UNIVERSITI MALAYA

UMACE
2021

UNIVERSITI MALAYA ACADEMIA-COMMUNITY ENGAGEMENT
INTERNATIONAL CONFERENCE E-PROCEEDINGS

INNOVATION RESILIENCE POST PANDEMIC RECOVERY

e-Proceedings
Universiti Malaya Academia Community Engagement Conference
(UMACE 2021)
14th September 2021, Online via Zoom Platform
Universiti Malaya
Jalan Profesor Diraja Ungku Aziz,
Pantai Valley
50603 Kuala Lumpur,
Malaysia

INTERNATIONAL VIRTUAL CONFERENCE UNIVERSITI MALAYA ACADEMIA-COMMUNITY ENGAGEMENT UMACE 2021

"INNOVATION RESILIENCE: POST PANDEMIC RECOVERY"

E-PROCEEDINGS

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FOREWORD

Universiti Malaya Academia-Community Engagement (UMACE) is an important event in the community engagement paradigm. Given the trust for me to continue to serve as Chairman for the International Conference of Universiti Malaya Academia-Community Engagement 2021 (UMACE 2021) this year demands enormous trust and I do always pray that I can fulfil the expectations for this event to be successful and impactful.

In the early stage of preparation for this conference, I have started a discussion session with management and implementing groups and chaired several meetings to understand the wishes and expectations of all parties at the conference. In the meantime, I have also provided more detailed terms of reference about all the preparations to be done for the conference to be successful. There were also interactions and discussions with involved parties for this conference. I hope that this event can further strengthen the academia-community engagement ties and continue to produce something different, special, and highly valued for all campus communities including researchers and university students.

The Universiti Malaya Academia-Community Engagement (UMACE) is an annual conference organized by the UM Sustainability and Community Centre or UMCares that provide a platform to convene community champions not only UM researchers to present community projects that they had implemented throughout the year but also views from eminent speakers in sharing the community engagement insight, particularly during this pandemic time. This year UMACE 2021 serves as a virtual platform for the researchers and interested parties to deep dive into the community engagement mechanisms as they will discuss, exchange opinions, and share any effective strategies in solving community issues as part of the solutions-making process for the post-pandemic era. Proud to announce that UMACE 2021 is the 3rd series continuation success of PAKUM 2018, and this year is the first year ever to be held on a fully online platform. The community projects presentations were prearranged following UMCares project clusters, and the presentation session including project video will be held in two series of parallel symposiums.

It is our honour that participants are given the opportunities to learn insightful deliverables from multifaceted community projects presented during the symposium sessions as well as an exchange of experts' views during the forum sessions despite the pandemic.

ASSOCIATE PROFESSOR DR. AMER SIDDIQ AMER NORDIN
Chairman of UMACE 2021

PREFACE

UMACE 2021 International Virtual Conference was held successfully on 14th September 2021 at Universiti Malaya, Kuala Lumpur, Malaysia. The conference provides a scientific platform for both local and international researchers and business practitioners to present their community projects findings, particularly during this Covid-19 pandemic.

E-Proceedings of UMACE 2021 is an electronic publication for revised and extended papers presented at the UMACE 2021 International Virtual Conference. All papers in the e-Proceedings correspond to communications submitted and accepted for the UMACE 2021 conference. All extended abstracts went through a double-blind review process by reviewers before being accepted to the conference. A total of 53 extended abstracts were presented at the conference and included in the e-Proceedings.

Overall, the e-Proceedings presents a comprehensive overview of either ongoing or completed research involving community engagement either at the local or international level. These e-proceedings represent the current interests and project areas in education, ICT & technology, health and wellbeing, economics and social welfare that involved community engagement. The e-Proceedings book contains nine sections that represent papers presented across 9 symposiums at the UMACE conference 2021.

On behalf of the Organizing Committee, we would like to express our appreciation for the exceptional services offered by all committee members and session moderators and panel of judges throughout the conference. Each session's moderator was essential in directing the sessions in a timely and effective manner. The success of this conference would not have been possible without the support of the reviewers, who gave their time to assist in the selection of high-quality papers and provided vital critical criticism to help these articles better. We are certain that the participants will benefit from the discussions and appreciate the opportunity to form future collaborations.

DR. ZALFA LAILI HAMZAH
Chief Editor
E-Proceedings of UMACE 2021

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THE IMPLEMENTATION OF EARLY CHILDHOOD DEVELOPMENTAL PERFORMANCE STANDARD ASSESSMENT IN MALAYSIA

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Abstract

The Early Childhood Developmental Performance Standard Assessment in Malaysia involves the process of task completion by children in a real context. A child's actual ability refers to a child's ability to connect, apply and accomplish tasks in his or her environment that will result in authentic and meaningful learning. This study aims to explore the implementation of the Performance Assessment Instrument for Early Childhood Development in Malaysia, especially for children aged 4 to 6 years in preschool and Unity Kindergarten (i.e., Tadika Perpaduan, TP). The Standard Early Childhood Developmental Performance Assessment Instrument was designed and developed using the Design and Developmental Research approach (Klein, 2014). The implementation of this instrument was carried out through a quasi-experimental approach and Interpretive Structural Modelling (ISM). For the quasi-experimental approach, data were collected through interviews, observation and analysis of documents. There are 50 preschoolers, four teachers and 20 parents involved at this stage of the instrument implementation. Next, ISM approach was carried out using the data from the quasi-experimental analysis. This was collaborated with the input from the 12 panel of experts. Findings indicated that the standard performance assessment instrument for early childhood development in Malaysia has a positive impact on (1) Assessment form as an important activity and emphasis was given on the process of preschool children achievement development, (2) Assessment Methods, (3) Mastery Level Analysis, (4) Assessment Activities and (5) Intervention. Implications of the study revealed that good assessment management assists in developing cognitive domains, fine motor, gross motor, socio-emotional and language. It also helps teachers to directly observe the pedagogical forms, teaching and learning activities and daily routines of children during preschool. Suggestions for implementation improvement include providing space and opportunities for teachers to conduct authentic assessments that are appropriate for children's development.

Introduction

Preschool education generally aims to provide children with the first experience and exposure to various forms of basic knowledge and skills to prepare them to step into a more formal schooling environment. Looking at preschool education in Malaysia, it aims at developing the potential of 4- to 6-year-old children in a holistic and integrated manner, inclusive of physical, emotional, spiritual, intellectual, and social aspects through a safe, fun, creative and meaningful learning environment. This is stipulated in the Standard Curriculum for Primary School (KSSR, 2011) and the Standard Curriculum for Secondary Schools (KSSM, 2017) (PPPM, 2013-2025, KPM, 2012). Both curricula have adopted school-based assessment (SBA) to evaluate children's learning development. In the implementation of SBA, formative assessment or assessment for learning is given the main emphasis to further enhance children's learning and to build children's potential more comprehensively (Na'imah, 2011).

The implementation of assessment requires teachers to have sufficient knowledge and exposure especially in terms of the assessment construct, process, and methods for evaluating and reporting. While primary and secondary school teachers may receive formal training for learning assessment, preschool teachers may not be the case. Teachers may have constraints in carrying out student learning assessments at the preschool level. In their study, Nordin et al. (2000) found that teachers face several problems when implementing assessment at the preschool level and one of them is due to time constraints.

Therefore, this project aims to explore the implementation of the Early Childhood Developmental Performance Standard Assessment in Malaysia to further understand the practice. The following research question is developed to meet the purpose of the study: What are the retrospective views of the community (children, parents, teachers, and expert panel) on the implementation of the Early Childhood Developmental Performance Standard Assessment in Malaysia?

Methodology

The Early Childhood Developmental Performance Standard Assessment was designed and developed using the Design and Developmental Research approach (Richey Klein, 2014). The instrument's effectiveness was evaluated in a preschool of ERT Setapak Vocational College (KVeRT) and Bukit Gambir Unity Kindergarten (TP). The research was performed in two forms: Quasi-Experimental and Interpretive Structural Modelling (ISM).

For the quasi-experimental approach, data were collected through interviews, observation, and analysis of documents. There are 50 pre-schoolers, 4 teachers and 20 parents involved at this stage of the instrument implementation. Next, ISM approach was carried out using the data from the quasi-experimental analysis. This was collaborated with the input from the 12 panel of experts. The experts were five early childhood education teachers, a professor in the field of assessment; an officer of the Curriculum Development Section from the Ministry of Education (Malaysia), and five lecturers from the Institute of Teacher Education. The consensus from the panels of

experts were received on the Early Childhood Developmental Performance Standard Assessment Model.

Results

Findings from the interviews with 20 parent participants who were involved in the implementation of the Standard Early Childhood Developmental Performance Assessment Instrument and document analysis (i.e., Student Performance Record, Student Output, Teacher's Lesson Plan) revealed that there is a positive impact of the instrument implementation. Impact was seen on the form of assessment, where it is important to have a variety of forms: assessment for learning, assessment as learning, and assessment of learning. As for the developmental performance of the preschool children, the assessment process should be continuous. The retrospective views of teachers and parents on the implementation of performance instruments indicated they were very satisfied with the assessment activities carried out in developing children's potential according to the domains of children's holistic development. From the interview, one of the teachers stated:

> *"Various assessment activities implemented in this instrument, give me the opportunity to get to know more about the development of my students. I can plan teaching and learning according to the needs of students to develop their potential" (Teacher L; I1 20-22)*

Next, Figure 1 is the findings from the Interpretive Structural Model approach of the Early Childhood Developmental Performance Standard Assessment Model, that has reached consensus (among the experts):
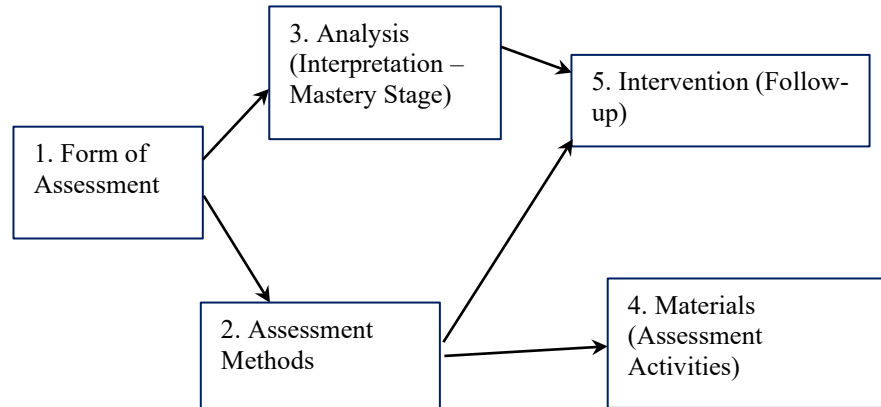
Figure 1: Findings of the Interpretive Structural Model - the Early Childhood Developmental Performance Standard Assessment Model

Discussion

The implementation of the Early Childhood Developmental Performance Standard Assessment has had a positive impact on the management of children's authentic assessment process at the preschool/kindergarten level. Continuous assessment implemented through this instrument provides guidance and space for teachers and

parents to improve weaknesses and further improve the performance of the children, in accordance with the needs of self-regulated learning development. This is especially important in terms of helping teachers and parents in identifying and monitoring the children's development, determining the children's various potentials, and knowing the strengths and weaknesses of the children in learning. The instrument allows teachers and parents to plan for teaching and learning activities according to the developmental needs and growth of the children, traces the effectiveness of teaching and learning, and examines the growth of the children in accordance with their age.

The Early Childhood Developmental Performance Standard Assessment Model as part of the ISM findings, displayed in Figure 1, displays the five elements that should be integrated in the assessment management that include various methods to obtain information about children's development and learning. Assessment should be conducted throughout the teaching and learning process by teachers and parents. This can help teachers track the mastery level, the learning progress, and plan for their next lesson or teaching strategy. The Panel of Experts reached a consensus on the five important elements in the management of the assessment of children's achievement at the preschool and earlier level, namely (i) the form of assessment; (ii) Assessment Methods; (iii) Analysis/Interpretation - Mastery stage; (iv) Materials/Activities Assessment and (v) Follow-up actions (interventions). Authentic assessment form in early childhood education will provide opportunities and space for teachers to have follow-up actions in developing children's potential to the optimum stage of the cognitive, affective, physical, social, and psychomotor domains.

Contribution

The implementation of the Early Childhood Developmental Performance Standard Assessment provides a major contribution to the form of assessment and evaluation of children's development. Through the collaboration with the preschools involved, the Early Childhood Developmental Performance Standard Assessment Model has successfully been produced. This model has now become a guide and reference for teachers and parents in assessing the children's performance.

The implementation of the Early Childhood Developmental Performance Standard Assessment involves training of the parents and teachers. Two series of online workshops were carried out to transfer the knowledge about the forms of assessment for children's learning performance. In addition, the implementation of this instrument led to competition and two workshops on 'Kids Creativity' among preschool children.

Impact

The implementation of this Early Childhood Developmental Performance Standard Assessment is assessed for its impact on the community (children, teachers, and parents) who were involved in the project. The impacts of implementing the Early Childhood Developmental Performance Standard Assessment are as follows:

a. The positive impact of the **Assessment Form** in teaching and learning can be implemented by both teachers and parents. The performance assessment could be carried out daily on the children's activities, in and out of the classroom.

b. The implementation provides new ideas on the variety of **Assessment Methods** that are suitable to be practiced by teachers and parents during teaching and learning sessions.

c. Positive impact on developing teachers' and parents' understanding in interpreting the children's **Mastery Levels**. Children's abilities, progress and mastery of skills are strongly influenced by the growth rate, according to developmental domains.

d. Provide ways for teachers and parents to prioritize the selection of **Materials for Assessment Activities**. Assessment and evaluation activities of children's developmental performance should be carried out continuously and appropriately according to the child's development level.

e. The instrument could assist teachers and parents to plan **Follow-up Actions (Intervention)** according to the learning needs of the children. Teachers and parents need to ensure that the strengths, potentials, and weaknesses of the children need to be strengthened, streamlined, and enhanced through ongoing enrichment, rehabilitation, or guidance activities.

Conclusion

The implementation of the Early Childhood Developmental Performance Standard Assessment successfully produced an assessment management model. The model has provided an alternative way of assessment to measure the learning performance of preschool children, aged 4 to 6 years. The analysis of the study concludes that the five elements used in the management of performance assessment are suitable to be used. It gives room for modification in assessing children's developmental levels. The experts have reached a consensus on the suitability of the five elements in assessment management. In the interest of children's performance development, it is imperative for every teacher to carry out a standard assessment of children's learning development, in and out of the classroom at any set intervals. Performance-Based Assessment that underlies this study is suitable to be applied in kindergarten or preschool classrooms. In summary, the instrument can help children in developing their potential and learning performance.

Acknowledgement

References

Abdul Rahman, M.N., Abd. Razak, N., Abd Razak, N.A., Abdul Hadi, H., & Mansor, M.A. (2020). Instrument pentaksiran prestasi standard awal perkembangan kreativiti dan estetika kanak-kanak malaysia: konsensus pakar. *Jurnal Kepimpinan Pendidikan, 7* (4):20 – 29.

ADAPTABILITY AND READINESS OF ADULT LEANERS TO ONLINE LEARNING: PRELIMINARY STUDY

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Abstract

In March 2020, Malaysia was hit by the COVID-19 outbreak which placed the entire state under the range of Movement Control Orders. Most universities are directed to held online classes by April 2020 and continue until the year 2021. This study was conducted to observe the level of adaptability and readiness of Executive Diploma students after a series of Movement Control Orders. The Executive Diploma students involved in the study are working students and come from different occupational backgrounds. The classes were normally held during the weekend. Data was collected by submitting a survey via a google form. The results demonstrate that most of the students are prepared in terms of knowledge of using technology. However, there were still a few students who have faced challenges, especially to getting good internet access and using proper software/hardware during online learning.

Keywords: COVID-19; Online learning; Executive Diploma; B40 Students

Introduction

The COVID-19 pandemic has disrupted standard teaching and learning practices in almost all educational environments around the world (UNESCO, 2020). Educators and students had to change the way of teaching and learning, respectively. Educators also need to know how to deliver lectures using online methods, while students need to adapt to the learning that no longer occurs in the classroom (Abdul-Hamid & Hamzah, 2020). These changes are not only impacting at the school level but also the university level involving full-time and part-time students (Sharin, 2021). For full-time students, it is usually students who are young and able to adapt to the technology quickly. While part-time students are working students of various ages, which sometimes finds it quite a hassle. This is also no exception for the Executive Diploma (ED) students who are from various backgrounds and experiences. The ED Program is a part-time academic program designed for adults and professionals to improve their knowledge and skills in their respective areas. The ED also recognizes previous learning and skills acquired through work experience as admission to the program. The age range of ED students is from 21 to 60 years and must have a minimum of three years of working experience before they can apply to the program. Although it is already the second year of the

pandemic still, not all students are proficient in using online technology. Therefore, this paper provides an overview of online learning adaptability and readiness from the perspective of ED students.

Methodology

A complete research procedure was carefully chosen for the study. A total of 22 Executive Diploma students of UTM Kuala Lumpur were involved in the study. The survey was done using google form which takes an average of 10 minutes to complete. The analyses were computed using Excel, and the results were categorized into seven parts which exposed the respondents' demographic information, the expectation to learn online, participant's self- direction, learning preferences, self-study habits, technology skills, and hardware/software availability.

Results

Table 1 to Table 7 shows the survey results of the Executive Diploma students regarding online learning. Table 1 shows the demographic results, Table 2 illustrates the students' online learning expectations, Table 3 demonstrates the students' self-direction, Table 4 indicates the students' learning preference, Table 5 shows the students' self-study habits, Table 6 presents the students' technology skills, and Table 7 demonstrates hardware/software requirements.

Table 1: Respondents' descriptive statistics

	Variable	Freq	Percent
Age	22 - 30 years old	11	50
	31 - 36 years old	6	27.3
	37 - 42 years old	4	18.2
	43 - 48 years old	1	4.5
Gender	Female	4	18.2
	Male	18	81.8
Working Time	Shift	13	59.1
	Office Hour	8	36.4
	Unemployed	1	4.5
Household	Less than RM 2500	3	13.6
	RM 2,500 - RM 3,200	4	18.2
	RM 3,201 - RM 4000	4	18.2
	RM 4001 - RM 5000	7	31.8
	RM 5000 dan ke atas	1	4.5

Table 2: Respodents' Online Learning Expectation

Competency	Mean
I understand that learning is my responsibility	5.00
I understand that online classes are more challenging than physical classes	4.64
I understand that I cannot complete an online course using only a smartphone	4.09
I'm willing to email or have online discussions with people I may never have met	4.18
Average Score	**4.48**

Table 3: Respodents' Self-Direction

Competency	Mean
I always set goals and targets for myself	5.00
I am a very motivated person	5.00
I can work on a task until complete	5.00
I always make sure I don't get left behind and take note of the due date of my work	5.00
Average Score	**5.00**

Table 4: Respodents' Learning Preferences

Competency	Mean
I love reading and can remember details by reading	4.09
I can learn using listening methods, such as lectures, recordings, or audio files	3.82
I am comfortable communicating through writing	3.36
I can study on my own, but can also benefit from working in groups	4.82
Average Score	**4.02**

Table 5: Respodents' Self-Study Habits

Competency	Mean
I have a dedicated study space where I can read and work on my assignments without interruption	3.64
I can spend 15 ++ hours a week for a 3 credit course	3.82
I will organize/save my course work in a folder on the computer for my reference purposes later on	4.91
I can dedicate certain times of the day or night to focus on my studies	4.00
Average Score	**4.09**

Table 6: Respodents' Tecnology Skills

Competency	Mean
I know how to use a computer and send emails	4.91
I know how to use websites and surf the internet	4.91
I know how to use online meeting platforms well	4.09
I know how to use relevant computer software to complete my assignments	4.82
Average Score	**4.68**

Table 7: Respodents' Hardware/Software Requirements

Competency	Mean
I have a computer that works fine on using Windows or Mac OS.	4.09
I have Internet access with a fast and new connection	3.64
I have my own printer	2.73
I have headphones/earphones and a microphone if an online class needs to use it	4.64
Average Score	**3.77**

Discussion

In this study, most of the ED students, between 22 to 30 years old, are working shift hours. The highest household income of the ED students in the study is between RM4001–RM5000, which is basically 95% of the ED students who fall under the B40 income category. The students' average scores for online learning expectation and self-direction can be seen in Table 2 and Table 3 respectively, which indicates the ED students are highly prepared for online learning. For the students' learning preferences as shown in Table 4, and the average score is 4.02. The score is quite convincing, though, not all ED students are comfortable completing their assignments through writing. Table 5 demonstrates the ED students' study habits at an average score, 4.09. The results show that not all students have an appropriate space to study at home. While Table 6 illustrates that most of the ED students already get used to the available technology during online learning and this is very encouraging. Nevertheless, not all ED students have proper internet access and a printer in case they need to print the assignments.

Conclusion

Overall results show that ED students can adapt to online learning. This can be true, as Malaysia is facing its second year of the MCO, as well as the students. The results also show that students from low-income families, especially the B40 group, face some challenges to get connected, especially with low Wi-Fi connection. Even though the Malaysian government provides subsidies for internet services to all Malaysian, the

university also needs to play an important role. One of the suggestions, the educators need to plan more asynchronous lessons that students can access when the internet is not good.

Acknowledgement

References

Abdul-Hamid, S., & Hamzah, R. (2020). *How ready were Malaysian undergraduates for the sudden online classes during the COVID-19 pandemic?* Paper presented at the First International Conference on Science, Technology, Engineering and Industrial Revolution (ICSTEIR 2020).

Sharin, A.N. (2021). E-Learning during Covid-19: a review of literature. *Jurnal Pengajian Media Malaysia, 23*(1), 15-28.

UNESCO. (2020). COVID-19 educational disruption and response. Retrieved from https://en.unesco.org/covid19/educationresponse

HEAR ME, EMPOWERING YOUTH LIVING WITH DISABILITIES: COMMUNICATION SKILLS THROUGH ART

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Abstract

This paper shares how a group of researchers learned and engaged with Persons living with disabilities at the Pusat Latihan Pemulihan dan Perindustrian (PLPP) in Bangi. Communication is the key to expressing one's emotions, feelings and life experiences, and research has shown that communication is also the biggest barrier for Persons living with disabilities. Working with a group of 27 young adults living with disabilities, this project aimed to empower these individuals to communicate for personal and social reasons, and eventually acquire employment-related communication. Due to the COVID-19 pandemic, communication became even more challenging to reach out to the artists. We share our communication practices and how art was used as a stimulus for communication. Art has the potential career path for people living with disabilities and there are options that would create livelihoods. This is action research, which highlights how the researchers constantly reflected and developed each phase by integrating art education and communication skills while taking into account the various types of disabilities. The research provides a guide to inclusive education for students learning art and living with disabilities, which outlines the role of the Sustainable Development Goals as well as the aspirations of the United Nations Convention for the Rights of Persons with Disabilities 2006. These basic needs must be met so as to enable their full and equal participation in society. This sharing is practical for communication trainers, volunteers, and researchers who seek different methods in providing special needs education and are keen to engage in continued efforts to empower disabled youth.

Keywords: Disability; Communication; Art; Action Research; Employment

Introduction

Communication is a huge challenge to persons living with disabilities, and it is not limited to those who have vision, hearing or speech impairments. These individuals are known to have difficulty in expressing their feelings, needs, and in explaining what they are experiencing as they are easily misunderstood or misheard. Healthcare providers, for instance, understand the need for effective communication in the delivery

of quality healthcare for persons living with disabilities (Lawthers, Pransky, Peterson & Himmelstein, 2003). Similarly, there is a need for all qualified educators particularly in special needs education and concerned people who care enough to ensure persons living with disabilities are equipped with appropriate communication skills.

According to the Malaysian Social Welfare Department, there are 513,519 registered persons with disabilities which represents approximately 1.58 percent of the Malaysian population (Min, 2019). Despite the facilities and affirmative action taken by the Malaysian government such as allocation of 1% job quota for persons with disabilities (PwD) in public and private sectors, the number of employees with disabilities is still disappointing. A *Bernama* report on December 12, 2020, stated that as of June 2019, the total number of PwD in the civil service was 3,686, equivalent to 0.29 per cent, and the pandemic has not helped in any way. Institutions like the Pusat Latihan Pemulihan dan Perindustrian (PLPP) in Bangi plays an important role in ensuring that inclusive education and training is provided to the individuals and with the shutdown of the centre the whole of 2020, the students returned home with no continuity in their lessons.

Aspects such as soft skills need to be constantly worked on and integrated into the art education and other technical knowledge to ensure these individuals are able to develop their skills from class to career, employment, and livelihood. The expectation that the PwD are self-reliant and able to work should not remain on paper. Emerging research has demonstrated that there is a strong relationship between disability and poverty, especially in low- and middle-income countries (Banks et al., 2017). With the Coronavirus-19 pandemic, the challenges are even greater in creating barriers to the PwD to acquire both the communication skills and to be guided on their art education. The pandemic put a damper on research but the objective of the research remained the same, to investigate the best intervention needed to ensure PwD enhanced their communication skills and discover the niche in the art that could elevate their career potential. As such, two important research questions that the research answers are (i) what skills do PwD need to communicate their work of art, and (ii) how can art be used as a potential tool for career development? For the first research question, the different modes of communication are investigated while for the second research question, a sample of how art enables the PwD to find their niche is discussed.

Methodology

This paper shares how working with 27 young PwDs enabled the researchers to reflect and use a spiral pedagogy to develop communication skills via artwork. Eighteen sessions consisting of 64 contact hours were held pre-pandemic where the researchers were physically present. Taking the art class as the main research site, interactive sessions were held. The sessions were aimed at enhancing confidence when communicating for specific purposes. Initially, the individuals were shy and did not open up to the researchers but eventually, they became more comfortable with the researchers they were familiar with.

During the pandemic, we simulated the same techniques used in class, online. Using art to communicate is ideal as it allows individuals to verbalize their thoughts and ideas and to build their confidence to speak their minds. The individuals shared their current activities and the status of their involvement in art. Some of the individuals were contacted via Facebook, Messenger or Whatsapp and normal calls to elicit

information on their current activities. Some shared their drawing techniques and colouring choices during the online interview sessions. One of the first initiatives to engage with the public, and to evaluate the level of their communication and persuasive skills was the exhibition organised in October 2019 in conjunction with Jobs Malaysia. The job exhibition at PLPP Bangi was to provide early exposure to these trainees. But now, using a qualitative action research method and reflective practitioner feedback, a virtual reality exhibition is planned which would be a permanent virtual space to promote featured artists. During the planning and preparation of the exhibition, the artists and researchers were in constant contact with each other.

Their experience on the ability or inability to communicate, their excitement, anxiety, uncertainties, and other emotions were discussed, and now they are excited about being a part of their 'own' exhibition. This Virtual Reality exhibition has been planned with the hope that PwD would build their confidence, self-esteem and ability to communicate their artwork to the public and to motivate others in pursuing life goals and searching their own niche.

Results

A visual presentation of engaging through communication is presented below.

1. Onsite location of research and students taking the Art education.

Figure 1: UM Researchers with students enrolled in the Art Class at Pusat Pemulihan dan Perindustrian, Bangi before the pandemic.

2. Training onsite was completed before the pandemic.

Figure 2: Training module and module contents integrated with Art Class

3. During the pandemic, modes of communication used were Whatsapp video call, Facebook messenger, real-time phone calls and Instagram following.

Figure 3: RQ1 Methods and skills PwD used to communicate their work of art

Figure 4: Researchers continue to promote each young artist on the Project Webpage on Facebook Hear Me Empowering Disadvantaged Youth throughout the Pandemic

4. Art can be used as a potential tool for career potential as shown below.
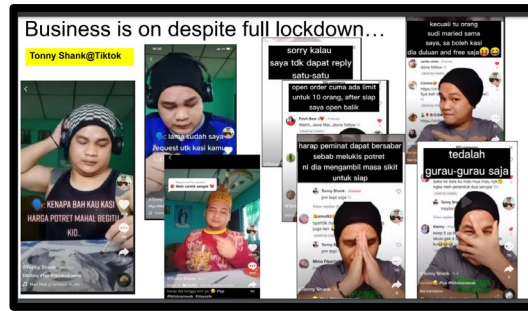
Figure 5: Tony Timban, our featured artist is busy making money drawing for his customers and the overwhelming requests during the pandemic

Discussion

The online training sessions included how to communicate and use expressions of the self through artwork. This includes the language for the promotion of their skills and artwork. The students were also encouraged to publicise their page and be equipped with language for job interviews.

The virtual reality exhibition scheduled in October 2021 is an avenue for these novice artists to practice their curatorial skills. In answering research question 1, what skills do PwD need to communicate their work of art. The artists were mostly computer and IT-savvy and have Facebook and Whatsapp accounts. However, they were not into self-branding nor did they promote their work. Similar to Braithwaite's (1984) study, the access to technology was good but there were language barriers. Personal accounts were found to be in both Malay and native language with a handful attempting some English. It was more like sharing a hobby with their friends. Realizing the potential of these talents, the researchers created the Hear Me Empowering Disabled Youth Facebook page in English. These efforts have now paid off where the artists have taken to showcase their art skills and express their feelings about their art via their medium of preference. Some, like Tony Timban, have also started Tik Tok videos which are shown in Figure 5. Ameer now uses mostly English in his Facebook page and expresses why he is fascinated by one's eyes, likening them to the soul of the person as shown in Figure 6 below.

Figure 6: Ameer's heading reads 'Eyelashes thing'

The second research question, on how art can be used as a potential tool for career development is already shown in Figure 5, and budding artists are important for commercial purposes. These artists would be much sought after in the designing of fashion styles, vehicles, cartoons, interior designs that are made beautifully by these talents. With the virtual reality exhibition, we believe there is career potential for these talented individuals.

Contribution

A Facebook page (https://www.facebook.com/HearMeEmpoweringYouth).

has been established to give visibility to these trainees and to continuously and constantly provide a sustainable platform to highlight their potentials. Updates are also uploaded leading up to the Virtual Reality Exhibition. This exhibition will also be used to engage the media in promoting these artists and their artwork, in the hope that it would contract the interests of employers to provide job opportunities for these artists.

This research has not only promoted the young artists but also drawn the interests of other Persons with Disability who want to attend the sessions at PLPP. Our linguists have made major strides in being able to engage with the youth and we take pride that our young artists are gaining confidence and higher self-esteem. We see a huge impact in career potentials including portrait drawings for commercial purposes, fashion designers, and cartoon and animation artists. Below is a sample new start-up that shows the recognition of one's potential.

Figure 7: Elisyah Nur has started her small business enterprise, for one who only wanted to help her mother cook

This project has a social impact from the educational aspect where the PwD are empowered in various ways. This is in line with the UN Disabilities Sustainable Development Goals and UNICEF's aims:

1. By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

2. To enhance the communication skills of disadvantaged youth.
3. To enable youths to practice various ways to express themselves.
4. To introduce soft skills that nurture, heal and improve their confidence levels.

Conclusion

This research has shared a fundamental principle, that the communication between able-bodied and those living with disabilities requires conscious knowledge of how the former should interact with the latter (Meakim, Smelzer & Mariani, 2017). There were many challenges involved in getting the artists to send their art pieces, as such we would only be able to feature a few artists at a time. This research can be replicated and we have in the pipeline a training module that would help other educators and researchers to train disabled youth to communicate through various art forms. The design of the module allows the able-bodied to understand the many different personalities and their life experiences who need various types of communication and language skills. These special talents must be honed but those who do not possess innate talent should also be given the appropriate communication skills that they would need for their future.

Acknowledgement

References

Banks, L. M., Kuper, H., & Polack, S. (2017). Poverty and disability in low-and middle-income countries: A systematic review. *PloS One*, *12*(12), e0189996. https://doi.org/10.1371/journal.pone.0189996

Braithwaite, D. O. (1984). Ablebodied and disablebodied persons' communication: the disabled person's perspective. Conference paper presented at the Annual Meeting of the Western Speech Communication Association. Seattle.

Lawthers, A.G., Pransky, G. S., Peterson, L.E., & Himmelstein, J.H. (2003). Rethinking quality in the context of persons with Disability. *International Journal for Quality in Health Care, 15(4)*, 287-299.

Min, N. A. N. (2019, April 13). Jumlah OKU berdaftar JKM masih rendah. *Sinar Harian.* https://www.sinarharian.com.my/article/23353/BERITA/Nasional/Jumlah-OKU-berdaftar-JKM-masih-rendah

Meakim, C., Smelzer, S.C. & Mariani, B. (2017). Guide for integrating standardized patients with disabilities in nursing curriculum.

INTERACTIVE ROAD SAFETY CLUB IN SCHOOLS

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Abstract

The road accidents rate in Malaysia is increasing every year especially for vulnerable road users who are pedestrians and bicyclists. Problems of negligence and lack of awareness by students in self- assurance to always be vigilant while using the road should be curbed by increasing their level of knowledge in road safety. Therefore, it is important to deliver road safety messages and foster a vigilant attitude among the students. The main objective of this project is to increase the level of knowledge and awareness among the students in road safety. An interactive road safety club was established in the selected schools participating in the project. A series of road safety teaching and learning activities modules were developed by the joint efforts from the Universiti Malaya project team members and project collaborators who are traffic engineers with vast experience in road safety discipline. Each project team member will be the facilitator to each participating school and assist the club advisor, who are the teachers, to run the teaching and learning activities in school. The involvement of the project members in the school activities is only limited to the first year of the project, with the purpose of to train the club advisor to conduct these activities. In the second year, the project members shall only monitor and provide assistance if necessary to the club advisor. The club can be graduated from this program and fully run independently by the school teacher after year two.

Keywords: Road Safety; Vulnerable Road Users; Road Accident

Introduction

The rate of road accidents in Malaysia is increasing every year especially for vulnerable road users who are pedestrians and bicyclists. Problems of negligence and lack of awareness by students in self-assurance to always be vigilant while using the road should be curbed by increasing their level of knowledge in road safety. Therefore, it is important to deliver road safety messages and foster a vigilant attitude among the students. The traditional road safety campaigns conducted before were arguably not effective and had less impact in efforts to reduce road accident cases. One reform is needed where the road safety knowledge needs to be practiced and reviewed on an ongoing basis. Therefore, an interactive road safety club is established at each school involved in this study to achieve this objective. In this club, activities such as theory classes, demonstrations, site visits etc. will be conducted from time to time on a regular basis so that the participants will be able to follow all the lectures and activities therefore with a good knowledge and understanding in road safety.

Methodology

The first task in this project is to design the road safety module which includes teaching and learning activities. The project team together with collaborators from the industry has referred to the main reference "Interactive Road Safety for You" by Major T.M. Chong, who is also the project collaborator, in designing the club module. 11 modules were developed with estimated 3 hours to cover for each module, and sufficient for the club administrators to run the activities for the whole academic calendar. Several meetings, briefings and training were given to the club advisors and teachers to ensure that all parties are clear and understand the content of each module. A brief survey on general road safety knowledge is conducted in the first activity to acquire the level of road safety knowledge among the students. Since the COVID-19 outbreak in early 2020 has abruptly shattered the project plan, an alternative activities delivery method was conducted, which is through an online platform. A series of webinars were conducted in April and May by the project team member and industry collaborators to the road safety club members. Another round of webinar series was given by Mr. Mohd Tajuddin bin Jamaludin, the club advisor from SMK Taman Datuk Harun, in November 2020.

Results

Table 1 shows the list of activities conducted in this project.

Table 1: Project activities

Date	Activity
11th February 2020	Module 1 in SMK Seksyen 4 Kota Damansara
12th February 2020	Module 1 in SMK Taman Dato Harun
19th February 2020	Module 1 in SMK Sri Damansara 2
4th March 2020	Module 1 in SMK Bukit Bandaraya
6th April 2020	Road Safety Webinar Series 1: Ethical Driving
9th April 2020	Road Safety Webinar Series 2: Introduction to Road Safety
16th April 2020	Road Safety Webinar Series 3: Highway Code
23rd April 2020	Road Safety Webinar Series 4: Road Safety at School Zone
30th April 2020	Road Safety Webinar Series 5: Safe Driving
12th May2020	Road Safety Webinar Series 6: Pedestrian Safety Tips
6th – 9th September 2020	Road Safety Webinar by Teacher Tajudin (SMK Taman Dato Harun).

Figure 1: Meet and greet session with the school principals and representatives on 18 November 2019 at the Cube, *Akademi Pengajian Islam*, Universiti Malaya

Figure 2: Discussion session with collaborators and school representatives on 5 February 2020 at the Faculty of Engineering, Universiti Malaya

Figure 3: Interactive road safety club activities in schools.

Contribution

With the new edition of the road safety module for schools, the school administrators could manage the road safety club by themselves without the involvement of the UM team. By using the same approach, the study team could further expand the project to other schools in Klang
Valley and other regions.

Impact

Through the activities and sharing sessions from the interactive road safety club in school, it could channel road safety knowledge to the students effectively and further increase their level of awareness in this aspect.

Conclusion

In conclusion, the forming of the interactive road safety club in schools is to raise road safety awareness among the students and equip them with the proper road safety knowledge. The school administrators can manage and run all the club activities by themselves after the training and guidance from the study team in the first year. With the same approach, this project could be expanded to other schools and more interactive road safety clubs could be
formed.

References
Chong, T.M. (2009). Interactive Road Safety for You. *Electronic Book.*

PROGRAM JALINAN KIMIA

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Abstract

Program Jalinan Kimia is a program that aims to cultivate a great interest in science subjects, especially chemistry, among high school students. According to the Akademi Sains Malaysia (ASM) Report in 2017, annual tertiary education enrolment in Science, Technology, Engineering, and Mathematics, STEM courses fell by 20% in 2016 from a target of 60%. This STEM data has raised concerns on the number of professional talents in the country. Therefore, this program is a collaboration between local universities and high schools to strengthen the impact of STEM subjects. This program is conducted from August 2020 until September 2021. The program is divided into three parts, namely Science Practical Work Assessment (PEKA) in Schools, Survey through Psychological Assessment and finally Career Talk and Postgraduates Research Forum. The objectives of this program are to increase the number of students enrolment in the STEM courses of tertiary education, provide career exposure and raise awareness of the important responsibilities of higher education institutions to the community. In conclusion, we believe that this program is able to increase students' interest in STEM subjects and in turn stimulate their interest to pursue their studies in STEM streams in higher education institutions.

Keywords: STEM Education; STEM Awareness; Science Practical Work Assessment (PEKA); Career Exploration

Introduction

Program Jalinan Kimia is a program that aims to cultivate a great interest in science subjects, especially chemistry, among high school students. This project is organized by the Department of Chemistry, Faculty of Science, Universiti Malaya. The ratio of students in science to art subjects reported in 2010 was 48:52 before declining further in 2014 that showed a ratio of 47:53 with only 29% of Form 5 students entering the science field. According to the Akademi Sains Malaysia (ASM) Report in 2017, annual tertiary education enrolment in STEM courses fell by 20% in 2016 from a target of 60%. Results from the Relevance of Science Education, ROSE also suggest that lack of awareness on career opportunities hinder the interest and ability to engage scientific enquiry among high school students. This STEM data has raised concerns on the number of professional talents in the country. The main goal of this project is to bridge the gap between university lecturers and graduates with high school students by

providing practical and experiment activities that can enhance the scientific research skills of the students. The activities conducted in the schools are expected to motivate students towards research in the field of science, technology, and innovation, thus taking steps towards fostering a scientifically minded and innovative society. This is in line with the Malaysia Education Blueprint (MEB) for 2013-2025 and the 6th agenda of Malaysia's 2020 Vision.

Methodology

The implementation of the *Program Jalinan Kimia* is divided into three (3) parts:

1. *Science Practical Work Assessment (PEKA) in School*

   PEKA in School is a demonstration on a series of science experiments to attract the interest of high school students. The idea of PEKA in School also aims to cultivate students' interest in science through the presentation of science facts and articles in a relaxed, interesting, and creative manner. *Program Jalinan Kimia* consists of school students who are also joined by volunteers among postgraduates, lecturers and alumni of the Department of Chemistry, Universiti Malaya. Due to the COVID-19 pandemic issue, small-scale experiments were conducted in the Dr. Noraini's Laboratory, Department of Chemistry and they were demonstrated virtually to the students. The experiments conducted coincide with the Curriculum & Assessment Standard Document (DSKP) which has been set by the Ministry of Education Malaysia (MOE). The facilitators of the *Program Jalinan Kimia* have shared their skills and research outcome to motivate high school students and shaping positive motivation towards the subjects of Science, Technology and Innovation (STI).

2. *Survey Through Psychological Assessment*

   Psychological Assessment questionnaires have been prepared and distributed to the students. Relevant questions and feedback from student have outlined on how the education system is adapting to the current challenges and trends. Interest in science is assessed with two scales, Students' enjoyment of science (JOYSCIE, ST094) and interest in broad science topics (INTBRSCI, ST095). ST095 questions divide students into two forms of groups namely upper secondary students and lower secondary students.

3. *Career Talk and Postgraduate Research Forum*

   These talks and forums will be held to discuss the direction of students after high school. Therefore, students will be more confident in the selection of courses after their O-level/SPM examination. The research findings will be shared by postgraduates to attract the interest of school students. Lecturers and postgraduates will share their success in producing high-impact journals that make significant contributions in the world of scientific and technological research. Due to the stipulation of the Movement Control Order, the schedule of each school is constantly changing and not the same following the implementation of Home-Based Learning and Teaching (PdPR). Therefore, there is no date for approval from the District Education Office to run this program in the near future.

Results

1311 participants ranging from Form 3 to Form 5 students have responded to this program through google forms. Posters and experiment videos have been uploaded on the social media and there has been positive feedback from the students. **Figure 1** illustrates PEKA in School activities recorded by the *Program Jalinan Kimia* facilitators and list of students who watched all the experiments virtually:

Figure 1: Students engaging in virtual experiments
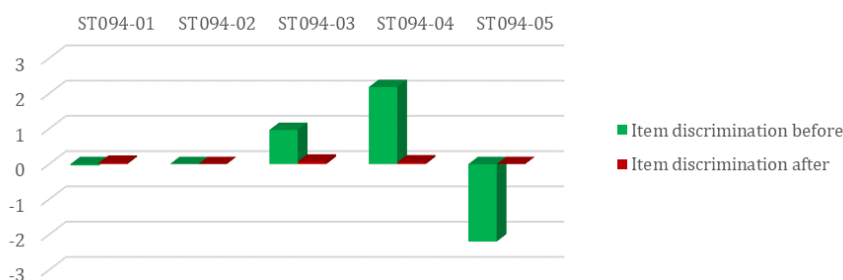
Figure 2: Item discrimination, α before and after *Program Jalinan Kimia*

Discussion

In this investigation, students' interest in STEM subjects by following the Organisation for Economic Co-operation and Development (OECD) model is indicated by:

- Curiosity in science-related issues
- Willingness to acquire additional scientific skills and knowledge
- Consideration interest in science-related careers

The differences in the upper and lower secondary students did not differ much as the relatively low item discrimination, α is obtained for questions regarding on content or related cognitive skills (ST094-01 t& ST094-02). Whereas large-item discrimination is observed as questions involving constructing arguments (ST094-03, ST094-04, & ST094-05). The largest α is observed as students from the upper secondary group had a clear ambition in science field. Therefore, creating a huge gap between the two groups. Moreover, a negative α is seen for questions specific to the field of chemistry. Surprisingly, students from the lower secondary group answered correctly which indicates that this group is very knowledgeable about the career field in detail. After the *Program Jalinan Kimia* was introduced, students are given the same set of questions but in a different order. These two groups of students coincidentally gave a significant decrease in the value of α. This is due to the engagement of postgraduates in this

program that prepares students to acquire research skills and embark on a scientific career.

Contribution

The *Program Jalinan Kimia* organized for high school students is expected to further stimulate students' interest in research in science, technology and innovation, thus fostering a highly knowledgeable and innovative society and subsequently taking STEM streams in higher education institutions. This is in line with the Malaysia Education Blueprint (MEB) for 2013-2025 and the 6th agenda of Malaysia's 2020 Vision.

Impact

Fostering awareness of the importance of STEM education and learning among secondary school students towards taking STEM streams at the tertiary level.

Conclusion

The results of this program indicate that the lack of awareness of career opportunities in STEM streams hinders the interest and ability to engage scientific inquiry among high school students. The use of research findings by teachers must be fostered when dealing with STEM subjects. Globalization has shaped new changes being implemented such as the teaching of higher-order thinking and the concept of lifelong learning for teachers. Bridging high school and university must be given attention for further collaboration. Thus, a strong foundation in STEM needs to be nurtured and subsequently, the number of students in this stream needs to be increased to meet the needs of the professional workforce.

Acknowledgement

References

Akademi Sains Malaysia (2018). Science outlook 2017 Academy of Sciences Malaysia. Retrieved from https://www.akademisains.gov.my/asm-publication/science-outlook-report-2017.

Organisation for Economic Co-operation and Development. (2017). PISA 2015 assessment and analytical framework: Science, reading, mathematic, financial literacy and collaborative problem solving. OECD Publishing.

Poague, E. (2018). Gen z is shaping a new era of learning: here's what you should know. Retrieved from https://learning.linkedin.com/blog/learning-thought-leadership/gen-z-is-shaping-a-new-era-of-learning--heres-what-you-should-kn.

Schreiner, C., & Sjøberg, S. (2004). Sowing the seeds of ROSE: background, rationale, questionnaire development and data collection for ROSE (The relevance of science

education): a comparative study of students' views of science and science education. Retrieved from http://urn.nb.no/URN:NBN:no-14449.

Tang K. (2020). Movement control as an effective measure against Covid-19 spread in Malaysia: an overview. Zeitschrift fur Gesundheitswissenschaften = Journal of public health, 1–4. Advance online publication. https://doi.org/10.1007/s10389-020-01316-w.

EXENDED ABSTRACT

SYMPOSIUM 2: ICT & TECHNOLOGY

OPTIMIZATION OF ELECTRICITY CONSUMPTION IN SCHOOL BUILDINGS

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Abstract

In Malaysia, many primary and secondary schools are not using electricity optimally, resulting in high electricity bills every month. This situation happens due to the lack of knowledge and awareness among teachers and students on electricity-saving attitudes and technologies. In addition, the layout of the school buildings is also not helping in the optimal use of electricity. Limited funds for activities towards electricity saving is also another reason. If electricity consumption can be reduced at a school, the monthly electricity bill can also be reduced. When the electricity bill is reduced, the saving can be used for other purposes that are more beneficial to teachers and students. Therefore, it is important to consume electricity optimally in school buildings. The objectives of this work are to analyze the electricity consumption in the existing buildings of one of the schools in Kuala Lumpur, to implement energy-saving attitudes and technologies to optimize the usage of electricity in the school buildings and to compare the electricity consumption between before and after the energy optimization is implemented. The school chosen for the study in this work is Sekolah Kebangsaan (SK) Kampung Selayang in Kuala Lumpur, Malaysia. From the results obtained in this work, it was found that by implementing energy-saving attitudes and technologies, the electricity consumption at SK Kampung Selayang could be reduced by 20.12% per month. These methods could also be implemented at other schools in Malaysia.

Keywords: Electricity Saving; Energy Optimization; School Buildings; Energy Saving Attitudes; Energy Saving Technologies

Introduction

Many primary and secondary schools in Malaysia are not consuming electricity optimally. This causes high electricity bill needs to be paid every month. This scenario happens due to the lack of knowledge and awareness among teachers and students on electricity-saving attitudes and technologies. The layout of the school buildings is also not assisting in the optimal use of electricity. Limited funds for activities related to electricity saving is also another reason for this. If electricity consumption can be reduced, the monthly electricity bill will also become lower. When the electricity bill per month is reduced, the saving from it can be used for other purposes that are more useful to teachers and students. Thus, it is important to consume electricity optimally in any of the school buildings.

Electricity can be consumed optimally by increasing the awareness towards energy saving attitudes and technologies, which has been surveyed widely since the past. Based on the surveys previously, some factors that are influencing energy-saving behavior of individuals are the location of the school, awareness and knowledge towards energy-saving (Wang, Zhang, & Li, 2014), an education level (Poortinga, Steg, Vlek, & GerwinWiersma, 2003), family income level and government policies (Yue, Long, & Chen, 2013). The belief, norms and values are also influencing energy-saving behaviors (Ertz, Karakas, & Sarigöllü, 2016; Hua & Wang, 2019).

Based on the research problems, the objectives of this work are to analyze the electricity consumption in the existing buildings of one of the schools in Kuala Lumpur, to implement energy-saving attitudes and technologies to optimize the usage of electricity in the school buildings and to compare the electricity consumption between before and after the energy optimization is implemented. SK Kampung Selayang in Kuala Lumpur, Malaysia was chosen in this work since it is one of the oldest schools in the city.

Methodology
This project consists of five stages. Stage 1 is the initial data collection, where data on the electrical load installed at all buildings of the school and the total time of electrical load consumption were obtained. Stage 2 is the data analysis, where the total electricity consumption of the school was analyzed. Stage 3 is the implementation of energy-saving attitudes and technologies in the school buildings to optimize the usage of electricity. The energy-saving technologies considered are motion sensors, light sensors and temperature sensors. The energy-saving attitudes considered are switching off electrical appliances when not in use, allowing natural light to enter the buildings, and reducing air-conditioner usage. Stage 4 is a comparison of the total energy consumption between before and after energy optimization is implemented. The possible reduction of energy usage was also recorded. Finally, the output of the project was reported in a conference proceeding.

