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“Optimizing Innovation in Knowledge, Education and Design”

EXTENDED ABSTRACT



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Editors : Dr. Siti Norfazlina Yusoff
Azni Syafena Andin Salamat
Nurfaznim Shuib

Cover design : Syahrini Shawalludin
Layout : Syahrini Shawalludin

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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

3rd International Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023)

WEB-BASED SYSTEM FOR DYSLLEXIC: A SCREENING AND LEARNING STYLE RECOMMENDATION

Nur Melissa binti Mohammad Faisal Wee
Faculty of Business Management
Universiti Teknologi MARA
nurmelissa@uitm.edu.my

Mohd Zaki bin Sadik
Faculty of Business Management
Universiti Teknologi MARA
mohdzaki552@uitm.edu.my

Mohamad Hafiz bin Mohd Yusof
Engineering (System) Department
Celestica Electronic (M) Sdn Bhd
hafizsmktsni@gmail.com

Nurul Hidayah binti Mohd Yusof
Faculty of Business Management
Universiti Teknologi MARA
Offhidayah1204gmail.com

Ummi Qaisara Faqihah binti Reman
Faculty of Business Management
Universiti Teknologi MARA
ummi.sara18@gmail.com

ABSTRACT

It is estimated that 17% of students enrolled in primary schools in 2020 were dyslexic in Malaysia. A person with dyslexia is said to have a specific learning disability. Although one may appear to be normal like any other person, he or she might suffer from difficulties reading, writing, and calculating. Primary schools in Malaysia currently applies "Instrumen Senarai Semak Disleksia (ISD)" in assessing students who has high probability for dyslexia and needs further medical action. ISD is conducted manually causing difficulties for teachers to properly analyze and document that important information. Thus, a web-based system was established to properly screen and determine their learning style to ensure that early detection for dyslexic students can take place.

Keywords: Dyslexia, *Instrumen Senarai Semak Disleksia*, Learning Style

INTRODUCTION

One of the outstanding programs conducted by the Ministry of Education is Literacy and Numeracy Program (LINUS) which was initiated in the year 2009 to support students without basic skills of literacy and numeracy. Meanwhile, in terms of assessing learning problems, “Instrumen Senarai Semak Disleksia (ISD)” was implemented. Based on a preliminary interview with Guru Penolong Kanan (Senior Assistant Teacher) of SK Padang Temu, ISD consists of checklist with 50 questions and was done manually. Three main problems were identified for the interview which are: -

1. Due to limitation of space, it is difficult to manage students' information (kept in physical file)
2. Difficult to track teachers' information for those who oversee special education.
3. Calculation on the results of dyslexia screening checklist was conducted manually can be a challenge thus making it hard to determine the students' preferred learning style.

Thus, based on the above problems faced, the researcher has developed a system that could auto screen students by simply entering the values and eventually determine the most suitable learning style for each of the students.

INTERFACES



Figure 1: LOGIN & REGISTRATION



Figure 2: ISD TEST

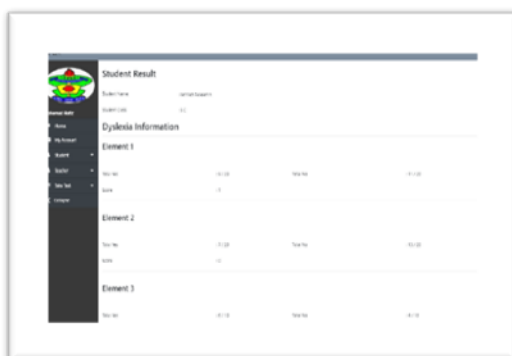


Figure 3: DYSLEXIA PAGE RESULT



Figure 4: LEARNING STYLE

Table 2. Element scoring for ISD Checklist

Element	Range Score	Score
Element 1	0-7	0
	8-20	1
Element 2	0-7	0
	8-20	1
Element 3	0-3	0
	4-10	1

Table 1: ELEMENT SCORING FOR ISSD CHECKLIST

A's, R's, and K's	Aural
The number of A's is more than V's, R's, and K's	Read/Write
The number of R's is more than V's, A's, and K's	Kinesthetic
The number of K's is more than V's, A's, and R's	Visual and Aural
Number of V's and A's the same and more than R's and K's	Visual and Read/Write
Number of V's and R's the same and more than A's and K's	Visual and Kinesthetic
Number of A's and R's the same and more than V's and K's	Aural and Read/Write
Number of A's and K's the same and more than V's and R's	Aural and Kinesthetic
Number of R's and K's the same and more than V's and A's	Read/Write and Kinesthetic
Number of V's, A's, and R's the same and more than K's	Visual, Aural, and Read/Write
Number of V's, A's, and K's the same and more than R's	Visual, Aural, and Kinesthetic
Number of V's, R's, and K's the same and more than A's	Visual, Read/Write, and Kinesthetic
Number of A', R's, and K's the same and more than V's	Aural, Read/Write, and Kinesthetic
All the number of the value are the same	Visual, Aural, Read/Write, and

Table 2: SCORING OF LEARNING STYLE RESULT

METHODOLOGY

For this innovation, two sets of questionnaires were applied in developing the system known as Instrumen Senarai Semak Disleksia (ISD) Checklist and VARK Questionnaire respectively. For ISD Checklist, 50 questions were asked, and which consist of three elements identified as the student's ability to read, write, focus on student's cognitive ability, and lastly focus on any specific dyslexic characteristic available in the student. Each element consists of 20 questions, 20 questions and 10 questions respectively. If the student has a score of 1 for each element in the checklist, she or he will be categorized as having a high possibility of dyslexia.

In terms of the learning style recommendation, the questionnaire used is VARK Questionnaire which consists of 16 questions and four answers for each of the questions. Each of the questions will be assigned to each of the VARK dimensions known as Visual, Aural, Read/Write, and Kinesthetic. Next the answers will be calculated to derive and finally comparing the highest number of answers for each of the elements in the VARK Questionnaire (refer to table 2).

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