensuring that learners could succeed in their education and life (National Association of School Psychologists, 2010). The Center for Medical Health in Schools (2002) suggested that learning support should include physical supports, social supports, emotional supports, and intellectual supports. These categories are necessary to provide a comprehensive framework for addressing the diverse

educational needs of students. IHLs can create an inclusive learning environment that promotes the holistic development of students and ensures their overall well-being by incorporating these supports.

Empowering SEN learners through education, especially in IHLs, is crucial for their competitiveness and sustainability throughout their academic pursuits. Therefore, it is necessary to thoroughly examine all aspects of their education, including but not limited to learning and facilitating (L&F) support, financial support, physical and information accessibility, living expenses, and their overall experiences in IHLs (Ghulam Fatima et al., 2020; Nurhidayah Norazlan et al., 2020; Roslinda Alias et al., 2019; Norhaslinda Daud et al., 2018).

In addition, PWDs benefit greatly from the integration of technology in their daily lives. Inclusive education acknowledges the crucial role of technology in supporting SEN learners throughout their educational journey. This viewpoint is emphasized by Zalizan Jelas, a prominent figure in inclusive education in Malaysia (Zalizan Jelas, personal communication, June 5, 2012).

Thus, MoTSEL, a technology-based model, has been developed to serve as a framework for implementing inclusive education in Malaysian higher education (Roslinda Alias, 2016). As shown in Figure 1, this innovative model comprises six sub-components that are: 1) Academic Affairs, 2) Students Affairs, 3) Library, 4) University Administration, 5) Community, Industrial Networking and Alumni and 6) Special Department/Unit for SEN. Each leveraging technology to support inclusive practices and cater to the needs SEN learners particularly in Malaysian IHLs. The MoTSEL underwent a revision in 2019 to incorporate the latest technological practices and updates.

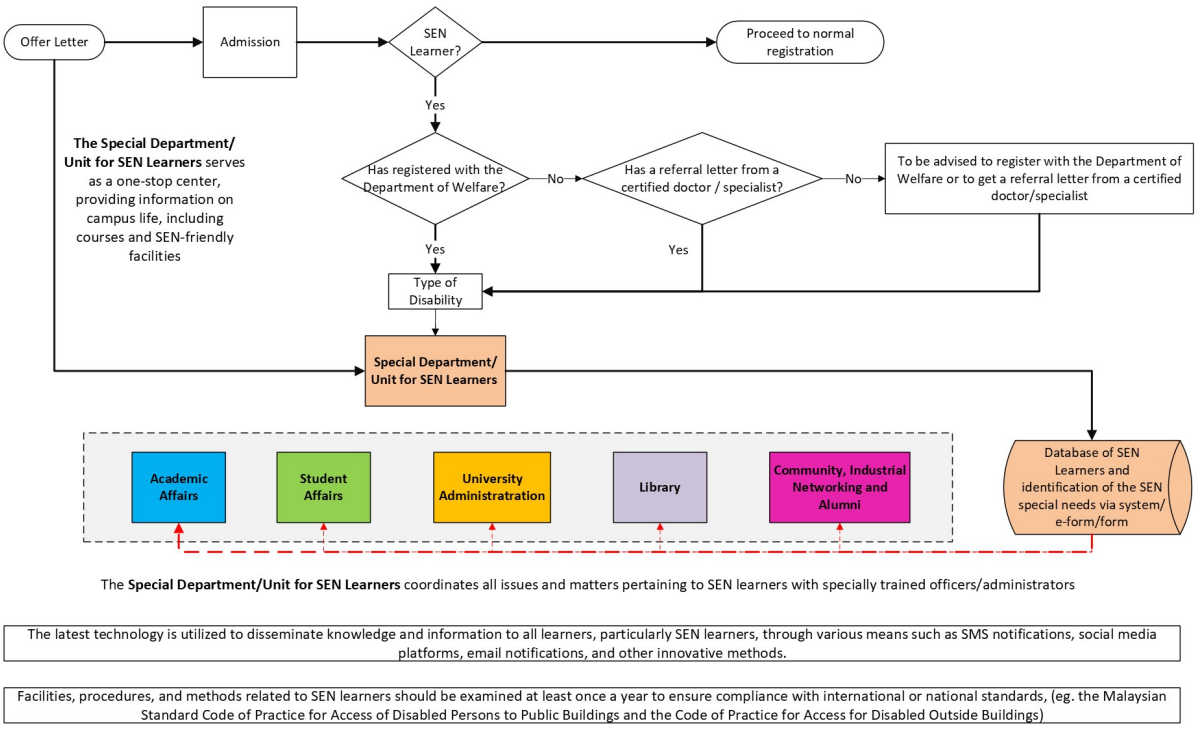

Figure 1. The Revised MoTSEL 2019 (adapted from Roslinda Alias, 2016)

HOW WOULD MoTSEL CREATE INCLUSIVE ENVIRONMENT IN IHLs? THE EVIDENCE VIA EXEMPLIFICATIONS

The objective of MoTSEL is to empower and support the educational journey of SEN learners IHLs. By harnessing the potential of technology, MoTSEL aims to enhance the learning experience and provide the necessary support for SEN learners to succeed in institutions of higher learning (IHLs). Physical supports, social supports, emotional supports, and intellectual supports are incorporated into MoTSEL. As such, it could be regarded as one of the comprehensive models for technology-supported learning designed specifically for SEN students in IHLs. Incorporating these various supports demonstrates MoTSEL's dedication to addressing the multifaceted needs of SEN learners, fostering their holistic development, and ensuring an inclusive educational experience.