Results
Tables 1 and 2 show the energy consumption at SK Kampung Selayang before and after the implementation of energy optimization. The tables include the total hours per day of energy usage and the total energy usage per day and month (taken as 22 days) for each of the electrical loads.

Table 1: Energy consumption at SK Kampung Selayang before energy optimization

	No. of unit	Power per unit (W)	Hours per day	Total energy per day (kWh)	Total energy per month (kWh)
Fluorescent lamp	236	38	6	53.808	1183.776
Fan	41	80	6	19.680	432.960
Air-conditioner	15	1000	10	150.000	3300.000
Total				**223.488**	**4916.736**

Table 2: Energy consumption at SK Kampung Selayang after energy optimization

	No. of unit	Power per unit (W)	Hours per day	Total energy per day (kWh)	Total energy per month (kWh)
LED lamp	236	24	4.5	25.488	560.736
Fan	41	80	5.5	18.040	396.880
Air-conditioner	15	1000	9	135.000	2970.000
Total				**178.528**	**3927.616**

Figure 1: A view on one of the buildings at SK Kampung Selayang, Kuala Lumpur

Discussion

Based on the results shown in Tables 1 and 2, the possible total reduction of electricity consumption is 20.12% per month through energy optimization. This is achieved through changing the existing fluorescent lamps to LED lamps and reducing the lamp, fan and air-conditioner usage through energy-saving attitudes and technologies.

Contribution

The contribution of this research to SK Kampung Selayang is by implementing energy-saving attitudes and technologies in the school buildings, the electricity consumption could be
reduced by 20.12% per month.

Impact

In terms of behavioral aspect, the impact is the awareness towards energy saving among the school teachers and students could be cultivated. In terms of the economy, the impact is the school will be able to reduce the electricity bill in the long term.

Conclusion

The electricity consumption at SK Kampung Selayang, Kuala Lumpur has been successfully analyzed. Through the implementation of energy-saving attitudes and technologies, the electricity consumption at SK Kampung Selayang could be reduced by 20.12% per month from the existing condition. These methods could also be recommended for implementation at other schools in Malaysia.

References

Ertz, M., Karakas, F., & Sarigöllü, E. (2016). Exploring pro-environmental behaviors of consumers: An analysis of contextual factors, attitude, and behaviors. *Journal of Business Research, 69*(10), 3971-3980.

Hua, L., & Wang, S. (2019). Antecedents of consumers' intention to purchase energy-efficient appliances: an empirical study based on the technology acceptance model and theory of planned behavior. *Sustainability, 11*, 2994.

Poortinga, W., Steg, L., Vlek, C., & GerwinWiersma. (2003). Household preferences for energy-saving measures: A conjoint analysis. *Journal of Economic Psychology, 24*(1), 49-64.

Wang, Z., Zhang, B., & Li, G. (2014). Determinants of energy-saving behavioral intention among residents in Beijing: Extending the theory of planned behavior. *Journal of Renewable and Sustainable Energy, 6*, 711-720.

Yue, T., Long, R., & Chen, H. (2013). Factors influencing energy-saving behavior of urban households in Jiangsu Province. *Energy Policy, 62*, 665–675.

APPLICATION OF *TRICHODERMA*-BASED BIOFERTILIZER (TBF) TO PROMOTE AGROECOLOGY-ORIENTED RICE FARMING SYSTEM IN SAWAH SEMPADAN, SELANGOR

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Abstract

The fungal species *Trichoderma* is reported to have a significant impact on the growth and physiological performance of rice plants. Substituting synthetic chemicals with agroecology-based input such as *Trichoderma*-based biofertilizer (TBF) can be an alternative to produce rice more sustainably for the local rice farmers. This project aims to disseminate the knowledge of TBF procedure and application to the Sawah Sempadan rice farming community for sustainable rice production through a series of seminars and workshops. In addition, three demonstration plots were selected for this project as a testament to TBF's performance in the field. Plant height, number of tillers, and number of leaves of rice were measured during this demonstration to compare the rice performance between TBF and non-TBF rice fields. The seminars and workshops organized during this project received an overwhelming reception and a positive response from the participants. The program has established awareness and increased knowledge on agroecology and organic-oriented farming. The demonstration plots also showed a significant difference in rice growth in TBF-treated fields as compared to the controls. Although the Movement Control Order (MCO) due to the COVID-19 pandemic has restricted the scientific data, this preliminary information has provided confidence among farmers on the performance of TBF. In conclusion, the TBF could free rice farmers from dependency and reliance on chemical fertilizers in rice production which could give them more sustainable economic advantages with environmental benefits.

Keywords: Agroecology; Beneficial Microbes; Organic Farming; Sustainable Agriculture

Introduction

The application of beneficial microbes in crop production has been suggested as a foundation for the next "Green Revolution" in agriculture (Baez-Rogelio et al. 2017). Studies have highlighted the impacts that root-associated microbial communities can improve plants' health and development (Lareen et al. 2016). Many microbe-based products have already been formulated and released to the public (Singh et al. 2016).

Trichoderma is a fungal genus with numerous functions in agricultural systems, e.g., promotion of plant growth, induction of plant defenses against pathogens, and resistance to both biotic and abiotic stresses (Gill et al. 2010; Guller et al. 2016; Doni

et al. 2019). *Trichoderma* spp. are highly interactive fungi that live in soil, root, and foliar environments. In addition to assisting plants to resist various diseases and drought stress, Trichoderma has been reported to have positive effects on the growth of many crops. Incorporating *Trichoderma* into biofertilizer could enhance the growth, physiological traits, and yield of rice (Doni et al. 2019).

Unfortunately, the use of huge amounts of chemicals and pesticides as inputs in the current conventional rice cultivation has been commonly known to exert harmful effects to the environment and farmers, including soil degradation, water pollution and direct toxic effect (Uphoff, 2017; Thakur et al., 2016). Substituting synthetic chemicals with agroecology-based input such as biofertilizer can be an alternative to produce rice more sustainably (Doni et al. 2017; 2019). However, the lack of fundamental scientific knowledge and limited access to the newest technology and advancement on organic-based farming has delimited the promotion of sustainable agriculture in Malaysia. Hence, Universiti Malaya (UM) team, who are working with a beneficial microbe (*Trichoderma*), found that this specific fungus is highly complementing with the rice agro-ecosystem.

The introduction of *Trichoderma* in the rice agroecosystem can boost the production of rice most sustainably (Doni et al. 2019). Therefore, incorporating the finding of the *Trichoderma* research into the rice production program in Sawah Sempadan, Tanjung Karang, Selangor will be a good platform to increase the credibility of environmentally sustainable agriculture in the country. This project aims to disseminate the knowledge of agroecological farming to the local community in Sawah Sempadan through creating awareness on the importance of agroecology for sustainable rice production and livelihood of the community; imparting skills and techniques related to *Trichoderma*-based biofertilizer (TBF) through a series of seminars and workshops; and ultimately positioning Sawah Sempadan community into a larger network of organic and agroecological farming in the country.

Methodology

A series of seminars and workshops on agroecological practices and the roles of microbes in rice production systems was organized for farmers and secondary school students in Sawah Sempadan, Tanjung Karang, Malaysia in January and July 2020.

Trichoderma-based biofertilizer (TBF) was applied to the rice farms in selected Sawah Sempadan as a demonstration plot to introduce the TBF technology for the farmers. A total of three plots in Sawah Sempadan were selected for this demonstration. The plots are owned by one of the participants of the workshop. *Trichoderma. asperellum* SL2 (Public Accession Number: UPMC 1021) was prepared in Universiti Malaya prior to field treatment. The *Trichoderma* spore concentration for the TBF was adjusted to 107 spores/ml. The TBF was sprayed to the field using a drone at 20L TBF per hectare one week before transplanting. The drone height was maintained at 3m above the field surface to avoid TBF drift. Additional three plots using conventional fertilizer without TBF application were selected for comparison or control.

The growth performance of rice cultivar MR220 in TBF and control fields was evaluated at 30, 37, and 44 days after transplant. The parameters include plant height, number of tillers, and number of leaves.

Results

A total of two programs were conducted during this study (Figures 1 and 2). The first program which included a seminar and a workshop was conducted on 18 January 2020. The title of the seminar was "Agroecology and Organic Farming for Sustainable Rice Production" delivered by Dr. Muhamad Shakirin Mispan from Universiti Malaya and Dr. Anizan Isahak from Malaysian Agroecology Society for Sustainable Resource Intensification (SRI-Mas). This was followed by "How to make your own TBF" workshop facilitated by Dr. Nurul Shamsinah Mohd Suhaimi and Dr. Febri Doni from Universiti Malaya (Figure 1). A total of 50 secondary school students and rice farmers from Sawah Sempadan participated in these activities (Figure 1). A similar program was repeated on 18 July 2020 with 20 participants from various backgrounds including rice farmers, vocational teachers, and local public. Participants were also given an experience to plant rice using SRI method (Figure 2). Unfortunately, the Movement Control Order (MCO) due to the Covid-19 pandemic has restricted the number of participants to join the program.

The growth performance of rice after TBF application showed a significant increase than the control plots (Figure 3). The height of the cultivated rice MR220 in TBF fields was 20.7% taller than the same variety of rice in the control plots (Figure 3a). A similar pattern also showed in a number of tillers and leaves. The TBF application increased 33.9% and 45.4% number of tillers and leaves, respectively (Figure 3b,c). Alas, no data for yield was obtained due to no interstate travel during the MCO which did not permit the data collection.

Figure 1: Seminar and workshop on agroecology and *Trihoderma*-based biofertilizer (TBF). This program aims to deliver awareness on sustainable agriculture and at the same time to share and transfer the TBF technology to the farmers and interested parties.

Figure 2: Hands-on activity on rice planting using System of Rice Intensification (SRI) method.
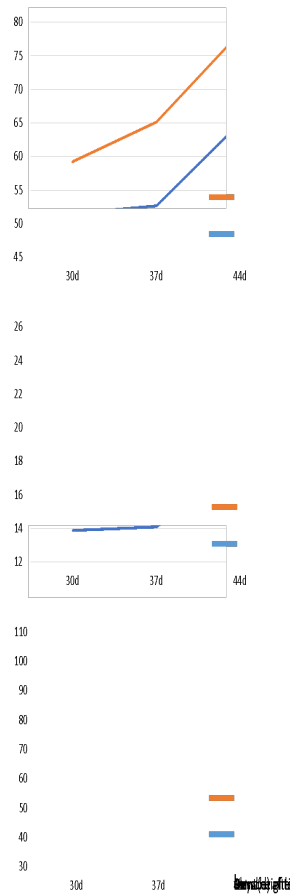
Figure 3: Growth performance of cultivated rice at 30, 37, and 44 days after transplanting after *Trichoderma*-based biofertilizer (TBF) and control treatments. a) Plant height; b) Number of tillers; c) Number of leaves

Discussion

The overwhelmed reception and positive response from the participants during and after the organized programs indicate the farmers and general public are open to new technologies and knowledge in sustainable agriculture. The seminars and workshops have established awareness and increased understanding of agroecology and organic-oriented farming.In general, the participants were concerned with the conventional practice in rice farming especially on the excessive usage of toxic chemical inputs in the production of rice. A detailed and comprehensive survey needs to be conducted in the future to understand the farmers' perception, acceptance, and attitude towards organic-based and agroecological technologies.

Despite some restrictions to gather data during the MCO, the preliminary data showed promising information on the application of TBF in the rice field. The TBF has clearly improved the early-stage vegetive growth of cultivated rice in terms of height, the number of tillers, and number of leaves. This is in line with our review on the influence of microbes used in rice farming and the outcome of symbiotic interactions between rice plants and fungal microbes of a particular strain in the ubiquitous genus of *Trichoderma* (Doni et al. 2019). Similarly, the controlled replicated trials on various studies have shown that plants including rice inoculated with *Trichoderma* significantly increased the plant growth, physiological characteristics, biochemical traits, nutrient uptake, and yield (Yedidia et al. 2001; Contreras-Cornejo et al. 2015; Pascale et al. 2017). Further trials showed that rice seedlings inoculated with *Trichoderma* produced greater increment along each of these parameters as compared to the seedlings grown under conventional methods following the inoculation with *Trichoderma* (Doni et al. 2017).

Contribution

The *Trichoderma*-based biofertilizer (TBF) could free farmers from their current dependency, or at least reduce their reliance, on chemical fertilizers which are commonly used in rice farming systems. A simple method for producing Trichoderma-based biofertilizers is available for farmers to take up, thereby reducing their dependency on chemical fertilizers, giving them economic advantages, and producing wider environmental benefits.

Impact

The use of huge amounts of chemicals and pesticides in the current conventional rice cultivation has been commonly known to exert harmful effects to the environment and farmers, including soil degradation, water pollution and direct toxic effect. Substituting synthetic chemicals with agroecology-based input such as TBF can be an alternative to produce rice in a more sustainable way.

The technology transfer of TBF via continuous "hands-on" and "face-to-face" programs will provide the opportunity for the farmers to witness the application and effectiveness of scientific-based agroecological technology to improve the performance of their crop production. These programs also can increase the awareness of farmers and the general public on the importance of sustainable agriculture for food security

and safety. Participants will embrace sustainable agricultural innovations as evident in the actual employment of innovative equipment and/or method.

Conclusion

The seminars and workshops to introduce agroecological-based technology in rice farming have been well accepted by the community in Sawah Sempadan. A number of farmers have already shown interest in *Trichoderma*-based biofertilizer (TBF) and are ready to apply it in their rice farms. Further survey and continuous communication with the farmers are needed to create a long-term relationship between UM and farmers in Sawah Sempadan beyond this project as a long-term life-long learning project. The success testament of TBF application in the field can support the campaign. More testing and field demonstrations can be organized after the MCO to provide more scientific evidence of TBF technology for the farmers and public.

Acknowledgement

References

Baez-Rogelio, A., Morales-García, Y. E., Quintero-Hernández, V., & Muñoz-Rojas, J. (2017). Next generation of microbial inoculants for agriculture and bioremediation. *Microbial Biotechnology, 10*(1), 19–21. https://doi.org/10.1111/1751-7915.12448.

Contreras-Cornejo, H.A., Macías-Rodríguez, L., Vergara, A.G. et al (2015). Trichoderma modulates stomatal aperture and leaf transpiration through an abscisic acid-dependent mechanism in Arabidopsis. *J Plant Growth Regul 34*, 425–432. https://doi.org/10.1007/s00344-014-9471-8.

Doni, F., Che Radziah, C.M.Z, Anizan, I., Norela, S., Fathurrahman, F., Uphoff, N., & Wan Mohtar, W.Y. (2017). Relationships observed between Trichoderma inoculation and characteristics of rice grown under System of Rice Intensification (SRI) vs. conventional methods of cultivation. *Symbiosis, 72*, 45–59.

Doni, F., Fathurrahman, F., Mispan, M.S., Suhaimi, N.S.M., Yusoff, W.M.W., Uphoff, N. (2019). Transcriptomic profiling of rice seedlings inoculated with the symbiotic fungus *Trichoderma asperellum* SL2. *J Plant Growth Regul, 38*(4),1507-1515.

Doni, F., Mispan, M.S., Suhaimi, N.S.M., Ishak, M.N., Uphoff, N. (2019). Roles of microbes in supporting sustainable rice production using the system of rice intensification. *Appl Microbiol Biotechnology, 103***, 5131–5142.

Gill, S. S., & Tuteja, N. (2010). Reactive oxygen species and antioxidant machinery in abiotic stress tolerance in crop plants. *Plant physiology and Biochemistry : PPB*, *48*(12), 909–930. https://doi.org/10.1016/j.plaphy.2010.08.016.

Guler, N.S., Pehlivan, N., Karaoglu, S.A, Guzel, S., Bozdeveci, A. (2016). *Trichoderma atroviride* ID20G inoculation ameliorates drought stress-induced damages by improving antioxidant defence in maize seedlings. *Acta Physiol Plan, 38,* 132. https://doi.org/10.1007/s1173 8-016-2153-3.

Lareen, A., Burton, F., & Schäfer, P. (2016). Plant root-microbe communication in shaping root microbiomes. *Plant Molecular Biology*, *90*(6), 575–587. https://doi.org/10.1007/s11103-015-0417-8.

Pascale, A., Vinale, F., Manganiello, G., Nigro, M., Lanzuise, S., Ruocco, M., Marra, R, Lombardi, N., Woo, S.L., Lorito, M. (2017). *Trichoderma* and its secondary metabolites improve yield and quality of grapes. *Crop Prot, 92*, 176–181.

Singh, D.P., Singh, H.B., Prabha, R. (2016). *Microbial inoculants in sustainable agricultural productivity.* New Delhi, India: Springer.

Thakur, A.K., Uphoff, N., Stoop, W.A. (2016). Scientific underpinnings of the System of Rice Intensification (SRI): What is known so far?. *Adv Agron, 135*, 147–179.

Uphoff, N. (2017). SRI: an agroecological strategy to meet multiple objectives with reduced reliance on inputs. *Agroecol Sust Food, 41,* 825–854.

Yedidia, I., Srivastva, A.K., Kapulnik, Y., Chet, I. (2001). Effect of *Trichoderma harzianum* on microelement concentrations and increased growth of cucumber plants. *Plant Soil, 235*, 235–242.

COMMUNITY ENGAGEMENT IN EDUCATION INFORMATICS FOR RURAL LEARNERS DURING THE POST-COVID-19 ERA

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Abstract

Community engagement has been part of yearly commitments by academicians in most public universities. This study aims to analyse the impact of community engagement in education informatics through a program conducted among rural learners. Due to the movement control order (MCO) as the consequence of the COVID-19 pandemic, usual physical activities have been substituted with online activities. Compared to existing works, this study reports the impact of an intervention program to increase knowledge and interest in learning English along with the exposure of Information and Communication Technology (ICT) to support their online learning. A survey was distributed among 51 secondary students from eight rural schools in the Southeast Johor region who participated in a program known as e-THRiL from August to October 2020. The findings show positive impacts in terms of knowledge before and after joining the program, fulfilling their needs, besides the expected changes and sustainability aspect that was achieved through the activities and the exposed ICT. Thus, it concludes that despite the challenges during the post-COVID-19 era, academicians could still contribute to the local communities in this case rural learners who are exposed to various applications, tools and methods based on ICT in learning English, a subject that has been a challenge to rural learners.

Keywords: Community Engagement; Education Informatics; Rural Learners; Post-COVID-19 Era

Introduction

Centre for Advancement in Rural Education Informatics (iCARE) was founded in 2012 as a community project under the strategic partnership between Universiti Teknologi Malaysia (UTM) and a rural agency, Southeast Johor Development Authority (KEJORA), which the collaboration continued in 2018 (KEJORA, 2021). In 2020, iCARE received IEEE Educational Activities Region 10 (IEEE EA R10) Commendation Fund for the program known as "IEEE iCARE e-Tuition for Humanity among Rural Learners during COVID-19 Pandemic Period in Malaysia (e-THRiL)" as one of the initiatives during the pandemic period that has caused the closure of all industries including schools and higher learning institutions. Hence, this study aims to report the impact of community engagement in education informatics through the e-THRiL program participated by 51 rural learners of secondary level in Southeast Johor.

Community engagement has been widely practiced mainly in the education field. For instance, the early work by Oakes and Zoltowski (2014) reports the use of community engagement along with service learning to teach engineering and computing where through a workshop, the facilitators introduced the pedagogy and shared EPICS model that was created at Purdue University and a program under IEEE Foundation. In addition, Jordaan and Maharaj (2018) promote diversity in a community engagement module for undergraduate engineering students at the University of Pretoria, South Africa. The measured diversity aspects among the teams include gender and race, courses, community partners, and projects. It concludes that the module gives students the opportunity to solve real-life issues while serving the selected communities. More recent work by Raad (2021) reports the reflections done by students enrolled in electronic circuit analysis lab courses and integrated their solutions with their final projects to solve the selected community issues. In contrast, our study focuses on an intervention program that was created to enhance knowledge and interest in learning English using ICT during the post-COVID-19 era and measure its need and impact.

While in term of education informatics, early work by Kuna and Vozár (2016) adopts a Web application to teach Discrete Mathematics among first year undergraduate students at Constantine the Philosopher University in Nitra. It conducted pre-test and post-test to measure students' knowledge. The findings show an improvement in students' knowledge when learning the course with the support of a Web application. Larraza-Mendiluze et al. (2020) propose a learning-to-teach-to-learn (L2T2L) methodology that requires university students to learn and later teach younger students in cascading way that is to secondary and then to primary students. The study reported the positive effects on students' attitudes towards informatics. Recent work by Yu (2020) specifically focuses on English education using a live-streaming course platform that stresses the importance of value orientation so that students could see the importance and value of English by using the modern way of learning English. Our previous work reports a case study of a related intervention programme to increase interest and confidence in speaking English (Sulaiman, 2018). However, our current study focuses on the use of ICT to improve English besides students' interests not specific to communication. Another work focuses on service-learning and community engagement for the Computer Science subject (Sulaiman et al., 2020) that also differs from the concerning factors in the current study.

Thus, this study is within the scope of community engagement among secondary level rural students who attended an intervention program online during the movement control order (MCO) period in Malaysia. The main research question is how the program could increase their knowledge and interest in learning English with the exposure of Information and Communication Technology (ICT) to support their online learning. The objectives are (i) to conduct a community engagement in education informatics among the selected rural learners, (ii) to measure participants or respondents' level of knowledge before and after attending the program and (iii) to study the need and impact of the program under the study.

Methodology
The study is a problem-solving type that aimed to solve the issues of lack of interest in learning English among rural learners and the awareness of ICT applications and tools

that can provide diversity in learning methods. It selected the case study of upper secondary students from eight schools in a rural region that is Southeast Johor under the rural agency, KEJORA. A survey was used to collect the data to fulfill the objectives. For the first objective on the knowledge gained before and after the program, the five-point Likert scale was used as 1: very weak, 2: weak, 3: moderate, 4: good, 5: very good. For the second objective regarding the program need and impact, the five-point Likert scale was also used, which includes 1: strongly disagree, 2: disagree, 3: not sure, 4: agree, 5: strongly agree.

In addition, under the iCARE project, a special program named as iCARE My Community (iMC) has selected the bottom-40 UTM students (household income of RM3500 and below) from the Southeast Johor region under KEJORA to serve as ambassadors at their local communities to conduct various educational activities, especially during semester breaks. Due to the MCO in Malaysia since 18 March 2020, the iMC ambassadors had constraints in conducting physical activities. In this study, e-THRiL program was conducted online from 23 August to 10 October 2020 by the facilitators among iMC ambassadors and invited facilitators with the guide of academicians. During the recovery MCO period, students in Malaysia except those with public exams were still studying at home, well known as PdPR.

The facilitators used various applications such as WhatsApp, Padlet and Quizizz to deliver their contents and discuss with the students. The students from eight schools were divided into four teams with assigned facilitators. They were nominated by their schools based on the students' interest to join voluntarily, then they had to get permission from their parents. They received minimal mobile data support for being active participants by attending at least 60% of the conducted sessions under the respective team. Each team conducted 12 to 15 sessions with an average of one hour per session. The sessions for the e-tuition were conducted out of school hours. Of 69 registered students, 49 (71%) were considered as committed participants, while 51 (74%) students responded to the survey.

Analysis

The analysis of the survey includes the background of the participants, the level of their knowledge before and after joining the program, and finally the program's need and impact. Figure 1 shows the distribution of students by school. The highest participant was from SMK Bandar T6 (11 students, 21%) while the lowest was from SMK Tan Sri Jaafar Albar and SMK Tanjung Pengelih respectively (three students, 6%). In terms of the top three challenges faced by the participants, Figure 2 shows 18 (60%) of them stated the weak Internet access, followed by 6 (20%) responded that they could not afford to top up mobile data, and 5 (17%) had to share the Internet access. One participant (3%) faced the problem with the used mobile phone.
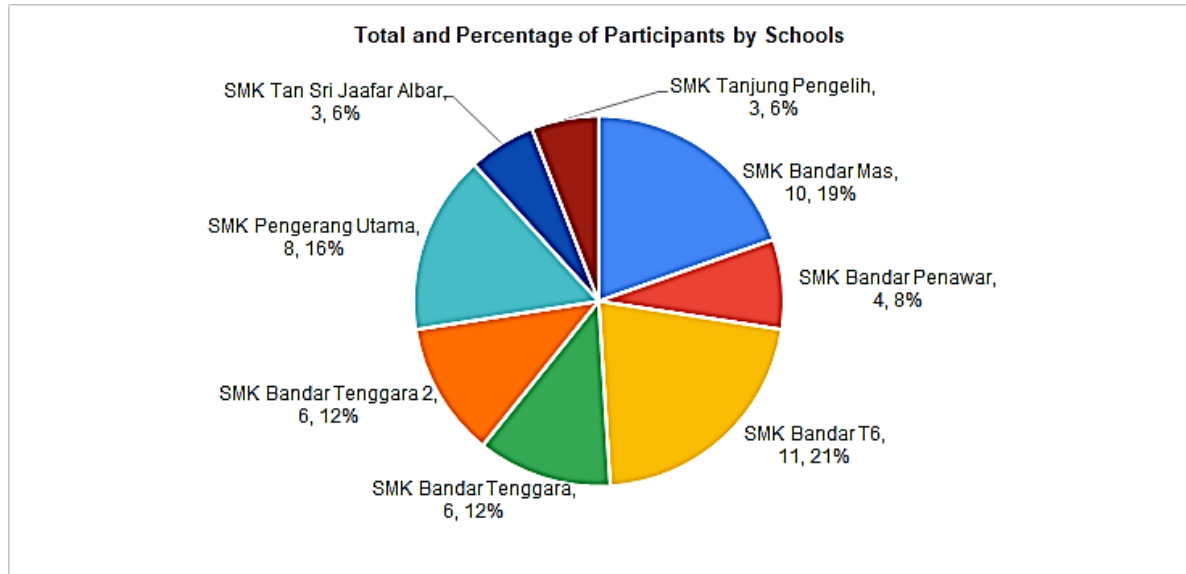
Figure 1: Distribution of students by eight participating schools.

Figure 3 shows the level of participants' knowledge based on the five-point Likert scale in three aspects: (i) level of English language knowledge, (ii) level of interest in the English language, and (iii) level of knowledge of applications and online learning methods. The respondents' level of English knowledge improved greatly in a good level that is 16 (31%) were good before the program with the increase to double that is 32 (63%) while those in weak level reduced from 9 (18%) to 3 (6%). In terms of interest, the huge increase before versus after the program is reflected in a very good level that is from 20 (39%) to 32 (63%). For a level of applications and online learning methods, the huge increase also occurs in a very good level that is from only 2 (4%) before the program to 19 (37%) after the program.
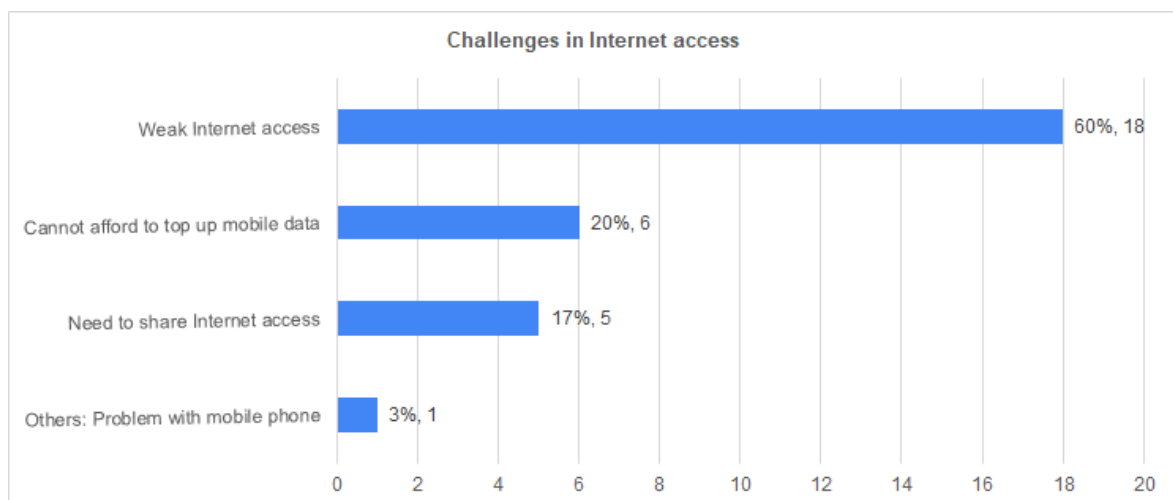
Figure 2: Challenges in the Internet access among participants.
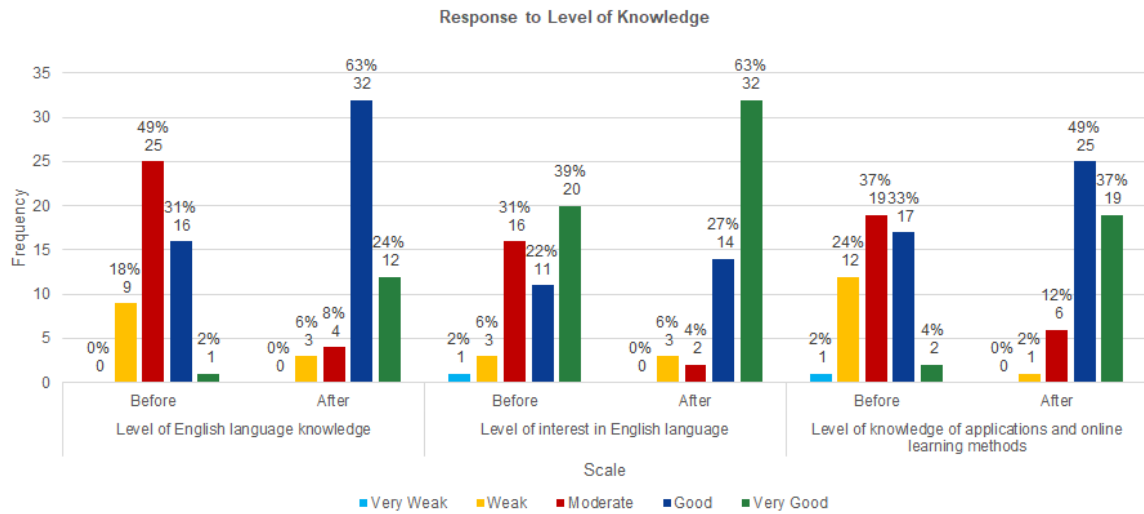
Figure 3: Level of participants' knowledge before and after the program.

The following analysis reports the responses to the need and impact of the program. Figure 4 shows a majority of respondents (71%) agree that the program fulfills their need in mastering English online, while 33 students (65%) agree that it fulfills their need as an alternative method to master English. In terms of change in knowledge, attitude, skill, and aspiration, most of them (55%) agree that the program increases knowledge regarding applications and online learning methods to master English. In addition, 22 respondents (43%) agree that the program changes the perception that mastering English is difficult. Nevertheless, eight students (16%) strongly disagree with this aspect.

The third aspect measures the implementation of change. The first is whether the program increases their skills in mastering English online that shows more than half (28 respondents, 55%) agree on the aspect. Besides, most students (29 respondents, 57%) agree that the program gives the idea and innovation that can be practiced when mastering the English language. In the sustainability aspect, 20 respondents (39%) agree that the use of applications and methods have been implemented without facilitators' assistance. A few of them (33%) are not sure and disagree (22%) on this point. On the other hand, most of them agree (23 respondents, 45%) and strongly agree (21 respondents, 41%) that the use of free applications and learning methods in this program is economical. Finally, the majority of them strongly agree (53%) that the program gives benefits and fosters rural students' wellbeing during the COVID-19 pandemic.
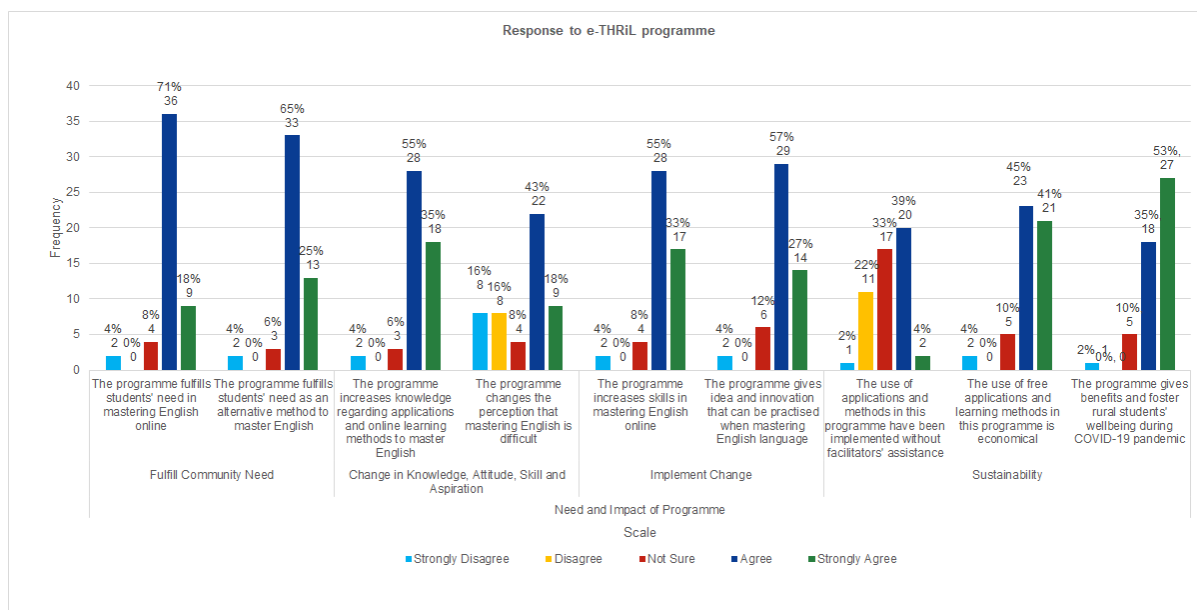
Figure 4: Response to e-THRiL program in terms of need and impact of the program.

Findings

The findings deduce that e-THRiL program has positive impacts as an intervention program for a community engagement from the university to the selected rural upper secondary students as the case study. Despite the key challenges in accessing the Internet among most of the participants (60%), the e-tuition format in the program managed to achieve expected outcomes for the two key objectives are in terms of English knowledge before and after attending the program, and the community needs besides the impact of the program up to its sustainability level.

To recap, the program was conducted by the facilitators with a maximum of 15 hours from August to October that is equivalent to a two-day training. Hence, the positive impact on the level of knowledge in the three concerned factors (English language, interest, applications, and learning methods) before and after attending the program deduce that such a long-term intervention program could solve the issues related to education informatics. In this case study, it focuses on the issues in mastering English using ICT among rural learners.

Finally, the analysis on community needs towards the intervention program and its impacts in term of change in knowledge, attitude, skill and aspiration, implement change, and sustainability; reflect that learning English and the exposure to ICT through e-tuitions under the e-THRiL program provides different perspectives of learning as compared to how students learn English formally at schools. The majority of positive responses based on a high percentage of more than 50% mainly to those who agree to the given statements (six out of nine) prove that such intervention programs are in need and could give positive impacts in anticipated changes, implement them, and sustain what targeted beneficiaries have gained.

Contribution

In theory, the study contributes to other studies related to community engagement mainly among academia and specifically in the education informatics field. The

approaches used in the reported program and its study could be replicated by other researchers. Practically, the study has proved that despite the recovery MCO during the study, physical community engagement programs could be transformed as online programs even among rural learners. Hence, the selected rural learners as the subjects in the case study have received the benefits from the e-THRiL program supported by KEJORA and IEEE EA R10.

Impact

Behavioural, Awareness: The study has shown the anticipated change based on the awareness gained after attending the program. **Social-education, human rights:** The study has deduced that such intervention programs can complement the formal teaching and learning at schools. **Health and Wellbeing:** The study proves that it is possible to conduct an online program during the MCO to foster students' wellbeing during the COVID-19 era. **Technological:** The study reflects that ICT is vital mainly during the current COVID-19 era when the MCO still occurs in Malaysia.

Conclusion

In a nutshell, community engagement from universities to local communities is beneficial mainly in rural areas. This study reports the impact of a community engagement program named e-THRiL that aimed to increase knowledge and interest in learning English using ICT among 51 secondary school students in a rural region that is Southeast Johor, Malaysia. Due to movement restrictions during the post-COVID-19 era, the activities were conducted online using the e-tuition approach. Although there were many challenges faced by the participants and facilitators, the findings reflect positive impacts of the intervention program in the measured factors among the respondents who were upper secondary level students. Indeed, such programs with e-tuition approach could be continued even when physical activities are allowed in the post-COVID-19 era.

Acknowledgement

References

Jordaan, M., & Maharaj, B. T. J. (2018). Promoting diversity in a community engagement module for undergraduate engineering students. In *Proceedings of 2018 World Engineering Forum – Global Engineering Deans Council (WEEF-GEDC)*, 1-5. IEEE.

KEJORA (2021). UTM, KEJORA jalin kerjasama bangun modal insan. https://www.kejora.gov.my/9234-2/#

Kuna, P., & Vozár, M. (2016). Web application as support for learning methodology in informatics education. *Proceedings of 2016 IEEE 10th International Conference on Application of Information and Communication Technologies (AICT)*, 709-713. IEEE.

Larraza-Mendiluze, E., Arbelaitz, O., Arruarte, A., Lukas, J. F., & Garay-Vitoria, N. (2020). JolasMATIKA: An experience for teaching and learning computing topics from university to primary education. *IEEE Transactions on Education*, *63* (3), 136-143. IEEE.

Oakes, W. C., & Zoltowski, C. B. (2014). Using the community to teach engineering and computing. *Proceedings of 2014 IEEE Frontiers in Education Conference (FIE)*, 1-3. IEEE.

Raad, H. (2021). Designing electronic circuits labs to promote community engagement. *Proceedings of 2021 Innovation and New Trends in Engineering, Science and Technology Education Conference (IETSEC), 32-35.* IEEE.

Sulaiman, S. (2018). The role of the academia in university social responsibility: a case study on community-based participatory research in selected rural education informatics. In R. Bakar & A. Ismail (Eds.), *Sustainability of higher education: a global perspective*, 62-82. USM Press.

Sulaiman, S. (2020). Service-learning in application development course: a case study of a rural community engagement. *Proceedings of 2020 9th International Conference on Software and Computer Applications (ICSCA 2020)*, 158-162. ACM.

Yu, S. (2020). Research on the value orientation and implementation strategy of English education based on the live-streaming course platform. *Proceedings of 2020 International Symposium on Advances in Informatics, Electronics and Education (ISAIEE)*, 47-49. IEEE.

EXERGAMING AS TELEREHABILITATION APPLICATION FOR THE DISABLED

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Abstract

It's worth noting that most rehabilitation centres' conventional physiotherapeutic training leads individuals in need of physical therapy to result in a loss of motivation. The application of exergaming in rehabilitation can boost behavioural, physiological, and motivational effects. Therefore, this study aims to help people with disabilities to improve their quality of life by measuring physiological responses during moderate-vigorous physical activity (such as boxing exergaming). Through heart rate measures during boxing exergames, the average heart rate corresponds to 70% of the predicted maximum heart rate, which is comparable to moderate-intensity physical activity. A favourable attitude toward exergaming will aid in speedy recovery or improvement of functional capacity during rehabilitation.

Keywords: Exergaming; Disabled Person; Heart Rate; Perceived Exertion

Introduction

In Malaysia, failure in rehabilitation therapy is a common problem among people with disabilities. According to the study, after being incapacitated, 9 out of 10 of these impaired people stopped exercising. Access to proper physical therapy is essential, particularly to encourage these individuals to engage in regular physical activity, which enhances their quality of life. People with lower body impairment (such as spinal cord injury, cerebral palsy, stroke, amputation) are among those who necessitate physical rehabilitation therapy. The patient must remain motivated throughout the rehabilitation process in order to assess the program's success. However, the current COVID-19 preventative guidelines disrupt their daily routines, which limits their access to rehabilitation programs (Chen et al., 2020). To note, most rehabilitation centres' conventional physiotherapeutic training leads to a considerable drop in motivation among patients in need of physical therapy. According to a previous study (Lohse, Lambert-Shirzad, Verster, Hodges, & Loos, 2013), the use of video games in rehabilitation has potential effects on behavioural, physiological, and motivational gameplay. This concept of active video gaming demands more than passive control via a hand controller (Mears & Hansen, 2009). These motion controllers may be used to practice rehabilitation-relevant movements, and well-designed game mechanics can help patients stay engaged and motivated during their recovery. Therefore, the objective

of this study is to help people with disabilities to improve their quality of life by measuring physiological responses during moderate-vigorous physical activity (such as boxing exergaming).

Methodology

This study employs the Sony PlayStation 3 modalities with two motion controllers and an eye camera connected to a television. The Move Boxing from Sports Champions 2 was used as the gameplay. Despite other choices of game, Move Boxing was presented to give moderate-vigorous physical activity to the participants. In order to assess the physiological outcome, heart rate data during a 10-minute session was collected using a heart rate monitor (Polar H10) that synced with a smartphone application (Polar Beat). From this technology, values of maximum heart rate, average heart rate, calories burned and also time spent at a specific intensity can be recorded. The participants then were asked to fill out an online questionnaire regarding their perceived exertion (Borg's original (6-20) and modified (1-10) score) during gameplay. The exergaming was undertaken at Pusat Haemodialysis Puteri Zulaikha, and the participants were included based on inclusion criteria: aged between 18 to 60 years old, having sufficient upper extremity mobility, and free from any musculoskeletal problems.

Results and Discussion

The average heart rate reached by five participants with spinal cord injury (paraplegia) during boxing exergames was 126 ± 14 bpm, which corresponds to 70% of the predicted HRmax. RPE (1-10) and RPE (6-20) had total mean SD values of 3.4 ± 0.9 and 13 ± 1.2, respectively. This finding implies that Move boxing could help disabled persons do more exercise and improve their cardiorespiratory health. According to guidelines (Norton, Norton, & Sadgrove, 2010), increasing HR data to the recommended moderate-intensity physical activity provided the same advantages as brisk walking. Similar to (Hurkmans, van den Berg-Emons, & Stam, 2010) study, which found Wii Sports boxing delivers at least moderate-intensity physical activity in adults with bilateral spastic cerebral palsy (GMFCS level I or II).

Figure 1: Exergaming session performed by participants

Table 1: The descriptive data of participants

Cases	Age	BMI (kg/m2)	HR rest	HRmax pred	Average heart rate, mean (SD)	Percentage of HRmax pred (%)	RPE (1-10)	RPE (6-20)	Intensity
1	45	29.41	82	176.5	131 (17)	74	3	13	Moderate
2	56	24.38	94	168.8	141 (25)	84	5	15	Vigorous
3	30	30.1	86	187.0	120 (10.5)	64	3	12	Moderate
4	27	19.23	98	189.1	121 (9.8)	64	3	12	Moderate
5	28	29.05	98	188.4	121 (7.5)	64	3	13	Moderate
Mean (SD)	37.2 (12.8)	26.4 (4.6)	92 (7.3)	182 (9)	126 (14)	70 (8.9)	3.4 (0.9)	13 (1.2)	Moderate

Abbreviations: BMI, body mass index; HRrest, resting heart rate; HRmax pred, predicted maximum heart rate; RPE, Rating of perceived exertion.

Contribution

This study inadvertently motivates disabled people to be active, especially during the pandemic. Regular physical activity, such as moderate-to-vigorous exergames, will increase levels of physical activity, especially among the sedentary. A favorable attitude toward exergaming will aid in speedy recovery or improvement of functional capacity during rehabilitation.

Conclusion

The physiological reaction during boxing exergaming for disabled people was objectively examined in this study. Exergaming appears to contribute to moderate-intensity physical activity, which can be done regularly for rehabilitation training. However, as a result of the epidemic, rehabilitation treatments were limited, resulting in poor patient motivation. As a result, it is suggested that patients engage in exergaming regularly in a home-based setting to stay active and, eventually, enhance their quality of life.

Acknowledgement

References

Chen, P., Mao, L., Nassis, G. P., Harmer, P., Ainsworth, B. E., & Li, F. (2020). Coronavirus disease (COVID-19): The need to maintain regular physical activity while taking precautions. *J. Sports Sci. Med., 9*(2), 103-104. doi:10.1016/j.jshs.2020.02.001

Hurkmans, H. L., van den Berg-Emons, R. J., & Stam, H. J. (2010). Energy expenditure in adults with cerebral palsy playing Wii Sports. *Archives of Physical Medicine and Rehabilitation, 91*(10), 1577-1581. doi:https://doi.org/10.1016/j.apmr.2010.07.216

Lohse, K., Lambert-Shirzad, N., Verster, A., Hodges, N., & Loos, H. (2013). Video games and rehabilitation: Using design principles to enhance engagement in physical therapy. *Journal of neurologic physical therapy: JNPT, 37*, 166-175. doi:10.1097/NPT.0000000000000017

Mears, D., & Hansen, L. (2009). Technology in physical education article #5 in a 6-part series: Active gaming: Definitions, options and implementation. *Strategies, 23*(2), 26-29. doi:10.1080/08924562.2009.10590864

Norton, K., Norton, L., & Sadgrove, D. (2010). Position statement on physical activity and exercise intensity terminology. *J. Sports Sci. Med., 13*(5), 496-502. doi:10.1016/j.jsams.2009.09.008

IMPROVING EXERCISE DURING THE COVID-19 PANDEMIC AND NATIONAL LOCKDOWN: A HOME-BASED EXERGAMING TRAINING PROGRAMME

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Abstract

The COVID-19 pandemic has resulted in low physical activity levels (PAL) due to limited exercise opportunities and lack of equipment. This is especially true for those stuck in small, confined housing areas such as flats, apartments or squatters. In addition, exercise equipment can be bulky and expensive for people within the B40 group. Virtual exercise is heavily promoted during these trying times. Among one of the useful home-based exercise interventions, is called "exergaming", a video game that requires active bodily movements for player in-game control. Exergaming can be used to promote exercising at home, whilst encouraging interactive online competitive sports play, all within the comfort of one's own home. It has been shown to produce moderate-vigorous exercise intensities in metabolic equivalents of task (MET) of more than three. A research participant call was sent out to *Pusat Latihan Perindustrian dan Pemulihan* students and alumni through various communication mediums and social media. The inclusion criteria were individuals within the B40 group, who do not have any exercise equipment at home and have low PAL. Low PAL is defined as having performed moderate-vigorous exercise at <5.16MET hours/day. Those with or without a form of physical disability are eligible to take part. However, any individuals with cognitive disabilities affecting their verbal understanding or command were excluded. The participants must be able to understand either English or Bahasa Malaysia as part of the pre and post training assessment requirement. They must also possess their own set of television, with a minimum size of 32 inches and a HDMI port. Four participants (mean age: 32±7) fulfilled the inclusion criteria and were selected to take part in the exergame training for a period of four weeks conducted at their own home. The PlayStation® 3 console, along with its Move® controllers, Eye® camera and Move activated video games (Sports Champions®: Boxing, Tennis and Gladiator Duel) were provided to the participants to play the exergames as aerobic training exercise at home. They must fulfil the aerobic exercise using only the exergames provided, at an intensity between moderate-vigorous with at least 75-150 minutes/week of total playtime. The intensity of the exergames were self-rated using Borg's modified (1-10) rating of perceived exertion (RPE). Participants were asked to state their age, monitor their resting heart rate, weight, height, PAL, rating of perceived exertion, RPE (Borg 1-10) and enjoyment scores pre and post completion of the training. PAL was determined using the Physical Activity Scale for Individuals with Physical Disabilities, which was given in MET per

day, rating of perceived exertion used the modified Borg (1-10) scale and the enjoyment scores used the Physical Activity Enjoyment Scoring system (5-35)[5]. All four participants reported playing the exergames at moderate-vigorous intensity levels (RPE: 4-9). There was an insignificant (p=0.068) threefold increase in their weekly PAL (pre:10.6MET/week vs post:48.3MET/week). Their perceived enjoyment remained relatively high throughout with no significant difference (Mean:32 ±4, p=0.18). A home-based exergaming training can be conducted at health-beneficial intensities, improve PAL, whilst promoting an enjoyable exercise during the pandemic COVID-19 lockdown.

Keywords: Exergaming; Exercise; Games; Health

Introduction
The Covid-19 pandemic has resulted in low physical activity levels (PAL) due to limited exercise opportunities and lack of equipment. This is especially true for those stuck in small, confined housing areas such as flats, apartments or squatters. In addition, exercise equipment can be bulky and expensive for people within the B40 group. Virtual exercise is heavily promoted during these trying times. Among one of the useful home-based exercise interventions, is called "exergaming", a video game that requires active bodily movements for player in-game control. Exergaming can be used to promote exercising at home, whilst encouraging interactive online competitive sports play, all within the comfort of one's own home. It has been shown to produce moderate-vigorous exercise intensities in metabolic equivalents of task (MET) of more than 3.

Methods
A research participant call was sent out to *Pusat Latihan Perindustrian dan Pemulihan* students and alumni through various communication mediums and social media. The inclusion criteria were individuals within the B40 group, who do not have any exercise equipment at home and have low PAL. Low PAL is defined as having performed moderate-vigorous exercise at <5.16MET hours/day [1]. Those with or without a form of physical disability are eligible to take part. However, any individuals with cognitive disabilities affecting their verbal understanding or command were excluded. The participants must be able to understand either English or Bahasa Malaysia as part of the pre and post-training assessment requirement. They must also possess their own set of television, with a minimum size of 32 inches and a HDMI port.

Four participants (mean age: 32±7) fulfilled the inclusion criteria and were selected to take part in the exergame training for 4 weeks conducted at their own home. The PlayStation® 3 console, along with its Move® controllers, Eye® camera and Move activated video games (Sports Champions®: Boxing, Tennis and Gladiator Duel) were provided to the participants to play the exergames as an aerobic training exercise at home. They must fulfill the aerobic exercise using only the exergames provided, at an intensity between moderate-vigorous with at least 75-150 minutes/week of total playtime [2]. The intensity of the exergames was self-rated using Borg's [3] modified (1-10) rating of perceived exertion (RPE). Participants were asked to state their age, monitor their resting heart rate, weight, height, PAL, rating of perceived exertion, RPE

(Borg 1-10), and enjoyment scores pre and post-completion of the training. PAL was determined using the Physical Activity Scale for Individuals with Physical Disabilities [4], which was given in MET per day, rating of perceived exertion used the modified Borg (1-10) scale [3] and the enjoyment scores used the Physical Activity Enjoyment Scoring system (5-35)[5].

Results/findings
All four participants reported playing the exergames at moderate-vigorous intensity levels (RPE: 4-9). There was an insignificant (p=0.068) threefold increase in their weekly PAL (pre:10.6MET/week vs post:48.3MET/week). Their perceived enjoyment remained relatively high throughout with no significant difference (Mean:32 ±4, p=0.18).

Conclusions
A home-based exergaming training can be conducted at health-beneficial intensities, improve PAL, whilst promoting an enjoyable exercise during the pandemic Covid-19 lockdown.

References
Washburn, R. A., Zhu, W., McAuley, E., Frogley, M., & Figoni, S. F. (2002). The physical activity scale for individuals with physical disabilities: development and evaluation. *Archives of physical medicine and rehabilitation*, *83*(2), 193–200. https://doi.org/10.1053/apmr.2002.27467.

Garber, C. E., Blissmer, B., Deschenes, M. R., Franklin, B. A., Lamonte, M. J., Lee, I. M., Nieman, D. C., Swain, D. P., & American College of Sports Medicine (2011). American College of Sports Medicine position stand. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. *Medicine and science in sports and exercise*, *43*(7), 1334–1359. https://doi.org/10.1249/MSS.0b013e318213fefb.

Borg G. A. (1982). Psychophysical bases of perceived exertion. *Medicine and Science in Sports and Exercise*, *14*(5), 377–381.

Mat Rosly, M., Halaki, M., Mat Rosly, H., Davis, G. M., Hasnan, N., & Husain, R. (2020). Malaysian adaptation of the physical activity scale for individuals with physical disabilities in individuals with spinal cord injury. *Disability and Rehabilitation*, *42*(14), 2067–2075. https://doi.org/10.1080/09638288.2018.1544294.

Graves, L. E., Ridgers, N. D., Williams, K., Stratton, G., Atkinson, G., & Cable, N. T. (2010). The physiological cost and enjoyment of Wii Fit in adolescents, young adults, and older adults. *Journal of Physical Activity & Health*, *7*(3), 393–401. https://doi.org/10.1123/jpah.7.3.393.

DEVELOPMENT OF MALAYAN BEAR DENTAL CLINIC STORYBOOKS TO EMPOWER PRESCHOOL CHILDREN ABOUT TEETH AND ORAL HEALTH

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Abstract

This project aimed to develop a series of children storybooks to expose pre-school children about teeth and the importance of having good oral health entertainingly through the use of native animal characters. A group of 22 academics from three specialties (pediatric dentistry, orthodontics and special care dentistry) designed and developed the book series. Group discussions were conducted to identify each specialty's views regarding the theme and content of each short story. The storybook series contains nine short stories about oral health education using the local Malayan Sun Bear as the central character. Sunny, the cheerful bear, learns from his clever dentist, Doctor Gigi Mousedeer. The story's narration includes key health messages (tooth brushing, controlled sugar snacking, regular dental attendance, and having a good oral health-related quality of life) and a range of behavioural change techniques, which are supported by illustrations to ease children's understanding. The content of the narration and illustrations were validated by a team of dental experts to ensure that the children are equipped with the correct dental knowledge from an early age. Their learning is reinforced through fun interactive activities together with their parents, peers, and teachers that are incorporated into each story. Character education approach using local animated stories were utilised to effectively communicate and enhance their soft skills, in still positive values in children and simultaneously support their social and emotional well-being development in an inquisitive learning environment.

Keywords: Character Education; Pre-school; Oral Health Education; Teddy Bear; Story Book

Introduction

In general, preventive oral health care in children is based on routine dental check-ups, dietary counseling, and oral hygiene education, emphasizing caries prevention for parents. Early childhood caries among pre-school children is still a major oral health problem worldwide with more than 60% of 5-year-old children affected (Tinanoff et al.,20019). In addition, the current COVID-19 pandemic had restricted access to provisional dental treatment and non-emergency dental services. Hence, the burden of

dental treatments is expected to gradually rise. Researchers in Wuhan predicted that once the pandemic situation is under control, dentists in the country will face a surge in the number of paediatric patients seeking dental treatment (Liu *et al*., 2021). It has long been recognised that teaching children about oral health and care is crucial towards preventing oral diseases. Pre-schoolers must be educated on the best oral health practices since good oral care habits develop early in life.

A method to support and encourage children especially the pre-schoolers in oral health care learning is through illustrated story books (Cihak et al.,2012). Stories with illustrations play a vital role in children growth and development. The book they read and the characters they meet can become their new childhood friends. It is also good for children to understand the value of books as a useful source of information. In addition, reading also helps children with their learning process, confidence level, coping with emotions, and language development. Therefore, this educational project by a group of academics from the Department of Paediatric Dentistry and Orthodontic, Faculty of Dentistry, University Malaya was organised with the aim to develop a series of children story books to expose pre-school children about teeth and the importance of having good oral health in an entertaining way using animal characters native to Malaysia.

Methodology

The storybook has been designed and developed as illustrated in **Figure 1**. This project was developed based on a community project "Malayan Bear Dental Clinic Programme" involving activities with pre-school children that was held by the department before the pandemic. The content of the storybooks was developed through consensus among experts in the field. Each chapter of the story contained key health messages (tooth brushing, controlled sugar snacking, regular dental attendance, good oral health-related quality of life) and a range of behavioural change techniques, which were accompanied by illustration ideas. The whole learning process was developed around a structured framework of learning outcomes aligned towards several different aspects of knowledge that were targeted to be important to know for the intended age group. Every learning outcome was covered by at least two activities to ensure different activities can promote different learning for different styles of learning in the variety of children involved.

The development process drew on interdisciplinary expertise from the paediatric dentistry, orthodontics, and special care dentistry disciplines in the form of nine small groups, each of which was tasked with creating a storyboard for each chapter. The development process utilised Word documents in Office 365 to facilitate collaboration and optimise physical distancing when working in a group. The development activities were guided by main editors who acted as advisors throughout the process. The members of the group were selected for their niche interests in oral health promotion in children and clinical knowledge. A series of meetings were initiated and chaired by the main editors to clarify on the storyboard with experts, and further communications continued via WhatsApp and emails.

Sunny Bear, the Malayan sun bear, was chosen as the main character. It aims to be a local adaptation to the Teddy Bear Hospital concept that has been established in the UK, where this educational project was introduced to help young children aged 3 to 12 to reduce anxiety and lose their fear of doctors and the hospital environment. Other

characters in the series revolved around the daily lives of Sunny Bear's family and friends. There were nine short stories, each with twelve to thirteen pages of fun and engaging learning activities to test the knowledge component obtained from the story. Drawing, counting and matching exercises, maze tracing, puzzles, crosswords, and cut-and-paste worksheets were just a few of the fun and enjoyable learning activities available for children to explore with the assistance of their parents/ guardians. Such activities help young children learn how to complete tasks by using their problem-solving skills. **Figure 2** shows the design of the cover page of a few series and the content of the book. Techniques related to color, size and number of words, common animals' characters were incorporated to engage children visually and to retain their interest for a longer learning period.
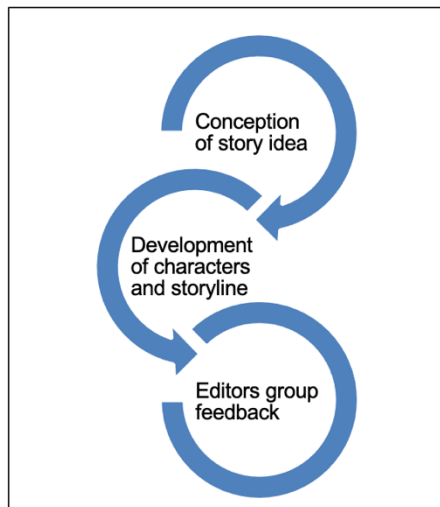
Figure 1: The developing process
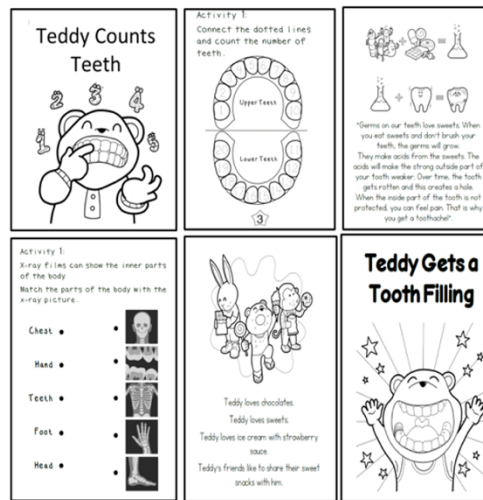
Figure 2: Examples of cover pages, storyline and activities

Results

To date, the storybook has not been tested by the community due to the movement control order by Malaysian government. Currently, the editor group with experts from different specialties is actively involved in the development of a guidebook for pre-school teachers and the community on how to use this storybook as part of education learning tools for children. However, we anticipated that a fun learning process in contrast to rote textbook learning conventionally carried out in schools will produce a better learning experience and with better outcomes.

Discussion

This type of storybook serves as a great source in terms of children's language development. Strouse et al. looked at studies that focused on word learning from picture books. This acts as another method of learning which does not only provide children with many opportunities to respond to literature but the opportunity to develop creativity, morality, empathy and an understanding for our unique Malaysian cultural heritage and the culture of others. Moreover, children's literature can be used to foster children's growth of personality and social skills while instilling good dental knowledge and habits at an early age.

Contribution

The Sunny Bear storybook series, which the content focuses exclusively on behavioral shaping and basic oral health care for pre-school children. The content of these storybooks has been validated by a group of qualified specialists from paediatric dentistry, orthodontics, and special care dentistry. Fun and engaging activities at the end of each series will enhance children's understanding of the specific themes. Children will enjoy coloring and painting the black and white images in this book. These activities will help to boost children's fine motor skills and problem-solving skills while also teaching them about teeth and oral health. This allows children to foster a more meaningful and memorable learning experience, which should result in positive oral health behaviours. The A4-size of these storybooks is appropriate for holding, fits in a backpack, and is easy to store in a book rack.

Impact

The book can be handy used at home, at school (Pre-school or Montessori),in a paediatric clinic waiting areas, especially the paediatrics and primary care dental clinics. In addition, it serves as an aid and a valuable teaching tool for teachers, parents and oral health care professionals/providers in educating children about the importance of oral health care and good habits. During the pandemic, this activity book can be used as a supplement to learning activities for preschool children, especially those with limited access to dental facilities. The great impact of this book is also known as 'Anthropomorphism' which enables young readers to understand more complex subjects or issues, which are adapted to children's worldview. Furthermore, we hope these anthropomorphic stories of Sunny Bear will leave a more significant purpose than entertaining children. Indirectly to teach children moral lessons humorously and creatively, appro-priate manners and behaviour. Those messages and ideas are often conveyed by analogy. The Malaysian animal characters are given similar traits and feelings as children so that the story becomes more accessible to young readers. We hope the early engagement of children-parents in these anthropomorphic stories from early childhood will continue to evolve as a significant tool for engaging young readers in Malaysia. In line with the merging of physical books into the online platform for example virtual books like Kindle, there are future plans to transform this work into a virtual form for wider-based seamless access via the internet.

Conclusion

Storybooks can be appealing for children and families and may prove to be an effective means of communicating health messages and behavioural change techniques in behaviour change interventions across a variety of fields. Books may also be tools for preparing children for dental examinations and procedures.

Acknowledgement

References

Tinanoff, N., Baez, R. J., Diaz Guillory, C., Donly, K. J., Feldens, C. A., McGrath, C., Phantumvanit, P., Pitts, N. B., Seow, W. K., Sharkov, N., Songpaisan, Y., & Twetman, S. (2019). Early childhood caries epidemiology, aetiology, risk assessment, societal burden, management, education, and policy: Global perspective. *International Journal of Paediatric Dentistry*, *29*(3), 238–248. https://doi.org/10.1111/ipd.12484.

Liu, C., Zhang, S., Zhang, C., Tai, B., Jiang, H., & Du, M. (2021). The impact of coronavirus lockdown on oral healthcare and its associated issues of pre-schoolers in China: an online cross-sectional survey. *BMC Oral Health*, *21*(1), 54. https://doi.org/10.1186/s12903-021-01410-9

Cihak, D. F., Kildare, L. K., Smith, C. C., McMahon, D. D., & Quinn-Brown, L. (2012). Using video Social Stories™ to increase task engagement for middle school students with autism spectrum disorders. *Behavior Modification*, *36*(3), 399–425. https://doi.org/10.1177/0145445512442683

SYMPOSIUM 3: HEALTH & WELLBEING

FILIAL THERAPY AS AN ATTACHMENT BASED ON INCARCERATED MOTHERS AND INFANTS IN A PRISON

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Abstract

It draws our attention that there is not much research done in Asia regarding children's mental health, especially the emotional development of children in the prison. In this article, the researchers present the concern for the quality of emotional development of children in prison, and the importance of addressing the need for early intervention to children at an early age, especially toddlers in the prison. Growing up with an incarcerated parent, especially a mother, can be linked to a lot of negative outcomes resulting from changes in family structure, experiencing trauma related to their parent's arrest, and living in the prison since born. The purpose of this paper is to call attention to these children and emphasize the emotional intervention they need to the public. By increasing awareness and providing knowledge, we may improve the emotional development of these children. This is a study on female prisoners and their children in Penjara Wanita Kajang Selangor Malaysia. By providing five-week filial therapy sessions to incarcerated mothers and their children, these efforts have the potential to improve outcomes for children and their families to healthy and happy futures. The first objective of this research is to examine the positive bonding of filial therapy as an attachment-based on incarcerated mothers and infants in Penjara Wanita Kajang. The second objective is to verify how filial therapy benefits female prisoners and their children.

Keywords: Filial Therapy; Mental Health; Female Prisoner; Children

Introduction

There is less research regarding female prisoners worldwide in a long time, especially in Asia. Psychologists prefer to research male prisoners. In order to have a better understanding of the female prisoners' mental health condition, and the relationship with their children. Filial therapy is a treatment approach based on play and focuses on relationships. To improve parent-child relationships, young children are needed in the process. Most importantly, above all the effects mentioned, children can learn that they are loved and important to their caregivers through the process of play. It is designed not only to resolve the child's problems but also to strengthen the parent-child bond, to improve the healthy psychosocial development of the child and family. Moreover, parents and children interact and see each other in new ways in filial play sessions. This

also strengthens the parent-child relationship, which enhances a sense of happiness. In order to get proper knowledge related to female prisoners' mental health conditions, psychologists and counselors may conduct more research related to the psychological program for female prisoners.

Filial therapy was first developed in the late 1950s, and formally introduced by Dr. Bernard and Louise Guerney (Guerney, 1964; VanFleet, 2005). Bernard Guerney (1964) developed filial therapy based on Carl Rogers' client-centered therapy as the theoretical principles and Virginia Axline's play therapy principles. It only requires a short period of time for both parents and children to learn with straightforward instructions (Topham and VanFleet,
2011). With this mindset, they can also build and develop self-confidence and self-esteem (Powers, 2009).

Methodology

The current study was designed based on a cross-sectional study design. There were two groups of participants from Penjara Wanita Kajang. The participants were selected based on the purposive e-selective sampling method. The first group of this research consists of female prisoners and their children, and the other group will be the children at the Taska (Children Care Centre).

According to Dr. Rise VanFleet, filial therapy is a psychoeducational family intervention in which the therapist trains and supervises parents as they hold special child-centered play sessions with their children, thereby engaging parents as partners in the therapeutic process and empowering them to be the primary change agents for their children (VanFleet, 2009). Furthermore, Landreth's 10-session training model has shown the benefits of filial therapy in many conditions.

Not like other therapy focusing on either parent or child, filial therapy focuses on the existing relationship between parent and child. From birth, children and their parents develop a close attachment relationship which is prone to last for a lifetime and affect patterns in the family systems (Vafa, & Ismail, 2017). According to a recent meta-analysis, compared to filial therapy which was provided by a mental health professional, filial therapy which was provided by parents had a significant effect (Bratton, Ray, Rhine, & Jones, 2005).

Contribution

Filial therapy does not only emphasize the parents' ability of tolerance towards their children but also their expectation of being parents. It emphasizes the historical, theoretical and research foundations of filial Therapy. In other words, filial therapy is all about the child. Only when the parents understand their children's needs, feelings, the results of filial therapy can be revealed. Furthermore, children will be encouraged to express their feelings, needs of being heard when parents started to understand them.

Impact

Not like other therapy focusing on either parent or child, filial therapy focuses on the existing relationship between parent and child. Researchers are aware that a child's issue is not only about the child. In other words, this issue is relevant to the entire family. Only both parents and children are devoted to it, filial therapy can have better

results. Filial therapy has many benefits to the family. Above all, the main benefit is it enhances the relationship between parents and children.

Conclusion
The previous findings showed that the importance of the parent-child relationship, and how filial therapy benefits to parents and children. However, due to this pandemic, our visit request to Penjara Wanita Kajang Selangor Malaysia has been postponed until further notice.

Acknowledgement

References
Bratton, S.C., Ray, D.C., Rhine, T.J., & Jones, L. (2005). The efficacy of play therapy with children: a meta-analytic review of treatment outcomes. *Professional Psychology: Research and Practice, 36*, 376-390.

Guerney B., Jr (1964). Filial therapy: description and rationale. *Journal of Consulting Psychology*, *28*, 304–310. https://doi.org/10.1037/h0041340.

Powers, S. (2009). This issue and why it matters. *Zero to Three, 30*, 3.

Topham, G., & VanFleet, R. (2011). Filial therapy: a structured and straightforward approach to including young children in family therapy. *Australian and New Zealand Journal of Family Therapy*.

Vafa, M. A., & Ismail, K. H. (2017). Filial therapy work best for preschoolers'children with challenging behavior (Keberkesanan terapi filial bagi kanak-kanak prasekolah yang mempunyai tingkah laku. *e-Bangi*, *1*(1).

VanFleet, R. (2005). *Filial therapy: Strengthening parent-child relationships through play* (2nd ed.). Sarasota, FL: Professional Resource Press.

VanFleet, R. (2009). *Filial Play Therapy*. Children and Adolescents Video Series.

E²MAS: EMPOWERING THE EMOTION OF MALAYSIAN AGING SOCIETY THROUGH VIRTUAL GROUP COUNSELING DURING PANDEMIC

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Abstract

This paper aims to illustrate the E²MAS or Empowering the Emotions of Malaysian Aging Society group counseling module developed as a community project for the elderly. The overall aim of the group counseling program is to increase the ability of the elderly population to cope with the emotional challenges during the pandemic. The delivery of the program was changed from face-to-face to virtual platform via Zoom due to the pandemic. The group counseling module was developed based on the need analysis feedback from four registered counselors involved in offering counseling services for the elderly and a group of 15 elderly respondents. The group counseling module consists of 8 sessions and is conducted weekly for two hours every week. The group counseling sessions are divided into two orientation sessions, three exploration sessions, two brainstorming and planning sessions and one termination session. Using the Cognitive Behaviour Therapy (CBT) approach, the exploration session focuses on mindfulness and distress tolerance. Meanwhile, the brainstorming and planning session focuses on emotion regulation and interpersonal effectiveness training. The group counseling program contributes towards increasing the overall psychological wellness and mental health of the elderly.

Keywords: Emotional Management; Group Counselling; Cognitive Behaviour Therapy

Introduction

In 2020, the Covid-19 pandemic has taken a toll on the population of the world. People of all ages are greatly affected in terms of health, lifestyle, and psychological wellbeing. The elderly population seems to be the most disadvantaged since they are considered the high-risk group facing greater health and psychological challenges. The elderly may experience more emotional turmoil due to the new norms. Emotional management, although not an uncommon skill, becomes more important now than ever especially among the elderly.

On the other hand, mental health services are also facing challenges due to the need to offer counseling services via an online platform compared to the conventional face-to-face approach. The challenge here lies in two aspects, first, the effectiveness of the mental health program offered to the elderly, and secondly the practicality of the online platform when used by the elderly population. However, the online platform is

the most suitable way to outreach to these populations due to health concerns, and the strict lockdown and standard of operating procedures.

Literature review

Emotional management is an important component of emotional intelligence. Research has found that Emotional intelligence influences cognitive and affective judgments of life satisfaction, with these judgments of life satisfaction predicting psychological well-being. (Delhom,Gutierrez, Molina & Meléndez, 2017). Emotional Intelligence and social skills are positive predictors of psychological wellbeing in the elderly (Tafti & Mofradnezhad, 2018). According to Lloyd, Malek-Ahmadi, Barclay Fernandez & Chartran (2012) every 1-point increase in EQ-i:S scaled score, the risk of having depression decreased by 6%. The results indicated that increased EI has a beneficial effect in terms of current depression status.

Several studies supported that emotional regulation among older adults should be given great emphasis. Urry & Gross (2010) propose that, for older adults to achieve well-being by selecting and optimizing particular emotion regulation processes to compensate for changes in internal and external resources. Older adults used more passive emotion-regulation strategies than middle-aged adults. (Fields, Stein & Watson 2004). It is also found that the ability to control experience and expression of emotions operates more effectively in older adulthood (Phillips, Henry, Hosie, Milne, 2008). Solving worrisome problems with greater levels of episodic detail can positively influence emotion regulation in older adults. (Jing, Madore & Schacter, 2019).

Emotional skills can be improved in older adults thus contributing to wellbeing and life satisfaction (Delhom, Satorres, Meléndez, 2020), and many training programs have been conducted to improve the quality of life for the elderly. Findings revealed that the applied intervention i.e., group reminiscence therapy significantly associated with various dimensions of emotional intelligence including self-awareness, self-control, self-motivation, empathy and social skills in the older adults within the experiment group (Bazooband, Baghbanian, Torkfar, 2016). Research by Young & Baime, (2010) found that overall emotional distress and all subscale mood measurements improved significantly following Mindfulness-Based Stress Reduction training for the elderly. MBSR training resulted in a more than 50% reduction in the number of older people reporting clinically significant depression and anxiety. Primary care is a setting where interventions to improve mental health can be beneficial. Providing evidence-based programs that work with older people is a priority for public mental health (Saldivia, Inostroza, Bustos, Aslan, Bühring, Farhang King & Cova (2019)

Problem statement

Studies by Ahmed et al (2020) and Meda et al (2020) during the pandemic reported an increase in anxiety, and depression in the general population, especially those facing extended lockdowns and these effects are even greater among the elderly population. The pandemic has given rise to several emotional challenges among the elderly. Most elderly individuals will naturally lessen their social connection and gradually reduce their participants in the community. However, due to the pandemic, reducing participation in the community is no longer by choice, but rather a sudden change in the natural process of aging. Loneliness may become a serious issue during the

pandemic. The inability to have a physical social connection accompanied by being less technologically savvy than the younger generation increases not just the physical gap but also the emotional gap between the elderly and other members of society. Being away from other family members and not being able to meet as freely as before increases the feeling of isolation. Social isolation often results in loneliness, which is a factor significantly associated with depression in elderly adults (Adam, Sanders & Auth, 2003) Anxiety among the elderly also increases due to the concern over health during the pandemic. Being the high risked group, the elderly are more prone to virus infection and this adds to insecurity and uncertainty about the future. Other emotions such as sadness and hopelessness may result from the overwhelming challenge during the pandemic such as lost of family members due to Covid-19 and financial insecurity of the family. All these negative emotions may lower psychological wellbeing of the elderly, thus giving rise to mental health concern such as depression.

Due to these concerns, the objectives of this research are as follows:

a) To increase the emotional awareness among the elderly towards the factors and triggers of emotions during the Covid-19 Pandemic
b) To provide psychological support for the elderly in coping with emotional challenges during the Covid-19 Pandemic
c) To enhance coping skills in the issues of aging such as loneliness, self-care and social engagement during the Covid-19 Pandemic

Methodology
The content of the group counseling module was developed based on the findings of Need Analysis Focus Group discussions. Three series of focus group discussion was conducted to determine the need for emotional management group counseling for the elderly. One focus group consists of four registered counselors who offer their services to the elderly. Another two were conducted with 14 elderly individuals between the age of 55 to 65 years old. Based on the triangulation of the data collected, an eight-session group counseling module was developed.

The E^{2}MAS group counseling module uses Cognitive Behaviour Therapy Theory as its framework. Cognitive Behavioural Therapy (CBT) is an intensive treatment method designed to help people to change disruptive thoughts, behaviors and feelings in order to successfully navigate the challenges that life presents. It focuses on the present, brief, encourages the active participation of group members and also provides support for changes to be achieved successfully.

The group counseling consists of eight sessions which are conducted on weekly basis for 120 minutes per week. The eight sessions are divided into two orientation, three exploration sessions, two brainstorming and planning sessions and one termination session. The orientation sessions focus on rapport-building among members, structuring and encouraging participation including getting familiar with the online platform. The three exploration sessions will focus on the CBT concept of mindfulness and stress tolerance whereby group members will explore their awareness towards their own emotions, the trigger factors and their response towards emotional experience. Meanwhile, the two brainstorming and planning sessions will focus on emotional regulation and interpersonal effectiveness training. This session will

encourage them to use their coping skills effectively and explore new self-care techniques in managing their emotions to face the challenges during the pandemic. Meanwhile, the last session for the termination will focus on reviewing the progress of the group members and evaluating the group member's experience of the counseling session.

These counseling sessions will be conducted via the Zoom platform by the research team members who are also registered, counselors. It will also be done according to the ethical guideline of the Board of Counsellors to ensure the confidentiality of the sessions and the rights of the counselor and clients are guarded. Two groups will benefit from this group session and each group will consist of 10 group members.

Results

Since the research is still ongoing, no results are available now. However, based on the content of the group counseling sessions, the E^2MAS module is expected to:

a) Increase the awareness of the participants towards their own emotions and trigger factors leading to such emotions
b) Increase the understanding of participants towards the effect of emotions on their thinking and behavior
c) Improve the coping skills of the participants when experiencing negative emotions such as loneliness, anxiety, sadness, and hopelessness
d) Improve creativity of participants to think of self-care strategies in managing their emotions, and social connection with others.

Discussion

The E^2MAS group counseling module has by step-by-step approach towards effective emotional management training based on Cognitive Behaviour Therapy, therefore it is based on a strong theoretical foundation that can be understood and easily replicated by other counselors who are interested in attending the elderly. The movement restrictions and health concerns require the sessions to be conducted online and this comes with advantages and disadvantages. The advantage of conducting counseling via an online platform includes easier access to mental health services for the elderly, almost anytime and from anywhere. This increases the chance of helping the elderly during the lockdown, reducing the health-related risk, avoid loneliness and social detachment. Meanwhile, the disadvantage includes the lack of participation among the elderly who are less tech-savvy and do not have an internet connection. Nevertheless, the E2MAS group counseling module is a step in the right direction, providing an alternative for life-long learning, social support, and mental health care for the elderly. At the same time, it provides a platform for the elderly to build or maintain healthy social connections with others of the same age group, learn self-care and coping strategies among themselves and regulate their emotions more effectively while aging during the pandemic.

Contribution

The findings of the study will be beneficial to many parties especially organisations dealing with the welfare and wellbeing of the elderly. Most importantly the E^2MAS

module will be a valuable training resource for the Department of Social Welfare Malaysia, counselors offering services for the elderly and social workers in retirement homes. Overall, it helps to add to the quality of life and psychological wellbeing of the elderly by focusing on effective emotional management. It also helps the aging population to cope more effectively in terms of emotions with the new norms during the Covid-19 Pandemic.

Impact

The E^{2}MAS training program is expected to increase the level of awareness towards the emotional issues faced by the aging population during the pandemic. It also highlights the importance of a life-long learning process regardless of age in order to achieve a greater quality of life and psychological wellbeing. A well-structured emotional management training program will give a great impact on the field of counseling and gerontology.

Conclusion

In conclusion, the E^{2}MAS group counseling module will empower the elderly with better emotional awareness and emotional understanding resulting in positive thinking and adaptive coping during this challenging time. Although the group counseling approach is limited in reaching a larger number of respondents, it is more specifically targeted, enabling the researchers to focus on developing the potentials of the group members. However, other approaches such as bigger guidance group training may be considered. E^{2}MAS group counseling module can be a valuable resource for community counselors in assisting the Malaysian aging population to cope with their emotions.

References

Adams, K. B., Sanders, S., & Auth, E. A. (2004). Loneliness and depression in independent living retirement communities: risk and resilience factors. *Aging & Mental Health*, *8*(6), 475–485. https://doi.org/10.1080/13607860410001725054.

Ahmed, M. Z., Ahmed, O., Aibao, Z., Hanbin, S., Siyu, L., & Ahmad, A. (2020). Epidemic of COVID-19 in China and associated psychological problems. *Asian Journal of Psychiatry*, *51*, 102092. https://doi.org/10.1016/j.ajp.2020.102092.

Bazooband, A., Baghbanian, A., & Torkfar, G. (2017). A case study of the relationship between basic psychological needs and general health among old people. *Iranian Journal of Public Health*, *46*(12), 1746–1747.

Young, L. A., & Baime, M. J. (2010). Mindfulness-based stress reduction: Effect on emotional distress in older adults. *Complementary Health Practice Review, 15*(2), 59–64. https://doi.org/10.1177/1533210110387687.

Delhom, I., Gutierrez, M., Lucas-Molina, B., & Meléndez, J. (2017). Emotional intelligence in older adults: Psychometric properties of the TMMS-24 and relationship with psychological well-being and life satisfaction. *International Psychogeriatrics, 29*(8), 1327-1334. doi:10.1017/S1041610217000722.

Delhom, I., Satorres, E., & Meléndez, J. C. (2020). Can we improve emotional skills in older adults? emotional intelligence, life satisfaction, and resilience. *Psychosocial Intervention, 29*(3), 133 - 139. https://doi.org/10.5093/pi2020a8

Jing, H. G., Madore, K. P., & Schacter, D. L. (2019). Not to worry: Episodic retrieval impacts emotion regulation in older adults. *Emotion, 20*(4), 590–604. https://doi.org/10.1037/emo0000581

Lloyd, S. J., Malek-Ahmadi, M., Barclay, K., Fernandez, M. R. & Chartrand, M. S. (2012). Emotional intelligence (EI) as a predictor of depression status in older adults. *Archives of Gerontology and Geriatrics, 55*, 570–573. doi: 10.1016/j.archger.2012.06.004

Meda, N., Pardini, S., Slongo, I., Bodini, L., Rigobello, P., Visioli, F., et al. (2020). COVID-19 and depressive symptoms in students before and during lockdown. *Journal of Psychiatric Research, 134, 69-77*. doi: 10.1101/2020.04.27.20081695.

Phillips, L. H., Henry, J. D., Hosie, J. A., & Milne, A. B. (2008). Effective regulation of the experience and expression of negative affect in old age. *Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 63*(3), 138-145.

Saldivia, S., Inostroza, C., Bustos, C., Rincón, P., Aslan, J., Bühring, V., Farhang, M., King, M., & Cova, F. (2019). Effectiveness of a group-based psychosocial program to prevent depression and anxiety in older people attending primary health care centres: a randomised controlled. *BMC Geriatr;19*(1):237.

Tafti, M.A., & Mofradnezhad, N. (2018). The relationship of emotional intelligence and social skills with psychological well-being in the elderly. *Iranian Journal of Ageing, 13*(3), 334-336.

Urry,H. L., & James J. Gross, J.J (2010). Emotion regulation in older age. *Current Directions in Psychological Science, 19*(6), 352-357. https://doi.org/10.1177/0963721410388395.

ENHANCING THE USE OF HANDS-ON AND VIRTUAL LEARNING TO IMPROVE PRIMARY SCHOOL STUDENTS ENGAGEMENT IN SCIENCE, FOCUSING ON OBESITY PREVENTION MODULE

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Abstract

Nearly 30% of children below 17 years in Malaysia were overweight and obese. This study was aimed to 1) educate primary school children on their body systems and functions and 2) instill awareness on obesity prevention. Year-Four to Year-Six students from 6 primary schools in the district of Petaling Utama were invited. Six modules were developed, complementing their Science syllabus. Two 1.5 hour online workshops were conducted using the Zoom platform. Workshop 1 focused on the human digestive system, food pyramid and healthy eating habits (n=250). Workshop 2 covered modules on human body systems, excess sugar and prevention of obesity (n=181). A pre- and post-session quizzes to test students' knowledge were given in Workshop 1, while a post-session quiz and feedback forms using the Likert scale, were given in Workshop 2. For workshop 1, the mean score for pre-quiz (n=223) was 8.07/15.00 (SD 2.79, range 1-15) and for post-quiz (n=243) was 9.33/15.00 (SD 2.89, range 2-15). There was a significant increase in their post-quiz scores (mean difference 1.26 SD 4.1, $p<0.001$). For Workshop 2, the mean score for the quiz was 10.57/15.00 (SD 2.91, range 3 -15). The formal feedbacks from students were encouraging, 79% agreed that the workshop's contents were easy to be understood, 91% felt that that program was beneficial and 84% would like to attend again. In conclusion, programs targeting school children should enhance their understanding of the subject matter and complement the school syllabus. More programs to increase awareness of healthy lifestyles and obesity should be undertaken.

Keywords: Obesity; STEM Education; Virtual Learning; Primary School

Introduction

Childhood obesity is a global problem, with an estimated 38.2 million children being overweight or obese in 2019 (1). Reports from the National Health and Morbidity Survey (NHMS) (2019) showed that 14.8% of Malaysian children below 17 were obese, while 15% were overweight (2). Several factors increased the risk of childhood obesity in Malaysia; the main factors remain increased caloric intake and reduced physical activities. If there is no intervention, childhood obesity will continue to rise with an increase in its complications.

In preparation for the industrial 4.0 revolution, the country is embracing education reforms. Also known as Education 4.0, more emphasis is put on project-based

learning, data interpretation, inferencing skills, and independent learners. Students are exposed to elements of biology, chemistry, physics and engineering as early as Standard 1. However, there has been a decline in students taking up science subjects in secondary schools (44% in 2018 versus 49% in 2012) (3). These challenges could hinder the progress of our nation from excelling in science, technology, engineering and mathematics (STEM) education.

With these issues surrounding primary school children, we seek to undertake a project on obesity prevention, complementing the Science school syllabus materials. The specific objectives were to educate students on: 1) understanding their body systems, functions and how to care for them, focusing on the digestive, cardiovascular, respiratory and skeletal systems, 2) health issues such as obesity and 3) measures to reduce obesity, focusing on the choice of nutrition, avoiding excessive sugar and increasing physical activity.

Methodology

Six primary schools under the district of Petaling Utama were randomly chosen: SK Damansara Utama, SK Bandar Utama Damansara, SK Taman Dato Haron 1, SK Taman Dato' Haron 2, SK Kampung Tunku and SK Seksyen 7 Kota Damansara. Year Four to Year Six students (10-12-years-old) were invited. Posters were shared via WhatsApp.

Six modules were prepared as follows: 1) The digestive system, 2) The food pyramid, 3) Healthy eating, 4) The Human systems 5) Say no to excessive sugar and 6) Together we fight obesity. Two workshops were conducted, each lasting for 1.5 hours in the Malay language. The first workshop was held on the 24th of July 2021 with the theme of ' Saya Bijak Buat Pilihan' using a Zoom webinar with 250 participants. The second workshop was held on the 7th of August 2021 with the theme of 'Saya Sayang Diri Saya' using Zoom meeting with 181 participants.

A pre- and post-session quizzes to test students' knowledge were given in the first workshop, while for the second workshop, a post-session quiz and feedback forms were given. The platform used was Google Forms, given its simplicity. The feedback used a 3-point Likert scale adapted using emoji, whereby a response of 1 indicated 'strongly disagree' and a response of 5 as 'strongly agree'. The scores were analysed using SPSS version 24.

Results

Responses for the quizzes are presented in Figures 1a and b, respectively. The mean score for pre-quiz in workshop 1 (n=223) was 8.07/15.00 (SD 2.79, range 1-15), while the mean score for post-quiz (n=243) was 9.33/15.00 (SD 2.89, range 2-15). There was a significant increase in their scores after they have attended the modules (n=199), (mean difference 1.26 SD 4.1, $p<0.001$). For the second workshop (n=181), the mean score was 10.57/15.00 (SD 2.91, range 3 -15). The feedbacks for the sessions are given in Figure 2.
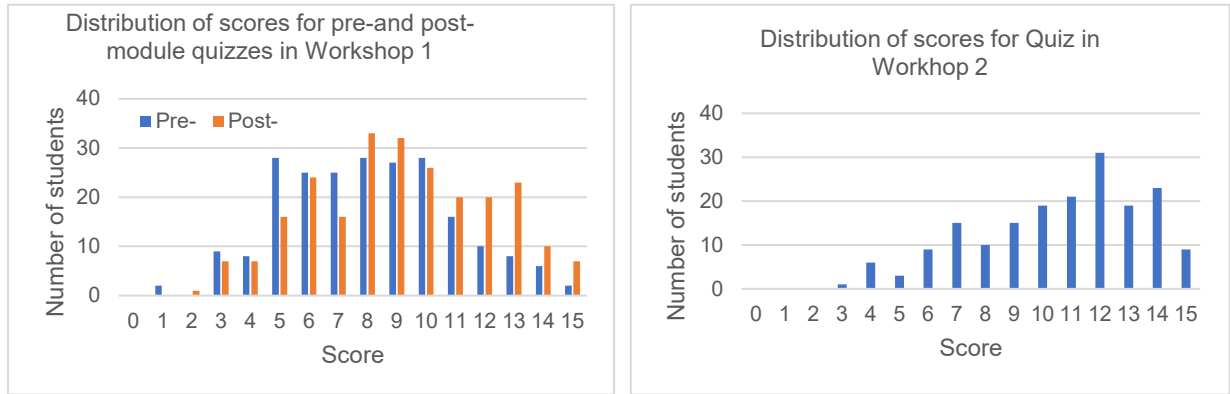
Figure 1: a) Distribution of scores for pre-and post-module quizzes in Workshop 1 b) Distribution of scores for post-module quizzes in Workshop 2
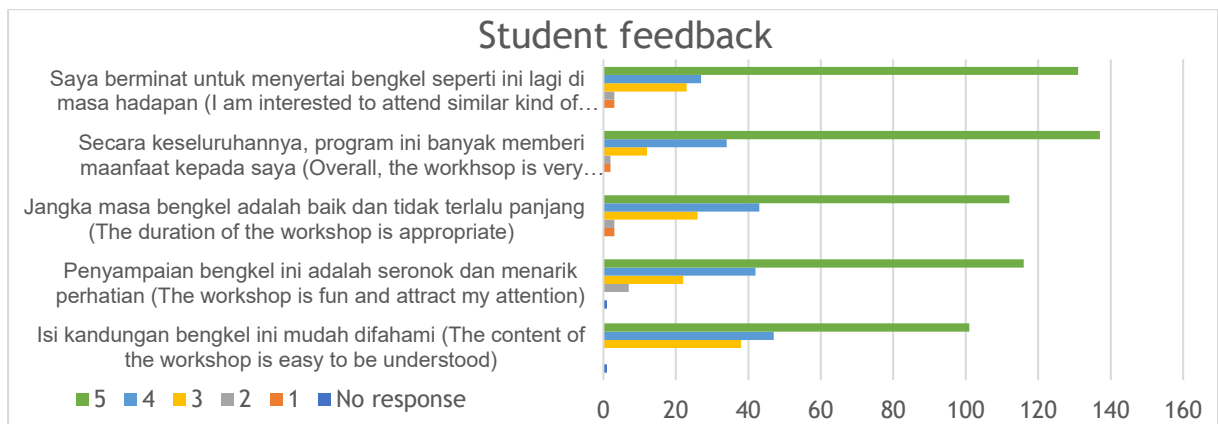
Figure 3: Students feedback on workshop 2

Discussion

Our project has achieved its short-term objectives of educating students on taking care of their bodily systems and obesity prevention. The majority of students were able to answer at least half of the questions in the quizzes as measures of their levels of knowledge. Students' feedback indicated that more than half felt that the workshop's content is easy to be understood and more than two-thirds thought that that program was beneficial and would like to attend again.

This project was initially planned with hands-on and team-based activities in the school halls, and an introduction to google classroom and information literacy in the computer labs. However, the Covid-19 pandemic has affected schools in 2020. Virtual learning has taken off to ensure education continues. School children have adapted to this new norm, with Google classroom being the main learning platform. Hence, this part of the study was not attempted.

Other activities are planned in this project, including coloring, drawing and poster competitions for Year One to Year Six students, quiz competitions between schools, and healthy plate photography contests for school teachers. This is to ensure the continuation of learning via various methods. Although no data is yet available, the extended period of being at home due to the pandemic is thought to have increased

caloric intake and decreased physical activities. Thus, the current time is 'perfect' timing for the obesity prevention modules.

We obtained quiz scores as measures of knowledge transferred to the students due to the time constrain in conducting online sessions with primary school children. Future studies could look into using questionnaires to examine their nutritional intake, attitude and eating behaviour. There was no measure of obesity parameters to examine the effectiveness of the program to reduce obesity in these school children given the school closures.

Online learning has taken the world by storm. Academicians should take this opportunity to engage with the community, including school children, and share their expertise. Learning can now occur anywhere and anytime, and students are more ready than ever.

Contribution

Enhanced awareness in primary school children on healthy lifestyle and obesity prevention. Engaging school children in Science topics focusing on human body systems and nutrition.

Impact

Health and Wellbeing: Long term goal of obesity prevention

Conclusion

Programs targeting school children should attempt to include information already available in the school syllabus to enhance their understanding of the subject matter. More online programs to increase awareness on the obesity problem should be undertaken in schools.

Acknowledgement

References

World Health Organization (2021). Obesity and overweight. Retrieved from https://www.who.int/news-room/fact-_sheets/detail/obesity-and-overweight.

Institute for Public Health (IKU National Institutes of Health (NIH). National Health and Morbidity survey 2019. Retrieved from https://iku.moh.gov.my/images/IKU/Document/REPORT/NHMS2019/FactSheet_BI_AUG2020.pdf

Kementerian Pendidikan Malaysia, Bahagian Perancangan dan Penyelidikan Dasar Pendidikan Bil (02) 2019. Edisi Mac-April. Retrieved from https://www.moe.gov.my/en/muat-turun/penerbitan-dan-jurnal/infomedia-bppdp/2019-4/2301-infomedia-bil-02-mac-april-2019/file

PROMOTING HEALTHY FOOD PRACTICES AT HOME DURING PANDEMIC USING SELF-DEVELOPED NUTRITION EDUCATIONAL YOUTUBE VIDEOS ACCOMPANIED BY FOOD ASSISTANCE

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Abstract

Malnutrition in Malaysia within the lower-income family has risen within recent years, leading to an increased prevalence of stunting, and obesity among Malaysian children (5 – 17 years). Children and parents need continuous support and guidance to maintain healthy food practices to establish healthy eating habits. Nutrition educational interventions delivered through social media with the help of food assistance have been shown to have positive effects on promoting nutritional knowledge and eating habits of parents and their children. Therefore, the objective of this study was to promote healthy food practices of children and parents of the lower-income group during the COVID-19 pandemic with the help of our self-developed nutritional educational videos and food basket. A total of 262 children and their parents from the low-income groups had participated in this study. Two nutrition educational videos were developed and uploaded onto YouTube. The theme of the Healthy Food Basket (HFB) was 'Eating healthy at an affordable price'. Each family was given a basket of the HRB and links to access to the educational videos. Video content analysis shows that the 2 self-developed videos received high views and an appropriate number of likes after 1 month the videos had been online. In conclusion, this study successfully managed to provide food assistance during the COVID-19 pandemic and at the same time managed to promote better awareness that healthy food practices should start from the comfort of their home.

Keywords: Healthy Food; Pandemic Low Income; Children; Food Assistance

Introduction

Malaysia, as a developing country is facing the 'triple-burden' of malnutrition: child wasting, stunting, and obesity among Malaysian adolescents is of great concern. According to the National Health and Morbidity Survey (NHMS, 2019), 20.7% of children below age 5 have been reported to be suffering from stunting, 11.5% are reported from wasting and nearly 12% of children are obese (10 – 17 years). The prevalence of adolescent obesity can be seen higher within the bottom 40% of the Malaysian household income (B40) group.

The burden of malnutrition within the B40 household can be due to multi-factorial. Parents within the lower-income household will be unlikely to use their limited resources to buy healthy and low-energy dense food which may lead to poor diet quality within the household (French et al., 2019). The evidence of having poorer

diet quality during the adolescent period may lead to a variety of clinical disorders with potentially severe consequences for emotional and physical health such as obesity and overweight (Sahoo, 2015).

To reduce childhood obesity, it has been suggested to increase intakes of healthy food (e.g., foods rich in calcium, vegetables and fruit) and limit the intake of unhealthy food. At present, it is estimated that 42.1% of Malaysian adolescents consume more than 25g intake of sugar, and the average intake of sodium was at 2289.5 ± 920.9 mg/d (Majid et al., 2016). Furthermore, studies have shown that there is a social gradient between adolescent diet quality
promoting poorer long-term health especially within the lower SES (De Mestral, et al., 2019; Martinez-Lacoba et al., 2020).

Previous studies have shown that lower-income groups are unable to afford to buy healthy food due to their limited finances and unavailability of food (French et al., 2019). However, with proper nutrition education knowledge, the quality of family meal practices and overall food preparation at home can be slightly improved. Continuous support and guidance are needed in order to promote healthy food practices to ensure that they will develop into healthy eating behaviour. Nutrition education intervention delivered using social media (e.g., YouTube) and providing food assistance have been shown to have a high potential to reach a large number of people, including those from the lower-income group (Torto & Brownell, 2020). Such interventions are cost-effective, flexible, have a low participant burden, and may be more visually appealing and engaging (Ahmad et al., 2018).

Campbell (2016) claimed that the food environment such as the expensive price to procure food such as fish, lean meat, fruits, and vegetables affects food choices by parents, which is why the theme of our food assistance basket was to 'Eating healthy at the affordable price'. The 'Healthy Food Basket' was then developed to provide parents with some knowledge of cheaper alternatives to healthy food. This is because past studies have shown that healthy food practices can be encouraged among the lower-income group when small changes are being made to their daily diet. Thus, this study aimed to investigate the possibility to promote healthy food practices at home by targeting children' and parents' awareness through the help of self-developed nutrition educational videos with food assistance.

Methodology
Nutritional educational video development
The nutrition educational videos were developed based on the results from the MyHeART study (Abdul Majid et al., 2016) that shows the prevalence of salt intake among adolescents exceeded the RNI. Consequently, two self-developed nutrition education with each video has an educational objective. The educational objectives were (1) Reducing salt intake; and (2) Obesity an ongoing pandemic. After 1 month of the videos being put online, the number of views, like, dislike, and comment were analysed.

Food assistance – 'Healthy Food Basket'
The food groups included in the Healthy Food Basket (HFB) were based on expert knowledge for healthy food during the pandemic. The HFB consisted of food such as cereals, grain, vegetables, legumes, poultry, milk, and dairy products.

Participants and Procedure
Two schools within Lembah Pantai were purposely selected due to the high prevalence of students within the B40 household. A total of 262 participants aged 10 years had participated in this study. Each participant was given an HFB and YouTube link to access the self-developed nutrition educational videos.

Results and discussion
Video content analysis - Number of Views, Likes, Comments and Replies
The number of views, likes, comments, and replies towards a YouTube video may represent the impact level and participants' acceptance towards the video content (Lee & Shin, 2009). For the first video on reducing salt intake, content analysis shows that the video managed to record a total number of 353 views, 9 likes, and 0 dislikes. As for the second video on obesity, an ongoing pandemic, a total of 186 views, 6 likes, and 0 dislikes were recorded. The comment sections usually will be the platform for exchanging ideas for the participants. Through exchanging ideas, participants may interact directly with the host, and this may likely shape a person's perception (Jaffery et al., 2020).

Food items in the HFB
A total of 11 food items were included in the HFB. Table 1.1 shows the food items grouped according to their food groups based on the Malaysian Dietary Guidelines for children and adolescents (NCCFN, 2013). The dietary intake of the previous report from the MyHeART study (Ng et al., 2019) was used as a guideline to draft the HRB. The food items listed in the HRB such as rice and eggs were all daily eaten food. The serving size of the food listed in HRB was based on the Malaysian Dietary Guidelines that recommend a daily intake of between 6 – 9 servings of cereal and grains, 2 servings of fruits, 3 servings, 1 – 2 servings of meat/poultry, 1 serving of legumes, and 2 – 3 servings of milk and dairy products. This is a collaboration with the Sime Darby group to get food assistance.