MoTSEL's roles in supporting SEN learners in IHLs could be seen from its exemplifications in educational innovations and other contributions including acting as a reference for national and university level guidelines and policy related to inclusion. It also provides a foundational framework for Disability Services Units. Based on these facts, the novelty of MoTSEL's work cannot be denied.

The details on the exemplifications and related publications of MoTSEL as summarized below:

No	Exemplification and Related Publication	Details	Award / Achievement
1	E-ESSENCE (Electronic Emotional and Social Support for Special Educational Needs (SEN) Learners' Community in Higher Education)	ï Educational innovation ï A social emotional support for SEN learners via e-group	1) Gold Medal ï UiTM Industry and Alumni Relations Excellence Award 2014 ï National University Carnival on E-Learning 2014 (NUCeL 2014) ï International Exposition on Shariah Compliant Idea, Invention, Innovation and Design (i-SCIIID) 2014 2) First Runner-Up
2	i-CHO Kit (Islamic Cakna Hal OKU Kit)	ï Educational innovation ï The teaching kit aims to provide early exposure to preschool Muslim children, particularly those who are non-disabled, with the goal of raising awareness about disabilities from an Islamic perspective	1) Gold Medal ï International Exposition on Shariah Compliant Idea, Invention, Innovation and Design (i-SCIIID) 2016 ï International University Carnival on E-Learning (IUCEL 2016) 2) Silver Medal ï Invention, Innovation & Design Exposition 2015 (IIDEX 2015) ï Educational,

			Innovation, Creativity & Design Competition 2015 (EiCD 2015)
3	Malaysia Cakna Hal OKU Kit (My CHO Kit)	ï Educational innovation ï Teaching kit ï The My CHO Kit aims to provide early exposure to preschool children, particularly those who are non-disabled, in order to raise awareness about disabilities	1) Diamond Medal ï Invention, Innovation & Design Exposition 2019 (IIDEX 2019) 2) Gold Medal ï Invention, Innovation & Design Exposition 2019 (IIDEX 2019) 3) Silver Medal ï Educational, Innovation, Creativity & Design Competition 2019 (EiCD 2019)
4	Guidelines for the Implementation of Inclusive Policy for Persons with Disabilities in Higher Education (2019)	ï Reference for the Guidelines development	ï Guidelines by Ministry of Higher Education
5	UiTM Study Policy for Students with Disabilities (2018)	ï Reference for the Policy development	ï Policy by UiTM Academic Affairs Division
6	Implementation Framework for Universiti Teknologi MARA Disability Services Unit (UiTM DSU)	ï Implementation framework for UiTM DSU	ï Framework for university level
7	Reka Bentuk Sejagat Dalam Pendidikan (Universal Design in Education): Siri 1 – Pendekatan Asas Kepada Pembelajaran OKU	ï E-Book ï eISBN: 978-629-97642-0-5	ï E-Book ï Year 2022
8	The Model of Technology-Supported Learning for Special Educational Needs Learners: Towards Inclusive Environment for Special Educational Needs (SEN) learners in Malaysian Higher Education	ï In Alphin H.C, Cha R.Y & Lavine J. (Eds.). The Future of Accessibility in International Higher Education (pp 202-208). IGI Global. DOI: 10.4018/978-1-5225-2560-8.ch012. ISBN: 9781522525608	ï International Chapter in the Book ï Year 2017
9	The Model of Technology-Supported Learning for Special Educational Needs Learners (MoTSEL): Promoting Heutagogic-Inclusive Environment in Malaysian Higher Education	ï International Journal on E-Learning and Higher Education. Volume 1 (1), pp. 65-84. ISSN: 1985-8620. ï International Journal on E-Learning and Higher Education. Volume 1 (1), pp. 65-84. ISSN: 1985-8620. (https://journalined.uitm.edu.my/images/Vol111/Vol11_June2019.pdf).	ï National refereed journal

CONCLUSION

The Model of Technology-Supported Learning for Special Educational Needs Learners in Institutions for Higher Learning (MoTSEL) was developed in 2016 to support SEN learners in Malaysian IHLs through technology. It underwent three phases of development, addressing the diverse needs of SEN learners. The integration of technology in MoTSEL aligns with the Malaysian government's efforts to empower PWDs and promote inclusion. By incorporating physical, social, emotional, and intellectual supports, MoTSEL fosters an inclusive learning environment in IHLs. The model's revision in 2019 updated it with the latest technological practices. MoTSEL's exemplary role includes inspiring educational innovations, influencing national policies, and establishing Disability Services Units. Its comprehensive approach and dedication to inclusive practices highlight its significance in empowering SEN learners in higher education.

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