Table 1: Food item and quantities of the Healthy Food Basket

Food item	Quantity
Cereals and grains	
Basmathi rice	5 kg
Dried barley	425 g
Milk and Dairy products	
Low fat milk	1 kg
Flavoured milk	1.2 L
Coconut milk	800ml
Vegetables and Fruits	
Canned mushroom	425g

Canned corn	425g	
Dates	1 kg	
Poultry		
Fresh egg	30 eggs	
Legumes		
Dhal	300 g	
Others		
Cooking oil	2 kg	

Contribution

This study had provided the appropriate tools to shape participants' belief that healthy eating and practices should begin from home and the responsibility from everyone within the family.

Conclusion

It can be concluded that the self-developed nutrition educational videos and food assistance (HFB) can be alternative tools to empower families from the B40 group to eat healthier as well to provide awareness for parents when it comes to purchasing healthier food. Currently, an evaluation of whether the assistance of healthy baskets helps during this pandemic is been conducted.

Acknowledgement

References

Abdul Majid, H., Ramli, L., Ying, S. P., Su, T. T., Jalaludin, M. Y., & Abdul Mohsein, N. A. S. (2016). Dietary intake among adolescents in a middle-income country: an outcome from the Malaysian Health and Adolescents Longitudinal Research Team Study (the MyHeARTs Study). *PloS One*, *11*(5), e0155447.

Ahmad, N., Shariff, Z. M., Mukhtar, F., & Lye, M. S. (2018). Family-based intervention using face-to-face sessions and social media to improve Malay primary school children's adiposity: a randomized controlled field trial of the Malaysian REDUCE programme. *Nutrition Journal*, *17*(1), 1-13.

Campbell, M. K. (2016). Biological, environmental, and social influences on childhood obesity. *Pediatric Research*, *79*(1), 205-211.

Institute for Public Health. (2020). National health and morbidity survey (NHMS) 2019: Non-communicable diseases, healthcare demand, and health literacy—Key Findings.

Ng, A. K., Hairi, N. N., Jalaludin, M. Y., & Majid, H. A. (2019). Dietary intake, physical activity and muscle strength among adolescents: the Malaysian Health and Adolescents Longitudinal Research Team (MyHeART) study. *BMJ Open*, *9*(6), e026275.

Sahoo, K., Sahoo, B., Choudhury, A. K., Sofi, N. Y., Kumar, R., & Bhadoria, A. S. (2015). Childhood obesity: causes and consequences. *Journal of Family Medicine and Primary Care*, *4*(2), 187–192. https://doi.org/10.4103/2249-4863.154628

ADDRESSING THE POTENTIAL CHALLENGES AND BARRIERS IN MALAYSIAN SCHOOLS TO IMPROVE ASTHMA CARE AMONG CHILDREN: A CALL FOR CHANGE

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Abstract

Asthma is a common chronic respiratory disease in children and affects an estimated 8.7% of Malaysian children under the age of 18. Children with asthma may present with breathing difficulty, chest tightness, cough, and abnormal breath sounds (wheezing), which can occur anytime, including at school. Poor asthma control could reduce the quality of life and school attendance of children. Asthma attacks can be life-threatening and immediate care is needed to prevent a worsening condition. Therefore, parents need to inform teachers about their child's illness, and teachers should act *in-loco parentis* during asthma emergencies in schools. To inform the development of a school-based asthma programme, we conducted qualitative studies among local stakeholders (children with asthma and their parents, school staff, healthcare professionals and policymakers) to inform the development of a school-based asthma program as there is no specific guideline on asthma care in Malaysian government schools. This paper describes the stakeholder engagement workshop that aimed to disseminate findings of the studies, discuss the barriers and challenges of caring for asthma at school, and raise awareness of asthma in schools and inform local policy/guideline in the future. We conducted a 2-hour online workshop among stakeholders of school-based asthma programs in February 2021. We invited primary care physicians, school health teams, school staff, parents of children with asthma as well as state and district policymakers from the Ministry of Health and Ministry of Education. A total of 27 participants took part. The workshop started with a short sharing session from two key speakers: 1) a community paediatrician who presented about asthma, 2) a state policymaker explaining the existing school guideline on medical care at school with a focus on asthma. The lead researcher for this project (SNR) presented the key findings of our qualitative studies. Participants were then divided into four groups using a virtual break-out room according to their background (teachers, healthcare professionals, policymakers and parents) for an hour-long discussion. To ensure a focused discussion. each group was facilitated, and we used

questions to understand the challenges and potential solutions to improve asthma at school. The session was recorded and notes were taken. Each group shared their discussion with the whole group and a final list was agreed upon by consensus. A feedback form was sent to all participants at the end of the workshop. Four major challenges were identified: (1) a lack of knowledge or information about students' health; (2) Parents and teachers were unclear about responsibilities for medical care in schools; (3) teachers were lacked skills to reliably recognise asthma symptoms and there was a fear of legal ramifications and (4) a lack of asthma action plans in school and policy to support teachers caring for children at schools. Implementing a school-based asthma programme that focuses on improving communication among teachers and parents about children's health issues and needs, having a school asthma action plan in place and training teachers to deal with asthma attacks are potential solutions to these challenges. Schools play a critical role in assisting students to keep their asthma under control by implementing well-coordinated school-based asthma programs. Schools can be an ideal platform to improve asthma awareness among children and the community, support children's asthma care, particularly during emergencies. It is possible to implement a school-based asthma program in Malaysia with good support from healthcare providers and having specific school asthma guidelines and policies.

Keywords: Children; Asthma; Schools; Challenges

Introduction
Asthma is a common chronic respiratory disease in children and affects an estimated 8.7% of Malaysian children under the age of 18 (Ahad & Khoo, 2017). Children with asthma may present with breathing difficulty, chest tightness, cough, and abnormal breath sounds (wheezing), which can occur anytime, including at school (Global Initiative for Asthma, 2021). Poor asthma control could reduce the quality of life and school attendance of children. Asthma attacks can be life-threatening and immediate care is needed to prevent a worsening condition (Global Initiative for Asthma, 2021). Therefore, parents need to inform teachers about their child's illness, and teachers should act *in-loco parentis* during asthma emergencies in schools. (World Health Organisation, 2021).

To inform the development of a school-based asthma program, we conducted qualitative studies among local stakeholders (children with asthma and their parents, school staff, healthcare professionals and policymakers) to inform the development of a school-based asthma program (Ramdzan et al., 2020; Ramdzan et al., 2019) as there is no specific guideline on asthma care in Malaysian government schools. This paper describes the stakeholder engagement workshop that aimed to disseminate findings of the studies, discuss the barriers and challenges of caring for asthma at school, and raise awareness of asthma in schools and inform local policy/guidelines in the future.

Methods
We conducted a 2-hour online workshop among stakeholders of school-based asthma programs in February 2021. We invited primary care physicians, school health teams, school staff, parents of children with asthma as well as state and district policymakers

from the Ministry of Health and Ministry of Education. A total of 27 participants took part. The workshop started with a short sharing session from two key speakers: 1) a community paediatrician who presented about asthma, 2) a state policymaker explaining the existing school guideline on medical care at school with a focus on asthma. The lead researcher for this project (SNR) presented the key findings of our qualitative studies.

Participants were then divided into four groups using a virtual break-out room according to their background (teachers, healthcare professionals, policymakers and parents) for an hour-long discussion. To ensure a focused discussion. each group was facilitated, and we used questions to understand the challenges and potential solutions to improve asthma at school. The session was recorded, and notes were taken. Each group shared their discussion with the whole group and a final list was agreed upon by consensus. A feedback form was sent to all participants at the end of the workshop.

Results
Four major challenges were identified: (1) a lack of knowledge or information about students' health; (2) Parents and teachers were unclear about responsibilities for medical care in schools; (3) teachers were lacked skills to reliably recognize asthma symptoms and there was a fear of legal ramifications and (4) a lack of asthma action plans in school and policy to support teachers caring for children at schools. Implementing a school-based asthma program that focuses on improving communication among teachers and parents about children's health issues and needs, having a school asthma action plan in place, and training teachers to deal with asthma attacks are potential solutions to these challenges.

Conclusion
Schools play a critical role in assisting students to keep their asthma under control by implementing well-coordinated school-based asthma programs. Schools can be an ideal platform to improve asthma awareness among children and the community, support children's asthma care, particularly during emergencies. It is possible to implement a school-based asthma program in Malaysia with good support from healthcare providers and having specific school asthma guidelines and policies.

Acknowledgements

References
Ahad, A., & Khoo, E. M. (2017). Asthma control and care among Malaysian Primary School Children: A cross-sectional study. *Asia Pac J Public Health, 29*(5), 422-429. doi:10.1177/1010539517717766

Global Initiative for Asthma. (2021). Global Strategy for Asthma Prevention. In.

Ramdzan, S. N., Khoo, E. M., Liew, S. M., Cunningham, S., Kendall, M., Sukri, N., . . . Pinnock, H. (2020). How young children learn independent asthma self-management: a qualitative study in Malaysia. *Arch Dis Child, 105*(9), 819-824. doi:10.1136/archdischild-2019-318127

Ramdzan, S. N., Pinnock, H., Liew, S. M., Sukri, N., Salim, H., Hanafi, N. S., . . . Khoo, E. M. (2019). Perceptions of complementary/alternative medicine use and influence on evidence-based asthma medicine adherence in Malaysian children. *NPJ Prim Care Respir Med, 29*(1), 5. doi:10.1038/s41533-019-0118-x

World Health Organisation. (2021). WHO guideline on school health services. In. Geneva.

BARRIERS AND CHALLENGES OF IMPLEMENTING PULMONARY REHABILITATION IN MALAYSIA: STAKEHOLDERS' PERSPECTIVES

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Abstract

Chronic respiratory diseases (CRDs) are a growing problem in low- and middle-income countries (LMIC) where mortality and morbidity rates are rising. Evidence on the benefits of pulmonary rehabilitation (PR) for patients with CRD has accumulated in recent years notably in the improvement in functional exercise capacity, dyspnoea, and quality of life along with reduced hospital stays and costs. We aimed to reflect on the barriers and challenges along with possible solutions to the implementation of a PR program in Malaysia, through the eyes of health care professionals. With limited stakeholder engagement activities being carried out in Malaysia, this stakeholder event aimed to engage healthcare professionals' views on the barriers to implementation of PR in Malaysian healthcare settings. The intention is to raise awareness of PR's role in treating patients with CRDs and develop local and national strategies for implementation in the future. The barriers and challenges to PR implementation identified included poor knowledge of PR amongst providers, lack of financial and human resources, absence of clear guidelines and referral pathways as well as patient barriers to participating in PR. The proposed solutions to these barriers include formal PR training of healthcare workers, the appointment of motivated expert program coordinators, installation of proper facilities and communication pathways between hospital departments, evidence-based guidelines for PR, community outreach

programs, better patient education and shared decision making between healthcare workers and patients. These key stakeholder perspectives have informed us about the research gaps in the implementation of a PR program in Malaysia, allowing us to explore possible solutions in future research planning and execution of PR implementation for patients with CRDs. The stakeholder engagement activity for PR implementation has enabled an understanding of the needs and priorities of stakeholders and helped us identify solutions for barriers for research on PR implementation.

Keywords: Chronic Respiratory Diseases; Healthcare Workers; Pulmonary Rehabilitation

Introduction
Chronic respiratory diseases (CRDs) are a growing problem in low- and middle-income countries (LMIC) where mortality and morbidity rates are rising. Evidence on the benefits of pulmonary rehabilitation (PR) for patients with CRD has accumulated in recent years notably in the improvement in functional exercise capacity, dyspnoea, and quality of life along with reduced hospital stays and costs.

Objectives
We aimed to reflect on the barriers and challenges along with possible solutions to the implementation of a PR program in Malaysia, through the eyes of health care professionals.

Significance
With limited stakeholder engagement activities being carried out in Malaysia, this stakeholder event aimed to engage healthcare professionals' views on the barriers to implementation of PR in Malaysian healthcare settings. The intention is to raise awareness of PR's role in treating patients with CRDs and develop local and national strategies for implementation in the future.

Potential Methods/Solutions
The barriers and challenges to PR implementation identified included poor knowledge of PR amongst providers, lack of financial and human resources, absence of clear guidelines and referral pathways as well as patient barriers to participating in PR. The proposed solutions to these barriers include formal PR training of healthcare workers, the appointment of motivated expert program coordinators, installation of proper facilities and communication pathways between hospital departments, evidence-based guidelines for PR, community outreach programs, better patient education and shared decision making between healthcare workers and patients.

These key stakeholder perspectives have informed us about the research gaps in the implementation of a PR program in Malaysia, allowing us to explore possible solutions in future research planning and execution of PR implementation for patients with CRDs.

Conclusion

The stakeholder engagement activity for PR implementation has enabled an understanding of the needs and priorities of stakeholders and helped us identify solutions for barriers for research on PR implementation.

References

Labaki, W.W., & Han, M.K. (2020). Chronic respiratory diseases: a global view. *The Lancet Respiratory   Medicine, 8*(6):531-3.

WHO. World Health Statistics 2018. World Health Organization. 2019. Retrieved from https://apps.who.int/iris/bitstream/handle/10665/272596/9789241565585-eng.pdf.

Baptista, E.A., Dey, S. & Pal, S. (2021). Chronic respiratory disease mortality and its associated factors in selected Asian countries: evidence from panel error correction model. *BMC Public Health, 21*(1):53

Department Of Statistics Malaysia. Press release statistics on causes of death, Malaysia, 2019. [press release]. 2019

Ur Rehman, A., Hassali, M., Muhammad, S. A., Shakeel, S., Chin, O. S., Ali, I., Muneswarao, J., & Hussain, R. (2021). Economic burden of Chronic Obstructive Pulmonary Disease patients in Malaysia: a longitudinal study. *PharmacoEconomics – Open*, *5*(1), 35–44. https://doi.org/10.1007/s41669-020-00214-x.

Habib, G.M., Rabinovich, R., Divgi, K. *et al. (2020).* Systematic review of clinical effectiveness, components, and delivery of pulmonary rehabilitation in low-resource settings. *Npj Prim. Care Respir. Med**,** 30*(52). https://doi.org/10.1038/s41533-020-00210-y.

Azarisman, S. M., Hadzri, H. M., Fauzi, R. A., Fauzi, A. M., Faizal, M. P., Roslina, M. A., & Roslan, H. (2008). Compliance to national guidelines on the management of

chronic obstructive pulmonary disease in Malaysia: a single centre experience. *Singapore medical journal*, *49*(11), 886–896.

Johnston, K., & Grimmer-Somers, K. (2010). Pulmonary rehabilitation: overwhelming evidence but lost in translation?. *Physiotherapy Canada. Physiotherapie Canada*, *62*(4), 368–373. https://doi.org/10.3138/physio.62.4.368.

Watson, J. S., Adab, P., Jordan, R. E., Enocson, A., & Greenfield, S. (2020). Referral of patients with chronic obstructive pulmonary disease to pulmonary rehabilitation: a qualitative study of barriers and enablers for primary healthcare practitioners. *The British journal of general practice: ``the journal of the Royal College of General Practitioners*, *70*(693), e274–e284. https://doi.org/10.3399/bjgp20X708101.

Keating, A., Lee, A., & Holland, A. E. (2011). What prevents people with chronic obstructive pulmonary disease from attending pulmonary rehabilitation? A systematic review. *Chronic Respiratory Disease*, *8*(2), 89–99. https://doi.org/10.1177/1479972310393756.

Sohanpal, R., Hooper, R., Hames, R., Priebe, S., & Taylor, S. (2012). Reporting participation rates in studies of non-pharmacological interventions for patients with chronic obstructive pulmonary disease: a systematic review. *Systematic Reviews*, *1*, 66. https://doi.org/10.1186/2046-4053-1-66.

Concannon, T. W., Meissner, P., Grunbaum, J. A., McElwee, N., Guise, J. M., Santa, J., Conway, P. H., Daudelin, D., Morrato, E. H., & Leslie, L. K. (2012). A new taxonomy for stakeholder engagement in patient-centered outcomes research. *Journal Of General Internal Medicine*, *27*(8), 985–991. https://doi.org/10.1007/s11606-012-2037-1.

EXTENDED ABSTRACT

SYMPOSIUM 4: ECONOMICS, FINANCE & SOCIAL WELFARE

ZERO WASTE MOVEMENT IN URBAN POOR COMMUNITY

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Abstract

Malaysia generates around 16,688 tonnes of food waste daily. Despite biodegradable properties and a high potential for composting, almost 80% of food waste generated is still disposed of in landfills. This significant study discusses the current state of food waste management in Malaysia, including the amount of food waste generated, sustainable development goals efforts, as well as public knowledge and biological technology transfer on composting as a method of reducing food waste disposal. This research aims to enhance the awareness to the community by introducing the best applicable zero waste practices and food waste separation at source, encouraging participation from local communities and develop the best possible sustainable solution to a resilient food waste management system in the area. The food waste interventions included a passive approach, selective community engagement approach and social media approach. A centralized communal composting was introduced using Takakura technique, and proper separation at the source facility was implemented. A total of 303 responses were collected in a community representative of a high-density urban residential region. Meanwhile, a focus group attended a composting session, which transforms food waste into compost. The study's outcome contributed to savings of the avoided total accumulated CO_2 emissions, which is 2,315,364.189 kg CO_2 equivalent per year, whereas the amount of disposal cost savings is RM3,124.20 per year. Furthermore, the potential postulated income generation for compost production alone in a year is RM 68,580 from the food waste and yard trimmings separated at the source. The composting of food waste and promotion of separation at source would inadvertently cause the reduction of carbon emissions, minimize pollution, promote the healthy well-being of the community and circular economy in the collaborative ecosystem.

Keyword: Food Waste; Separation at Source; Centralised Communal Composting; Sustainable Development Goal; Circular Economy

Introduction

Based on the FAO, global food waste amounts to 1.3 billion tonnes per year, or more than one-third of global food output. Fresh fruits and vegetables account for 45% of worldwide food waste, with food waste from residential dwellings accounting for one of the highest rates. The majority of this trash is disposed of in landfills, where the conditions encourage the production of greenhouse gases for instance methane, which contribute to global warming. Improper handling, lack of proper storage, unsold goods, and processing can all result in food waste (e.g., peeling, washing, drying) (Saulo, 2021). Alternatives to solid waste landfilling, such as recycling and waste minimization or reuse regulations, have been introduced in many countries to reduce the negative consequences of waste management methods. Malaysia produces 38,000 tonnes of residential garbage per day, of which 45% – or 17,000 tonnes – is food waste, of which 4,080 tonnes are still edible (SWCorp, 2021). In line with Malaysia's plan to halving the country's carbon emissions intensity to 45% by 2030, compared to 2005 levels. Malaysia is dedicated to making a significant contribution to the mitigation of global climate change. Malaysia is also firmly dedicated to being a leading player in the worldwide transition to a low-carbon, and eventually carbon-neutral society, with the goal of doing so by 2050.

The food system's sustainability problems have become much more apparent and urgent as a result of the far-reaching disruptions caused by the COVID-19 epidemic. Food waste is defined by the FAO as a reduction in the amount or quality of food at the retail and consumption stages of the food supply chain. In industrialised countries like the United States, families were formerly regarded as the main cause of food waste along the supply chain (Gunders, 2012; Buzby, Wells, and Hyman, 2014). Poor planning and inventory management, uncertainty over date labels, and bulk shopping are all factors that lead to home food waste (Gunders, 2012). Under normal circumstances, stockpiling, which has been a common household response to Covid-19, would be considered waste-increasing since households frequently mismanage surplus food (Thyberg and Tonjes, 2016) and provides a sense of security in a period of scarcity or allows for more physical distancing, as mentioned by Ellison et al. (2020). For example, the lockdown has resulted in increased consumption of packaged goods and take-out cuisine and thus causing the waste generation increment in landfill.

This study aims to enhance the awareness to the community by introducing the best zero waste practices and separation at source of food waste, encourage participation from local communities and develop the best possible sustainable solution to the food waste management system in the area. This research examines homeowners' utilizes communal composting in Taman Sri Sentosa and discusses the access communal composting facility's refusal to utilize the communal composting facilities despite financial incentives and sanctions introduced. This research also investigates the quantification of carbon emission reduction on food waste diversion from landfills and other health and economic benefits. This research incorporates empirical data to shed light on the variables that may influence people's authentic use of communal composting and organic waste diversion behaviour while also offering some practical implications urging the locals to commit to community-led environmental behaviour. The scope of direct carbon emissions involves two aspects: waste avoided from landfills and total freight truck mileage avoided, whereas indirect carbon emissions involve total energy saved, total diesel saved, total chemical fertilizer consumption avoided, and total

new product consumption avoided as a result of recycling efforts. The study also proposes novel, innovative and resilient solutions to existing waste management challenges via corroborating several vital recommendations to policymakers to assist them in holistically responding to the potential future pandemics regarding food waste management.

Methodology

This study is designed as a cross-sectional survey and data was collected from February 2020 until July 2021. The food waste interventions used in this study involved a passive approach (handouts), a selective community engagement approach and a social media approach (Facebook group and WhatsApp). Several methods to conduct the composting quantitative study were household survey interviews, a focus group discussion and frequent monitoring of composting throughout the workshop campaign. A total of 303 responses were surveyed in the community of Taman Sri Sentosa that represents a high density of urban residential area. Meanwhile, the focus groups that participate in composting workshop which converts food waste into compost consist of 35 active members of Bayview Green Garden.

The location of composting is at Bayview Court 1D apartment which is a 5-storey walk up medium cost apartment that was built in 1988. It had 4 blocks, which were Block 50 (A, B, C) with 60 homeowners, Block 52 (A, B, C, and D) with 80 homeowners, Block 54 (A,B, C) with 60 homeowners, and Block 56 (A, B, C) with 60 homeowners. In total, there are 260 homeowners living at Bayview Apartment. However 10 units are empty, hence, in average all 250 units had around 4 people living at each unit. Currently, there are 1,000 people are in total living at Bayview Court 1D apartment. There is also a small kindergarten located within the apartment compound area. In addition, booths and markets nearby can generate large quantities of food waste and reduce the burden of environmental pollution. The best approach to food waste problems is that some of them are involved in composting activities by converting food waste to compost. There are the total number of 77 hawker booths and markets, and 40 open markets in the Taman Sri Sentosa recorded by the Kuala Lumpur City Hall (DBKL, 2020).

The rotating drum bin used consisted of four 120 L drum bins that cost RM35 a piece. The composting bin was built using a personal welding equipment and a welding helmet owned by members of the local community. The cost was RM500 for two sets and RM400 for two sets of labour cost. RM50 per metric tonne of MSW landfill tipping fee is avoided from Taman Sri Sentosa to Taman Beringin Sanitary Landfill, according to SWCorp data. In comparison to a sanitary landfill, the tipping cost for an incinerator could be four to five times greater. For easier access for small children and the urban gardening, three more composting bins of 120 L drum capacity were erected near the kindergarten area.

Food waste is collected and stored in a compost bin provided by the Universiti Malaya and Bayview Green Garden community. The amount of food waste collected is quantified and analysed further to ensure a simple process for properly managing organic waste. With the help of biological treatment (composting) knowledge adapted from the Takakura Method whereby the organic waste is decomposed by microorganisms cultivated from locally available materials. This method entails the formulation of a seed compost from fermented solutions and the establishment of a

fermenting bed. Organic waste is combined with seed compost and placed in a ventilated bin container to degrade. This is a conventional composting process in which wastes are decomposed aerobically with the help of passive aeration (little and infrequent turnings or static aerations like perforated poles). This approach is time-consuming, however it is a straightforward type of composting with cheap operational and capital expenditures as compared to vermicomposting, windrow composting, and other types of recycling organic waste. The formation of a pile of raw materials is solely required for this procedure, which requires little effort and equipment. The primary method of aeration is the passive passage of air through the compost bin, which slowly degrades the organic waste.

Table 1: The methodology of Carbon Footprint Emissions

No	Scope	Formula & Expression
A	**Direct Carbon Avoided**	
1	Waste avoided from disposed at landfill, E_1	$\mathbf{E_1 = W \times EF_1}$ W: waste avoided from transported to landfill (kg) EF_1: Disposal of municipal solid waste, sanitary landfill (Default: 0.75451 kg CO_2-eq/kg)
2	Total mileage of freight truck avoided, E_2	$\mathbf{E_2 = (T \times Dt \times 2)\, EF_2}$ T: No. of trips reduced Dt: Distance travelled per trip (km) EF_2: Transport (Freight lorry 3.5-7.5 metric ton, EURO5) (Default: 0.48337 kg CO_2-eq/km)
B	**Indirect Carbon Avoided**	
1	Total energy saved, E_3	$\mathbf{E_3 = (E \times EF_{3a}) + [E \times EF_{3b}(GCH_4)] + [E \times EF_{3c}(GN_2O)]}$ E: Total energy saved EF_{3a}: Emissions per kWh of electricity consumed (Default: 0.770701107 kg CO_2-eq/kwh) EF_{3b}: Emissions per kWh of electricity consumed (Default: 0.00001131953 kg CH_4-eq/kwh) GCH_4: Global warming potential for methane gas, CH_4 (Default: 23) EF_{3c}: Emissions per kWh of electricity consumed (Default: 0.00000695 kg N_2O-eq/kwh) GN_2O: Global warming potential for Nitrous oxide, N_2O (Default: 300)
2	Total diesel saved, E_4	$\mathbf{E_4 = (T \times Dt \times Ds \times D \times k)\, EF_4}$ T: No. of trips reduced Ds: Diesel consumption (L) Dt: Distance travelled per trip (km) D: Density of diesel (kg/L) k: no. of trip per day (Default: 2 trips) EF_4: Low Sulfur, Diesel Production (Default: 0.45032 kg CO_2-eq/kg)

3	Total chemical fertilizer consumption avoided, E_5	$E_5 = [B \times (1-M) \times FRF] EF_5$ B: Composted biowaste (kg) M: Mass loss coefficient (Default: 0.85) FRF: Fertilizer replacement factor (Default: 0.5) EF_5: Fertilizer production, as N (Default: 2.74053 kg CO_2-eq/kg)
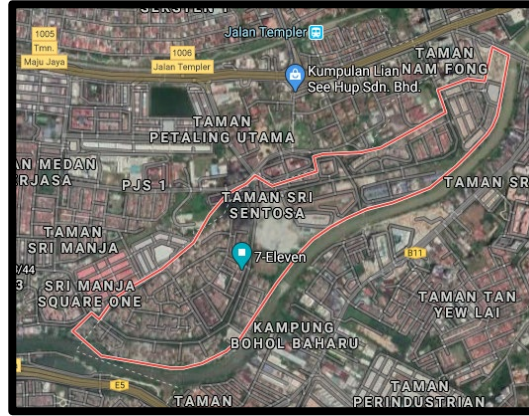
Figure 1: Assessment for Composting Area at Taman Sri Sentosa, Petaling Jaya
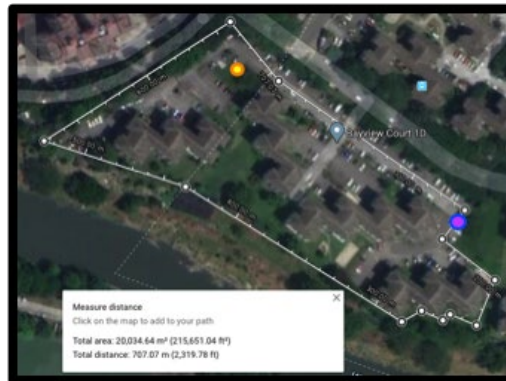
Figure 2: Specified Location of Communal Composting Bin at the Bayview Court 1D Apartment (Marked in Orange & Yellow: Rotated Bin; Marked in Blue & Purple: Passive Aerated Static Bin)

Figure 3: Left to Right: Rotated Composting Bin; Passive Aerated Static Bin

A. Socio-Demographic Profile of Taman Sri Sentosa

Gender

- Male 39%
- Female 61%

Age

- 71 and above 1%
- 61-70 11%
- 51-60 19%
- 41-50 15%
- 31-40 18%
- 21-30 24%
- 15-20 12%

Education Level

- No education 3%
- Primary Education 10%
- Secondary Education 57%
- Tertiary Education 28%
- Others 2%

Household Size

- 1-2 people 16%
- 3-5 people
- 6-8 people 26%
- More than 8 people
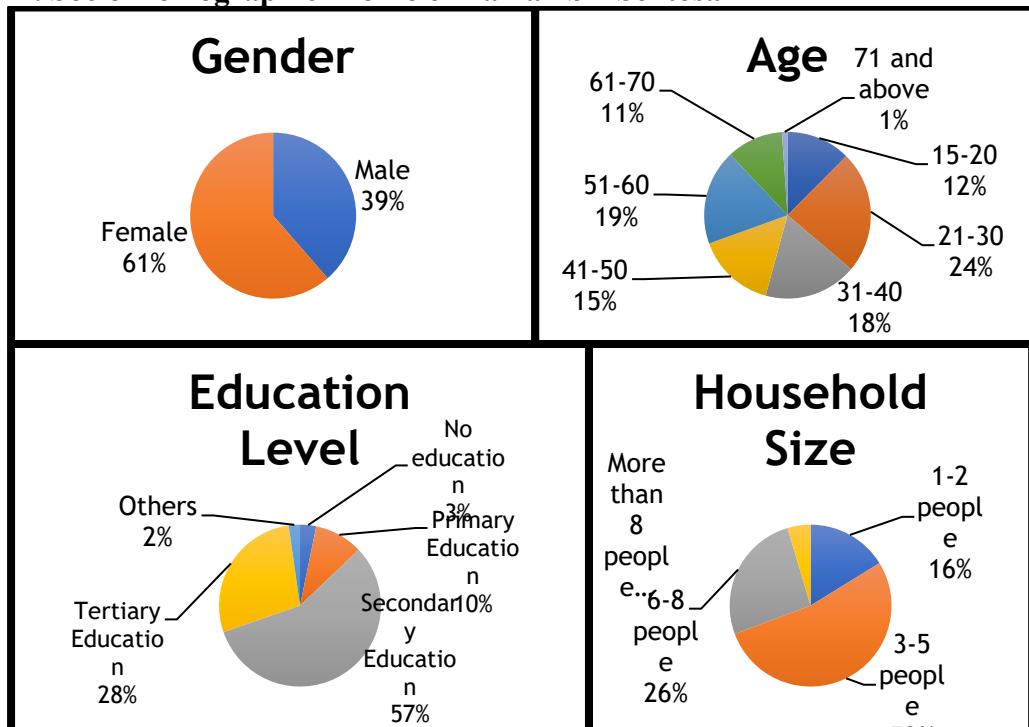
B. Composting Performance of Bayview Green Garden, Taman Sri Sentosa

Table 2: Inventory Assessment for Composting Performance Activity

Scope	Amount	Unit
Total Energy Saved	2,422.40544	kWh
Total Diesel Saved	25.56	kg
Total Chemical Fertiliser Consuption Avoided	1,143	kg
Total Mileage of Freight Truck Avoided	384.048	km
Expected Revenue	68,580	RM
Disposal Cost Savings	3,124.20	RM

Table 3: Accumulation of CO_2 Emission Avoided (kg CO_2 eq.)

Scope	Amount (kg CO2 eq.)
Direct Carbon Avoided	
Waste avoided from disposed at landfill, E_1	11,498.73
Total mileage of freight truck avoided, E_2	185.64
Indirect Carbon Avoided	
Total energy saved, E_3	2,300547.33
Total diesel saved, E_4	0.06646
Total chemical fertilizer consumption avoided, E_5	3,132.43
Total Carbon Emission Avoided	**2,315364.19**

Figure 4: Food Waste Composting at Passive Aerated Static Bin
(Left-to-right: Yard Trimming Waste, Food Waste, Resident throwing food waste)

Figure 5: Food Waste Composting at Rotated Bin
(Left-to-right: Yard Trimming Waste, Food Waste, Resident throwing food waste)

Figure 6: Compost Product in a month

Discussion

There has been a significant increase in recent decades in initiatives that integrate public participation in the environmental governance process and are focused at environmental conservation (Tang et al., 2010). However, the success of community food waste reduction initiatives, such as the usage of communal composting, is contingent on people' voluntary participation. As a result of the significance of public involvement, understanding why people embrace and utilise waste reduction programmes has become a prominent subject in environmental research (Domina and Koch, 2002). This study emphasise the critical importance of raising awareness about the current negative consequences of improper organic waste separation at the source.

Based on the results, seniors make less food waste than their younger colleagues. According to the study by Aurelio, 2021, because females are more likely to be the major food preparers at home, they are more familiar with and produce less food waste than males. People with a greater degree of education earn more money and waste more food than people with a lower level of education. Food waste dropped in large families during the lockdown, according to the research, owing to the fact that larger houses can better support the re-use of leftovers. Furthermore, as indicated by a number of respondents in the study, this outcome could be influenced by the fact that, especially during the lockdown, the household food preparer has more time to plan and cook.

Besides that, improper collection practises may result in virus contamination of general municipal solid waste, posing a risk of transmission. As a result, the safe handling and final disposal of this waste is critical to the effectiveness of an emergency response. The frequency of biodegradable trash collection should be adjusted to the generation dynamics of the neighbourhood, while recyclable waste collection may be decreased depending on truck availability and residents urged to keep recyclables in sealed bags for extended timeframes. When unsorted trash reaches the dumpsite, it needs additional human sorting time. The longer employees are exposed to garbage, the greater the risk of transmission of a disease such as COVID-19. Local governments should encourage people to behave responsibly; they may help decrease recycling workloads by practising appropriate household segregation or by adhering to new guidelines for managing source-separated organic waste, as mentioned before. The importance of social media such as Facebook and Whatsapp allow the community to interact and communicate in depth discussion regarding the rotating schedule of food waste input in composting bin. The communication and awareness campaign should be reinforced to raise public awareness of the challenges confronting the waste management sector during the COVID 19 crisis. This could be accomplished through advertisements, campaigns, newspaper articles, and social media campaigns, among other methods.

For policymakers, organic waste is both an opportunity and a challenge, and recent attention has been focused on community composting techniques, highlighting the aspect of health, environmental and/or economic implications. Waste management and the waste resource efficiency are critical strategies for mitigating and adapting to the effects of climate change (Spyridi et al., 2015). The waste management sector is becoming more involved in climate change mitigation (Ragobnig and Hilger, 2008) and circular economy (CE) initiatives (Pai et al., 2019). In contrast to the present linear paradigm of 'take-make-waste,' the Circular Economy (CE) is a circular system capable of progressively decoupling development from the use of limited resources. This study

benefitted the transition from the current organic waste system (source separate waste collection) to community composting by recycling the food waste collected and quantifies the environmental and economic benefits, as well as identifying the local community preferences and attitudes towards well-being, via a direct survey interview. This research provides policymakers with quantitative data to aid in the development of a sustainable and resource-efficient MSW management system in Malaysia.

Contribution

The contribution of communal composting were the minimised carbon emissions associated with avoided food waste disposal activity, the substitution of chemical fertiliser usage, and the reduction of energy consumption. The results indicated that treating food and yard waste as resources could result in significant carbon emission reductions. The environmental impacts of Business-as-Usual (Landfill) versus the communal composting initiative were calculated. Composting food waste also contributes to soil carbon sequestration. For example, applying compost to land improved crop yield, which resulted in higher C uptake from the atmosphere. Once absorbed by biomass, this carbon is largely retained underneath soil surface as microbial biomass (Ryals et al., 2015; Boldrin et al., 2009). Besides that, it was proven by introducing new type of communal activity such as composting, the impact would alleviate mental stress and anxiety by a novel act for boosting the release of dopamine and serotonin level. Sense of ownership and belonging would promote social connectedness within the neighbour's livelihood social activities.

Households must strive to be self-sufficient in terms of food production and waste reduction. Healthy soil is necessary for a healthy communal food system. Thus, the healthy soil spillover leads to urban gardening that should be fully utilised to guarantee food security, sovereignty and safety in the event of future pandemic. As a result, localised communal composting, urban farming, and market gardening may be implemented to satisfy local demand. Furthermore, food peels and other food waste may be composted for personal use. This study will lead to reducing the carbon sequestration by local community selling the homegrown products. Thereby promoting greener job opportunities to adapt with the current pandemic which eventually leads to sustainable circular economy pathway and becoming a resilient community.

Impact

Presently, the COVID-19 epidemic has intensified psychological difficulties including stress, worry, depression, and anxiety, thus redefining the initial concept of sustainability consumption (Dong and Bouey, 2020; Goyal et al., 2020). The COVID-19 epidemic has also altered food shopping patterns, with customers in many low-income nations opting for staple carbs and non-perishables, resulting in perishable food being thrown away in marketplaces. Panic buying (Dholakia, 2020; Hossain et al., 2020; Meyer, 2020) and even suicidal behaviour have been reported as a result of the epidemic (Goyal et al., 2020). Panic purchasing prompted by COVID-19-induced lockdowns has resulted in individuals stockpiling perishable food products ignorant of their expiration dates. Jribi et al. found in their research on the COVID-19 issue has heightened public awareness about food waste as a result of expected supply constraints (Jribi et al., 2020). The research found, however, this pro-behavioral shift was mostly

motivated by socioeconomic considerations rather than environmental concerns. Additionally, during times of crisis, customers choose to conserve rather than discard, resulting in reduced waste production (Durante and Laran, 2016;Jribi et al., 2020). However, the research suggests that an increase in home food waste production may occur under complete lockdown owing to storage constraints, poor cooking practises, or overcooking and hoarding (Jribi et al., 2020).

Because most organic waste handling emits some GHGs (Andersen et al., 2010; Swati and Hait, 2018), it's critical to keep this to a minimum. It is critical to reduce GHG emissions from digestate treatment in order to achieve sustainable cities and communities (SDG 11) and sustainable consumption and production (SDG 12). It is also a climate action (SDG 13), as it minimises GHG emissions and encourages the use of trash for biogas production. Decomposition processes release three greenhouse gases: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (NOx) (N_2O). CO_2 is a net contribution because it returns newly fixed carbon to the atmosphere. Due to its formed when microbes break down organic materials, CO_2 emissions are frequently used as a sign of degradation.

Reducing food waste at its source is critical due to its consequences towards the economic, societal, ecological and health-related domains (Gobel et al., 2015). According to the ReFED (2016), this impact would be of significance value and imminent impact. Minimizing food waste would have positive impact on the economy (producer income, consumer expenses) (Lipinsky et al., 2013), food security (Ingram et al., 2013), the fight against hunger (Garrone et al., 2014), and the global environmental footprint (Eriksson et al., 2014).

Conclusion

Small-scale composting provides local residents with waste collection services and free compost; and aids in the achievement of biodegradable waste diversion targets. While an admirable activity, bioaerosols may be emitted in minimal concentrations from these facilities, and found at locations where sensitive receptors are present. However, simple yet immediate solutions, such as mapping with buffer zones when visualising a site, composting technique, composter design and planning of facilities environment (outdoor), would reduce the risk posed to site workers and off-site sensitive receptors. Future development of urban bioaerosol sampling protocols and regulations would further provide the means for small-scale composting facilities to reduce exposure and protect community health.

Table 4: The Community in Bayview Green Garden was given the best practicable means possible to ensure the offensive substance is under control under the guidance proposed/recommended advised by UM ZWC waste operators.

	Best Practicable Means	Recommendations to the Community
1	The size, design and inherent operation characteristics of the plant or process	Size: Drum size capacity of 70 Liter Design: in-vessel composting and at a confined area. Operation: Aerated static pile in enclosed bin

2	The provision if necessary, and appropriate use of mist eliminator, dust arrestor, gas absorber and control instrumentation.	Control instrument: 1. UM ZWC Organic Fertiliser 2. Grass clippings and yard waste as odor controller
3	The use of suitable raw material or suitable fuel	Suitable raw materials is recommended in the Guidelines of Communal Composting
4	The alternative process within the capacity and design capability of the plant	-
5	The alternative manner of operation or procedures within the capacity and design capability of the plant or process	-
6	The proper conduct and adequate supervision of operation and	Proper conduct and supervision is advised as in the Guidelines of Communal Composting
7	Regular and efficient maintenance of plant and control equipment	The appointed member of community is responsible for the controls of regular maintenance of waste facilities and equipment.

The findings imply that some specific categories of municipal garbage have visibly grown, putting additional pressure on waste management systems, based on comparisons of the quantity of home waste produced before and during the epidemic. The findings of this study provide significant information on consumption trends during emergency scenarios to city administrations and municipal utilities. As a result, more systemic and strategic initiatives to reduce the increase in home trash during pandemic circumstances had to be supported.

Upgraded systems are required to address the complexities of waste management. Technology-based solutions promises to produce high-quality by-products while guaranteeing job security and a high level of safety for all personnel engaged, should be promoted. Additionally, it is necessary to foster research and investment in these new technologies. Apart from environmental and economic viability, they should integrate social viability into their design. Local production and consumption will assist in resolving supply chain anomalies in the case of a future pandemic. Tax cuts and fiscal stability in times of global crises will go a long way toward generating demand for robust domestic production and spending. Additionally, minimising food waste, reusing food, using food waste, and nutrient recycling (through composting) are key circular economy concepts in the sustainable food system that should be applied at both the production and consumer levels.

In terms of the study's limitations, this study acknowledge by utilising a convenience sample that is country diverse decreases the likelihood of identifying distinctive local tendencies. It does, however, allow for a greater degree of generalisation. The minimal number of responses may be considered as the study's

drawback. It is also prudent to anticipate more than adapting to the new crisis-born reality; rather, utilise this crisis to identify the waste management sector's weaknesses and invest in essential steps to address them.

Acknowledgement

References

BioCycle, 2020. COVID-19 budget cuts cause temporary suspension of NYC organics collection .

Boldrin, A., Andersen, J.K., Møller, J., Christensen, T.H., Favoino, E., 2009. Composting and compost utilization: accounting of greenhouse gases and global warming contributions. *Waste Management Resources*. https://doi.org/10.1177/0734242X09345275.

Buzby, J., Wells, H., & Hyman, J. (2014). The Estimated Amount, Value, and Calories of Postharvest Food Losses at the Retail and Consumer Levels in the United States (Economic Research Service No. 121; Economic Information Bulletin). U.S. Department of Agriculture. https://www.researchgate.net/pro le/ Jean_Buzby/publication/285230768_The_Estimated_Amount_Value_and_Calories_o f_Postharvest_Food_Losses_at_the_Retail_and_Consumer_Levels_in_the_United_St ates/links/5a8f16220f7e9ba4296974ad/The-Estimated-Amount-Value-and Calories-of-Postharvest-Food-Losses-at-the-Retail-and-Consumer-Levels-in-the-United-States.pdf

Chua Mason, Huang Shen & Bashir, Mohammed & Tan, K. & Chua, Hung Soon. (2019). A sustainable pyrolysis technology for the treatment of municipal solid waste in Malaysia. AIP Conference Proceedings. 2124. 020016. 10.1063/1.5117076.

DBKL, 2020. Hawkers Market and Night Market https://www.dbkl.gov.my/en/perkhidmatan/kemudahan-awam/

Domina, T., Koch, K., 2002. Convenience and frequency of recycling: implications for including textiles in curbside recycling programs. *Environmental Behavior*. 34 (2), 216– 238.

Dholakia, U., 2020. Why Are We Panic Buying During the Coronavirus Pandemic? [WWW Document]. Psychology Today. URL https://www.psychologytoday .com/us/blog/the-science-behind-behavior/202003/why-are-we-panic-buying- during-the-coronavirus-pandemic. (accessed 4.27.21).

Dong, L., Bouey, J., 2020. Public Mental Health Crisis during COVID-19 Pandemic. China. *Emergency Infection Disease*. 26, 1616–1618. doi:10.3201/eid2607.202407.

Duan, L., Zhu, G., 2020. Psychological interventions for people affected by the

COVID-19 epidemic. The Lancet Psychiatry doi:10.1016/S2215-0366(20)30073-0.

Durante, K.M., Laran, J., 2016. The effect of stress on consumer saving and spending. *Journal Marketing Research*. 53 (5), 814–828.

Eriksson, O., Finnveden, G., Ekvall, T., Bjo ̈rklund, A., 2007. Life cycle assessment of fuels for district heating: a comparison of waste incineration, biomass and natural gas combustion. *Energy Policy*. 35 (2), 1346–1362. https://doi.org/10.1016/j. enpol.2006.04.005.

Ericsson, N., Nordberg, Å., Berglund, M., 2020. Biogas plant management decision support – a temperature and time-dependent dynamic methane emission model for digestate storages. Bioresource Technology Reports. 11 https://doi.org/10.1016/j. biteb.2020.100454 art. no. 100454.

Eriksson, M., Strid, I., & Hansson, P.-A. (2014). Waste of organic and conventional meat and dairy products. A case study from Swedish retail. *Resources, Conservation and Recycling*, 83, 44–52.

Fanelli, R.M., Di Florio, A., 2016. Domestic food waste, gap in times of crisis. Italian Review of Agricultural Economics, 71 (2), 111–125.

Forbes H,QuestedT,O'ConnorC.United Nations Environment Programme. Food Waste Index Report-2021. 2021. ⌷SEP⌷

Garrone, P., Melacini, M., & Perego, A. (2014). Opening the black box of food waste reduction. *Food policy*, 46, 129–139.

Go ̇bel, C., Langen, N., Blumenthal, A., Teitscheid, P., & Ritter, G. (2015). Cutting food waste through cooperation along the food supply chain. *Sustainability*, 7, 1429–1445.

Goyal, K., Chauhan, P., Chhikara, K., Gupta, P., Singh, M.P., 2020. Fear of COVID 2019: First suicidal case in India. *Asian Journal Psychiatry*. 49, 101989. doi:10.1016/j.ajp.2020. 101989.

Gunders, D.; Jonathan, B. *Wasted: How America is losing up to 40 percent of its food from farm to fork to landfill*; ⌷SEP⌷Natural Resources Defense Council: New York, NY, USA, 2017.⌷SEP⌷

Hossain, M.S., Ferdous, S., Siddiqee, M.H., 2020. Mass panic during Covid-19 outbreak- A perspective from Bangladesh as a high-risk country. *Journal Biomedical Analytics*, 3, 1–3. doi:10.30577/jba.v3i2.40.

Ingram, J. S. I., Wright, H. L., Foster, L., Aldred, T., Barling, D., Benton, T. G., Berryman, P. M., Bestwick, C. S., Bows-Larkin, A., Brocklehurst, T. F., & Others (2013). Priority research questions for the UK food system. *Food Security*, 5, 617–636.

IPCC, 2001: *Climate Change 2001*: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change [Houghton, J.T., Y.

IPCC, 2007: Climate Change 2007: *The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z.

IPCC. *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*; IPCC: Geneva, Switzerland, 2019. Available online: https://www.ipcc.ch/report/2019-refinement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas- inventories/ (accessed on 21 January 2021). ⌷

Jribi, S., Ben Ismail, H., Doggui, D., Debbabi, H., 2020. COVID-19 virus outbreak lock- down: what impacts on household food wastage? *Environmental Development Sustainability*. 22, 3939–3955. doi:10.1007/s10668-020-00740-y.

Lipinski, B., Hanson, C., Lomax, J., Kitinoja, L., Waite, R., & Searchinger, T. (2013). Reducing food loss and waste. World Resources Institute Working Paper, June, .

Martinengo, M.C., 2014. Household Food Waste and Consumer Culture: reflections on Italian Behaviour. *Journal of Nutrition Ecology and Food Resources*, 2 (1), 73–77.

Meyer, S., 2020. Understanding the COVID-19 Effect on Online Shopping Behavior [WWW Document]. Big Commerce. URL https://www.bigcommerce.com/blog/ covid-19-ecommerce/. (accessed 4.27.21).

Paes, L.A.B., Bezerra, B.S., Deus, R.M., Jugend, D., Battistelle, R.A.G., 2019. Organic solid waste management in a circular economy perspective. A systematic re- view and SWOT analysis. *Journal of Cleaner Production*, 239, 118086.

Pai, S., Ai, N., Zheng, J., 2019. Decentralized community composting feasibility analysis for residential food waste: a Chicago case study. *Sustainable Cities and Society*. https://doi.org/10.1016/j.scs.2019.101683.

Ragoßnig, A., Hilger, H., 2008. Editorial: waste management: stepping up to the climate change challenge. *Waste Management Resources*. https://doi.org/10.1177/ 0734242X080260010601.

ReFED, 2016. A Roadmap to Reduce U.S. Food Waste by 20 Percent.

Saulo, A (2021). How the COVID-19 Pandemic has Impacted Food Waste. https://www.foodqualityandsafety.com/article/how-the-covid-19-pandemic-has-impacted-food-waste/

Spyridi, D., Vlachokostas, C., Michailidou, A.V., Sioutas, C., Moussiopoulos, N., 2015. Strategic planning for climate change mitigation and adaptation: the case of Greece. *International Journal of Climate Change Strategy and Management*, 7, 272–289. https://doi.org/10.1108/IJCCSM-02- 2014-0027.

SWCorp 2021. https://www.thestar.com.my/news/nation/2021/05/20/daily-food-waste-staggering. Thursday, 20 May 2021. Fatimah Zainal.

Tang, Z., Brody, S.D., Quinn, C., Chang, L., Wei, T., 2010. Moving from agenda to action: evaluating local climate change action plans. *Journal of Environment Planning and Management*. 53 (1), 41–62.

Thyberg, K.L., Tonjes, D.J., 2016. Drivers of food waste and their implications for sustainable policy development. *Resources, Conservation and Recycling*. doi:10.1016/j.resconrec. 2015.11.016.

Uçkun Kiran E, Trzcinski AP, Ng WJ, Liu Y. Bioconversion of food waste to energy: A review. *Fuel* 2014;134:389–99. https://doi.org/10.1016/j.

Yang, D.; Xu, L.; Gao, X.; Guo, Q.; Huang, N. Inventories and reduction scenarios of urban waste-related greenhouse gas emissions for management potential science of the total environment inventories and reduction scenarios of urban waste-related greenhouse gas emissions for management potential. *Science of Total Environment*. 2018, *626*, 727–736. [CrossRef] [PubMed]

RE-ENTERING POST-PANDEMIC ERA: LEATHER CRAFTING MODULE FOR B40 SINGLE PARENTS' ADDITIONAL INCOME GENERATION

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Abstract

The COVID-19 pandemic has changed the global economic landscape tremendously. As the nation's average household income shows significant reduction for the first time in the last 10 years, the pandemic effect can lead to further socioeconomic catastrophe among certain group in our community. The leather crafting module applied in this project is aimed to create a viable money generating platform for B40 single parents community towards re-entering post pandemic era. Participants were selected after a screening process which was fully conducted via mobile applications using Google application form and link which was advertised in Whatsapp, Facebook, Instagram and Twitter. For this first cohort, 4 single mothers were selected for an intensive 4-day workshop focusing on the foundation of leather products, fabrication technique, leather craft hand-manufacturing and marketing strategy sharing. The workshop was successfully conducted in collaboration with local crafting studio, Krava Sdn. Bhd. and an indie brand, Fid Harry. The outcome measures were based on short and moderate-term parameters. Short term parameters include the ability of participants to produce their respective assigned small leather products and copyright filing of the training module. Moderate term parameters were in the form of survey which was conducted at 6 months after the completion of the workshop. The survey includes a continuation of crafting activity, restriction factors due to worsening of the pandemic and amount of additional income from crafting activities, among others. In conclusion, this module is simple and viable for B40 single parents who have an interest in learning new skills which can be applied towards additional income generation. With appropriate training, tools and marketing strategy, the leather products can be made at home and marketed online, an economic ecosystem suitable during this pandemic.

Keywords: COVID-19; Single Parents; B40; Income Generation; Leather Craft

Introduction

The COVID-19 pandemic has changed the global economic landscape tremendously. As the nation's average household income shows a significant reduction for the first time in the last 10 years (1), the pandemic effect can lead to further socioeconomic catastrophe among certain group in our community. Single parents from B40 group can be considered as a high risk community entity which could be greatly affected and should be assisted throughout the pandemic. As they are struggling to juggle between

responsibility towards their children and economic survival, the effect of a worsening pandemic may lead to further stress and unwanted implications towards their respective livelihood and welfare.

Economic horizontal expansion focusing on additional income initiative during the pandemic is necessary to ensure that B40 single parents able to generate income. Relevant and viable small enterprises include food, clothing and cosmetic can be conducted through online trading, thus making it suitable to be done at home especially during movement control order (MCO).

However, the wide and open online market may not be that easy and too competitive thus making it a high risk entrepreneurship venture if not well prepared. Online business also requires persistent marketing and active involvement as effective communication is vital between a seller and a customer thus making such commitment very challenging for single parents.

Our proposed module is focused in niche area, personalized products, with potentially high profit margin and allow products crafted by single parents to be purchased from brand owner. These factors allow single parents involved to minimize waste and optimize profit based on the quantity of leather crafts being produced.

The leather-crafting module applied in this project aimed to create a viable money-generating platform for B40 single parents' community towards re-entering post-pandemic era. The objectives of this project are focused on short and moderate term aspects covering at the i) ability of participants to gain new skills, ii) producing leather crafts independently, iii) utilizing the skills to continuously produce goods to supply demand from a niche leather market thus generating additional income toward re-entering the post-pandemic era.

Methodology

Four participants were selected after a screening process which was fully conducted via mobile applications using Google application form and link. The application was advertised in WhatsApp and in social media platforms namely Facebook, Instagram and Twitter (Figure 1). Important information in application form includes age, occupation, salary range, address, availability of transportation and number of children, among others.

For this first cohort, the four selected B40 single mothers were enrolled into an intensive 4-day workshop focusing on the foundation of leather craft production, leather types, fabrication technique, leather craft hand manufacturing and marketing strategy sharing. The workshop was successfully conducted in collaboration with local crafting studio, Krava Sdn. Bhd. and an indie brand, Fid Harry.

The project outcomes were then measured using a questionnaire which consisted of components for short and moderate-termed parameters.

Results

The workshop was successfully conducted on 3rd, 4th, 7th and 10th of April 2021. The demographic data of participants are summarized in Table 1. Activities can be seen as in Figure 2 and 3. The module content and outcome measures that are categorized into short and moderate-termed parameters are summarized in Table 2.

Table 1: Participants' demographic data.

Particip ant	Age (y/o)	Numbe r of Childre n	Occupatio n	Income (Per month)	Educati on Level	Own transport	Place of stay
1	35	2	Unemploye d	Nil	SPM	Motorcyc le	Shah Alam
2	35	4	Lab assistant	RM 1,500	SPM	Car	Kuala Lumpur
3	50	1	Unemploye d	RM 1,500	SPM	No	Klang
4	65	2	Tailor	RM 1,200	SPM	Car	Bangsar

Table 2: Summary of module content and outcome measures.

	Phase	Item	Achievement
A)	Short Term	Introduction to leather	100%
		Leather cutting	100%
		Thread holes	100%
		Sewing	100%
		Finishing	100%
		Leather crafts (demonstration and practical)	100%
		Marketing strategy	100%
	Phase	**Parameters**	**Responses**
B)	Moderate Term (*assessed via questionnaire at 6 months)	Continuity of leather crafting activity	N/A
		Effective income generation	N/A
		Amount of additional income to date	N/A
		Willingness to be linked to industry	N/A
C)	Other outcome	Module copyright filing	In progress

Figure 1: E-posters for social media advertisement and announcement.

Figure 2: Participants at work under the supervision of workshop facilitator.

Figure 3: Certification ceremony following the completion of leather crafting workshop.

Discussion

The pandemic socioeconomic implication and demanding household multi-tasking among single parents must not be taken lightly thus necessitating serious commitment and initiative from relevant institutions to ensure their welfare and livelihood. Study by Ki et al. showed that the prevalence of depression differed notably between the single mothers and married women due to various factors. The study emphasized that assistance concerning economic stability and parenting support are important for single mothers to reduce depression (2).

Even though our project has indirectly encouraged the participants towards entrepreneurship, various business endeavour and opportunities during the pandemic must be explored with great care as failure to succeed may lead to further socioeconomic impact and risk of impaired well-being (3). A viable additional income generation platform for a high-risk group such as B40 single mothers is important. As such, our project has put great focus on various aspects to benefit the participants either

through new skills or personalized products development which cater a niche group to optimize returns for the B40 single parents.

Our project showed that this training module is suitable for social entrepreneurs who work closely with government agencies or corporate sectors under their respective corporate social responsibility initiatives. Social entrepreneurs have the know-how and expertise thus having the potential to become an effective bridge between the economically high risk group such as B40 single parents and the corporate or government agencies (3).

However, the long term socioeconomic impact of the pandemic towards a niche and personalized business or micro-industry must not be underestimated. This issue is evidenced from the difficulty of our participants in continuing the activity due to several issues such as prolonged MCO, limited supply of raw materials and low demand due to reduced consumer buying power.

Contribution
The workshop has successfully provided new skills to the participants to allow them to initiate independent effort to generate additional income into their household during the pandemic. Furthermore, the workshop and training module can be the foundation of any social entrepreneurship initiative focusing on leather crafting skills for any marginalized community group.

Impact
The workshop able to provide new skills and creating a viable additional income generation platform for B40 single parents. This initiative has indirectly contributed towards positive behavioural among participants and strengthening their self-esteem as single parents in facing this challenging period.

Conclusion
In conclusion, this module is simple and viable for B40 single parents who have interest in learning new skills which can be applied towards additional income generation. With appropriate training, tools and marketing strategy, the leather products can be made at home and marketed online, an economic ecosystem suitable during this pandemic.

More assistance in the form of grants and industrial engagement should be given to this type of social entrepreneurship as it proven to be an important component in nation building, welfare committed community and ensuring survival throughout the current challenging moments.

Acknowledgement

References
Morgan, P. J. and L. Q. Trinh. (2021). Impacts of COVID-19 on Households in ASEAN Countries and Their Implications for Human Capital Development. ADBI Working Paper 1226. Tokyo: Asian Development Bank Institute. Available: https://www.adb.org/publications/impacts-covid-19-households-asean-countries

Kim, G. E., Choi, H. Y., & Kim, E. J. (2018). Impact of economic problems on depression in single mothers: A comparative study with married women. PloS one, 13(8), e0203004. https://doi.org/10.1371/journal.pone.0203004

Fairlie R. (2020). The impact of COVID-19 on small business owners: Evidence from the first 3 months after widespread social-distancing restrictions. Journal of economics & management strategy, 10.1111/jems.12400. Advance online publication. https://doi.org/10.1111/jems.12400

Julie Pybus (2020). Pandemic pivoting: how Malaysia's social enterprises areresponding to the Covid-19 crisis. Available: https://www.pioneerspost.com/news-views/20200505/pandemic-pivoting-how-malaysia

THE IMPLEMENTATION OF FINANCIAL LITERACY MODULE FOR VOCATIONAL COLLEGE STUDENTS

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Abstract

COVID-19 pandemic has resulted in financial crisis worldwide. In such situation even having some knowledge of financial literacy will help individuals to financially sustain. Financial literacy is an important but often ignored skill that is vital for the young. Lack of knowledge and understanding of financial literacy will directly affect the well-being of the individual. Research indicates that a lack of financial literacy has been found to be correlated with higher debt burdens, incurring greater fees, loan defaults and loan delinquency. This project involves three phase: need analysis phase, development phase, implementation and evaluation phase. The objective of the first phase is to identify the importance of developing financial literacy module for vocational college students. Then, interview was conducted with the Principal and six teachers in a selected vocational college in Kuala Lumpur. The findings indicate that the financial literacy module prepares students to plan, manage and monitor their finance efficiently. In addition, this module also will train the students to develop self-leadership especially in prioritizing their wants and needs.

Keywords: Financial Literacy; Socio-Economic; Vocational; Malaysia

Introduction

Financial literacy is an important but often ignored skill that is vital for the young (Jayaraman & Jambunathan, 2018). Lack of knowledge and understanding of financial literacy will directly affect the well-being of the individual. Research indicates that due to low financial literacy, individuals experience a variety of problems that are related to personal finances such as savings, investments, or old plans, credit and so on (Mokhtar, Sabri, Catherine, Thinagaran & Dass, 2018). In addition, a lack of financial literacy has been found to be correlated with higher debt burdens, incurring greater fees, loan defaults and loan delinquency. Previous research indicates that socio-economic factors are important determinants of financial literacy (Lusardi, Mitchell & Curto, 2009; Ramasamy, Kenayathulla & Ghani, 2018). Most youths from lower income groups are less likely to be exposed in terms of financial literacy. Thus, there is an urgent need to provide exposure and basic knowledge of financial literacy to the youth

especially lower socio economic status to avoid persistence of this problem. If this problem is not curbed, it can cause serious problems such as having to declare bankruptcy at a young age; stress, depression and mental problems (Dewanty & Isbanah, 2018).

Hence, among the objectives of this project are: 1) identify the needs for the module development for financial literacy module, 2) to design and develop financial literacy modules based on the needs analysis, 3) to evaluate and gather feedback on the modules implementation. With these objectives in mind, this paper will only address one of the research questions developed for the project. The objective of the phase first is to assess the relevance and importance of financial literacy module for vocational college students especially students from B40 group. Various stakeholders' perspective have been sought to understand the importance of this module.

Methodology

These Financial Literacy modules were developed using Design and Developmental Research (DDR) approach, as stipulated by Richey and Klein (2014). The DDR approach involves 3 phases of development – Needs Analysis, Module Design & Development, and Module Implementation & Evaluation.:

Phase 1: Development Needs Analysis. The data collection for the need analysis involved seven respondents in total that comprised of a principal and teachers from a vocational college. Data collection was conducted through interview with the Principal and six teachers in a selected vocational college in Kuala Lumpur.

Phase 2: Module Design and Development. The findings of the study from phase 1 (needs analysis) were used as the basis input to design and develop the Financial Literacy Module. Nominal Group Techniques (NGT) and the Fuzzy Delphi approach were used as a form of data collection for designing the modules. In this phase, a total of 30 experts in the field of education and financial literacy. The modules were then used in the next phase – Phase 3.

A total of 4 modules were successfully developed from the previous Fundamental Research Grant Scheme (FRGS) and UMCares Community Engagement Grant (UMCARES) project and these modules were previously applied for Principal and undergraduate students. However, in this project, the module will be modified to fit the vocational college students.

Phase 3: Module Implementation and Evaluation. The modules that were designed and developed in Phase 2 will be implemented and evaluated for their effectiveness. The implementation of these modules will be conducted through series cover several seminar series: identifying and differentiating wants and needs, budgeting, insurance, savings, credit card and financial games. Each module covers its own objectives.

Result

The findings of the study through interview can be categorized into several themes as presented below:

Relevancy of the Modules

Findings on the relevance of the modules show that all respondents agree that the development of financial literacy module is relevant especially during this covid-19 pandemic where individuals need to be more careful in managing their personal finance.

"Financial literacy module is relevant when now we are in pandemic. Many people don't have job. They depend on their saving to live. I think financial knowledge will help to decide how much to save, which investment to do so that we are more prepared in case of emergency" (Principal; P1: 15-17)

In addition, especially during Covid 19 pandemic, health insurance becomes an important component of our life. Thus, financial literacy module such as insurance is highly relevant in current circumstance.

"Hospitalization cost is increasing. I think as we get older, we need a good health insurance. I think such knowledge is applicable especially due to pandemic, cases are increasing"   *(Teacher B; T2:16-18)*

Importance of the Financial Literacy Module

In addition, the current curriculum at the vocational college only covers the basic financial management course. Thus, it is important to develop the financial literacy module which comprises broader aspect such as saving, investment decisions so that they can make better planning for future. The financial knowledge provided in terms of budget preparation helps these students to prepare a weekly and monthly budget. In other words, this helps them to monitor their spending.

".... Currently, we only have basic financial management course. This is not enough. It is important to have other component as well such as e-wallet, e-finance" (Teacher A; T1:12-15)

Respondents also emphasized the importance of Financial attitude and behavior.
"Students need to learn how to self-discipline, not just buy according to trends or fashion" (Teacher B; T1:12-15)

Discussions: The findings indicate that financial literacy module is relevant especially in current pandemic where students need to have proper financial management skills so that they can save and aside emergency funds. In addition, investment decisions such as insurance plan, saving plans need to be planned properly so that we are well prepared for the unexpected situations. In addition, the current curriculum at the vocational college only covers the basic financial management course. Thus, it is important to develop the financial literacy module which comprises integrated module such as saving, investment decisions, e-finance, financial attitude and behaviors.

Contribution

This study will contribute to the development of financial literacy Module for teachers and students. In addition, the content of the financial literacy module will be designed to meet the digital generations through financial literacy games. Financial literacy module which is more comprehensive would be able to use for other community as well

such as single mothers and indigenous community so that sustainability of this modules can be enhanced.

Impact
Financial Literacy module is expected to result in behavioural change where individual students and teachers would be wiser in making financial decisions especially in consumptions, expenditures, investments and financial planning for the future. Students are able to prepare financial budgets control mechanism for their saving and spending.

Conclusion
These findings provide insights to policymakers and relevant agencies on the appropriate interventions that need to be made to ensure financial well-being of our future generations. Financial literacy seminars which includes relevant modules should be introduced in vocational colleges and all higher institutions since students are less likely to be exposed to such skills at the younger age. Financial literacy skills become an important skills needed for everyone especially when we are facing pandemic such as Covid-19 where we need to prioritize our wants and emergency funds. Financial planning and decision making skills are key to financial wellbeing.

References
Dewanty, N. & Isbanah, Y. (2018). Determinant of the Financial Literacy: Case Study on Career Woman in Indonesia. *ETIKONOMI*, *17*(2), 285-296.

Jayaraman, J. D., & Jambunathan, S. (2018). Financial literacy among high school students: Evidence from India. *Citizenship, Social and Economic Education*, *17*(3), 168-187.

Lusardi, A., Mitchell, O. & Curto, V. (2009). Financial Literacy among the Young. *Journal of Consumer Affairs*, Summer, 358 – 380.

Ramasamy, M., Kenayathulla, H. B., & Ghani, M. F. A. (2018). Faktor Sosioekonomi Yang Mempengaruhi Kemahiran Literasi Kewangan Pelajar Sekolah Menengah Di Negeri Sembilan. *JuPiDi: Jurnal Kepimpinan Pendidikan*, *5*(3), 10-33.

Mokhtar, N., Sabri, M. F., Catherine, S. F., Thinagaran, A., & Dass, L. M. Profile and Differences in Financial Literacy: Empirical Evidence.

Ramasamy, M., Kenayathulla, H. B. & Ghani, M. F. A. (2018). Faktor Sosioekonomi yang mempengaruhi kemahiran literasi kewangan pelajar sekolah menengah di Negeri Sembilan. *JuPiDi: Jurnal Kepimpinan Pendidikan*, *5*(3), 10-33.

Richey, R. C., & Klein, J. D. (2014). Design and development research: Methods, strategies, and issues. Routledge.

ONLINE SALES: JOB COACH PROGRAM FOR DISABLED YOUTH

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Abstract

School leavers from the special education system may be lacking of income generating skills. They may not be able to survive on their own; however, by working collaboratively with non-profit organisations (NPOs) in their local community, they can get sufficient support to generate income online. The objectives of this community project are: 1) to increase knowledge and practice for online sales, 2) to increase self-skills in marketing and sale of products and services, and 3) to increase self-confidence among the trainees. We appointed a job coach to teach online sales knowledge to the teachers at the chosen association for disabled youth, Pondoku. Teachers at Pondoku will have to prepare materials to be taught to Pondoku trainees. In addition, the trainees learned marketing strategies to generate revenue through online sales. To increase their self-confidence of Pondoku trainees, several charity activities to the local community were done collaboratively with mosque committee members. As a result of this study, we have produced seven (7) profitable activities and nine (9) non-profit activities. The hybrid approach to survival of the NPO is vital in addition to the support from industry partners. The program aims to not only cultivate the awareness of improving self-skills for online income-generation; but also discover the non-profit organisation's survival capabilities with the help of the local community and industries.

Keywords: Disabled Youth; Online Sales; Non-Profit Organisation Survival; Income Generation

Introduction

Zukowski et al. (2021) reported that the non-profit organisation (NPO) for disadvantaged adult learners like school dropouts, refugees etc., using online learning, platform, and products are not the panacea for youth unemployment. It is even worse for disabled youth that need to compete with other abled youth to find a job. Disabled youth need to be guided and supported physically and mentally. Pondoku is a non-profit organization (NPO) that is working on a model for male disabled youth aged 16 years old and above (called trainees) to get direct exposure to living in the local community. Trainees will have to stay five days and four nights (Monday to Friday) at the designated premises and will get a monthly allowance contribution. More interestingly, Pondoku trainees are required to practise an Islamic lifestyle and carry out activities for inviting sustenance, such as charity, recitation of *ruqyah* and *doa* prayers for the surrounding community. In order for the NPO to continue facilitating disabled youth,

they need to be helped to improve their knowledge in terms of income-generating skills. According to Haugh et al. (2021), NPOs need to be cultured into social enterprises, where they should also look into profit activities to survive. However, Avelino and Palacio (2021) emphasized that the significant difference between profit and non-profit organisations is in terms of ethics and high social responsibility for NPOs. Paluszak et al. (2021) (Paluszak et al., 2021)suggested the activities undertaken for the resilience of NPOs should focus on the following: 1) scope of activities, 2) cooperation, and 3) finance.

Methodology

We appointed a job coach to teach online sales knowledge to the teachers at Pondoku. Teachers at Pondoku and the management will be brainstorming on activities for income generation, either as profit or non-profit activities. These activities were categorised into the scope, business partner for cooperation and our strength of finance (Paluszak et al., 2021). Once Pondoku receives the products from the business partner, the trainees will be guided physically for repackaging, sorting, and marketing them on the online platform. Several charity activities with the local community and mosque committee members have been conducted to increase self-confidence among the trainees.

Results

As a result of this project, we had two separate online platforms for generating profit and for charity, respectively (see Figure 1 and Figure 2). Trainees have been trained as well in terms of increasing their confidence by appointing them to give away free food to the community. The food (bubur lambuk) was donated by generous individuals for this activity (see Figure 3).

Figure 1: Onpay platform sponsored by AT Fruit Fruit Sdn. Bhd.
https://atfruits.onpay.my/

Figure 2: Pondoku own Onpay online platform mainly for charity activities
https://rezeki.pondoku.org.my/

Figure 3: Trainees are distributing some food donation to the public around the mosque area.

Discussion

Pondoku is one of the useful examples to be created in every local community to help these disabled youth to provide services and contribute to the community. In addition to the focused spiritual activities that take care of and pray for the surrounding community, the NPOs who take care of them are encouraged to also be proactive with more profitable activities. These activities can be successful if they can work closely with the industry. These exciting, profitable and useful activities are the results of the highly motivating coach and all the supportive community players.

Contribution

This project has contributed to the awareness for NPOs to come out with activities for profit and non-profit activities for the future resilience of NPOs in supporting disabled youth in the local community.

Conclusion

The program aims to not only cultivate their awareness of the need to improve self-skills to generate income but also discover the capabilities NPOs need for survival with the help of the local community and industries.

Acknowledgement

References

Avelino, C. T., & Palacio, J. R. S. (2021). Ethics and Social Responsibility in strategic alliances. The case of alliances between for-profit and non-profit organizations. *Revesco-Revista De Estudios Cooperativos*(137), Article e73863. https://doi.org/10.5209/reve.73863

Haugh, H., Robson, P., Hagedoorn, J., & Sugar, K. (2021). The nascent ecology of social enterprise. *Small Business Economics*. https://doi.org/10.1007/s11187-020-00442-9

Paluszak, G. T., Wisniewska-Paluszak, J. A., Schmidt, J., & Lira, J. (2021). The Organisational Resilience (OR) of Rural Non-Profits (RNPOs) under Conditions of the COVID-19 Pandemic Global Uncertainty. *Agriculture-Basel*, *11*(7), Article 670. https://doi.org/10.3390/agriculture11070670

Zukowski, I., Parker, Z., Shetterly, D., & Valle, K. (2021). Public health crises compounded: A high school equivalency context in the time of a pandemic. *International Review of Education*, *67*(1-2), 31-52. https://doi.org/10.1007/s11159-021-09889-8

CHALLENGES IN DELIVERING SOCIAL INTERVENTION PROGRAMS TO MARGINALIZED GROUPS DURING COVID-19 PANDEMIC PERIOD

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Abstract

Marginalized communities, especially in the capital Kuala Lumpur are vulnerable due to COVID-19 pandemic and Movement Control Order. Life with various deficiency and unfortunate historical background make them living in difficulties. These at-risk situations may react as a hurdle to provide a conducive social environment for children's emotional and psychosocial development. In addition to financial assistance, psycho-educational support is also important to empower an individual to improve his quality of life. Social intervention programs using psycho-educational approach were designed for three different target groups; mothers/fathers/guardians, adolescents and children. The conducted program has given positive impact and social awareness to the participants. The marginalized group should not be excluded in the national development and social agenda because they also have the same rights as other groups, in fact they need more attention due to the poor living conditions and disadvantages. The challenge of conducting social intervention programs during pandemic is more obvious when the focuses of some community members are to meet the physiological needs for life such as food and shelter to maintain the survival compare to other type of needs. The research findings have to be taking into consideration in any post-pandemic recovery plan by the government or local agencies. The innovative and sustainable recovery programs should be inclusive without anyone left-behind.

Keywords: Marginalized Community; Lack of Various Needs; Psycho-Educational Support; Social Intervention; Kuala Lumpur

Introduction

Marginalized communities, especially in the capital Kuala Lumpur are vulnerable due to Covid-19 pandemic and Movement Control Order. They are classified as marginalized because some are low socio-economic status and can only afford to rent small rooms above shop houses and are not eligible to apply for government social assistance due to the lack of certain documents such as marriage certificates, birth certificates, and some even have no bank accounts. Some of them have criminal records, former drug rehabilitation center trainees and former inmates of orphanages. Most of them are also have a low level of education and a low level of parenting skills practice. These at-risk situations may react as a challenge to provide a conducive social environment for children's emotional and psychosocial development.

Children who come from unstable families and suffer from a lack of various needs are found to be at-risk for developing into troubled adolescents and adults. In addition to financial assistance, psycho-educational support is also important to empower an individual to improve his quality of life. These at-risk situations may react as a challenge to provide a conducive social environment for children's emotional and psychosocial development. Therefore, the programs and activities that will be carried out through this project are expected to give an inner motivation to help the community. Thus, this project aims to achieve the following objectives:

1. Improve parenting skills to parents or guardians to children.
2. Improve knowledge of the reproductive health of adolescents.
3. Improve adolescents' understanding of self-identity and preparation for adolescence.

Methodology

In order to achieve the objectives of the project, three intervention programs were designed for three different target groups, namely mothers/fathers/guardians, adolescents and children (aged 10 years and above). Project participants were identified as a result of collaboration with an NGO, Pertubuhan Kebajikan Ar-Riqab Kuala Lumpur which has direct access to the community and takes on social responsibility to meet some of their basic needs. The program for each target group was held twice. As such, each target group went through a 16-hour program. Program evaluation is held at the end of each session to measure the effectiveness of the program. The program operator consists of members of the research team with their respective expertise. As a measure to ensure the sustainability of the project, researchers collaborate with NGO to continuously monitor the progress of program participants as well as the process of knowledge transfer to NGO to continue the program to other participants in the community in the future.

Results

Since the country is still in a period of Movement Control Order, the program cannot be carried out physically according to the planned schedule. The Effective Parenting Program was implemented in collaboration with Ar-Riqab KL in February 2021. The situation of the country which is currently in Movement Control Order due to COVID-19 has limited research activities; activities in large numbers and over a long period of time are not allowed. Therefore, the program was conducted on 15 parents. Subsequent programs were postponed to a more appropriate time, depending on the circumstances of the covid-19 pandemic and government directives.

Figure 1: Effective Parenting Skill Program

Discussion

The conducted program has had an impact on the participants. The majority of program participants acknowledged that their knowledge and skills about parenting increased after the program. Nevertheless, the covid-19 pandemic has caused certain limitations for the program to run according to the planned schedule. Recognizing the limitations to physical participation, the program is also difficult to run online for a number of factors. Among the factors is that not all community members have a computer or smartphone. If they have, not everyone can afford internet data and also, not everyone is IT literate. Most of them who know the internet are savvier in browsing entertainment-based applications such as facebook, instagram and tiktok. A more important factor during the pandemic which has lasted for more than a year in the country is that the community is less interested in such programs because they are more focus on survival matters such as obtaining daily food resources, finding finance to ensure rent is not overdue and finding new jobs (for those who lost their jobs due to MCO).

Contribution

In addition to delivering this psycho-educational program, the more interesting part is that the networking was built. The program participants still contact the researchers to get views, ideas and suggestions after the program. In addition, researchers are also invited to provide expert services into a drug rehabilitation support group that exists in their community. Furthermore, being empathy to the basic needs of the target group, the researchers also worked with NGO to obtain assistance funds to help meet some of the basic needs of the community.

Impact

The conducted program has given a positive impact and social awareness to the participants. Some participants are still in touch with researchers until now to get opinions or refer to something specifically about the family aspect. There were also participants who shared about the positive development of themselves as a result of the programs they had gone through.

Conclusion

The marginalized group should not be excluded in the national development and social agenda because they also have the same rights as other groups, in fact they need more attention due to the poor living conditions and disadvantages. The challenge of conducting social intervention programs during the pandemic is more obvious when the focuses of some community members are to meet the physiological needs for life, namely food and shelter to maintain the survival.

Acknowledgement

References

Bhopal, K., & Deuchar, R. (Eds.). (2015). Researching marginalized groups. Routledge.

Davis, S. A., Mendenhall, A. N., Levy, M. M., Holmes, C., Fairman, M., & Jung, E. (2020). Delivering the Strengthening Families Program to Native American Families During COVID-19: Lessons & Next Steps. *Greenwich Social Work Review*, *1*(2), 141-149.

Larsen, L., Helland, M. S., & Holt, T. (2021). The impact of school closure and social isolation on children in vulnerable families during COVID-19: a focus on children's reactions. *European child & adolescent psychiatry*, 1-11.

Russell, S.A. (2021). Within Our Grasp: Childhood Malnutrition Worldwide and the Revolution Taking Place to End It. Pantheon Books.

Waters, L., Cameron, K., Nelson-Coffey, S. K., Crone, D. L., Kern, M. L., Lomas, T., ... & Williams, P. (2021). Collective wellbeing and posttraumatic growth during COVID-19: how positive psychology can help families, schools, workplaces and marginalized communities. The Journal of Positive Psychology, 1-29.

Werner, D. (2018). Disabled Village Children: A Guide for Community Health Workers, Rehabilitation Workers, and Families. The Hesperian Foundation.

POST COVID-19 ECONOMIC STRENGTHENING PROGRAM FOR DEAF COMMUNITY IN MALAYSIA: A COMMUNITY BASED APPROACH

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Abstract

The COVID-19 pandemic has indirectly affected most of our lives and changed our daily routines. Many have lost their jobs and their source of income. This has a huge impact on many even more for the B40 group including the deaf community. The majority of them are in the low-income group who are very much affected by the COVID-19 pandemic both economically and emotionally. Hence, this program is designed to provide an avenue for the deaf community to generate income through skill training in online business. The participants were among deaf people who are interested in starting an online business and those already running an online business. This project involved a series of workshops, covering topics such as Basic Concepts of Online Business, Digital Marketing, Basic Business Financial Management and Language & Communication Skills Workshop. A total of 126 persons with hearing- impaired participated in the program. These upskilling workshops are useful and great platform for the participants to explore the potential of online business in generating income, especially in time of the pandemic COVID-19 crisis.

Introduction

At the end of 2019, the world was shaken by a type of virus, known as CoronavirusCOVID-19pandemic which has now resulted to over 4 million deaths and reported over 2 billion cases around the world. As of early August 2021, Malaysia reported over 1 million cases and over 11,000 deaths. COVID-19 has had a profound impact on all walks of life in the world, including Malaysia, even more so from an economic aspect. Many have lost their jobs and have no source of income. This situation is more felt by the low-income group, the B40 including deaf people where the majority are in the B40 group.

The number of PWDs in Malaysia is reported to increase every year and is projected to reach half a million by 2020. People with disabilities (PWDs) in Malaysia are a minority that is still marginalized in terms of socio-economic progress. The increasing population of the disabled in Malaysia from year to year makes them a significant group to be given attention. The hearing impaired is reported at 44,523 in 2018. The hearing impaired (deaf) group is more discriminated against compared to the physical and visually impaired (Jani et al., 2020). They have difficulty communicating with others and the shortcomings they face cannot be easily understood by the community. Their right to get support/ assistance is less fought than the category of physically and visually impaired. Such a situation indirectly affects their well-being and their lives more so during this pandemic crisis Literatures showed entrepreneurship opens income opportunities to generate individual economies through their creativity and innovation (Okpara, 2007; Sarri et al., 2010). It can also reduce the problem of poverty and national imbalances. Thus, technological knowledge and supports can be given to this community for them to be self-sufficient and financially independent (Phaal et al., 2004). The pandemic has changed the business norms that require different business approaches to ensure business viability such as online business. Therefore, this project aims to empower deaf people already in small businesses or those who have the potential of going into an online business. The specific objectives are:

1.   to increase job opportunities through online business

2.   to increase household income through online business

3.   to enhance the financial management skills of participants

Methodology

This program is very much an action-oriented and community-based research generating knowledge through collaborative university-community partnership, in this context between Universiti Malaya and Malaysian Federation for the Deaf (MFD). Malaysian Federation of the Deaf (MFD) is a national level organization with 15 affiliated members consisting of state-level Deaf people from all over the country including the Association of Parents and Guardians of the Deaf, Kuala Lumpur and the Malaysian SignLanguage Interpreter Association. MFD became the voice of the Deaf people in this country in an effort

to improve the standard of living and socio-economy as well as fight for their needs/rights.

Target Community Group – Deaf community registered with Malaysian Federation for the Deaf (MFD), Nationwide
Approach

Skill Enhancement Workshops

1. Basic Concepts of Online Business - exposure to Basic Concepts of Online Business, The Why, What and How?
2. Digital Marketing - product Marketing via online, such as *Facebook, Instagram,*
   Whatsapp etc.
3. Basic Business Financial Management - basic bookkeeping
4. Language (BM) and Communication Skills

Workshop Implementation
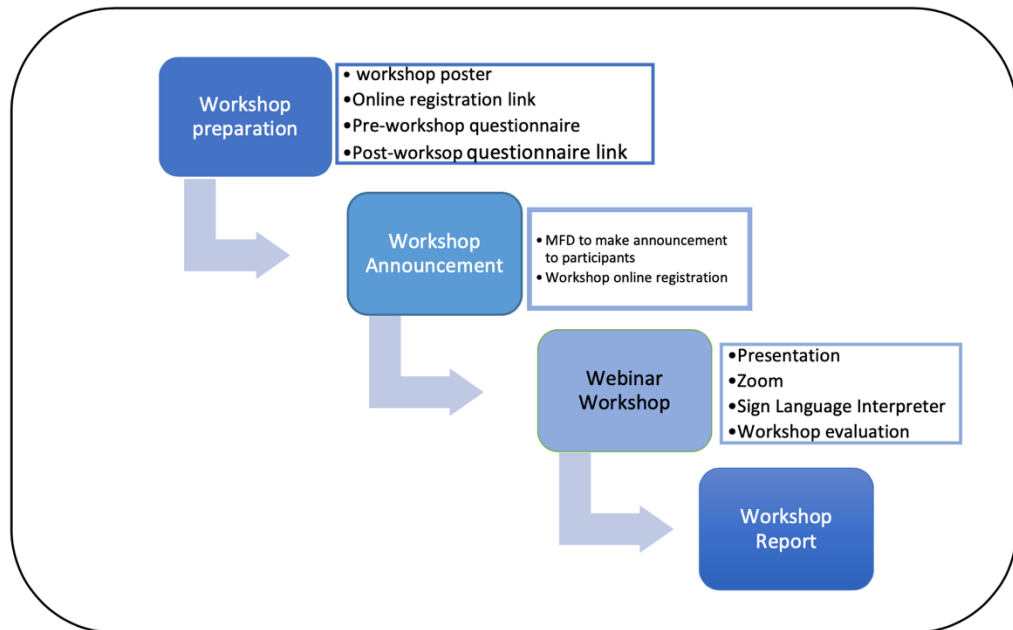
Figure 1: Workflow

Results

The implementation of the program was through a series of workshops designed to provide
skills in online business to enable participants to generate and increase family income thus
enabling them to be more independent and self-sufficient.

I. **Digital Marketing:** product Marketing via online, such as *Facebook, Instagram, Whatsapp etc.*

Workshop: Social-Media and Marketing
Exposure to the use of social media such as facebook (FB)   and Whatsapp in promoting
products more effectively (Edosomwan et al., 2011; Hassan et al., 2015).

Table 1: Profile of participants

Participants	Freq.	%
Gender		
Male	8	36.4
Female	14	63.6
Total	**22**	**100%**
Age		
±	8	36.4
±	7	31.8
±	4	18.2
±	3	13.6
Total	**22**	**100%**
Marital Status		
Divorced	1	4.5
Married	14	63.6
Single	7	31.8
Total	**22**	**100%**
Household Income		
Below RM500	5	23.8
RM501 - RM1000	**5**	23.8
RM1001 - RM1500	2	9.5
RM1501 - RM2000	3	14.3
RM2001 - RM3000	2	9.5
More than RM3000	4	19
Total	**21**	**100%**

Participants	Freq.	%
Locality		
Kedah	1	4.5
Kelantan	2	9.1
Kuala Lumpur	7	31.8
Pahang	1	4.5
Putrajaya	1	4.5
Selangor	8	36.4
Terengganu	2	9.1
Total	**22**	**100%**
Highest Level of Education		
Primary education	1	4.5
Secondary education	5	22.7
Certificate	12	54.5
Diploma	2	9.1
First Degree	2	9.1
Total	**22**	**100%**
Year in Business		
Less than 1 year	12	54.5
± \HDUV	4	18.2
± \HDUV	2	9.1
More than 10 years	4	18.2
Total	**22**	**100%**

A total of 22 participants attended this workshop. The majority of them were women and over 60% of the participants were in the age group between 21 - 40 years. Most of the participants were also in the B40 group and the majority had secondary education. Generally, many of them have just started an online business in less than 1 year. The most popular modes of product marketing that they use are WhatsApp and Facebook and the most effective way for them is WhatsApp.

> II.   **Basic Concepts of Online Business**: exposure to Basic Concepts of Online
> Business, The Why, What and How?

Workshop: The Basics of Online Business: Marketing and Branding
Exposure to basic concept of online Business and on how to start online business (Goggin & Newell, 2007).

Table 2: Profile of participants

Participants	Freq.	%
Gender		
Male	7	26.9
Female	19	73.1
Total	26	100%
Age		
±	12	46.2
±	6	23.1
±	5	19.2
51 - 60	3	11.5
Total	26	100%
Marital Status		
Divorced	1	3.8
Married	13	50
Single	12	46.2
Total	26	100%

Participants	Freq.	%
Locality		
Kelantan	5	19.2
Kuala Lumpur	3	11.5
Negeri Sembilan	5	19.2
Pulau Pinang	1	3.8
Sabah	2	7.7
Selangor	10	38.5
Total	26	100%

Highest Level of Education		
Primary education	6	23.1
Secondary education	1	3.8
Certificate	15	57.7
Diploma	1	3.8
First Degree	3	11.5
Total	26	100%

Household Income		
Below RM500	3	11.5
RM501 - RM1000	7	26.9
RM1001 - RM1500	5	19.2
50 ± 50	5	19.2
RM2001 - RM2500	1	3.8
RM2501 - RM3170	2	7.7
RM3171 - RM3970	1	3.8
50 ± 50	2	7.7
Total	26	100%

III. **Workshop**: Basic Business Financial Management

Provide exposure to participants on the basics of financial management in business as well as an understanding of financial inflows and outflows.

Table 3: Profile of participants

Participants	Freq.	%
Gender		
Male	11	35.5
Female	20	64.5
Total	31	100%
±	10	32.3
±	14	45.2
±	4	12.9
±	3	9.7
Total	31	100%
Marital Status		
Divorced/Widow	3	9.7
Married	20	64.5
Single	8	25.8
Total	31	100%
Household Income		
Below RM500	3	11.1
RM501 - RM1000	7	25.9
RM1,001 - RM1500	7	25.9
RM1501 - RM2000	2	7.4
RM2001 - RM3000	3	11.1
More than RM3000	5	18.5
Total	27	100

Participants	Freq.	%
Locality		
Kedah	2	6.5
Kelantan	2	6.5
Kuala Lumpur	8	25.8
Melaka	1	3.2
Pahang	1	3.2
Selangor	16	51.6
Terengganu	1	3.2
Total	31	100%
Highest Level of Education		
Primary education	1	3.2
Secondary education	3	9.7
Certificate	19	61.3
Diploma	4	12.9
First Degree	4	12.9
Total	31	100%

A total of 31 people were involved in the workshop, the majority of which were women. A large group of participants in the age group of 31-40 years. Many of them with a Certificate Education level. With regards to financial management, only a handful have ever attended related courses, and most have not. Sales payment methods are online as well as COD. The majority reported having separate accounts, namely business accounts and personal accounts. Existing business records are in the form of cash books, sales revenue, expenses and profit and loss.

IV. **Workshop:** Language & Communication Skills for the Deaf

The workshop aims to enhance the skills of Bahasa Melayu and communication among the deaf so that they can communicate better and more effectively.

Table 4: Profile of participants

Participants	Freq.	%
Gender		
Male	16	40
Female	24	60
Total	**40**	**100%**
Age		
±	6	15
±	20	50
±	8	20
51 - 60	4	10
> 60	2	5
Total	**40**	**100%**
Marital Status		
Divorced/Widow	2	5
Married	27	67.5
Single	11	27.5
Total	**40**	**100%**
Locality		
Johor	1	2.5
Kedah	1	2.5
Kelantan	4	10
Kuala Lumpur	11	27.5
Negeri Sembilan	1	2.5
Perak	3	7.5
Pulau Pinang	3	7.5
Sabah	1	2.5
Selangor	14	35
Terengganu	1	2.5
Total	**40**	**100%**

Participants	Freq.	%
Highest Level of Education		
Primary education	1	2.5
Secondary education	10	25
Certificate	14	35
Diploma	9	22.5
First Degree	3	7.5
Master	2	5
Total	**39**	**100%**
Household Income		
Below RM500	7	18.4
RM501 - RM1000	7	18.4
RM1001 - RM1500	4	10.5
50 ± 50	9	23.7
RM2001 - RM2500	4	10.5
RM2501 - RM3170	3	7.9
RM3171 - RM3970	1	2.6
50 ± 50	3	7.9
Total	**38**	**100**

A total of 40 people attended the workshop. Most are in the age group of 31-40 years. The highest group of participants had Certificates, followed by those with Secondary education and Diplomas. There are also participants who have degrees and Masters. Viewed from the aspect of reading habit, in general, majaroty do not read newspapers, 24% read daily and the rest occasionally. About 20% of them have read more than 5 novels and 50% have never read any novels.

Discussion

With the "*new skill" and "know how"*, the community should be able to generate steady income, self-sufficient and independent to continue and grow in their respective businesses. The workshop and activities will spark an interest among the deaf community and teach them what, why and how business online can be a lucrative mode of income generation as alternative to a normal paid job.

Contribution

The Economic Strengthening Program is designed to benefit the deaf community and to improve their livelihoods as well as wellbeing in facing economic and social challenges during the COVID-19 pandemic crisis.

Conclusion

In conclusion, the project is designed along the line of issues and problems and the needs of the project as an intervention program for the target participants ± the deaf community. It hasits two-prongs approach, namely, Community-Based: enhancement program with the target community; and Research element: needs analysis on the community - identifying skills and training required to equip themselves with the tools for income generation and self-sufficientas well as resilient in times of this pandemic. This is vital for the family and their welfare and sustainability.

Acknowledgement

References

Edosomwan, S., Prakasan, S. K., Kouame, D., Watson, J., & Seymour, T. (2011). The history of social media and its impact on business. *Journal of Applied Management and entrepreneurship, 16*(3), 79-91.

Goggin, G., & Newell, C. (2007). The business of digital disability. *The Information Society, 23*(3), 159-168.

Hassan, S., Shiratuddin, N., & Ab Salam, S. N. (2015). Social media as persuasive technology for business in Malaysia. *International Journal of E-Business Research (IJEBR), 11*(2), 18-39.

Jani, R., Alias, A. A., & Tumin, M. (2020). Persons with disabilities' education and quality of life: evidence from Malaysia. *International Journal of Inclusive Education*, 1-13.

Okpara, F. O. (2007). The value of creativity and innovation in entrepreneurship. *Journal of Asia entrepreneurship and sustainability, 3*(2), 1.

Phaal, R., Farrukh, C. J., & Probert, D. R. (2004). A framework for supporting the management of technological knowledge. *International Journal of Technology Management, 27*(1), 1-15.

Sarri, K. K., Bakouros, I. L., & Petridou, E. (2010). Entrepreneur training for creativity and innovation. *Journal of European Industrial Training.*

SYMPOSIUM 5: EDUCATION

INNOVATIVE ONLINE TEACHING-LEARNING PRACTICES WITH MICROSOFT 365 EDUCATION

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Abstract

Schools in Malaysia were closed as part of the Movement Control Order (MCO) for the most part of 2020 and 2021. Consequently, some teachers turned to online methods of instruction, developing workarounds and utilising video-conferencing and other productivity tools while students are required to learn from home as an effort to contain the spread of COVID-19 in the country. However, teachers had little support and guidance in planning online instructions and getting students to participate in a virtual classroom. This study is a portrayal of a project aimed to train teachers on the integration of Microsoft 365 Education technology in the teaching and learning process. 214 teachers from 20 schools in Kuala Lumpur and Selangor participated in a 'hands-on' workshop series. Feedback on the project impact and effectiveness was gathered using a quantitative approach via a survey instrument. Findings from a descriptive analysis shows Microsoft 365 Education were very well received by the teachers, who found it helpful, complementing their pedagogical and discipline related skills. With Microsoft Teams particularly, teachers are more efficient in administrative tasks, able to build an online collaborative classroom and succeeded in creating more interactive activities for their students. This study also presents some new evidence on the potential of Microsoft 365 Education technology for educational innovations and creativity in classrooms.

Keywords: Teacher Training; Training Programme Evaluation; Microsoft 365 Education

Introduction

Students across the country have been out of school since mid-March 2020 when Malaysia entered the movement control order command (MCO) phase to curb the spread of the COVID-19 epidemic (Adams, Mabel, & Sumintono, 2020). Schools have shifted from face-to-face learning to e-learning, with students required to study at home (Adams et al., 2021). Although, schools across the country will welcome back all primary and secondary school students in stages, the learning process of students after the opening of schools will have a difference after experiencing online learning for many months.

A sudden change to a face-to-face learning environment maybe awkward among students and to a certain teachers who have fully embraced remote teaching. Students may be at risk of falling behind in education. This study is a portrayal of a project aimed to train teachers on the integration of Microsoft 365 Education

technology in the teaching and learning process. The goal is to expose teachers to Microsoft 365 Education technologies and resources that support Blended Learning integration in line with 21st Century Skills and the UNESCO ICT Framework for teachers (UNESCO, 2011).

Project Objectives

1. To develop and train 20 primary and secondary school teachers in Petaling Jaya to be official *Microsoft Innovative Teacher Trainers* in the effective use of Microsoft 365 Education for the learning and teaching process.

2. To certify 214 teachers who successfully complete the Microsoft 365 Education module and award these teachers with a *Microsoft Innovative Teachers* certificate.

Methodology

The training was divided into two phases. In phase one, a six hour online training was held to train twenty primary and secondary school teachers in Petaling Jaya. The project leader along with four Microsoft Master Trainers was the instructors, using a newly developed Microsoft 365 Education module. Teachers who completed phase one was certified as *Microsoft Innovative Teacher Trainers*.

The second phase involved another six hours of online training given by the ten teachers who was certified as *Microsoft Innovative Educator Master Trainers* earlier. This time, the certified teacher trainers trained ten teachers each from their schools using a Microsoft 365 Education module developed on their own in consultation with the project leader and four Microsoft Master Trainers.

The project leader and Microsoft Master Trainers were the facilitators in the second phase. A total of 200 teachers from twenty primary and secondary schools in Petaling Jaya were trained in the second phase of the project and awarded with a *Microsoft Innovative Teachers* certificate upon successful completion of the training program.

This project utilized a survey instrument to gather teachers' feedback on the project impact and effectiveness. The instrument consisted of twelve items with a five-point Likert rating scale (Poor = 1 point, Fair = 2 points, Good = 3 points, Very good = 4 points; and Excellent = 5 point). Likert rating scale is commonly used in social sciences studies and attitudes score (Joshi et al., 2015) and its frequently used for respondents to indicate their individualized responses (Croasmum & Ostrom, 2011). Informed consent was sought and participation from the teachers was voluntarily.

Results

Statistical Packages for Social Sciences (SPSS) software version 25 was used to analyse the data collected. Descriptive statistics was used based on the indicators of mean and standard deviation.
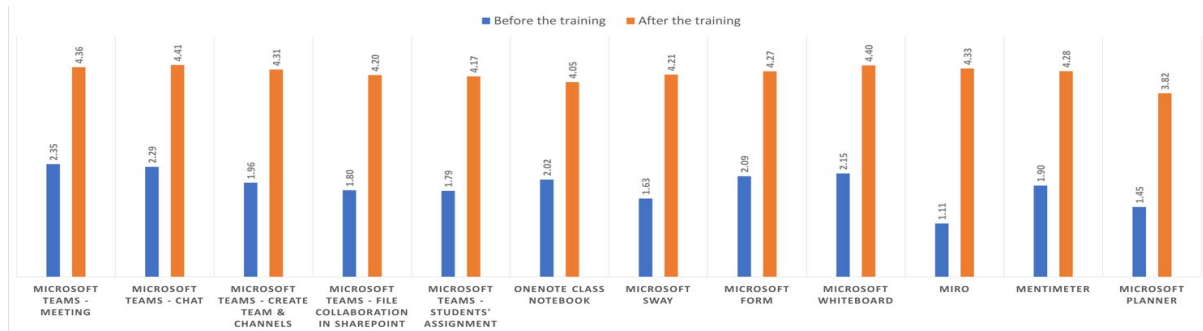
Figure 1: Mean score on the project impact and effectiveness according to each component.

Findings in Figure 1 indicate the impact and effectiveness of the Microsoft Innovative Teachers: Train the Trainers program. 214 teachers from twenty primary and secondary schools in Petaling Jaya showed significant improvement in terms of skills and knowledge in the use of Microsoft 365 Education technology. This can be observed from the significant mean differences between pre-program data and post-program data.

Discussion

This project aimed to train teachers on the integration of Microsoft 365 Education technology in the teaching and learning process. The skills and knowledge obtained from this program will have a sustainable impact on 214 primary and secondary school teachers in Petaling Jaya. Teachers are able to use Microsoft 365 Education to support the integration of blended learning in their classrooms and the application can still be used without any additional costs in the future. In addition, the schools involved in this project will have 20 certified *Microsoft Innovative Teacher Trainers* dedicated to training and assist teachers in terms of technical aspects and the integration of blended learning in their schools.

Conclusion

As the thrust towards implementing remote teaching gathers pace during this period of COVID-19 pandemic, training programs and support systems must be put in place to ease the adaption process for teachers (Rasouli et al., 2016). There is also a need to engage students in providing their input on how online activities can be carried out during a crisis such as a pandemic where face-to-face learning is not permitted. Their voices could provide essential information for teachers to gauge the effectiveness of their teaching and thus provide relevant interventions for their students.

Acknowledgement

References

Adams, D., Mabel, H. J. T., and Sumintono, B. (2020). Students Readiness for Blended Learning in a Leading Malaysian Private Higher Education Institution. *Interactive Technology and Smart Education*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/ITSE-03-2020-0032.

Adams, D., Chuah, K. M., Sumintono, B., and Mohamed, A. (2021). Students Readiness for E-Learning during the COVID-19 Pandemic in a South-East Asian University: A Rasch Analysis. *Asian Education and Development Studies, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/AEDS-05-2020-0100.*

Croasmum, J. T., and Ostrom, L. (2011). Using Likert Scales in the Social Sciences. *Journal of Adult Education*, *40*(1), 19-22.

Joshi, A., Kale, S., Chandel, S., and Pal, D.K. (2015). Likert Scale: Explored and explained. *British Journal of Applied Science and Technology*, *7*(4), 396-403.

Rasouli, A., Rahbania, Z. and Attaran, M. (2016). Students' readiness for e-learning application in higher education, *Malaysian Online Journal of Educational Technology*, *4*(3), 51-64.

United Nations Educational, Scientific and Cultural Organization (UNESCO) (2011). *UNESCO ICT competency framework for teachers*. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000265721.

HYBRID LEARNING MODULES FOR PRESCHOOL CHILDREN DURING COVID 19 PANDEMIC

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Abstract

The spread of the COVID-19 pandemic has greatly impacted the education sector particularly in terms of operations, infrastructures, and the teaching and learning processes. The closure of physical school sessions contributes to a new dimension for pedagogical practice that demands teaching and learning to be implemented online and from home. This study was conducted to develop and explore the implementation of COVID-19 Pandemic Hybrid Learning Modules. The participants for the study involved the selected groups of school community (i.e. pre-school teachers, parents, lecturers, and teaching union officers). Using the Design and Development Research approach (DDR), the modules were developed through three phases: (i) development needs analysis, (ii) design and development, and (iii) Implementation and evaluation. Data collection methods for this module involved in-depth interviews, observations (of teaching and learning), and documents (teaching records, memorabilia, and students' learning output). Analyses were carried out using different approaches (content analysis, thematic analysis and quasi-experimental) that suit the different forms of data. The findings of the study indicated that the implementation of the Hybrid Learning modules has given a positive impacting the aspects of behaviours, attitudes and practices (i.e. pedagogical competencies and skills, learning achievement, interest and motivation, and teacher-parent smart partnership. Some issues and challenges faced by the community and researchers in implementing these Hybrid Learning Modules were also identified. The results of this study suggest that a framework of Hybrid Learning Module is essential and should be provided to the community of educators, teachers and parents to ensure that hybrid learning could successfully be implemented for a particular group of learners from different or similar learning context.

Keywords: Smart Partnership; Hybrid Learning; Online Teaching; Hybrid Learning Modules; Pedagogy

Introduction

The Covid-19 pandemic prevention initiative has started on March 18, 2020, and it has impacted on the nature of education delivery and schooling in Malaysia. Notably that today's learning activities are implemented online by teachers through various learning platforms. The shift from physical classroom teaching and learning to online mode has triggered various issues. Studies indicated that 93% of teachers prefer face-to-face teaching and learning sessions (NUTP, 2020) as opposed to online teaching and

learning. This has led to the need for an understanding of their preferences and how it could be resolved during the pandemic when teachers are directed to teach, and students are expected to learn within their home vicinity.

A report from the Malaysia Ministry of Education indicated that the effectiveness of online teaching and learning (in specific, Home-Based Learning – HBL thereafter) is quite low in comparison to face-to-face classroom teaching (MOE, 2020). A survey carried out on 10,500 school teachers throughout Malaysia found several issues and challenges faced by the teachers when implementing their online teaching in which the issues and challenges are not limited to the readiness of the infrastructure and facilities (i.e., limited accessibility and poor internet connection) but are extended to teacher readiness and competencies in online teaching and learning (NUTP, 2020).

While teaching and learning online is not entirely new, it needs to be highlighted that not all teachers are ready and well-trained to have it ago, without any support system. The swift demand for all teachers to shift to online teaching and HBL has made relevant and directly affected parties to cooperate, assist, and negotiate in many ways. For teachers, they must find ways to upskill and reskill, which seem to be the main coping strategies in relation to teaching and learning. Adopting and adapting suitable teaching strategies, developing creativity, and building competencies may be the contributors to the teachers' work stress if no help or assistance is given to this community. Hence, building a proper support system to help the teachers is vital. As such, this study is hoped to provide a form of support to the teachers in terms of training and upskilling their pedagogical skills especially in developing competencies for online pedagogy through the development and introduction of Covid-19 Hybrid Learning Modules that highlight the concepts, skills and strategies of online teaching and learning to teachers and parents. This initiative is taken to develop understanding and promote innovativeness among the stakeholders.

This project is an extension of the Tuninipot project in which parts of the modules developed were based on the prototype modules of the Tuninipot (Hybrid Learning Module) that have been validated by experts in the field. The implementation of this project aims to develop awareness and share information and training on online pedagogical approaches that focus on teaching and learning materials preparation, managing student online behaviour, motivating children to learn, conducting teacher-parent collaborative teaching, promoting effective online lesson delivery through Hybrid Learning Modules. Hence, among the objectives of this project are: 1) identify the needs for the module development for hybrid learning, 2) to design and develop hybrid learning modules based on the needs analysis, 3) to evaluate and gather feedback on the implementation of the modules. With these objectives in mind this paper will only address one of the research questions developed for the project, concerning feedback on the Hybrid Learning Modules implementation, that is: "What is the retrospective views of the community (children, teachers and parents) on the implementation of hybrid learning module during the Covid-19 pandemic?"

Methodology

These Hybrid Learning Modules were developed using the Design and Developmental Research (DDR) approach, as stipulated by Richey and Klein (2014). The DDR approach involves 3 phases of development – Needs Analysis, Module Design & Development, and Module Implementation & Evaluation:

Phase 1: Development Needs Analysis. The data collection for the need analysis involved 10,500 respondents in total that comprised of preschool teachers, parents, education lecturers/teacher trainers, officers from the National Union of Teaching Professions of Peninsular Malaysia (NUTP) and officials of the Malaysian Ministry of Education. Data collection was conducted through an online survey questionnaire.

Phase 2: Module Design and Development. The findings of the study from phase 1 (needs analysis) were used as the basic input to design and develop the Hybrid Learning Modules. Nominal Group Techniques (NGT) and the Fuzzy Delphi approach were used as a form of data collection for designing the modules. In this phase, a total of 40 experts in the field of education and teaching technology. The modules were then used in the next phase – Phase 3. A total of 4 modules were successfully developed and would be used in the next phase of the study. The project inclusive of module development, implementation, and evaluation were made possible from the support of Universiti Malaya through the UMCares Community Engagement Grant (UMCARES2020-1I).

Phase 3: Module Implementation and Evaluation. The modules that were designed and developed in Phase 2 were implemented and evaluated for their effectiveness. The implementation of these modules involved a preschool in Setapak ERT Vocational College (KVeRT) and a member of the Peninsular Malaysia National Union of Teachers (NUTP). Data collection was conducted through quasi-experiments on 25 children. Data on the retrospective views of the use of hybrid learning modules were gathered from two teachers and 25 parents of the KVeRT Setapak Preschool. The implementation of the modules was carried out collaboratively with the KVeRT teachers and the parents, through two series of workshops on module usage and two classes to guide parents on online teaching, from home. The modules have integrated various activities for the children such as online learning activities, drawing and story-telling activities, and VidPro competition. As for the teachers, they were involved in the pedagogical innovation competition, teaching, and learning colloquium.

Results

The findings of the study through interviews, observations and document analysis indicated positive impacts of the modules on the school community (children, teachers, and parents). It was identified that 90% of the children involved could master the basics of digital literacy for learning (Synchronous Learning) such as Google Meet, Zoom and Google Classroom. In addition, analysis of the children's work displayed children's ability to draw creatively using assigned application 'tools'.

Findings related to the teachers' and parents' retrospective views on the applicability of the modules revealed that both teachers and parents were very satisfied with the modules used to develop competencies, skills, and interest in exploring online teaching

and learning applications to optimize teaching delivery to the children, at home. In an interview, Teacher F stated:

> *"I am very happy and excited to teach using this new curriculum teaching and learning application. Online teaching provides opportunities for teachers to implement a variety of teaching and learning activities. Teachers are given more space to explore various teaching applications to facilitate the online teaching process. (Teacher F; T2: 31-34)*

The findings from the interviews also indicated that the modules have successfully increased the confidence level among teachers and parents to conduct online teaching and learning sessions. The following statement was made by Teacher C which illustrates this:

> *".... apparently, many online learning activities can be implemented with children after undergoing this workshop. I used to have a hard time controlling online classes, handling worksheets as well as reviewing them. But through this workshop, I am more confident to explore various new pedagogies online...." (Teacher C; T1:38-41)*

Discussion

Discuss the results in perspective by comparing them to past studies or generally accepted knowledge in the field. Criticise your own method and results, for example, with respect to the simplifications made.Through the implementation of the modules, children, teachers, and parents were exposed to the skills of Online Pedagogy (Covid-19 Pandemic Social Distance Pedagogy). Several online teaching and learning applications were used as a teaching and learning resource materials for teachers and parents to apply as the Hybrid Learning Modules to children.The Hybrid Learning Modules for teachers, parents, and children emphasize on Online Pedagogical Skills that include eclectic skills of using synchronous learning platforms, Asynchronous learning, and Offline learning. Teacher participants were not only enhanced their skills in using online learning mediums (Google Classroom, Google Meet, Zoom, Yark) but also were guided in the aspects of online learning behaviour management, questioning techniques and online assessment. The modules also have given positive impacts on the development of children's creativity through online learning activities. Children did not only interact with teachers during online learning sessions but were also able to develop their early literacy and creativity skills through online learning applications. In addition, through these Hybrid Learning Modules, teachers and parents were also introduced to the skills of selecting learning content (syllabus) that needs to be evaluated and adapted into the online learning platform.

Contribution

The modules contributed significantly to the effectiveness of the implementation of online teaching and learning. Through a collaboration with the Peninsular Malaysia National Union of Teachers (NUTP), the NUTP Covid-19 Pandemic Social Distance Pedagogy books, posters and pamphlets were produced and distributed to all schools

throughout Malaysia as a guide and reference for teachers in implementing hybrid learning.

Through this project, four series of online workshops, with teachers and parents throughout Malaysia to conduct Hybrid Learning with children at home, were successfully conducted. In addition, two series of workshops with the children, on using several online applications for online learning, were also conducted.

It is worthy to note that the modules developed have given emphasis on the approach of managing children's online learning behaviour and learning as a form of Online Teaching Art. The project also has managed to promote pedagogical innovation and creativity by integrating the teaching of arts via online platforms following the concepts of cybergogy, heutagogy, and peeragogy.

Impact

The project impact and effectiveness of the modules were evaluated through interviews, observation, and document analysis. Findings from interviews with six community members involved in the implementation of the module and document analysis of the children's work are presented according to the following research question:

"What is the retrospective view of the community (children, teachers and parents) on the implementation of hybrid learning module during the Covid-19 pandemic?"

There were positive impacts on behaviours, attitudes and practices of online teaching and learning among children, teachers, and parents. This is evident through the number of participation of children and teachers in several competitions organized during the implementation of the modules. The impact was also seen in the increase of online pedagogical competencies and skills among teachers and parents. It was also observed that the children's interest and motivation to follow online learning had increased. In fact, the Hybrid Learning Modules also have an impact on the optimal and comprehensive management of online learning resource materials. In addition, this project has actually enhanced the smart partnerships between Researcher-Teacher-Student-Parent. Positive impact on the Teacher-Child-Parent relationship was observed in which more active and happy learning online (with teachers) and at home with the help of parents occurred (Home Based-Learning). There are several channels of communication and information developed for Online Pedagogy on social media through FB Page (Home-schooling) among parents and teachers.

Conclusion

The implementation of the modules has successfully produced a manual called the Hybrid Learning Guide, for Teachers - Parents (published by NUTP), along with several videos (YouTube and Webinar Series) that were produced based on the contents of the Hybrid Learning Guide. These efforts will provide resources for teachers and parents to deepen their knowledge and skills related to the Covid-19 Pandemic Social Distance Pedagogy (Online Pedagogy) and apply the knowledge when teaching their children. As an expansion of this project, a series of workshops on Online Pedagogy (Hybrid Learning) was eventually planned and conducted to train more representatives of the teacher-parent community at several NUTP Branches, nationwide. This move is a form of a knowledge transfer program.

Acknowledgement

References

Kesatuan Perkhidmatan Perguruan Kebangsaan Semenanjung Malaysia (2020). *Pembangunan Model Pedagogi Penjarakan Fizikal NUTP Pandemik COVID-19*.

A+STEM => SDG: CREATIVE ARTS FOR HOLISTIC STEM EDUCATION AND LITERACY

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Abstract

We propose an Art + STEM activity known as "Narrating the Future Earth" to encourage school students to narrate the vision of present and future Earth using local school & community initiatives based on Science, Technology, Engineering and Mathematics (STEM) as the scientific basis underlying Sustainable Development Goals (SDGs) presented using creative art. Students' understanding of STEM and their reflections on SDGs awareness will be assessed using self-determination theory.

Keywords: STEM; STEAM; Sustainable Development Goals; Science Communication; Creative Art

Introduction

Collaboration between STEM disciplines with the arts and humanities would contribute towards better understanding of complex issues facing humanity and life on Earth. What's more, Art + STEM enriches science communication, visualization, and inspires further collaborations (Feder 2021). Artists and scientists are reinventing their modes of collaboration by using mixed media to raise awareness of various global challenges, such as global warming, environmental, and social-economic issues.

Traditionally devoid of emotion, science can learn the power of engaging communication with emotion drawn from the arts, in order to amplify important messages pertaining to on matters that need human attention and mindset change. Arts have been considered as an important medium through which science teachers can humanize science (Stivaktakis & Krevetzakis, 2018). Art activities offer opportunities for creativity, identity building, self-actualization, cognitive skills, risk-taking by encouraging improvisation and experimentation in a non–threatening environment, retention of concepts, fine motor skills through kinesthetics, auditory, and visual sensory, stimulating and exercising a variety of intelligence, self-expression and outlook (Hadzigeorgiou, 2016). Such primal skill sets would enrich learning and translate STEM subjects from the classroom to wider spaces.

The 21st-century education must prepare the students to internalize sustainable development of the economy, the environment, and the social-cultural world needs to incorporate values education, citizenship education and global issues, and to embrace inter-disciplinarity (Taylor 2018). Teaching Sustainable Development Goals (SDGs) awareness using a various form of arts and involving the creative industries have been championed by many agencies and individuals. For example, Teach SDGs.org (www.teachsdgs.org/blog/arts-education-and-the-sdgs) is mobilizing global educators to innovate within education to meet Sustainable Development Goals. Teachers and students are supported in programs such as scriptwriting for drama, theatre, or performing arts to highlight global issues pertaining to social justice, and creative art celebrating local traditions describing life on land, in water and universal peace. On SDG 4: Quality Education, Malaysia needs to address the increasing digital disparity between the urban and the rural communities, as weaknesses exposed during the COVID19 pandemic (Tan, 2019; Galemberti, 2021). SDGs literacy in Malaysia's STEM curriculum is still relatively low and piecemeal, despite increasing participations among students through various projects that are mapped to different SDGs with emphasis on energy, water, climate change, waste and consumptions. There is a need for holistic view on the different SDGs demonstrating inter-dependence. This project is designed to fill this gap and to increase SDGs literacy with strong STEM contents and creative expression to internalise the life-long commitment for sustainable development.

Methodology

This A+STEM=>SDGs project involves four national secondary schools, namely SMK Damansara Utama, SMK Bandar Sri Damansara 1, SMK Sultan Abdul Samad PJ, SMK La Salle PJ. The school liaison teachers are consulted on the ongoing SDGs related projects at the schools and provide advices to the students on the STEM and arts contents. Following a web-based meeting with the school teachers, the activity for creative art was decided to be an open competition entitled "Narrating the Future Earth" using digital, literary, music art forms and open to all students at the school with individual or group entries. The school teachers and the students registered for the competition will be coached on effective communication of science using arts with SDGs backdrops. This session provides thematic ideas on the various initiatives being tried worldwide in promoting SDGs awareness through the use of Art + STEM in schools and in other public domains. This is be followed by the submission of students creative art for the competition at the respective schools. The winners from the school level competitions will then be mentored by researchers and practising artists. The students will have the opportunities to resubmit their works to be selected for a global SDGs competition. Meanwhile, students' understanding of STEM concepts and reflection on SDGs awareness are assessed using self-determination theory (SLT).

Results

The "Narrating the Future Earth" is still work in progress with the submission deadline set to mid-October 2021. Our early discussions with the liaison teachers showed encouraging responses, given there were already few ongoing STEM projects with strong SDGs narratives. Upon completion of this project this year end, it is hoped that the art-science dichotomy can be reduced in order to allow seamless interaction of both

'domains of knowledge' in delivering the learning outcomes in STEM classroom as well as realizing the National Education philosophy.

Discussion
In executing the original plan of using performing art, we were faced with huge dilemma to continue the project activities as planned due to the uncertainties in access to schools and the anxiety in the transition from face-to-face to online remote learning. These issues still persist to date as MCOs being extended. The switch to creative arts was a late mitigation plan, hence delayed the project milestone achievement.

Contribution
This project with new STEAM pedagogic model using real world SDGs narratives.

Impact
A+STEM => SDGs will create a student centred self-awareness on grand challenges.

Conclusion
Arts in the STEM curriculum and their deeper involvement should be considered the pedagogical rationale as the former offer significant opportunities for holistic learning experiences, prolonged creativity, and change of perception on abstract concepts and challenging issues in realising SDGs.

Acknowledgement

References
Feder, T. (2021). Mingling art and science opens minds. *Physics Today, 74*(4) 24-29.

Stivaktakis, S. and Krevetzakis, E. (2018). Learning Science through the Arts: The Theory and the Educational Possibilities. *Journal of Advances in Education Research, 3*(1) 67-74.

Hadzigeorgiou, Y. (2016). Imaginative science education. Cham: Switzerland: Springer International.

Taylor, P.C. (2018). Enriching STEM with the arts to better prepare 21st century citizens. Proceedings for AIP Conference,*1923*, 020002.

Tan, P.Y. (2019). Transform education system to meet UN's development goals. News Strait Times. Retrieved from (https://www.nst.com.my/news/nation/2019/10/527412/transform-education-system-meet-uns-development-goals).

Galemberti, S. (2021). Opportunity to transform public education, realise SDGs 2030. .News Strait Times. Retrieved from

(https://www.nst.com.my/opinion/columnists/2021/04/682089/ opportunity-transform-public-education-realise-sdgs-2030.)

VIRTUAL CLASSROOM EXPERIENCES IN TIME OF COVID-19 PANDEMIC: ACTIVITIES FOR REMOTE AND BILINGUAL TEACHING FOR UNIVERSITY STUDENTS

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Abstract

Objective: Describe the experiences of bilingual and remote teaching reflecting activities applied in the transition to virtual environment for higher education in business administration for Mexican students occurred during the pandemic caused by SARS-Cov-2 coronavirus. *Method*: A well detailed experience report, collecting observations of Edgar Soto working remotely in Spain as teacher of the Bachelor in Business Administration for La Salle University Pachuca, in Mexico, from January to July 2021 highlighting the strategies applied to enhance the teaching – learning process of subject in another language (English). *Findings*: In this report I present observations of the period of virtual education and share situations that led to actions I put in place to improve teaching on my subject of Business Consulting. *Conclusion*: This testimony will provide a set of key activities applied in virtual environment to facilitate the learning of a subject in other language.

Keywords: Remote Teaching; Virtual Learning; Higher Education; Business Administration; Bilingual

Introduction

At the end of 2019, scientists identified a coronavirus outbreak in China. Experts named the newly identified virus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the illness that it causes coronavirus disease 19 (Felman, 2021). The virus spread rapidly around the world, and the World Health Organization (WHO) declared a pandemic in March 2020. This virus is transmitted through respiratory particles when individuals remain in close contact, especially indoors. The rate of infection by the coronavirus has advanced across the globe, in Mexico the first documented case of this disease was a young male in Mexico City on February 28, 2020, since then the numbers of contagion has continued growth dramatically, in Mexico as July 31st, 2021, it has been reported officially an estimated total of more than two hundred forty-two thousand deaths (Datos Abiertos Covid, 2021).

As COVID-19 infections began in Mexico, government federal health authorities took decisions for disease control and prevention considering the most widespread and defended measure by the world's scientific authorities like practicing social isolation and avoiding group and mass concentrations in indoor places. Therefore, by March 15th, 2020, the Federal Secretariat of Public Education in Mexico (Secretaría de Educación Pública) via decree number 02/03/20 decided to suspend face-to-face classes at all educational levels for both public and private institutions in Mexico starting March 23rd, 2020 until further notice (Acuerdo Número, 2020).

As consequence of general suspension of face-to-face classes, many Universities in Mexico, like La Salle University Pachuca, adopted a full virtual teaching classroom model by using at each end its available systems and communication technology infrastructure. This was an alternative way to continue the education programs while lasts the mandate of suspension of onsite physical classroom teaching of by Government authorities, which by the way stands until now early August 2021.

La Salle University Pachuca (ULSAP) is a private school established in 1994 at the city of Pachuca, in the Mexican State of Hidalgo, approximately one hundred kilometers away from Mexico City. It is an affiliate of Lasallian educational institutions founded in 1680 and connected to De La Salle Brothers, a Roman Catholic religious teaching order founded by French priest Saint Jean-Baptiste de La Salle. ULSAP offers twelve bachelor's degree programs with a total population as January 2021 of approximately 220 students.

The current pandemic in the context of Covid-19 challenged traditional educational models and people involved in (teachers, students, parents, and staff) about how to deal with and get better from the virtual processes of learning and teaching. Therefore, this paper collects my personal experience on this new challenging and opportunity given situation.

Methodology

This is an experience and observation report about the actions and tactics applied in the remote teaching of Edgar Soto from Madrid, Spain to Business Administration students at ULSAP based in Pachuca, Mexico in full bilingual virtual learning environment from January to July 2021.

The descriptive method was used, along with a deep analysis of the actions within the teaching-learning framework for the subject of Business Consulting as a mandatory curricular topic taken in the eight term, the last one of the bachelors, and it has a theoretical-practical orientation, with a total workload of 72 hours.

One of the goals of this document is to share a personal view not as an absolute or exhaustive one but as perspective of the benefits and possibilities now given by the virtual environment and a concise list of ploys which enhanced of that.

Results and discussion

Despite the previous experiences facilitating homeschooling in many Universities in Mexico aside from across the globe (Moreau, 2012), it was a challenging moment during the coronavirus outbreak for ULSAP to migrate completely to a virtual environment reveling some counterarguments from university staff based on the extra effort required to shape the typical pedagogical old-fashioned presential model and the required technology tools and training on them.

Nevertheless, several studies and authors have provided benefits and advantages derived from technologies into higher educational institutions and is considered among the best methods of education. For example, Maureen (2010) mentioned in their article that the quality of education can be the same with the same teachers in virtual schools and traditional schools, depending on their skill level and attitude of the students and professors that shown different reactions. Professors, who were proponents of virtual education, were those who were more familiar with technology. They believe that students strongly prefer the use of remote education because they think since the

student-centered nature of this education system allows the students to fulfill the requirements more easily. Also, they believe that the quality of remote education is sacrificed to its comfort and ease of use. However, students may accomplish their goals because of a more individualized and time investment scheme (Maureen & Newvine, 2020).

Taking into consideration this line of reasoning promote the use of virtual and technology-based classes at ULSAP by a mixed use of videoconferences conducted through Zoom Meetings and Moodle as a learning platform designed to provide a single robust, secure, and integrated system to create personalized learning environments.

Videoconferencing was a perfect solution considering the experience in Madrid with a seven-hour time zone difference and Moodle offered the required flexibility, from location and time point of view, in order to structure all contents, material, supporting information, evaluation and learning tracking, being available any time anywhere for Mexican students.

On top of that, Mexican has relatively low English proficiency levels and despite sharing a border with the United States of America, the country ranks below several other Latin American nations for English proficiency. The IMCO (The Mexican Institute for Competitiveness) also found that although English is the international language of business in Mexico, only 5% of the population speaks or understands it. Moreover, 70 percent of companies presently expanding in Mexico have English proficiency as a basic requisite. The lack of English-comprehension skills limits Mexicans' access to professional opportunities but also to information as close to 56 percent of all online content and 90 percent of all scientific publications are written in English Inglés para la competitividad y la movilidad social, 2019).

Unfortunately, ULSAP stands on the low curve level of the number of classes conducted in English, as shown in **Table 1** for entire curricula of Business Administration, only one class of the concentration was taught in English.

Table 1: Curricula of Business Administration Degree at ULSAP
2017 – 2021 Generation

Number of semesters for the degree	Total number of subjects	Number of classes (concentration related) in English
8	57	1

Taking into account this reality it makes all sense to conduct the classroom session in English, therefore it was prepared a detailed planning, on daily basis placing synchronous as well as asynchronous activities as shown in the **Table 2**.

Table 2: Key activities conducted in Business Consulting class

Activities	Synchronous/ Asynchronous
Discussion boards	Asynchronous
Study Cases	Asynchronous
Quizzes	Both
Teaching – learning session	Synchronous

Business Glossary & wiki	Asynchronous
Live discussion and project presentations	Synchronous
Live polls	Synchronous
Homework & assigments	Both
Peer-to-Peer learning	Both
Webinar & Talks	Asynchronous

All this offered learning opportunities that have a lasting impact on students' lives and that foster meaningful connections. To do this, it helped to get to know each one the students and being aware of their interests and experiences, also by sharing genuinely open points of view and cultural perceptions among the group.

Additionally, Zoom's synchronous session offered an incredible opportunity for students to work on assignments in small groups engaging activities that require collaboration and discussion. Students also need to be taught skills to become effective collaborators and communicators.

Discussion boards were one of the key elements to promote collaboration and reflection between students but at the same time it was very helpful for practicing and improving thinking and communication in English. Long text in English were gradually posted in Moodle by students, with positive progress from those with lower levels of proficiency showing high commitment to improve their English communication skills, refer to **Figure 1**.
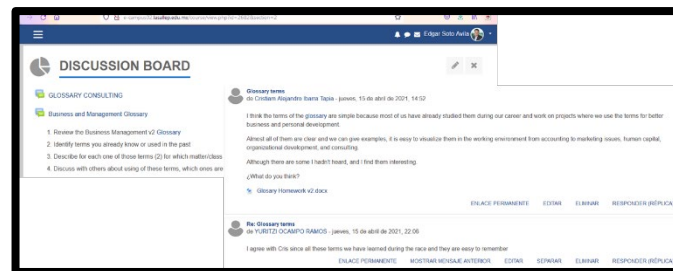
Figure 1: Example of typical discussion board in Moodle.

Another strategy for better education was the Peer-to-Peer learning and collaboration activities. For which three students were paired in a group including two students with A1 to B2 levels and one student with C1 / C2 level (based on the assessment performed for the students' English language skills according to Common European Framework of Reference for Languages (CEFRL)) (International language standards, 2019).

These activities groups worked together on Study Cases redacted in English about situations faced by global companies, the student analyzed the problem described and proposed solutions, those solutions will be presented in English in a role-play session where other students acting as company's executive will evaluate the proposal presented to them based on a set of key elements prepared for the students, like rationale thinking behind solutions, fact-base approach, verbal and no-verbal communication among others, refer to **Figure 2**.

Figure 2: Example of role-play live session in English.

After live sessions, the members of the groups cross-evaluated objective of the work, participation, and effort of each one of their own team teams, and finally evaluation of the students in order to obtain a 360º evaluation, promoting teamwork and objective feedback of each student.

At the end of the course the average note for the group was 8.1, while in the previous semesters they got an average of 7.5 and in the same semester during pandemic for the other regular Spanish speaking-based subjects the average note was 7.8 (in a scale of 0 to 10). Finally, the overall satisfaction survey for the class and the teacher showed a 4.8 (in a scale from 0 to 5).

Contribution and Impact
Social-education
Even though the Covid-19 pandemic represented a huge challenge for higher education institutions, it also provided opportunities to bring out creativity to get better teaching-learning outcomes.

The described experience impacted positively a group of twelve university students located in Pachuca, Mexico, allowing the students to interact with a teacher (a professional Consultant Executive), located in other continent more than nine thousand kilometers away, bringing them knowledge, besides different cultural and professional experiences. Also taking out them from their comfort zone to communicate in another language as well as using new business-related vocabulary in English. This improved the students self-confidence, recognizing the capability to tackle a new and challenging situation and proving additional perspective for their new professional life which right away will start.

Conclusion
This testimony provided a set of key activities applied in virtual environment to facilitate the remote teaching-learning of a subject in English. It was found that despite of the health situation the remote teaching permitted the student to get insights into how other cultures and people approach problem solving helping to better their own skills. Finally, virtual environment combined asynchronous and synchronous activities, which helped students to improve their communication skills in English inspiring the students for extra effort to connect in another language.

References

Acuerdo Número 02/03/20 de la Secretaría de Educación Pública (2020). Retrieved from https://www.dof.gob.mx/nota_detalle.php?codigo=5589479&fecha=16/03/2020

Datos Abiertos Covid (2021). Retrieved from https://www.gob.mx/salud/documentos/datos-abiertos-152127

Felman, A. (2021). *What to know about coronaviruses Medical News Today*. Retrieved from https://www.medicalnewstoday.com/articles/256521

Inglés para la competitividad y la movilidad social (2019). Retrieved from https://imco.org.mx/wpcontent/uploads/2019/11/2015_Documento_completo_Ingles_es_posible.pdf

International language standards. (2019). Retrieved from https://www.cambridgeenglish.org/exams-and-tests/cefr/

Moreau, K. (2012). *Specific Differences in the Educational Outcomes of Those Students Who Are Home Schooled vs. Students in a Traditional School Setting*. Michigan: Michigan University.

Maureen, H., Newvine, T. (2010). Perception of Distance Learning A Comparison of online and Traditional learning. *Journal of Online Learning and Teaching*, 14.

SYMPOSIUM 6: HEALTH & WELLBEING

THE INFLUENCE OF HANDS-ON ACTIVITIES ON STUDENTS' INTEREST TOWARDS LEARNING GENETICS

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Abstract

Genetics has become increasingly important with the advent of recombinant DNA technologies for the benefit of mankind such as the development of diagnostic and treatment of genetic disorders, infectious diseases, and non-communicable diseases. Hence, learning genetics is important, however, this topic is one of the most difficult subjects in Biology. In this study, we investigated whether or not hands-on activities would inspire upper-level students' towards learning genetics. Seventy-six Form 4 students from three different secondary schools - SMK Sultan Abdul Samad, SMK (P) Sri Aman and SMK Lembah Subang were invited to participate in two workshops - (i) The Secret of DNA and (ii) DNA fingerprint lab. Survey analysis revealed a positive effect of hands-on experience on increasing student engagement and evoke their interest in studying genetics. Therefore, the inclusion of hands-on activity serves as a potential way to galvanize students into genetics education.

Keywords: DNA; Fingerprint; Genetic; Hands-on Activity; Secondary Students

Introduction

To prepare for global competitiveness, the Malaysian government has initiated Malaysia Education Blueprint (2013-2025) to increase students' and teachers' interest, attitude and motivation in the Science, Technology, Engineering and Mathematics (STEM) (MOE, 2013). One of the STEM fields that covering the traditional disciplines is Biology which is specifically taught at the upper levels of secondary school (Form 4 and Form 5) in the Malaysian education system due to its importance as a science of life (MOE, 2016).

Genetics is often thought as a topic in Biology that is difficult to understand and learn (Azzeme, 2018; Cimer, 2012). Nowadays, the terms genes, DNA and chromosomes are not stranger to us due to their high occurrence rate in news and media such as popular television shows (e.g., CSI: Crime Scene Investigation). However, the uses of these words are interchangeable in situations and their mechanisms are not even considered during explanations. Furthermore, the school students often find the topic of genetics quite dry and abstract due to it is difficult to make the ideas tangible without the aid of any instruments (Mbajiorgu et al, 2006).

Therefore, the present study aims to investigate the influence (effectiveness) of hands-on learning activities in Form 4 students towards the DNA concept to gauge their interest towards genetics.

Methodology

Three schools -SMK Lembah Subang, SMK Sultan Abdul Samad and SMK (P) Sri Aman were selected for this study during the "Meet and Greets" session. Form 4 students from each school were invited to join two hands-on learning workshops (Part I: Basic genetic - The Secret of DNA; Part II: Applied genetic - DNA fingerprint lab). A brief seminar on the genetic topic was given and the students were divided into several groups to work together on experiments. In Part I, students were guided by facilitators to extract DNA from their cheek cells and fruits using easily accessible household materials including salt, coffee filter, zip-lock plastic bags and detergent. In Part II, the students were guided to solve a hypothetical crime scene to determine who has eaten the world's most expensive cheese via modelling the process of electrophoresis and DNA fingerprinting. The materials required were stationaries such as colour papers, maker pens, glues and scissors. At the end of the workshops, quiz games and surveys were conducted during a wrapping-up session while the feedback obtained from the surveys was used to assess the outcome of the hands-on activities.

Results

1. Meeting community from UM Kelab Sahabat on 18 November 2019 at Academy of Islamic Studies Universiti Malaya.

Figure 1: Meet and greets session that aims to gather teachers involved in UM Kelab Sahabat engagement projects.

2. Preparation for workshop: pre-running.
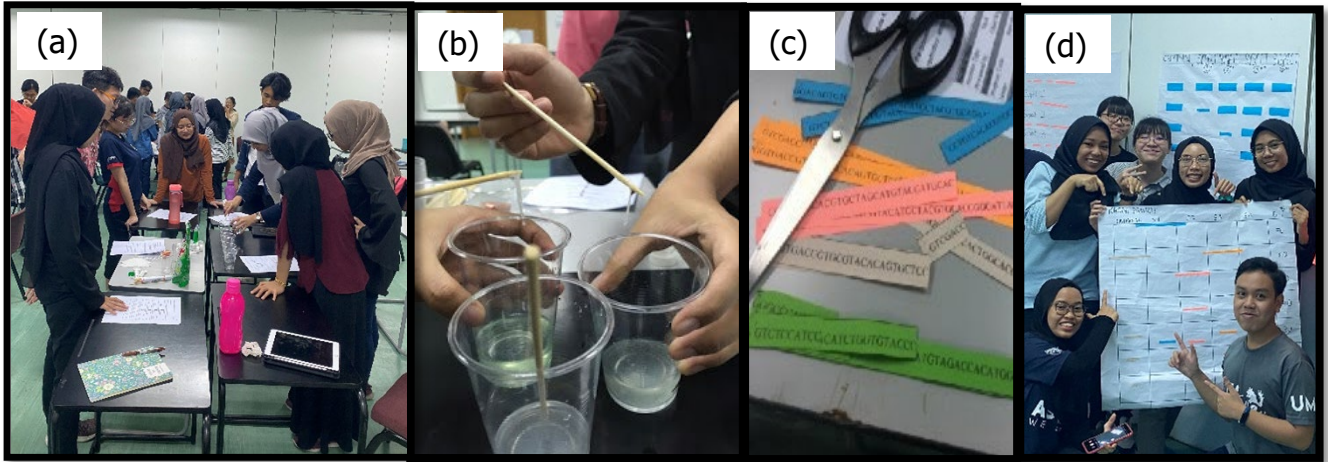
Figure 2: (a) Reviewing DNA extraction procedures by Year 2 Biomedical Science students (b) Extracted DNA from fruits (C) DNA sequences of the case study (d) Mapping DNA fingerprint by Year 1 Biomedical Science students.

3. Workshop: Parts I and II.

Figure 3: (a) Seminar session in SMK Sultan Abdul Samad (b) DNA extraction experiment in SMK Lembah Subang (C) Quiz games on DNA topic in SMK (P) Sri Aman (d) Paper-based DNA fingerprint completed by students from SMK Lembah Subang.

Discussion

The genetic topic aims not only to provide students with a basic understanding on scientific concept, but also to offer insights into the way the living world works. Overall, a total of 92% of the students stated that their interest in DNA learning was strongly stimulated after participating in the workshops compared to pre-workshop (64%) based on 76 respondents from the post-workshop survey. Of three activities conducted in each workshop, students were most satisfied with hands-on activity (95%), followed by quiz games (71%) and seminars (66%). This suggests the potential of the hands-on experiment positively influence students' interests in the learning of genetics compared to the traditional delivery method without experience such as a seminar. In addition, more than 91% of students strongly agreed that the information and skills they are learned during the hands-on activities improved their understanding of the DNA and fingerprint process. In summary, our study showed that hands-on

activities promote students' interest by providing a more realistic and exciting experience of the content.

Contribution
Our findings suggest that the use of particular hands-on activities are potential to attract students' interests in learning genetic topics that may be dry and tricky to them.

Impact
Implementation of the activity oriented practical work might be the first step to gauge student's interest in genetics and to motivate them to pursue a genetic-related field in higher education. Learning genetic is important as it can help in disease treatment, improve modern medicine, help to solve global challenges such as new agricultural solutions to continue feeding the increasing world's population.

Conclusion
Traditional, classroom teaching is a basic and essential tool for knowledge seeding. To enhance the effectiveness of successful knowledge seeding on genetics topics, hands-on experience via practical learning works well as an alternative complement approach.

Acknowledgement

References

Azzeme, A. M., & Yusri, I. W. (2018). Digital Board Game in Teaching and Learning of Biochemistry. *Proceedings of The International University Carnival on e-Learning (IUCEL),2018,* 470-472.

Cimer, A. (2012). What makes biology learning difficult and effective: Students' views. *Educational Research and Reviews*, 7, 61-71.

Mbajiorgu, N.M., Ezechi, N.G., & Idoko, E.C. (2007). Addressing nonscientific presuppositions in genetics using a conceptual change strategy. *Science Education* 91:419-438

Malaysia Ministry of Education (MOE). (2013). Malaysia education blueprint 2013-2025. Putrajaya: Ministry of Education

Ministry of Education Malaysia (MOE). (2016). Implementation guide for science, technology, engineering, and mathematics (STEM) in teaching and learning. Putrajaya: Ministry of Education

OVERCOMING THE EFFECT OF DRUG ADDICTION

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Abstract

Substance use such as opioids is a major cause of disability globally which has become one of the major risks for the burden of disease worldwide. In Malaysia, although considerable financial resources are spent annually to tackle the drug addiction problem, the approach produced poor results due to the high relapse rate among the patients. One of the main reasons for relapse cases is due to the unemployment after treatment due to the negative social perception of the patient. Besides, the need for them to go to the treatment center daily for their prescription caused them unable to fully commit to their job. Therefore, an alternate therapy treatment is introduced by using an automated methadone dispenser to replace the manual technique. Rumah Sinar Kasih KL was established as the treatment center that offers an alternative for the patients to equip various skills and generate their economy. One of the programs done to enhance their economic generation was through banana cultivation. The activity helps the government in reducing the cost of treatment as the revenues from selling the crops are used for the treatment and logistic fees. At the same time, a holistic approach to drug addiction rehabilitation is introduced by implementing Islamic psychospiritual therapy that helped the addiction recovery process with the spiritual enhancement based on Islamic psychospiritual and Islamic psychotherapy knowledge.

Keywords: Drug Addiction; Drug Addiction Treatment; Methadone Dispenser; Banana Cultivation; Psychospiritual Therapy

Introduction

Drug addiction is a serious issue in Malaysia that has been declared as the number one enemy and the main agenda of this country (Abdullah et al., 2021). Research has stated that the relapse rate in Malaysia is still high (Shafie et al., 2018). Unemployment is one of the factors that contributed to the high relapse rate in Malaysia. The negative social perception towards the patient might cause them to have difficulty adapting and

sustaining economically and spiritually. Besides, the treatment which requires the patient to go to the center daily to obtain their prescriptions prevent them from committing fully to their job which is an issue for some employers.

Therefore, an automated methadone dispenser is developed to improve the efficiency of the methadone dispensing process and reduce dispensing error. Besides, the spiritual aspect of the patients was enhanced to help them recover during the rehabilitation period through psychospiritual therapy. Next, banana cultivation activity which was then commercialized aimed to increase the economic generation of the patient during their rehabilitation period. Rumah Sinar Kasih KL is established with the aim to provide treatment and employment during their recovery while equipping the patients with skills to prepare them for their improved life.

Methodology
The project is divided into four sub-projects which are as follows:

1. **Development and performance evaluation of an automated methadone dispenser.**
The methadone dispenser is equipped with seven outlets that can dispense sequentially. The performance analysis of the dispenser was carried out by dispensing 16 ml (80 mg) of sugar solution for 100 runs by using the dispenser and manual technique to compare the accuracy, repeatability and dispensing time.

2. **Integrated approach for drug addiction treatment through Rumah Sinar Kasih KL project.**
The center act as the temporary home for the patients where they can get their treatment and improve themselves through upskill programs. Related health practitioner such as doctors and counsellors were trained to ensure that they can conduct the methadone treatment program.

3. **Economic generation through commercial banana cultivation.**
The banana cultivation started with the seedlings production through tissue culture technique UM. Then, the patients will acquire them and the seedlings will be transferred to the nurseries at center. Then, the bananas were harvested and sold to the respective buyers.

4. **Islamic integrated psychospiritual therapy intervention on drug addiction.**
The project started with conducting research on the centre to identify the suitability of the location and number of participants for materials preparation. Intervention and rehabilitation sessions were conducted twice a month for six months for 90 to 120 minutes per session. Interviews were done and questionnaires were given to collect data on the process and effects of intervention.

Results
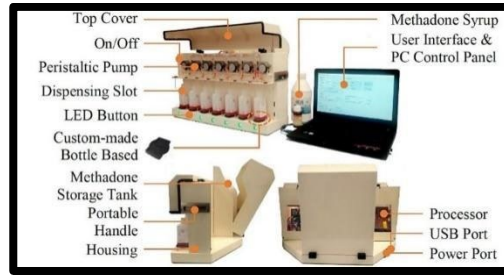
Figure 1: Isometric, side and rear view of the automated methadone dispenser.

Figure 2: One of the session during psychospiritual therapy.

Figure 3: UM Vice-Chancellor visited Rumah Sinar Kasih KL and shown to the banana, chicken, and catfish cultivation.

Discussion

Figure 1 shows the methadone dispenser developed in one of the sub-projects. The dispenser can dispense up to seven bottles sequentially with the introduction of seven outlets. The methadone dispenser was able to reduce the percentage error and dispensing time to 3.42% and 70.36% respectively. Figure 2 shows one of the psychospiritual therapy where the patients learned basic Arabic. Besides, Islamic spiritual reflexology technique was conducted at least five times over six months. Figure 3 shows one of the events where UM Vice-Chancellor was invited to visit Rumah Sinar Kasih KL where the bananas were cultivated. Besides, the patients also cultivated catfishes and chicken at the center. However, the cultivation process cannot be expanded further as the current space was limited.

Contribution

The research is expected to reduce the addiction problem through the methadone maintenance treatment (MMT) program and help to generate economy for the patients for them to start a new life. Psychospiritual therapy helps them to restore their life spirit while preparing them spiritually to assimilate back into society. The employment services provided allows the patient to generate income to accommodate self-sufficiency or their daily needs.

Impact

The development of the methadone dispenser contributes to the technological field as the idea can be implemented for different dispensing systems. The establishment of Rumah Sinar Kasih KL ensures social education among the patients as they can improve on their skills as a preparation for their new life. The banana cultivation project impacts the economy and finance positively as the patients learn how to generate income which can be used to cover the treatment and logistic fees while helping the government to reduce the cost of treatment.

Conclusion

The project of overcoming the effect of drug addiction was divided into four sub-projects. The development of the methadone dispenser improved the accuracy and repeatability of the volume dispensed while reducing the dispensing time and risk of dispensing error compared to manual technique. The banana cultivation project has been commercialized starting with local lecturers buying the bananas. Psychospiritual therapy has taught the patients the understanding of religious beliefs and the implementation of worship to produce righteous and devout Muslims. The establishment of Rumah Sinar Kasih KL allowed it to be the center for the patients to engage with the treatment, projects, and activities during the recovery period.

References

Abdullah, R. T., Embong, R., Omar, N., Yaakob, R., Lateh, H. M., Sulaiman, R., Tan, I. H., Sulaiman, R., San, L. Y., & Chik, Z. (2021). The Factors affecting the Tedency of Drug Addiction among Malays in Malaysia. *Revista GEINTEC-Gestao Inovacao e Tecnologias*, *11*(4), 2146–2155. https://doi.org/10.47059/revistageintec.v11i4.2261

Shafie, A. A. H. B., Jailani, M. R. B. M., Miskam, N. A. B. A., Elias, F. A. B., & Wahab, H. B. A. (2018). The Impact of Integrated Psychospiritual Module among the Drug Addicts in Malaysia in Elevating the Psychospiritual and Drug-Related Locus Of Control Level towards the decrease of Relapse Rate. *International Journal of Academic Research in Business and Social Sciences*, *8*(3), 296–315. https://doi.org/10.6007/IJARBSS/v8-i3/3929

COMMUNITY-ORIENTED PRIMARY CARE APPROACH TO ADDRESS MENTAL HEALTH ISSUES IN A SUB-URBAN COMMUNITY DURING THE COVID-19 PANDEMIC

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Abstract

This research-based community programme has a dual prong objective: applicability of community- oriented primary care (COPC) approach in the undergraduate training of medical students and addressing mental health issues in a targeted community. Three mental health issues were identified to address the different sub-group in the same community for better receptiveness, impact and sustainability. It was conducted through an online platform to fulfil the requirement of the lockdown period during the COVID-19 pandemic. A topic on mental health wellness was introduced to the sub-group and they were invited to participate in the related activities: health education trivia, posters and videos, health talks and forums, quizzes and answering questionnaires. Recruitment of participants during the COVID-19 pandemic was the biggest challenge faced due to the limited internet access in the community. The medical students were able to apply the COPC approach in engaging the community to increase their awareness, knowledge, and coping strategy with the given mental health issues. It also has proven that community outreach programmes can be conducted without being physically visible in the community. Universities have the advantage of engaging their students as advocates to their surrounding community.

Keywords: Community; Primary Care; Medical Students; Mental Health

Introduction

Background study: Community wellbeing is one of the principles in primary care medicine which is losing its priority in a busy outpatient clinic setting. Knowing and understanding the social, economic, educational, environmental, and political background of the community we serve, and addressing their health issues will indirectly help to better manage the acute and chronic illnesses of our patients in the clinic. Universities should integrate community-oriented primary care (COPC) approaches in addressing their surrounding community health. The emphasis of care should shift towards preventive care and health promotion in the community. Universities with medical programmes should introduce COPC in the curriculum of their undergraduate and postgraduate training. This will produce health care providers

who are competent with community management skills. University for Society (U4S) is a project for Universiti Malaya with the theme of mental health, involving medical students in the community with the participation of NGOs. It was modified to be fully online due to the COVID-19 pandemic.

Literature review: Community-oriented primary care (COPC) is a model of health care delivery that tightly integrates primary care and public health as a powerful movement in public health worldwide (Mullan & Epstein, 2002; Gofin et al., 2015). COPC is a strategy whereby elements of primary health care and of community medicine are systematically developed and brought together in a coordinated practice (Connor & Mullan, 1983). COPC unifies two forms of practice — the clinical care of individuals in the community and aspects of community medicine (Kark, 1981). COPC is promoted as an approach that is applicable to community mental health problems and community psychologists can provide the expertise to facilitate addressing community mental health in COPC programmes (Lenihan & Iliffe, 2001).

Research problems: The communities are facing mental health issues such as stress, depression and anxiety due to the COVID-19 lockdown and do not have an avenue to ventilate
or get mental health support.

Research scope: Mental health-related issues in the PPR Gombak community; domestic violence, internet addiction as well as depression, stress and anxiety.

Research question: Can COPC be applied to address the community mental health issues during the COVID-19 lockdown?

Research objectives:
1.   To identify the applicability of the community-oriented primary care (COPC) approach
        in the undergraduate training of medical students.
2.   To assess mental health issues in a targeted community during the COVID-19 pandemic.

Methodology
The community in PPR Gombak Setia was chosen for this project based on the discussion between Kuala Lumpur City Hall (DBKL) with UMCares and the U4S team members.The programme was conducted by three different groups of final year medical students at three different times since early 2021. Since the enforcement of the Movement Control Order (MCO), dynamic changes in the plan had to be done in accordance to the government's policy during MCO, among which were restrictions for gatherings and face to face events. Hence, a decision was made to conduct the programme via various online platforms namely WhatsApp, Zoom, Facebook and YouTube live streaming through the UMCares channel. A WhatsApp video call meeting between the supervisors, students and UMCares officer with the community leader and a community representative of PPR Gombak Setia was conducted to explain

the conduct of the programme, and to explore the mental health issues that the residents faced.

A WhatsApp group with the participants was created to make important announcements and to share information regarding our events or knowledge sharing with them. A video link related to mental health issues, the pre-event questionnaires and the Zoom link for the webinar were also given to the participants via the Whatsapp group. During the programme, we shared online educational posters on a weekly basis and conducted webinars.

The first programme (January 2021) was on domestic violence for women at PPR Gombak Setia. Consultant experts in domestic violence were invited to be the panellist for the webinar that was moderated by the student. The second programme (April 2021) was targeted (in the format of an online poster, online quizzes and webinar) for teenagers; to address the issues of cyber-bullying and internet addiction. And the third programme (June 2021) was done as a mental health awareness month in the format of continuous online education sharing, TikTok video, weekly online quizzes, and a webinar with the expert panellists for 80 participants in the working-age group.

At the end of each programme, students were required to fill in a Google form to describe their experiences and provide feedback. A debriefing session was also conducted for the students to present their final reports inclusive of a short video. Below is the outcome of the feedback by the students.

Adakah situasi wabak COVID-19 dan Perintah Kawalan Pergerakan menyebabkan emosi anda lebih teruk?
33 responses

- Ya
- Tidak

54.5%
45.5%

Result

Positive experiences by the students:

1. Leadership skills and teamwork management plan were nurtured.
2. Enhanced learning experiences and improvement in communication skills.
3. Online community engagement program was feasible.
4. Upskill in information and technology.

Negative experiences by the students:

1. Real-life (face to face) interaction with PPR participants was not possible.
2. Feeling unmotivated due to the final exam after the COPC programme.

Results generated from the PPR participants from the third program on Mental Health (Mind Your Health)
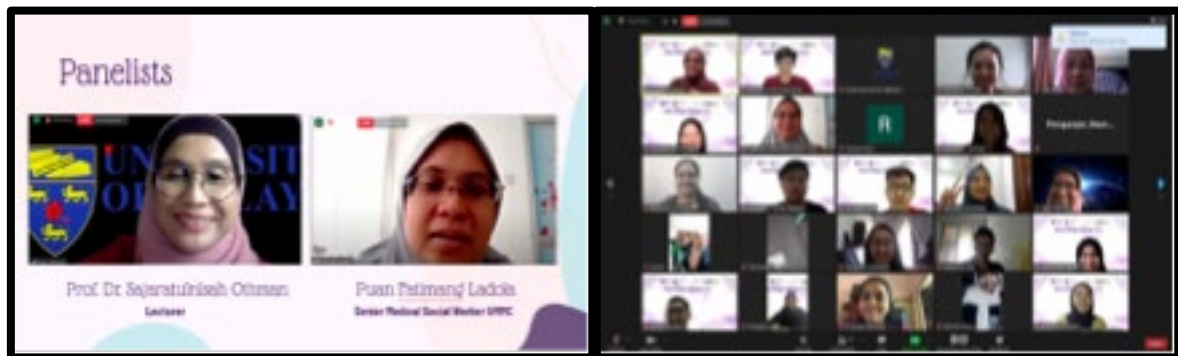
Berdasarkan jawapan yang anda beri dalam bahagian tadi, apakah yang ada rasa yang menjadi punca bagi masalah-masalah tersebut?

33 responses

Kategori	Nilai
Masalah kewangan	15 (45.5%)
Masalah yang dihadapi dalam pekerjaan	5 (15.2%)
Masalah antara hubungan ahli keluarga	2 (6.1%)
Masalah dengan kawan/komuniti	1 (3%)
Masalah kerja dari rumah	4 (12.1%)
Lain-lain	14 (42.4%)
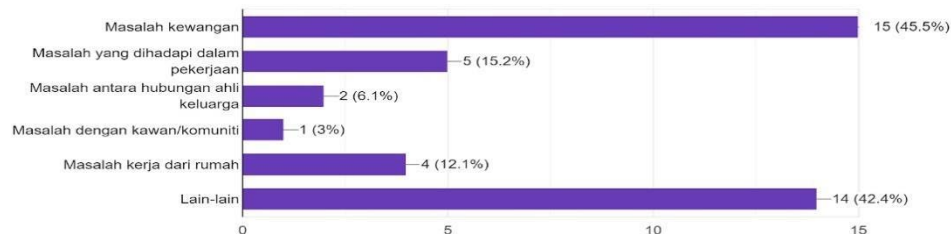
Figure 1: Snapshot of Online Webinar with PPR residents (Wanita Bahagia, Keluarga Ceria).

Discussion

Mental health issues are more prominent during the pandemic and should be taken seriously especially during the MCO period when people must work from home. Hence, it is important to raise awareness and increase the knowledge of the public about mental health through more community projects. Since the unprecedented pandemic, there are some challenges when conducting the community programme. First, this programme was carried out via online platforms. This posed a challenge to the community who was digital-illiterate and did not have access to the internet connection and gadgets. Consequently, our programme could not reach out to more people in the community. Second, most of the communications among the organizing committees and the community were being done via online meetings and messages. Nonetheless, an online mental health program was still doable and successful to be conducted during this pandemic.

Contribution

Community: Increase in awareness of mental health issues and ways to overcome the identified issues; Health empowerment and self-care.

Medical students: Enhance medical students training and empowerment in community engagement; involvement in planning, organizing, and executing the COPC programme for the community.

Conclusion

Mental health issues exist and are more prominent during the COVID-19 pandemic. Community programmes can be conducted online with support from stakeholders. This COPC approach on mental health can be duplicated and implemented in other communities, for the benefit of everyone.

Acknowledgement

References

Connor, E., & Mullan, F. (1983). Community Oriented Primary Care: Lessons Learned In Three Decades *Community Oriented Primary Care: New Directions for Health Services Delivery*: National Academies Press (US).

Gofin, J., Gofin, R.,& Stimpson, J. P. (2015). Community-oriented primary care (COPC) and the Affordable Care Act: an opportunity to meet the demands of an evolving health care system. *Journal of primary care & community health, 6*(2), 128-133.

Kark, S. L. (1981). *The practice of community-oriented primary health care*: Appleton-
Century-Crofts.

Lenihan, P., & Iliffe, S. (2001). Community-oriented primary care: a multidisciplinarycommunity-oriented approach to primary care? *Journal of community & applied social psychology, 11*(1), 11-18.

Mullan, F., & Epstein, L. (2002). Community-oriented primary care: new relevance in a changing world. *American Journal of Public Health, 92*(11), 1748-1755.

INTEGRATED PSYCHOSPIRITUAL THERAPY INTERVENTION ON DRUG ADDICTION

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Abstract

The study aims to produce a holistic approach to drug addiction rehabilitation by contributing from the aspect of Islamic Psycho-spiritual therapy to help former drug addicts through the process of addiction recovery with spiritual enhancement based on Islamic psychospiritual and Islamic psychotherapy knowledge. The Islamic Psychospiritual Scale (ZATIP), developed to measure drug addict spiritual level and conditions, and the Islamic Psychospiritual Therapy Module (MTPI), developed based on the theory and practice of the Sufi experts, Imam al-Makki, and Imam al-Ghazali, will be applied to be practiced by them. MTPI are important to enhance the former drug addicts to the understanding of religious beliefs (tawhid) and the implementation of worship in order to produce righteous and devout Muslim. Therefore, this understanding, practicality, and implementation will be able to improve their well-being to reduce the case of drug addiction relapses as well as enhancing knowledge in the community. The study that employed mixed method research in collecting and analysing data is expected to trigger the comprehensive understanding and practical skills on the Islamic Psychospiritual Therapy Module (MTPI) to the former drug addicts in improving meaningful lives as citizen. The knowledge and skills can also be disseminated to family members and communities.

Keywords: Integrated Psychospiritual Therapy; Drug Addiction; Spirituality; Islamic Psychospiritual

Introduction

Various attempts have been made by the government in dealing with drug problems including enforcing laws and organizing awareness campaigns. However, these actions are only precautionary measures. The treatment of drug rehabilitation is still under discussion in academia as well as a lack of research on such topic. Despite the numerous efforts that have been made, resulting a lot of capital and costs being channelled, many drugs addict relapses after their initial treatment.

The increase in drug addiction statistics report every year is especially disturbing in today's society. The imbalance between state and spiritual advancement in the formation of community identity today has led the public to engage in drug

dependency. In addition, various theories have also been highlighted as an approach to treat those who fall into said problem. Among them are the psychological methods introduced by psychologists and various other methods highlighted by the Malaysian government. The recovery theory is seen most effective and provides multiple benefits in dealing with criminal offenders.

A critical element often forgotten to be utilised in community rehabilitation, such as drug addiction and similar problem, is the spiritual element grounded from Islamic psychospiritual knowledge. Thus, the drug rehabilitation based on the Islamic Psychospiritual knowledge is important to be explored and applied to affect the recovery.

This study will provide the instrument to measure drug addict spiritual level and conditions and the Islamic Psychospiritual therapy module in order to assist them in developing spiritual awareness to live more meaningful lives as a devout Muslim; and enable them to gain skills on practicing the module.

Methodology

This study employed mixed methods research, i.e., quantitative, and qualitative in collecting and analysing data.

Table 1: Research Methods

Objectives	Data collection	Data analysis	Sampling & Location
What are the suitable psychospiritual elements in designing and developing Islamic Psychospiritual Scale (ZATIP) & Islamic Psychospiritual Therapy Module (MTPI)?	Survey on literature The Content Validity Index (CVI) Pilot test - Item reliability	Thematic analysis SPSS 25 SPSS 25	- 5 expert panel 25 participants, at Cure & Care Service Centre, San Peng
How to assist drug addicts in developing spiritual awareness to live more meaningful lives as a devout Muslim?	Questionnaire: (ZATIP) Intervention & rehabilitation sessions: (MTPI) In-depth interview pre, mid & post sessions	SPSS 25 NVivo 12	75 participants Cure & Care Service Centre, San Peng & Rumah Sinar Kasih, KL
How to enable drug addicts and facilitators in gaining skill to apply Islamic Psychospiritual Therapy Module (MTPI)?	Training of trainers (ToT) In-depth interview	Thematic analysis	15 facilitators & 2 Selected participants Cure & Care Service Centre, San Peng and Rumah Sinar Kasih, KL

This study was conducted only in Cure & Care Service Centre, San Peng and Rumah Sinar Kasih with the participants being a former drug addicts who receive methadone treatment.

Results

This study is based on community engagement; thus, the findings of this study are as follows:

1. Validated Islamic Psychospiritual Scale (ZATIP) to measure drug addict spiritual level and conditions.
2. Validated Islamic Psychospiritual Therapy Module (MTPI).
3. Intervention and rehabilitation sessions using the Islamic Psychospiritual Therapy Module (MIPT) were implemented in small group therapy.
4. Training of the trainers to facilitators and selected participants in using Islamic Psychospiritual Therapy Module (MIPT).

Figure 1: One of the sessions during psychospiritual therapy.

Discussion

The Content Validity Index for both ZATIP and MTPI were higher than 0.80 as Polit & Beck (2018) were considered to have good content validity. Based on the results of this reliability test, the ZATIP scale and MTPI module were accordingly, ready to be applied in the actual field study. The pilot test in determining the reliability of ZATIP and MTPI shows that the values of alpha coefficient for both ZATIP and MIPT were higher than 0.6. That is generally accepted, as mentioned by Pallant (2001), as an acceptable index for reliability in an instrument. This study that involved with other three sub-projects on "Overcoming the Effect of Drug Addiction" give more opportunity for the participants to not only enhance their spirituality and religious life but having methadone treatment and learning to generate income from banana cultivation. This study on drug addict rehabilitation using psychospiritual therapy mostly showed positive effects in the recovery from spiritual, mental, emotional, behaviour and social aspects.

Contribution

The study contributes towards the beneficiaries, Cure & Care Service Centre, San Peng and Rumah Sinar Kasih which deals with former drug addicts:

a. The process of disseminating knowledge and skills of MTPI through training of the trainers (tot) for the facilitators and through intervention and rehabilitation sessions for the former drug addicts.
b. The participants are able to understand, practice and implement the MTPI in their daily life to enhance their well-being in reducing the case of relapsing.
c. The knowledge and skills can be disseminated to family members and communities.

Impact

The impact can be seen on the former drug addicts behaviour in practicing good conducts, possess the awareness in getting close to God, and set efforts not to involve in bad things.

Conclusion

In conclusion, the study developed and validated one instrument and one module to be benefitted by drug addict. The ZATIP can be used as an instrument to measure the spiritual level of any drug addict, and the MITP can be taught to drug addicts to gain the understanding of religious beliefs and the implementation of worship in order to produce righteous and devout Muslims. The establishment of Rumah Sinar Kasih gave opportunity to the study team in applying the ZATIP and MITP and did training of trainers to selected facilitators and selected former drug addicts. It is recommended that this study should be expanded to beneficiaries outside Cure & Care Service Centre and Rumah Sinar Kasih.

References

Creswell, J. W. (2012). *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research*. Pearson Education.

Rozeeda, K., Rohayah, H. & Syed Hadzrullathfi, S. O. (2020). Impact of Spiritual Meditation on Drug Addiction Recovery and Wellbeing: A Systematic Review. International Journal of Human and Health Sciences, 4(4), 237-250.

Zaben, F. A., Sehlo, M. G.,Khalifa, D. A. & Koenig, H. G. (2015). Test–Retest Reliability of the Muslim Religiosity Scale: Follow-Up to Religious Involvement and Health Among Dialysis Patients in Saudi Arabia. *Journal of Religion and Health 54(3),* 1144–1147.

Sharifah Basirah, S. M. & Che Zarrina, S. (2017). *Kaedah Psikoterapi Islam.* Dewan Bahasa dan Pustaka.

DEVELOPMENT AND PERFORMANCE EVALUATION OF METHADONE DISPENSER FOR DRUG ADDICTION THERAPY

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Abstract

Drug abuse and drug addiction are becoming growing issues in most countries worldwide and are considered major public health problems. An initiative has been introduced in Malaysia via the methadone maintenance treatment program since the year 2005. Although the program has shown gradual success over the years by reducing the relapse rate of the patients, it has encountered several challenges in maintaining the effectiveness of the manual dispensing method done by the authorized health practitioners. Therefore, an automated methadone dispenser was developed to improve the effectiveness and comply with the requirements and needs of the users. In this research, the reliability and feasibility of the dispenser were determined through percentage error, accuracy and efficiency, and tests, respectively. Based on the performance evaluation, the findings suggested that the automated methadone dispenser has contributed to the decrease of percentage error to 3.42%, 31.52% higher accuracy, and 96% better efficiency compared to current manual methadone dispensing practices.

Keywords: Methadone Dispenser; Dispensing System; Methadone Maintenance Treatment; Drug Addiction; Performance Evaluation

Introduction

In many countries, governments have expended considerable financial resources in attempts to respond to the drug addiction problem that is labeled as "public enemy number one". A proper and efficient addiction recovery program must be introduced to control and overcome the increasing concerns on the addiction problem. In year 2005, Malaysia introduced a methadone maintenance treatment (MMT) program which aims to reduce addiction among persons who inject drugs. However, the manual dispensing

technique by using a syringe and beaker has the risk of wrong prescription which contributes to the majority of the failures of opioid substitution treatment (Gibson et al., 2020). Thus, the development of an automated dispensing machine aimed to improve pharmacist's workflow and efficiency (Craswell et al., 2020), reduce the occupational threat of carpal tunnel syndrome, and minimize dispensing errors (Amran et al., 2019).

To ensure the feasibility of the machine, the functionality was evaluated through an experiment to solve the existing problems with the dispensing process. This paper presents the development and performance evaluation of the automated methadone dispenser based on the reliability in terms of percentage error, repeatability, accuracy, and efficiency.

Methodology

The methadone dispenser has a regular interface that works as a command window embedded in a laptop for user simplicity. **Figure 1** shows the developed methadone dispenser.

Figure 1: Isometric, side, and rear view of the automated methadone dispenser

Due to the controlled medicine act, the methadone syrup was replicated with a sugar solution that has approximately similar properties based on the literature (Donaldson et al., 2015). Fifty gram of sugar solution used was dissolved in 50 ml of distilled water to cater to the performance evaluation. The conversion of 5 mg dose is equal to 1 ml of methadone dispensed.

The performance between manual technique and methadone dispenser was investigated and compared. The percentage error (Error %), repeatability (σ_r) and efficiency were investigated by dispensing 16 ml (80mg) of fluid for 100 runs. The Error % and σ_r are calculated based on equation (1) and (2) respectively where x_n is volume dispensed, $\underline{x}$ is the mean volume dispensed and n is the number of runs.

$$Error\ \% = \left[\frac{(Theoretical - Experimental)}{Theoretical}\right] \times 100\% \qquad (1)$$

$$Repeatability, \sigma_r = \sqrt{\frac{\sum (x_n - \underline{x})^2}{(n-1)}}$$

Results

Table 1: Comparison of Percentage Error for The Manual Technique and Methadone Dispenser.

Bottle Slots	Manual Technique				Methadone Dispenser			
	Volume (ml)		Error (%)		Volume (ml)		Error (%)	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1	16.416	17.082	2.600	6.763	15.639	16.530	2.256	3.313
2	15.673	16.967	2.044	6.044	15.680	16.530	2.000	3.313
3	15.355	17.355	4.031	8.469	15.679	16.577	2.006	3.606
4	15.744	17.311	1.600	8.194	15.755	16.550	1.531	3.438
5	15.611	17.277	2.431	7.981	15.745	16.476	1.594	2.975
6	15.344	16.966	4.100	6.037	15.710	16.553	1.812	3.456
7	15.777	16.987	1.394	6.169	15.700	16.550	1.875	3.438
Range	$15.344 \leq$ Volume ≤ 17.355		$1.394 \leq$ Error ≤ 8.469		$15.639 \leq$ Volume ≤ 16.577		$1.531 \leq$ Error ≤ 3.606	

Table 2: Repeatability Ranges for The Manual Technique Compared to The Methadone Dispenser.

$n = 100$			$\underline{x}$	$\sum (x_n - \underline{x})^2$	$\sqrt{\dfrac{\sum (x_n - \underline{x})^2}{n-1}}$	Range
Manual Technique	Volume (ml)	Min.	16.701	6.555	0.257	$0.177 \leq \sigma_r \leq 0.257$
		Max.	16.723	3.106	0.177	
	Time(s)	Min.	23.683	10.228	0.321	$0.321 \leq \sigma_r \leq 2.250$
		Max.	165.780	501.160	2.250	
Methadone Dispenser	Volume (ml)	Min.	16.051	3.067	0.176	$0.164 \leq \sigma_r \leq 0.176$
		Max.	16.069	2.657	0.164	
	Time(s)	Min.	30.600	24.000	0.492	$0.492 \leq \sigma_r \leq 0.667$
		Max.	32.000	44.000	0.667	
Remarks	• The methadone dispenser improved the dispensing time by 70.36%. • The dispenser improved the accuracy of the volume dispensed by 31.52%.					

Discussion

The performance of the dispenser was tested based on the repeatability (σ_r) that provided an estimation of the ability of the machine to facilitate repeatability at specific concentrations of the methadone. The percentage error (Error %) and σ_r values are shown in **Table 1** and **Table 2**, respectively. The results showed that higher consistency

of dispensed volume for methadone dispensers led to lower Error % and higher σ_r as compared to manual technique. Furthermore, the methadone dispenser produced smaller σ_r which is associated with relatively higher repeatability and better precision than the manual technique. Hence, the methadone dispenser was able to produce high dispensing efficiency and repeatability with better accuracy and faster dispensing time which reduced human resource requirements.

Contribution

The methadone dispenser removes the need for a manual dispensing process which reduces the workflow of the pharmacists. Besides, the dispenser ensures better accuracy, repeatability, and dispensing time which benefits the patients and pharmacists. This reduces the risk of dispensing error and lowers the risk of wrong doses. The seven outlets introduced also allows a patient who is stable to get prescriptions for several days efficiently.

Impact

The methadone dispenser is expected to improve the health and wellbeing of the patients as the prescription process is more accurate and efficient. Besides, the development of the dispenser contributes to the technological field as the concept of the dispenser can be used for other types of fluid-related dispensing processes in different fields.

Conclusion

In conclusion, the performance of automated methadone dispensers for MMT program is investigated. The methadone dispenser reduced the percentage error and dispensing time to 3.42% and 70.36%, respectively, and increased the dispensing accuracy by 31.52%. The dispenser is reported to be approximately 96% more efficient compared to the manual technique. Thus, the methadone dispenser is highly feasible, reliable, and excellent due to the reduction of dispensing errors while making the methadone dispensing process more efficient.

References

Amran, N. A. M., Karim, M. S. A., Rashid, R. A., Zahari, T. Z. T., & Ishak, A. L. (2019).
Improvement of Methadone Maintenance Treatment (MMT) Process Through Development and Implementation of Methadone Dispenser. *Journal of Testing and Evaluation*, *47*(5), 3563–3575. https://doi.org/10.1520/JTE20180094

Craswell, A., Bennett, K., Dalgliesh, B., Morris-Smith, B., Hanson, J., Flynn, T., & Wallis, M. (2020). The impact of automated medicine dispensing units on nursing workflow: A cross-sectional study. *International Journal of Nursing Studies*, *111*, 103773. https://doi.org/10.1016/j.ijnurstu.2020.103773

Donaldson, M., Goodchild, J.H., & Epstein, J.B. (2015). Sugar content, cariogenicity, and dental concerns with commonly used medications. *Journal of the American Dental Association (1939)*, *146*(2), 129–133. https://doi.org/10.1016/j.adaj.2014.10.009

Gibson, R., MacLeod, N., Donaldson, L.J., Williams, H., Hibbert, P., Parry, G., Bhatt, J., Sheikh, A., & Carson-Stevens, A. (2020). A mixed-methods analysis of patient safety incidents involving opioid substitution treatment with methadone or buprenorphine in community-based care in England and Wales. *Addiction*, *115*(11), 2066–2076. https://doi.org/10.1111/add.15039

EMPOWERING DISABLED YOUTHS' PSYCHOLOGICAL WELLBEING FOR CAREER DEVELOPMENT: A JOURNEY WORTH TRAVELLING

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Abstract

Helping persons with disabilities, especially those with physical disability can be a challenging task. They have unique needs, life experiences and developmental challenges. Although they receive some supports from the government, the types of help that are provided for them are mainly related to physical health, financial, and vocational. This research aimed at empowering the psychological wellbeing and mental health of youth with physical disability for their career development. The methodology comprised four phases of implementation, following the ADDIE (Assessment of needs, Design and Development of intervention, Implementation of the intervention, Evaluation of intervention effectiveness) framework. Results in phase one revealed the need to treat the youths with physical disability who had high anxiety level. As such, a cognitive therapy module for treating high anxiety (High Anxiety Therapeutic Intervention, HATI module) was designed and developed in phase two. HATI module was used in phase 3 during the implementation of rehabilitation group counselling program. Prior to the program, a pre-test was administered to assess the baseline score of anxiety among the participants. After the completion of the 8-session group counselling, a post-test was administered to assess the impact of the intervention program. Results showed that the developed module was valid and reliable to be used in the program and its use in the implementation of group counselling helped to reduce the anxiety level of the participants. These findings contribute to the rehabilitation counselling literature and generate useful intervention aid to empower youths with disability to cope with anxiety and life stressors.

Keywords: Psychological Wellbeing; Persons with Disability; Career Development; Self-Esteem; Mental Health

Introduction

Helping people with disabilities (PWDs), especially those with physical disabilities can be a challenging task. PWDs have unique needs, life experiences and developmental challenges. A growing body of research have revealed that PWDs often suffer from high anxiety, stress, and depression (Jones et al., 2014; Mushtaq & Akhouri, 2016). This contributes to their lack of self-esteem which can prevent them from reaching their

full potential. In addition, a plethora of research had indicated that self-esteem has a significant role in youths' career development (Atac, Dirik, & Tetik, 2018; Migunde, Othuon, & Mbagaya, 2016). Past studies have also revealed that group counseling is effective in empowering PWDs' psychological wellbeing so that they can achieve a holistic development in life (Ellis, Simpson, Rose, & Plotner, 2014; Livneh, Wilson, & Pullo, 2004). However, there are no local studies that looks into this unique area of research. Additionally, past studies focused mostly on social skills, educational support and general coping skills. Hence, this study aimed at empowering the self-esteem and mental health among youths with physical disabilities at a Center for Industrial Training and Rehabilitation Bangi, Selangor (PLPP) so that they are prepared and confident for career development. The objectives of the study were to a) identify the levels of depression, anxiety, stress, and self-esteem of youths with physical disabilities; b) develop two module-prototypes as a guide to conduct rehabilitative group counselling sessions; and c) determine the validity and reliability of the modules, as well as its effectiveness as an intervention.

Methodology
Overall, the study adopted an exploratory mixed methods design. The procedure involved, first, the administration of the Depression, Anxiety and Stress Scale (DASS-21) and Rosenberg Self-Esteem Scale (RSES) scale using survey approach to a total of 93 participants (males = 62, females = 31; mean age = 22.52) from PLPP. Second, after getting results from surveys, two prototypes of group counselling modules (anxiety and self-esteem therapy, respectively) were developed as guidebooks to be used in the intervention phase. The module development procedure was based on Sidek's (2001) model (Refer to **Figure 1** for a diagrammatical representation of the model). Whereas, the development of the modules' content was adapted from Clark and Beck's (2010) cognitive model of anxiety and Fennell's (1998; 2016) cognitive model of low self-esteem, respectively. Third, two focused group discussions (FGD) were conducted and each group comprised six expert respondents (PhD qualification with more than five years professional experience in counselling). The contents of the FGD were based on a 7-item questionnaire form which was designed based upon Jamaludin's (2002) research, that is an adaptation of Russell (1974) guide to module development, to get feedback on the validity of the module prototypes. The questionnaire's response format was a 10-point Likert scale (1 = strongly disagree to 10 = strongly agree). A comment box was also provided in the questionnaire for the experts to provide further suggestions or feedback regarding the module. The participants involved in the phase two study consisted of 110 youths with physical disabilities recruited from an educational training center in Selangor (Refer to **Table 1** for participants' demographic information). They were mostly males (57.3%), of Malay ethnicity (90%), and in between the ages of 18 to 30 years old. The types of physical disabilities that the participants have in this study includes spinal cord disability, head injuries (brain disability), mobility and physical impairment (i.e., upper limb or lower limb disability).

Results
Survey results, as depicted in **Table 2**, revealed that the participants' depression scores were moderate level (M=14.22, SD=9.78), their anxiety scores were severe (M=15.47, SD=8.56) and their stress level was mild (M=16.62, SD=8.51). Results also showed

that their self-esteem scores were moderate (M=3.32, SD=0.92), indicating within the normal range. Findings from module development procedures, the second phase, resulted in two prototypes of group counselling modules: (a) overcoming anxiety, and (b) enhancing self-esteem. The first module (overcoming anxiety) comprised 10 activities (Refer to **Table 3** for details), whereas the second module consisted of 8 activities. The implementation of these modules was carried out using a 8-session rehabilitation group counselling programme. In order to establish the validity of the contents of the module, the raw data from the 7-item questionnaires were computed by dividing the total scores of the individual experts' ratings with the overall score of the rating. Results from this analysis revealed the overall anxiety and self-esteem module's content validity values were 80.95% and 85.71%, respectively, indicating high validity because these values exceed the endorsed threshold value of 70% (Sidek & Jamaludin, 2005).
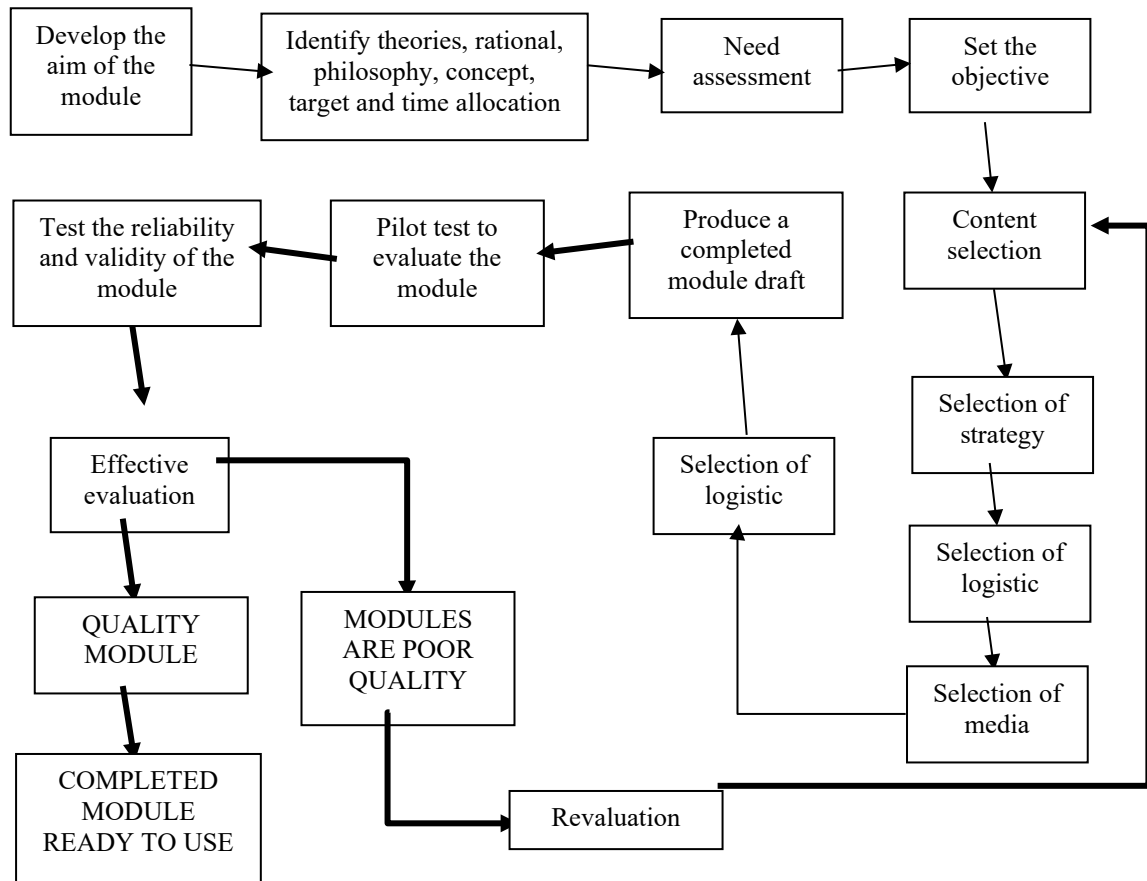
Table 1: Sidek's Module Development Model (Source: Mahfar, Noah, & Senin (2019)).

Gender		
Male	63	57.27
Female	47	42.73
Ethnicity		
Malay	99	90.00
Indian	8	7.27
Others	3	2.72
Age Group		
18 to 20 years old	40	36.36
21 to 23 years old	37	33.64
24 to 26 years old	17	15.45
27 to 30 years old	16	14.55

Table 2: Mean and standard deviations for DASS Scores

Mean	14.22	15.47	16.62
Standard Deviation	9.78	8.56	8.51
Severity	Moderate	Severe	Mild

Table 3: Content of the CT-A Therapy Module

1.	Introduction	1.	Introduction to Group Counseling	An introductory activity to explain the nature and purpose of the group, discuss the group rules and guidelines with group members.
		2.	Me, myself and I (Ice Breaking)	An ice breaking activity to get to know each other better and build trust among group members and group leader (and facilitators).
2.	Understanding Anxiety	3.	What is anxiety?	An activity to help members understand the concept of anxiety, specifically to help members understand the differences between stress and anxiety,

				and to help members understand the symptoms of anxiety.
		4.	Let's relax (Deep breathing exercise)	An exercise to help members achieve powerful feelings of relaxation, reduce negative thoughts and improve their attention.
3.	Identifying Apprehensive Thoughts	5.	Keep calm and peace is already with you	An activity to make members aware of their natural state of peace which is hidden under all the tension, stress and anxiety that they choose to take in, help members identify the exact source of their anxiousness and encourage members to come up with their own steps to feel empowered or more positive.
4.	Cognitive Interventions	6.	Processive safety cues	An activity to assist members in developing a more realistic and balanced outlook on their worry, and to identify triggers to their anxiety
5.	Overcoming Anxiety	7.	Thought stopping	An activity to help members let go of thoughts that makes them feel anxious and transform their negative thoughts to positive thoughts that make them feel peaceful.
		8.	Let's have an awesome attitude	An activity to make members aware that they are in control of their feelings.
6.	Planning for the Future	9.	My life's journey	An activity to help members manage their anxiety effectively in future and review the valuable coping skills learned during group counseling.
		10.	Therapeutic goodbye cards	An activity to highlight the members strengths and positive characteristics. Members have the opportunity to express their thoughts about termination.

Discussion

The findings from the first stage demonstrated that youths with physical disabilities have mild stress, moderate depression and severe anxiety. Supporting studies have revealed that individuals with disabilities across age groups often suffer from anxiety and depression (Dong, et al, 2020; Jones et al., 2014; Lund, Forber-Pratt, Wilson, & Mona, 2020; Noh, Kwon, Park, Oh, & Kim, 2016; Snoeijen-Schouwenaars et al., 2019). Nonetheless, effective coping strategies can protect them against such problems.

Youths living with physical disabilities encounter a number of substantial difficulties that can impact their quality of life. In addition, physical disability and mental health often go hand in hand. Both physical needs and mental health are equally important. Hence, it is important for youths with physical disabilities to tackle the stages of coping with and accepting their physical disability. A trained counselor can provide them with the techniques and tools for changing negative thinking and developing positive thinking patterns.

Moreover, group counseling provides a safe space for youths with physical disabilities with similar problems to come together and support each other. Research has shown that some youths respond better in a group of peers than individual counseling, especially if the participants are within the same age bracket (Pingitore & Ferszt, 2016; Shechtman, 2007). Additionally, adverse effects may be mitigated when individuals of the disabled group prefer to identify with each other instead of the mainstream culture (Bogart, Lund, & Rottenstein, 2018). Hence, disability pride which perceives disability as an enriching, valuable, positive experience and being a member in such a group serves as a protective factor (Bogart et al., 2018). This is because coming together as a group and showing support to one another, leads to positive feelings about oneself.

Furthermore, the findings from this research have provided evidence that the newly developed CT-A module is valid and reliable for its use in the target population. The Sidek's model is a robust and all-inclusive model that has precise steps in developing a module and evaluating its validity and reliability. Many other studies have also used Sidek's module development model when developing a mental health module and showed promising findings (Aga Mohd Jaladin et al., 2019; Madihiea & Noah, 2013; Mahfar et al., 2019; Said, Baharom, Hamilin, Madihie, & Yusoff, 2017). Nevertheless, when implementing this therapy module, the organizers should ensure that it is being delivered by a licensed professional counselor to safeguard the participants' wellbeing.

Contribution

The results of the present research prove that the content validity and reliability of the CT-A module are more than satisfactory. Nonetheless, this module can only be used by professional counselors as it is tailor-made for the counseling profession. There are many counseling techniques and skills that need to be administered during the group counseling session in order for it to be effective e.g., probing, active listening, blocking, linking, etc. Hence, it is necessary for a professional counselor to administer this module to the target population. At the same time, this therapy module can be promoted among practicing counselors through continuous training programs. This will ensure that clients receive high-quality counseling services. Therefore, the Malaysian

Counseling Association may consider using this therapy module in their current training workshops, especially when discussing multicultural counseling.

Impact

The present research is a testament to developing a systematic and rigorously tested therapy module for a specific population, youths with a physical disability. The Sidek Module Development Model and a cognitive theory were used as a guideline to develop this effective therapy module. The overall results of this research demonstrate that the newly developed HATI module can be applied by professional counselors to overcome anxiety among youths with physical disabilities. Further, the content validity and reliability of this therapy module have been established; thus, it can be used as a catalyst for future studies to be conducted on mental health (i.e., reducing depression, stress and anxiety) in different populations and settings. This shows that the HATI module can impact the health and wellbeing of the youth with physical disabilities because its use in a rehabilitation counseling program can reduce or elevate the high anxiety level.

Conclusion

The present study has provided empirical evidence regarding the need to overcome anxiety and enhance self-esteem among youths with physical disabilities as preparations for their career development. The newly developed anxiety and self-esteem counseling modules have been validated and they are considered to have high content validity. This finding implies that the modules are definitely feasible to be applied as a treatment in empowering youths with physical disabilities. Future studies should apply these modules in group counseling sessions to examine their reliability and positive effects on youths with physical disabilities. Overall, the implementation of this research is a journey that is worth traveling.

Acknowledgement

References

Atac, L. O., Dirik, D., & Tetik, H. T. (2018). Predicting career adaptability through self-esteem and social support: A research on young adults. *International Journal for Educational and Vocational Guidance*, *18*(1), 45-61.

Clark, D. A., & Beck, A. T. (2010). *Cognitive therapy of anxiety disorders*. New York, NY: The Guilford Press.

Ellis, S. K., Simpson, C. G., Rose, C. A., & Plotner, A. J. (2014). Group counseling services for persons with disabilities. In J. L. DeLucia-Waack, C. R. Kalodner, & M. T. Riva (Eds.), *Handbook of group counseling and psychotherapy* (p. 264–275). Sage Publications, Inc.

Fennell, M. J. (1998). Cognitive therapy in the treatment of low self-esteem. *Advances in Psychiatric Treatment*, *4*(5), 296-304.

Fennell, M. J. (2016). *Overcoming low self-esteem: Self-help program*. London: Robinson.

Jamaludin, A. (2002). *Kesahan, kebolehpercayaan dan keberkesanan modul program maju diri ke atas motivasi pencapaian di kalangan pelajar-pelajar sekolah menengah negeri Selangor*. (Doctoral dissertation). Universiti Putra Malaysia, Serdang, Malaysia.

Jones, K. H., Jones, P. A., Middleton, R. M., Ford, D. V., Tuite-Dalton, K., Lockhart-Jones, H., Peng, J., Lyons, R. A., John, A., & Noble, J. G. (2014). Physical disability, anxiety and depression in people with MS: An internet-based survey via the UK MS register. *PloS One*, *9*(8), e104604.

Livneh, H., Wilson, L. M., & Pullo, R. E. (2004). Group counseling for people with physical disabilities. *Focus on Exceptional children*, *36*(6), 1-18.

Migunde, Q., Othuon, L., & Mbagaya, C. (2016). Adolescents self esteem and its effect on career development. *Journal of Humanities and Social Science*, *22*(11), 67-73.

Mushtaq, S., & Akhouri, D. (2016). Self-esteem, anxiety, depression and stress among physically disabled people. *The International Journal of Indian Psychology*, *3*(4), 125-132.

Russell, J. D. (1974). *Modular instruction: A guide to the design, selection, utilization and evaluation of modular materials*. New York, NY: Burgess Publishing Company.

Sidek, M. N. (2001). *Perkembangan kerjaya: Teori dan praktis*. Selangor: Perkhidmatan Percetakan Fakulti Pengajian Pendidikan.

Sidek, M. N., & Jamaludin, A. (2005). *Pembinaan modul, bagaimana membina modul latihandan modul akademik*. Selangor: Universiti Putra Malaysia.

SYMPOSIUM 7: EDUCATION

BACA SAMBIL MAIN, KUASAI BAHASA MELAYU

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Abstract

The project "*Baca Sambil Main, Kuasai Bahasa Melayu*" is an initiative under UMcares to strengthen the Malay language reading skill among pupils of Sekolah Jenis Kebangsaan Tamil (SJKT). Generally, Tamil schools' pupils are not native speakers of the Malay language. So, they have difficulty mastering the language. They are also less exposed to reading materials in the Malay language. This is because the Malay storybooks target Sekolah Kebangsaan pupils are with a higher level of language use. In addition, these storybooks are more in the form of printed material. In this project, Tamil folklore has been translated into the Malay language. Each story will have a glossary that to be mastered by pupils and follow-up exercises to strengthen their understanding as well as their thinking skills. This book will also be published in the form of an e-book. In addition, language games via mobile phone applications will also be included in the book, so that pupils can enjoy reading The book will also be released in audio form. Hope this book will increase the pupils reading interest and improve their reading skills in the Malay language.

Keywords: Reading Skill; Reading Interest; Language Games; Folklores

Introduction

The evolution of the education system in Malaysia has been observed in various phases of development to discover the demands of education opportunities by the multiracial community in this country. This was reflected in the existence of primary level vernacular schools which are National Type Chinese schools (NTCS) and National Type Tamil Schools (NTTS). In Malaysia, the vernacular school is to provides education to all children (Sualman, 2019). In addition, the vernacular school is also helping to maintain their mother tongue in a multilingual setting of Malaysia. The use of the mother tongue as the language of instruction in NTTS made the pupils from NTTS did not master the Malay language when they are in primary school (Jamian, 2021). So that, the initiative should be taken to improve the Malay language among NTTS pupils. Reading skill is part of four basic language skills. Stakeholders have to do something to improve reading skills in the Malay language among SJKT pupils to increase their interest in reading Malay books. This study contained two objectives. The first objective is to increase interest in reading the Malay language. The second objective is to improve their reading skill in the Malay language.

Methodology

This study was conducted based on Design and development Research design. Before starting this study, the researcher conducted a need analysis for this study.

Step 1: The needs analysis

This needs analysis was conducted using two instruments, namely the reading test of five students selected from a NTTS school in the Petaling Utama district, Selangor State Education Department. The findings of this test stated that out of these five students, four had difficulty in reading the passages given to them. In addition, the researcher also obtained feedback from the school teachers on the reading skills of their students which shows the pupils are poor in reading.

Step 2: Design and develop the module

Based on the needs analysis the researcher had designed a reading module. Below is the process of the module construction:

1. Translate folklores from Tamil to Malay
2. Edit the language and content in the storybook.
3. Insert appropriate drawings for the storybook.
4. Prepare questions based on the story.
5. Provide language games by using mobile apps.
6. Transform to e-book.
7. Module will be validated by an expert.

Step 3: Send this module to the schools and pupils (pupils will use this module)

Step 4: Assessment

Results

Figure 1: Some examples of the content in the story book

The findings of the pilot study are shown in the **Table 1**:

Table 1: Result of Pre-Test and Post-Test

Date	Pre Test	Post Test	Change
Student A	40%	70%	+30%
Student B	30%	45%	+15%
Student C	50%	60%	+10%
Student D	40%	70%	+30%
Student E	45%	55%	+10%
Student F	30%	40%	+10%
Student G	35%	55%	+10%
Student H	50%	80%	+30%
Student I	45%	75%	+30%
Student J	50%	80%	+30%

Discussion

The improvement in pupils' achievement in Malay language reading skills is in line with the findings of previous studies (Othman, 2021). Their study also stated that the use of elements that are close to their culture will attract students to continue reading and master the second language (Wei, 2020). In addition, the study also shows that the use of language games elements and the use of electronic applications attracts pupils' interest in improving their achievement in mastering a language particularly reading skills.

Contribution

The results of this study can provide the electronics module to the pupils in order to master the Malay language, especially their reading skills.

Impact

The study also will increase the students' interest in reading materials in Malay language and increase their reading skills in the Malay language.

Conclusion

Generally, this project will enhance the reading skills of the Malay language. By acquiring these reading skills pupils will be able to comprehend their subject knowledge of all subjects when they step into the secondary level.

Acknowledgement

References

Jamian, A.R. (2021). Permasalahan kemahiran membaca dan menulis Bahasa Melayu murid-murid sekolah rendah di luar bandar. *Jurnal Pendidikan Bahasa Melayu*, *1*(1), 1-12.

Othman, Y., & Pakar, D.R. (2021). Kesan aplikasi perisian cerita interaktif semasa mengajarkan kemahiran bacaan dan kefahaman dalam kalangan murid tahun 4 di Brunei Darussalam. *Jurnal Pendidikan Bahasa Melayu*, *1*(1), 27-49.

Sualman, I., Hamzah, M., & Roskhamdi, N.S. (2019). The Forces of Intercultural Communication Toward National Unity in Malaysian Vernacular Schools. In *Proceedings of the Second International Conference on the Future of ASEAN (ICoFA) 2017-Volume 1* (pp. 155-166). Springer, Singapore.

Wei, S.L.Y., Lambri, A., & Kiting, R. (2020). Penguasaan kemahiran membaca Bahasa Melayu murid bukan penutur jati di Bintulu, Sarawak. *EDUCATUM Journal of Social Sciences*, *6*(1), 33-42.

BUDGET OPEN SPACE STUDIO (BOSS)

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Abstract
The work undertaken under the KTP grant comes together with the MR.DIY's, DIY made simple competition 2020 was done to empower the teaching staff and students at SMK Merapok, Lawas, Sarawak to be able to produce quality educational content in a renovated space that houses green screen and simple to use recording equipment. Consultation and conversation that the project team had with the school, discovers a niche area where the expertise of both authors in e-learning and instructional technology can benefit the strategic direction of the school. The resulting project envisions an area within the school compound to be equipped with a green screen and associated video production equipment that could enhance the ability of the school community to produce educational content. The team had to struggle to carry on with the project under the disruptions imposed by the movement-controlled order (MCO). However, with the determination to contribute to the school, the project is continued and the progress is detailed in this paper.

Keywords: Green Screen; Educational Video Content; Self-publishing; eLearning; Instructional Technology

Introduction

DIY made simple is the competition that showcases the ingenuity and creativity of secondary school students to create useful designs and contraptions using recycled materials to win cash prizes from MR.DIY, a Malaysian hardware store that has outlets at every corner of the country. As part of the project, the assigned mentor for the school is given grant funding of resources to transfer relevant knowledge to the school community from the expertise of the project mentors.

The school, SMK Merapok, Lawas, Sarawak is a rural school in the town of Lawas, which is situated about 30 minutes from the Sarawak's border with Sabah. However rural the setting, the school has been earmarked as one of the schools under the Program Transformasi Sekolah 2025 (TS25), initiated by the Ministry of Education, Malaysia that aims to produce high-quality human capital for the nation through 4 key initiatives. They are i) Fun learning environment, b) Supported by quality / visionary

leadership, c) Competent and highly aspiring teachers, and d) Strong community commitment.

The two mentors for the school are University Malaya academics, with the principal investigator is the senior lecturer from the Faculty Of Built Environment specialising in building surveying. At the same time, he is the Deputy Director (e-Learning Innovation and Technology) at the university's Academic Enhancement & Leadership Development Centre that focuses on training academics in innovative eLearning teaching and learning. The co-investigator is a senior lecturer at the faculty of education from the department of curriculum and instructional technology who is passionate about collaborating with and exposing schools to various ways innovative methods of teaching can be applied.

Matching the expertise of the mentors in support of the strategic goals of the school as part of the TS25 program, a decision is made through consultation with the school leadership and relevant teachers, coupled with an analysis of the school's potential in multimedia development. The project that is most suited to the needs of the school to further enhance it success for the TS25 program is a development of a budget open space studio or BOSS for short. The project is planned as knowledge transfer and provision of green screen space, for use of the school's teaching staff as well as students to develop video content to engage rural students with learning materials, content and pedagogy within the context of their setting.

The issue with a lot of video learning resources available online is that the production context is heavily influenced by the affordances that come with urban settings, where these learning videos are most often produced. This creates a disconnect with student learning in a rural setting, where resources are scarce, and teachers have to make do with what is available around them to deliver and engage the student with learning.

The project is designed to suit the context of the rural setting and allow the teachers and students to tell the learning story from their perspective in video format. The scope of the knowledge transfer goes beyond the action of exposing and training the teachers and students on how to produce content, but actively contributing by donating a set of basic equipment to enable and accelerate the adoption of the studio as a medium for content creation by the users at the school.

Based on that, our goal as researchers is to train teachers in using technological elements in conveying information and producing production through the use of technology that has artistic elements (related to photography) in order to make a production material seen more commercial.

The project to be carried out is to start with Phase 1 which is to build a 'green studio' space (green layer screen technology) at a low cost whereas a result of the construction of this project, all parties in the school will be able to produce information material in the form of video. deemed more commercial even just by using a smartphone. At the same time with the availability of this space, teachers can hone the talents of students in producing an interesting video.

With the space, then Phase 2 can be carried out through a series of BOSS training (focus on multimedia production training) especially in maximizing opportunities to use space and production of materials, especially for information delivery process and produce teaching and facilitation materials (PdPc) in schools as an exclusive production center on teachers. With the availability of these PdPc

materials, it is easier for teachers to use the Google Classroom platform especially in communicating and providing PdPc materials in helping students, especially online. Subsequently, all the materials produced can be disseminated through the online platform to certain groups, particularly to students and parents.

Methodology

Kabrich (2007) has attempted to identify the characteristics of an appropriate learning environment. He tried to determine whether a flexible learning environment could influence student engagement in the classroom. In this study, students who were in an experimental learning studio (prototype) were given a questionnaire related to learning style, ability to manipulate the learning environment and student engagement. The results of the study produced by Taylor (2008) have also replaced the traditional classroom environment with studio space that is in giving an impact by being able to move teachers to active learning pedagogy and increase the positive impact of pedagogy on learning.

Students prefer to be in a studio space compared to regular classrooms and communication between students can improve significantly. Students gave a positive reflection by stating that some of the feedback said that the students prefer to study in the studio space compared to the regular classroom. Among the features is that the studio should have portable furniture, smaller tables, comfortable chairs, a little free space, boards interactive white, and decentralized classroom shapes.

In addition, there were some requests to reduce the rules and maximize the freedom of students in modifying the space to create an atmosphere that is open and welcoming to students. Among the factors of a comfortable environment are building services in terms of lighting, ventilation as well as temperature and learning space.

In light of these research findings, the mentors have proposed that a room that the school leaders singled out for the project be turned into a green room studio, complete with the following list of equipment in **Table 3**:

Table 3: List of supplies and equipments for BOSS project

Studio Audio Visual Equipment	Studio Renovation Supplies
1. 3 Legged Stable Tripod for DSLR	1. 5 liter fern green pentalite internal emulsion paint for green screen
2. Wireless UHF Microphone System 2 Transmitter and 1 Receiver Musical Instrument Lavalier Lapel Mics for Smartphone	2. 5 liter coly epoxy floor (evergreen colour) finish
3. Microphone Cable Dual-Head Lavalier Lapel Clip-on	3. Painting equipment consisting brushes, rollers, paint trays, paint thinner, gloves & plastic cover
4. C920 stream HD webcam	

5. HDMI Video Capture Card HD 1080P Video Record via DSLR,Camcorder,Action Cam,Support Broadcast Live Streaming	
6. Portable Video Studio light panel fill-in lamp adjustable brightness 3200-5600K colour temperature	
7. 10 Inches Selfie LED-Ring Light with 3-in-1 Tripod Multifunction Stand Diverse Phone Holder Controller Fill Lamp for Dimmable Desk Makeup Ringlight for Video Recording Live Streaming with 3 Light Modes&10 Brightness Levels	
8. Micro HDMI to HDMI Cable 1080P 3D HDMI Cable for Camera Tablet HDTV PC	
9. Standard Movie Video Slate board Action Clapper board	

Some elements need to be provided in addition to space. Among the elements needed are lighting equipment and a microphone. The BOSS atmosphere is expected to be able to provide comfort to the community of teachers and students to produce various activities and teaching aids. Therefore, careful planning in the renovation of the studio and the provision of learning facilities is very important to create a good learning environment. To facilitate the R&D process, the studio needs to be well designed in terms of lighting, and equipment provided in order to provide comfort to users.

This lighting equipment needs to be provided before one uses a studio space. There are times when a performer is asked to stand set to make final lighting adjustments before a production is produced. There are times when the size of the talent, skin color and color / type of clothing and other elements require a little adjustment of lighting to make a production look more commercial.

Audio equipment, a microphone is a type of transmitter that converts sound waves into electrical signals. Good microphones are used in a variety of hardware such as telephones, hearing aids, public broadcast systems for concert halls and crowds, filmmaking, live and in-record audio engineering, sound recording, two-way radio, megaphones, radio, and television broadcasting, in computers for voice recording, speech recognition, and Voice systems via the Internet Protocol as well as for non-acoustic purposes such as ultrasonic sensors or knock sensors. With good audio, then the production of a video that has clear audio.

Lighting equipment and a microphone are the basic elements necessary for a recording at BOSS. The use of studio recording equipment has differences with BOSS

especially in terms of equipment cost and maintenance. This BOSS also has a role to hone the talents of students so that they can produce interesting videos to document learning or to teach others in an engaging way. Teachers can use the studio to produce videos to promote the school and also videos for teaching. The use of telephone cameras in school studios can be used if the school cannot afford a sophisticated camera.

After the installation and commissioning of the BOSS, a training program has been designed to help teachers and student users fully utilize the studio, in conjunction with the stated objectives of the project. Hands-on experience from the training, that can be done synchronously via web conferencing. The plan is to post basic setup for equipment as youtube videos, available for the users who may be struggling to follow a live session due to poor or limited broadband network connectivity because of their rural settings. The creative aspects of training of using BOSS will still have to be done live and interactively with the users as the benefit from the interaction will give better impact if done live.

Results

The project has managed to progress well despite the severe limitation of movement caused by the MCO. As the mentors are based in Kuala Lumpur and the community in question is situated in a very remote area in Sarawak, the challenges of communicating between the team are compounded with poor broadband connectivity available. However, the procurement of the BOSS studio supplies went relatively well, although the vendor does have problems getting the supplies to the school at the beginning.

The remaining steps that are still pending and will be continued after school opens and all teachers and students can resume teaching and learning activities are the completion of the renovation project, whereby the school staff will be drafted to carry out the renovation work for the planned studio. The final step of the project will be the training of teaching staff and students to fully optimise the use of the renovated studio facility for the benefit of the school for a long time.

Impact

The desired and planned impact that can be gained from the successful execution of the project goes beyond the lifetime of the KTP project. Having a good facility to produce video educational content gives confidence to teachers to explore more and better ways to get through to the next generation of learners who are digital natives. For the school, continued and sustained use of the facility can give a positive impact on the reach of the school towards its surrounding community. They can use the video content as public outreach, as a showcase for the achievement of the school, to join further competitions, and as a medium to get support from the community. The students benefit from increased confidence and exposure and savviness in communicating digitally with the outside world. They will also have developed skills and competency to showcase their talent, creativity and to showcase their learning creatively.

Conclusion

In conclusion, although the project can't be completed at the due date because of the difficulty imposed by the MCO, the project team is committed to completing the project when time and circumstances allow the project to proceed to the fullest, as the positive impact from the project can be felt for a long time after the project ends.

References

Kabrich, K.K. (2007). The interdependence of learning theory, pedagogy and spaces: Final report, Maricopa Institute for learning fellowship. Maricopa Community Colleges.

Taylor, S. (2008). Effects of Studio space on teaching and Learning: Preliminary findings from two case studies. Innovative High Education 33: 217-228.

CONTENT DIGITIZATION OF PLAY-BASED STEM LEARNING WITH PARENT'S GUIDE USING *RUKUN NEGARA* MODULES

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Abstract

Parents involvement in children's STEM learning requires particular attention during times of pandemics. This is because all learning has been converted to being fully online and the use of laboratory and tools are limited to those accessible at home only. Therefore, children depend on their parents for effective participation in STEM learning. This project curated a fully online STEM learning with the theme 'Rukun Negara' to enable active participation and demonstration of a parent scaffolded session. Digital content was developed and shared with 14 families with a set of physical and online material in preparation for the learning sessions. Responses from all parents were gathered at the end of all sessions, and the outcome shows positive feedback with suggestions for improvements. The children participated successfully in the program and all managed to complete the assignment given. This pilot study proposed a method to employ 3Hs, i.e. Hands-On, Heads-On, Hearts-On approach in STEM learning for parents and children to explore abstract concepts and thematic non-science ideas that are present in daily living. In short, the digitization of content targeted to parents as a guide to scaffold their children's exploration of STEM knowledge and skills is an important way forward to ensure that effective learning is not compounded by the pandemic.

Keywords: STEM Education; Online Learning; Parents, Children; Digitalization

Introduction

Young children depend on their parents and teachers to receive learning instructions, and this should be done in a fun and exciting ways. Emotional and social tactics can be used as strategies to engage their learning while most delivery has to be short, impactful, and memorable. The COVID-19 pandemic has forced us to use online learning platforms and resources. Parents have to be swift in adapting to online learning

at home to ensure the continuity of teaching and learning sessions from school. Nevertheless, with the uncertainties in the current climate, online learning from home has to be quickly adapted effectively as the new normal. The question is whether parents are ready to be part of this new normal for their young children?

The use of 'Hands-on, Heads on, Hearts On' (3Hs) concept in delivering content and skills to young children has been reported by Lee Y.L. & Hamzaid N.A. (2019a) from the ground level, from schools of different areas including Kuala Lumpur and Klang Valley, semi-urban area such as Kajang, Selangor, as well as outskirts area such as Segamat, Johor dan Miri, Sarawak. Views and responses from parents who joined our previously organized play-based learning sessions were presented (Lee Y.L. & Hamzaid N.A. (2019b). In general, parents provided positive responses, and most of them did not initially expect that play-based learning such as the one adopted in our method and approach was able to effectively deliver the intended learning outcomes. Some parents are were newly exposed to the different fields of science that were available at the university level and were introduced to their children through such sessions as they joined along. The trainers' experience and feedback were also reported (Lee Y.L. & Hamzaid N.A. (2018) to understand their point of view for successful learning design and delivery. This is important as the students' choice of the field as they grow older, particularly STEM (Science, Technology, Engineering, and Maths) in general depends on the interest nurtured in them while they are young scaffolded by their parents and family support. In times of pandemic, where traditional methods are not much of an option, STEM learning has to be done the new normal way. This indicates a fully online delivery, supported by appropriate learning materials to be conducted synchronously from home.

This study aims to explore and instill the love for STEM from home among parents and their children through carefully thought thematic learning that is suitable and effective for fully online delivery. The theme that was chosen this time is Rukun Negara in conjunction with Merdeka and Malaysia Day months.

Methodology

A guidebook for parents was published titled "Play with STEM" or "*Bermain Dengan STEM*" in hardcopy. A digital form of the content was also developed in order to educate parents via online and social media platforms. This aims to trigger parents' interest and ideas to help their children learn and explore STEM-related fields. To demonstrate the scaffolding techniques among parents with young children, five schools with fourteen families, particularly parents with children of age twelve years old and below; i.e. primary school, were identified to participate in this living-lab-like program. The schools are in the area of Bangsar and Pudu district and are affiliated with UMCARES.

Five core modules were selected from the book "Belajar Rukun Negara melalui STEM" (Hamzaid, et al., 2021) in order to deliver the Rukun Negara message through various STEM topics. Different topics related to STEM that are featured in the five modules were i) Augmented Reality and simple Mathematics (Module 1: Kepercayaan Kepada Tuhan); ii) Size, Area, Distance and Color mixing (Module 2: Kesetiaan kepada Raja dan Negara); iii) Knowledge and Symbols (Module 3: Keluhuran Perlembagaan); iv) Shapes and 3D Dimensions (Module 4: Kedaulatan Undang-undang); v) Magnetic

polarity and Object Association and Matching (Module 5: Kesopanan dan Kesusilaan). All modules are illustrated in **Figure 1**.

The modules were converted into a digital mode with a short video guide of how to perform each module. The required tools and kits were also prepared and packaged, then posted to all identified family addresses around Malaysia. Each session was conducted synchronously for three hours per day, with seven families involved in each session and moderated by two moderators who also act as facilitators of the modules. Three modules were run during the three-hour sessions and two more modules were provided as options for their asynchronous video assignment. The session started with some ice-breaking and introduction and involved hands-on activities using the content of the kits provided to their homes. Throughout the hands-on activity sessions, patriotic songs and music were played in the background to keep the session lively.

The 3Hs approach was adopted in this framework whereby the first H: Hands-On requires the children to build prototypes, second H: Heads-On which requires the children to follow instructions, think about the activities and some quizzes and question and answer sessions. The third H: Hearts-On involves acknowledging each child individually and addressing them in person throughout the session. This is the main reason for the program to be run in small groups of seven families, that is to ensure that the program organizers can provide appropriate attention to all participants while keeping the session lively and fun. This has proved to be quite a challenge to do physically in a large group, and it was believed to be harder in an online platform.
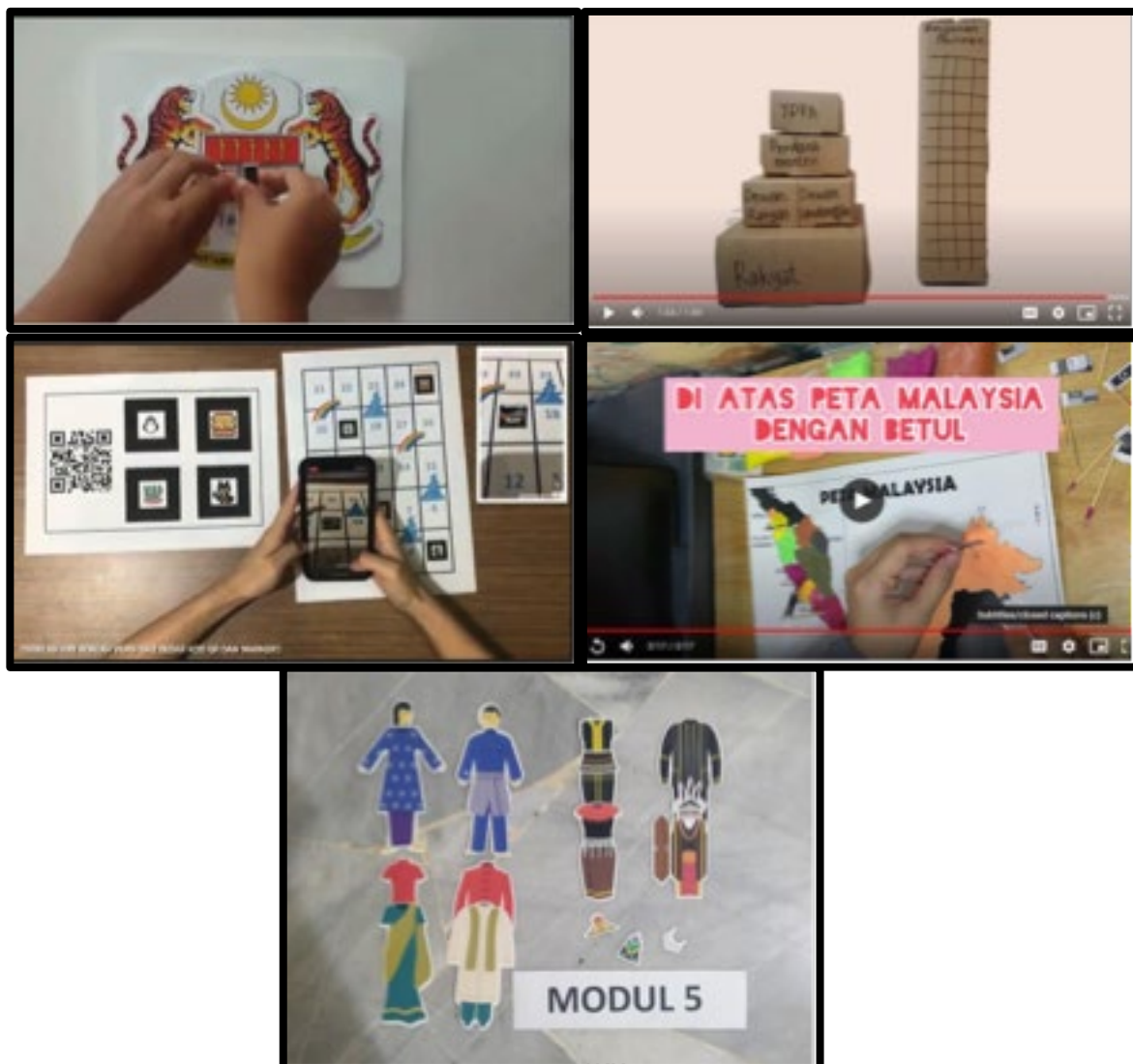
Figure 1: Digital modules of Rukun Negara a) Kepercayaan kepada Tuhan, (b) Kesetiaan kepada Raja dan Negara, (c) Keluhuran Perlembagaan, (d) Kedaulatan Undang-undang, dan (e) Kesopanan dan Kesusilaan.

A short survey was gathered from all parents at the end of the session. The survey consists of demographic details and five short questions. The questions are i) Which module did your children enjoy the most? ii) Do you think the session has enough hands-on?; iii) Do you think the session has enough thinking and information?; iv) Do you think other children will be interested to join this program?; and v) Do you think this program is suitable to be done fully online during the pandemic?. All responses were gathered through google survey forms.

Results

The preparation (Figure 2) and execution of the program were successfully done with five schools and fourteen families (Figure 3).

Figure 2: Online preparation of the program

Figure 3: Online program "Belajar Rukun Negara melalui STEM" with children 12 years and below.

The outcomes of the parents' responses are presented in **Figure 4**. All parents (N = 5) agree that the 3Hs elements are present (Hands-On score: 4.8 ± 0.45; Heads-On score : 4.4 ± 0.55; Hearts-On score: 4.4 ± 0.55) while almost all of them completely agree that such program is suitable to be conducted fully online (score 4.8 ± 0.45).

Discussion

Parents involvement during the preparation and ongoing of the program helps to scaffold the children's understanding thus making the program successful. Feedback include their excitement to meet their friends online and the ability to do hands-on activities in a short duration. Students also completed their video assignment submission promptly indicating their commitment to the program. The uniqueness of this program has also captured the attention of KHIND Project for Happiness Foundation who sponsored more kits to enable the team to outreach more participants from rural and disadvantaged background.
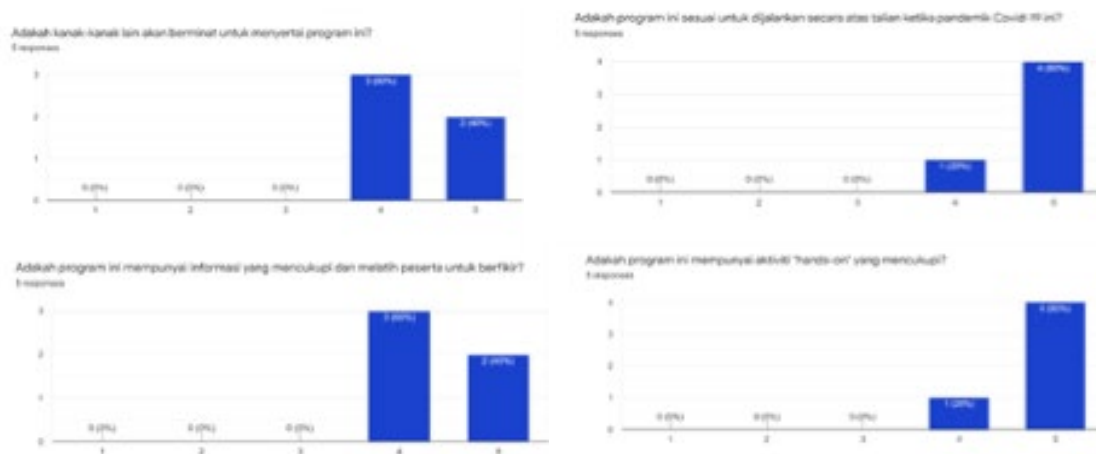

Figure 4: Online Parents' responses to the Learning *Rukun Negara* through STEM program

Contribution

The published Guidebook "Bermain dengan STEM" recontextualization for Post-COVID19 was successfully converted into digital content with a 'Home-based Learning' activity kit that was launched with the Merdeka and Malaysia Day theme of "Rukun Negara". It is targeted to reach many more families so parents and children can appreciate the play-based STEM learning in a thematic manner.

Impact

Through this project, we were able to ignite better awareness on play-based learning of STEM topics with a nationally renowned theme that can be appreciated socially by all Malaysians. The high potential socio-education impact may lead many more programmes to use the play- based STEM learning approach that is very applicable among families in times of the
pandemic.

Conclusion

Play-based learning can be successfully done via fully online mode with the support of mailed content material and conducted synchronously. Asynchronous tasks can be assigned to improve their self-understanding. Parents of children participants in our study reported high scores for 3Hs elements of the program and strongly believed that it is very suitable as a fully online mode. This study is however limited to a small number of families thus its concluded outcome could be better generalised by having a greater sample size from a variety of demographics. Further details of their children's feedback could be gathered to have insights
into the child's point of view.

Acknowledgement

References

Lee Y.L. & Hamzaid N.A. (2019a). Promoting Hands-on, Heads-on, Hearts-on

(3Hs) Biomedical Engineering Education among First Graders through Let's Go To Mummie's Lab, in Hidayah Mohd Fadzil, Renuka V Sathasivam, Roslinda Ithnin, Mas Sahidayana Mohktar (Eds) Best Practices in STEM Mentor Mentee, UM STEM Centre, page 62-74, Kuala Lumpur,ISBN 978-967-17408-1-1

Lee Y.L. & Hamzaid N.A. (2019b) Parents' Perspectives On Elementary

Engineering Education Using Hands-On, Heads-On, and Hearts-On (3HS) Approach,Malaysian Online Journal of Educational Sciences (MOJES), 7(4):15-29

Lee Y.L. & Hamzaid N.A. (2018) Promoting Hands-On, Heads-On, Hearts-On
    (3Hs) Elementary Engineering Education: Facilitators Perspective and Experiences,

Journal of Educational Research, 38:8-15

Hamzaid, N., Yee, W., Wan Kamarul Zaman, W. S., Lai, P.S.Q., & Rozman, S.I., (2021). Belajar Rukun Negara melalui STEM, Kuala Lumpur, Wilayah Persekutuan: UM STEM Centre. ISBN 978-967-25762-0-4

VIRTUAL GAMIFICATION OF STEAM (PROGRAMMING / VIRTUAL LAB)

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Abstract

It is becoming increasingly difficult to ignore the problem with the current online quiz generator as it lacks engagement elements. As a result, it provides fewer added values in eLearning; hence there is not much difference in doing online quizzes or pen and paper. Therefore, this project proposed to develop a gamified online quiz generator to improve the conventional quizzes by incorporating game elements that will engage students in day-to-day learning. The project began by investigating gamification mechanics and identifying engagement indicators. Designing a model for a gamified quiz generator is next. Then, an algorithm for a filtering agent to randomly feed questions into the quiz generator is developed. Finally, the project evaluates the effectiveness of the proposed gamified quiz model on students' engagement. The project has fulfilled the development of a gamified platform. The dashboard has a navigation bar to create a student's avatar and observe statistics such as energy, coin, level and login time. The storyboard is where a student attempts to answer quiz questions to defeat a monster. The student progresses with defeating several monsters. The challenge for this project is designing the complex layers so students do not get bored with the game quickly.

Keywords: Gamification; engagement; online quiz; edutainment

Introduction

Educators have been using online quizzes on the student's self-assessment and formative test, improving preparatory reading, and providing extra support for large classes. When Marks (2002) shows that students accept the online readiness assessment quizzes as a motivation factor to read the assignment before daily classes, many educators follow the recommendation. As a result, online quiz tools have become popular in e-learning. Means et al. (2009) argue that an online quiz generator must show elements of engagement. Otherwise, there is not much difference to doing it offline by pen and paper. Positive emotional gains such as engagement are found in game-based tools that contribute to gamified assessments (Retherford, 2020; Xi & Hamari, 2019; Huang & Hew, 2018; Calvo-Ferrer, 2017; Chaiyo & Nokham, 2017). However, gamification elements are rarely proposed in online quiz generators. Students who are not engaged while doing online quizzes cannot add value to their e-learning. The research objectives include (1) to investigate gamification mechanics in engaging

students at tertiary education, (2) to design a model for gamified quiz generator to engage students in tertiary education, (3) to develop an algorithm for a filtering agent to feed questions into the quiz generator randomly, and (4) to evaluate the effectiveness of the proposed gamified quiz model on students' engagement.

Methodology

In order to achieve the aim of this research, the pre-test and post-test methods are used to compare and evaluate the result. By referring to a data collection diagram, two groups of students will be selected, the control and treatment groups, respectively. Both of these groups will undergo a pre-test. The pre-test will measure their motivation in using an online quiz generator. After the pre-test stage, both of these groups will use the online quiz. The control group will use a regular quiz, hence without any game elements. The treatment group will use a gamified online quiz. The quiz questions for both groups should be generated from the same databank. This is to ensure that both groups are exposed to the same quiz questions. In addition, a teaching module will be selected for this study. If there are twelve weeks of lessons, it is proposed to develop two sets of online quizzes. These quizzes will be integrated into the lessons as a formative assessment. The data collection will be done with a questionnaire. The purposes of using a questionnaire in this study are to cover a larger area, easy maintenance, and safekeeping for future analysis. After the data is collected, the following procedure is data refinement. Any data that have systematic errors and inconsistent demographics will be excluded. After data refinement, split-plot ANOVA analysis will be used to analyse the data. The data analysis will focus on increasing engagement levels among the students through using a gamified quiz generator.

Results

Some screenshots of the developed gamification platform are as follows:
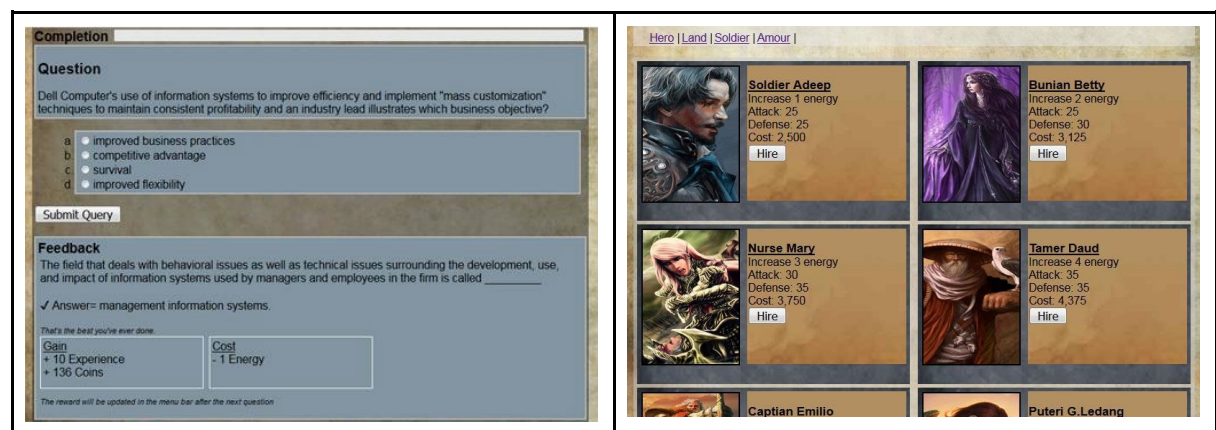

Figure 1: Online quiz generate random questions. Answering one costs the player's energy. Correct answers gain experience and coins, while wrong attempts result in the opposite. Players can upgrade their hunter when they gain sufficient experience points and coins.

Discussion

The most significant limitation in gamification development is technical skills and creativity. One needs to possess strong programming skills and creativity in creating the story mode that can engage players. The research and development of this project show that developers and teachers must unite to produce a quality game for educational purposes. The advantage of this project is that once the story mode has been established, teachers can update the questions and classify them into complexity levels. This question update and classification do not require programming skills.

Contribution

MOE is in the process of transforming traditional classrooms into advanced learning environments through the 1BestariNet project. In order to keep up with the 21st-century learners' needs, the 1BestariNet project aims to revolutionise 10,000 schools in Malaysia. This project contributes by facilitating teachers in creating engaging teaching resources, streamlining communication, and saving administration time and effort.

Conclusion

This gamified quiz provides a method for the students to use technology as part of their learning experience. This will also increase the students' motivation to learn and complete quizzes. With a gamified online quiz version, it is hoped that it can engage students in active learning. In addition, they can adopt the quiz into their learning schedule.

Acknowledgement

References

Calvo-Ferrer, J. R. (2019, October). Some Remarks on the Idiosyncrasy of Serious Games and its Effects on Research Results. In *ECGBL 2019 13th European Conference on Game-Based Learning* (p. 137). Academic Conferences and publishing limited.

Chaiyo, Y., & Nokham, R. (2017, March). The effect of Kahoot, Quizizz and Google Forms on the student's perception in the classrooms response system. In *2017 International Conference on Digital Arts, Media and Technology (ICDAMT)* (pp. 178-182). IEEE.

Hamari, J. (2017). Do badges increase user activity? A field experiment on the effects of gamification. *Computers in human behavior*, *71*, 469-478.

Huang, B., & Hew, K. F. (2018). Implementing a theory-driven gamification model in higher education flipped courses: Effects on out-of-class activity completion and quality of artifacts. *Computers & Education*, *125*, 254-272.

Marks, B. P. (2002). Web-Based Readiness Assessment Quizzes. *Journal of Engineering Education*, *91*(1), 97-102.

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies.

Raju, R., Bhat, S., Bhat, S., D'Souza, R., & Singh, A. B. (2021). Effective Usage of Gamification Techniques to Boost Student Engagement. *Journal of Engineering Education Transformations*, *34*, 713-717.

Retherford, T. A. (2020). *The effects of gamification on English language learners' motivation and vocabulary growth* (Doctoral dissertation, Southeast Missouri State University).

Xi, N., & Hamari, J. (2019). Does gamification satisfy needs? A study on the relationship between gamification features and intrinsic need satisfaction. *International Journal of Information Management*, *46*, 210-221.

VERMINCOMPOSTING TOWARDS THROUGH WASTE REDUCTION AND ORGANIC COMPOST MAKING

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Abstract

Schools canteens and homes produce an excessive amount of kitchen wastes daily. These wastes end up in landfills and pollute the environment with odour and release greenhouse gas. This Knowledge Transfer Grant was proposed to not only reduce the kitchen waste but also to gain benefit from the waste. Thus, the vermincompost program for the school; Sekolah Menengah Kebangsaan Dato Sri Ahmad Badawi in Pulau Pinang was introduced which may be replicated at any school or at home at a smaller scale with the objective to transfer knowledge to school pupils, teachers and community members on vermincompost benefits and theory of vermin composting. An online demonstration and workshop were conducted with the engagement of more than 1000 school pupils, teachers, parents and community members on vermincompost. The programme also established and utilised social media to disseminate information regularly for the general public audience as well as to conduct the online workshop. An E-manual was also published via the social media platforms on DIY of worm farming for public reference. The vermincomposting workshop received positive feedbacks and had presented valuable knowledge to all layers and age of the society. It was proposed that schools can operate at a larger scale and they may profit not only by gaining free organic fertilizer made of worm casting as the product of vermincomposting but also may generate income to the school co-op by selling the highly sort after world's best organic fertiliser.

Keywords: Vermi-compost; Sustainability; Organic Compost; Knowledge Transfer; Social Media

Introduction

Project-based learning is one of the best knowledge transfer and learning program that allows students to take more responsibility and interest for their learning as they make decisions and create solutions to problems that is around them. Project-based learning is a teaching strategy that honors students as capable people. In this Knowledge Transfer Grant administered by UMCares Universiti Malaya, the vermincomposting project which was initially made to be done at school level expanded to a much larger

scale as a positive side effect of online learning and school closure. The program was decided to be open to everyone; teachers, parents and the general public as well who were keen to know and learn on the subject of domestic scale vermincomposting. Vermincomposting is a practice that uses worms (vermi) to aid in the decomposition of organic materials, such as food scraps, creating a highly nutrient soil that can be used as a fertiliser (Pagan & Steen, 2004).

Presently, school canteens and home kitchens will produce tonnes of waste daily. In fact, record shows that Malaysia produces approximately 30000tonnes of waste daily (Sreenivasan et al., 2012). The initial objective of the program was to introduce to the concept of vermincomposting in the students. When the school reopens, students were invited to participate in the vermincomposting process by contributing their fruit scraps collected from the school canteen kitchen to the worm bins that was placed in the school grounds for the duration of the study. Reduce, reuse, and recycle are major economic corollaries of vermincomposting. Later, as the programme expanded, the objective was changed; to transfer knowledge to school pupils, teachers, parents and members of the public on vermincompost benefits and theory of vermincomposting. The aim is to demonstrate to the communities (consisting of students, teachers, parents or the interested general public) that they can reduce their kitchen waste at home that contributes and fills up local landfills just by having worm bins and able to produce organic compost. Urban waste can be effectively degraded by earthworms in vermincompost process resulting in the production of pathogen-free fertilizer (Hemalatha 2013). Vermincompost is also organic and chemical-free which are the best to be used for growing vegetables and fruits (Rajiv et. al).

Methodology

Knowledge transfer is not merely about how academics from universities are able to produce positive impacts on the recipients (community), but also how the process is able to improve and enhance the current levels of knowledge of the target group, which in this case refers to students, teachers, parents and the general public. The knowledge transfer grant employed an online workshops format as a method to deliver the objectives of the knowledge transfer grant safely and effectively during the COVID-19 pandemic.

Online workshops are both a time-consuming and also a time-saving activity (INMARK & MEF 2010). It is time-consuming because it requires prior preparations and organizational effort and meetings to make sure that all aspects are prepared and ready before the involvement of many people. The time-saving aspect of this method is that is made to be compact and deliver powerful activity which can lead to changes of views, create awareness and innovations in thinking. In addition, the method can mobilize the knowledge and information to diverse stakeholders and people.

The vermincomposting online workshop is not just conveying the theory of the domestic scale worm farming but also transfers practical and tacit knowledge for the receiver. Tacit (implicit) knowledge can hardly be formalized and transmitted because it is closely connected to individuals as it bases on intuition, values and viewpoints that were developed through experiences (Lahti & Beyerlein, 2000). Thus, a group of students from Sekolah Menengah Kebangsaan Dato Sri Ahmad Badawi was selected to be involved closely in the first two online workshops that were more focused in creative thinking and hands-on problem-solving. While the final online workshop utilising the

Zoom platform and Facebook live video about vermincomposting was tailored to include larger and wider age group audiences.

Results

The first workshop that involved the briefing and design phase was organised online according to a specific preparatory checklist. The two outcomes of the first workshop, students collected suitable recycled materials such as old furniture and waste materials to design and make worm bins which were referred to as 'worm hotels' for fun learning purposes. Students also presented the locations for placements of their 'worm hotels' as they were given information on the type of environment appropriate for vermicomposting and the task to propose sites for the project. Unfortunately, in March 2021 the school was forced to close before they were able to complete the 'worm hotels'.

The researchers had to modify the directions of the research due to the prolonged MCO by sending ready-made worm bins and materials to the school so they can also follow the video demonstration by the researchers. Then, a brave decision was made to open up the final workshop to a wider audience by using social media. This online workshop had a positive outcome with the engagement of more than 2200 people, more than 1000 watched and participated via Facebook live (based on 24 August 2021) and about another 50 people followed the workshop and demonstration via Zoom.

Discussion

The online workshop incorporated videos and quizzes which made it more engaging especially to the younger audiences. The Zoom and Facebook platforms (**Figure 1**) allowed the researcher to answer live the questions posted with regards to the topic. Overall, the aims and objectives of the knowledge transfer fund program which were to let the community have an initial understanding in worm farming and to promote worm farming to the community were achieved by the workshops.

Figure 1: The online workshop gather interest in community to be part of this Knowledge Transfer Programme.

Contribution

The vermincomposting workshops received positive feedbacks and had presented valuable knowledge to all layers and ages of the society. It was proposed that the school can operate at a larger scale and they may profit not only by gaining free organic fertilizer made of worm casting as the product of vermin composting to be used in their school grounds but also may generate income to the school co-op by selling the highly sort after world's best organic fertilizer. Students, teachers and member of the public expressed their keenness to start their small worm bins at home after attending the workshop.

Conclusion

Even though there had been several hurdles and challenges as this Knowledge Transfer Programme had taken place during the pandemic and over two movement control orders in Malaysian states (MCO 2.0 and MCO 3.0), the program was able to be altered to suit the current situation. Unfortunately, the initial intention to organize an onsite workshop to make 'worm hotels' with the students could not take place as traveling was forbidden and furthermore schools were also closed. Based on the outcomes and mode of conduct of this knowledge transfer program, it can be replicated in other schools or communities. It is envisaged that with a larger budget and allowance to travel more comprehensive workshops can be organised.

Acknowledgement

References

Hemalatha, 2013. Application of Vermicomposting for the Degradation of MSW and Crop Improvement. International Journal of Advanced Engineering Technology (IJAET) Vol. IV / 27-30. Chennai. India.

INMARK & EMF (2010). Concept and methodology of Interactive Workshops. Pro Ideal Plus Report.

Jayashree Sreenivasan Marthandan Govindan, Malarvizhi Chinnasami & Indrakaran Kadiresu (2012). Solid Waste Management in Malaysia – A Move Towards Sustainability https://www.intechopen.com/chapters/40529

Lahti, R., & Beyerlein, M. (2000). Knowledge transfer and management consulting: A look at "The Firm". *Business Horizons 43*(1), 65-74

Pagan, T., & Steen, R. (2004). *The worm guide: A vermicomposting guide for teachers.* Sacramento, California: California Integrated Waste Management Board.

Rajiv Kumar, S., Valani, D., Soni, B.K., & Chandran, V. (2011). *Earthworm vermicompost: A sustainable alternative to chemical fertilizers for organic farming.* Nova Novinka Publication

URBAN GARDEN FOR SUSTAINABLE LIVELIHOOD:UNIVERSITI MALAYA SUSTAINABLE GARDENING CAMPAIGN (UMSGC)

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Abstract

A community garden is an area of land that is used for planting crops, which is done cooperatively by a group of people that live in the same urban region, which will help in developing more sustainable food systems. The practice of urban gardening has gained importance due to the rising rate of urban poverty and the population in developing regions. In countries such as Malaysia, it also addresses malnutrition by providing urban dwellers with access to adequately nutritious, safe, acceptable and cost-effective food. It can also mitigate the negative effects of urbanization on the environment by adding green spaces to the neighborhood. Therefore, it is necessary to educate and fill in the know-do gap of local community in Taman Seri Sentosa, Pantai Dalam on an urban garden for sustainable livelihood via UMSGC Universiti Malaya Sustainable Gardening Campaign (UMSGC). The knowledge transfer program was implemented before constructing the urban garden to spread awareness of the importance of the urban garden to the community.

Keywords: Environment; Economy; Food Security; Sustainable Livelihoods; Urban Garden

Introduction

The Urban Garden is a strategy for Malaysia's economic and food security initiatives to ensure all people are fed (Othman et al., 2017). The majority of the world's poorest citizens reside in urban areas of developing countries. Thus allowing the urban poor to produce their own food would enable them to save a great amount of money (Eigenbrod & Gruda, 2015). Moreover, several benefits that are being highlighted about this urban garden practice are that it helps in improving mental health and reducing stress, and it also allows people to plant something that can be consumed safely (Nawrath et al., 2020). In Malaysia, urban residents are facing increasing living costs, particularly due to the rising cost of food. In order to achieve these, urban gardening is viewed as a way through which the livelihood strategies of urban

households can be addressed by the implementation of *sustainable gardening practices that protect and enhance the natural environment to ensure its sustainability.*

Methodology

This project was implemented by following these phases:

Phase 1: Transfer Knowledge Programme – Awareness on sustainable gardening campaign

> Engaging community to enhance the visibility of the university's contribution to the community and also authorities. A survey was conducted to determine the knowledge and perception of the urban garden among the community.

Phase 2: Hands-on transfer knowledge. The demonstration plot was organized using the randomized complete block design (RCBD) with three treatments and four replicates by growing green spinach. The yield production was measured. The treatments are T1 (soil only as a control), T2 (soil+fertilizer), and T3 (soil+fertilizer+compost).

Phase 3: Assisting and guiding communities to build urban gardens for their sustainability and welfare.

Results

Phase 1: Transfer Knowledge Programme

Respondents' Feedback on the programme (n = 27)

| Questions	Answer (Yes) Freq (%)	Remarks
1. Are you interested in gardening? 2. If you have an opportunity in gardening, do you interested to join? 3. Do you agree if we develop urban community gardening programme in your area? 4. Do you agree to involve in urban community gardening programme?	100% 88% 88% 90%	Majority committee was exciting to participate in urban garden at their community. However, lacking of technical knowledge of implementation urban garden and procedure to assess available land from local authorities are the main constraint to community to start urban garden

Phase 2: Hands-on knowledge transfer

Demonstration plot: Implement of urban gardening by planting green spinach at an urban community garden. The yield production of green spinach for four weeks of planting at urban community garden using recycled materials and rain water harvesting.

Community helps watering the plants

Measurement of growth performance
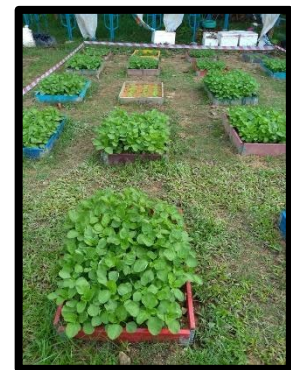
Demo plot

Phase 3: Assisting set up urban garden at Bayview Court Taman Sri Sentosa by implementation sustainable gardening concept collaboration with DBKL

Impact:

Implementation of sustainable gardening concept integrated four main principles of sustainability:

1. Environmental increases ecosystem resiliencies, helps clean up the air and water, recycled urban waste to produce organic fertilizer and organic pesticides.
2. Economic profitability: generate income from vegetables productions and reduced food miles.
3. Social wellness: Provides opportunities for social interaction and individual recreational opportunities. Increases awareness, education and youth development.
4. **Human Health:** The engagement of people in urban garden practice makes the food sources safe to consume, overcomes the problem of malnutrition, improved overall well-being and also reduces psychological distress.

Acknowledgement

References

Eigenbrod, C., & Gruda, N. (2015). Urban vegetable for food security in cities. A review. *Agronomy for Sustainable Development*, *35*(2), 483-498. https://doi.org/10.1007/s13593-014-0273-y

Nawrath, M., Guenat, S., Elsey, H., & Dallimer, M. (2020). Exploring uncharted territory: Do urban greenspaces support mental health in low-and middle-income countries? *Environmental Research*, 110625.

Othman, N., Latip, R. A., Ariffin, M. H., & Mohamed, N. (2017). Expectancy in urban farming engagement. *Environment-Behaviour Proceedings Journal*, *2*(6), 335-340.

SYMPOSIUM 8: HEALTH & WELLBEING

UPCYCLING REVOLUTION: FROM WASTE TO HEALTH

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Abstract

The increase in the human population has a greater impact on the rise in the generation of waste. This gives us a greater need to formulate an innovative strategy to successfully tackle waste diversion from landfills. Upcycling technology is the process of transforming by-products, waste materials, useless, or unwanted products into new materials or good-quality products for better environmental and health value. This project is being implemented to encourage the involvement of the community in converting waste into valuable products and create awareness among the community about the importance of managing waste systematically and also practicing a healthy lifestyle. Starting with the knowledge transfer program by introducing the Universiti Malaya Sustainable Gardening Campaign (UM-SGC), which applies the concept of gardening practices to make sure the urban garden will be sustained and support the five aspects that are food security, food nutrition, circular economy, environmental sustainability, and social engagement towards the Sustainable Development Goals (SDGs), followed by constructing an urban garden as a planting plot and then, the impact of the urban garden from the participation of the community, particularly during the pandemic of COVID-19. Based on this project, Kebun-Kebun Sentosa Bayview Green Garden has been established by involving the participation of 30 members from Bayview Court 1D Apartment, Taman Sri Sentosa, Lembah Pantai, Kuala Lumpur. The inspiration behind Kebun-Kebun Sentosa Bayview Green Garden is based on this project led by Universiti Malaya that consists of three sub-projects; namely (1) Urban Garden for Sustainable Livelihood,led by Dr Rosazlin Abdullah from the Institute of Biological Sciences, (2) Rejuvenating Public Space Through Reimagining Recyclable Plastic & Construction Waste, led by Dr Nurshuhada Zainon, from the Faculty of Built Environment, and (3) Zero Waste Movement in Urban Community, led by Professor Dr Sumiani Yusoff, Institute of Ocean and Earth Sciences. The main collaborators include partnering universities from Universiti Malaysia Terengganu (UMT), Universiti Islam Antarabangsa Malaysia (UIAM), and Universiti Malaysia Kelantan

(UMK), Dewan Bandaraya Kuala Lumpur (DBKL), Local Agenda 21 (LA21 KL) and the Department of Agriculture (DOA). The participation of the community in this project has successfully constructed an urban garden by applying upcycling technology, and the community has produced a variety of yields, such as vegetables for their daily consumption, and they are also able to generate a side income. During this pandemic, COVID-19, this community was able to contribute the urban garden's yield to the quarantine family.

Keywords: Community Participation; Healthy Lifestyle; Sustainable Gardening; Waste Management; Urban Gardening

Introduction

Waste management is an issue for several factors, which are technical, technological, social, and cultural, that contribute to making it complex, while the concentration of waste products in big cities mainly gives it an urban and   metropolitan   dimension (Sgobbo, 2016). By implementing upcycling technology in urban gardens, waste products can be managed in an effective way to create awareness and encourage participation among the community. Transforming waste materials into good products can assist the community in producing something that saves money, generates side income and improves overall well-being.

Methodology

The transfer of knowledge from the university to the community in terms of creating awareness of re-imaging of various types of waste using the upcycling revolution to create a product that could be self – sustaining for   the community involved. Kebun-Kebun Sentosa Bayview Green Garden has been established by involving the participation of 30 members from Bayview Court 1D Apartment, Taman Sri Sentosa, Lembah Pantai,   Kuala Lumpur. This project is executed by the following 3 sub-projects:

Project 1: Zero Waste Movement in Urban Community

Project 2: Rejuvenating Public Space Through   Reimagining Recyclable Plastic & Construction Waste

Project 3: Urban Garden for Sustainable Livelihoods (Introducing 'Universiti Malaya Sustainable Gardening Campaign' UM-SGC

Results

The result of this project can be seen based on several aspects, such as in terms of the economy, these urban residents are able to generate their own side income and reduce household expenditure. In addition, people are also able to create opportunities for employment through this project. Besides, this project can help that area become green and also beautify the space. The existence of an urban garden in that area provides a buffer for pollution. In terms of health, the urban garden helps the community provide fresh foods which are safe, nutritious and chemical-free. Urban gardeners are also able to improve their mental health while doing gardening activities. In terms of social, community engagement can be seen during gardening at the urban garden because the community was able to interact with each other Community Feedback's on the urban garden during the pandemic of COVID-19.

Respondent	Feedback
	Bayview Green Garden is a very good project where the people who living in urban areas have limited land to garden without barriers. With the Bayview Green Garden, it helps me free time with activities which can produce sweat and improve my fitness as well as I also can socialize and interact with other members and release my stress if just stay at home especially during movement control order (MCO). In addition, I can also add new knowledge with other members to get more crop yields.
	Bayview Green Garden is something which is provide benefits to the surrounding community because it makes it easier to get nutritious food, strengthens neighborhood bonds, and reduces threats to the environment. Bayview Green Garden also makes the area look beautiful. Bayview Green Garden is very helpful during MCO because the gardening activity is one of the soothing activities where it gives satisfaction to me. Currently, many residents work or study at home. So, gardening at home helps a family be positive and healthy.
	As a resident of Bayview Court 1D and a member of Bayview Green Garden, I am happy to have this garden because I enjoy gardening here. Bayview Green Garden is very helpful to me especially during MCO because I can get fresh vegetables from this garden.
	Bayview Green Garden is a place for gardening activities and a variety of crops such as fresh vegetables can be obtained here. In addition, Bayview Green Garden is a place for residents here to interact with each other. During the current MCO, gardening activities can be done to fill the free time here.
	Bayview Green Garden gave me the opportunity to meet and interact with other residents. As an apartment resident, Bayview Green Garden gave me a place to garden and I am happy enjoying the produce of the garden on my own. Bayview Green Garden is also the best place for everyone to give opinions and ideas to produce the best plants. Throughout the MCO, I worked from home. Gardening helps me to relieve stress.

Conclusion

Implementing upcycling technology in constructing urban gardens can reduce waste production at landfills. Waste production is transformed into good quality products which provide benefits to the community, such as helping to generate a side income, promoting a healthy lifestyle and also providing a sustainable environment.

Acknowledgement

Reference

Sgobbo, A. (2016). *Recycling, waste management and urban vegetable gardens*. WIT Transactions on Ecology and The Environment, 202.

KNOWLEDGE TRANSFER OF PROSTHETIC FABRICATION TECHNIQUE USING LAMINATION

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Abstract

Prosthetic limb is an artificial limb used to replace an amputated or missing limb. In Malaysia, it is commonly made using polypropylene copolymer. However, the plastic is subject to fatigue failure over a period of time and needs to be changed every two to three years. A laminated prosthetic however has a longer resistance to fatigue failure and can be used for more than five years without breaking. This project aims to share the knowledge of fabricating a prosthetic device using lamination technique to the trainers of Pusat Latihan Perindustrian dan Pemulihan (PLPP). PLPP is an institution that teaches prosthetic fabrication skills to disabled people for industrial marketability. The lamination technique will produce a stronger and more durable prosthetic socket with minimum waste. It also eliminates the usage of an oven that is required for polypropylene socket fabrication thus reducing the overhead cost. The project was held at PLPP's Prosthetic and Orthotic Workshop with the participation of 10 trainers. The curriculum covered common types of sockets such as Transtibial, transfemoral, transradial and transhumeral, extra knowledge of ankle-foot orthosis (AFO) is also included as the AFO is a regular request. A total of 5 devices are able to be completed during the whole project. The devices do the training session was properly made with few irregularities. PLPP trainers are able to fabricate prosthetic socket independently.

Keywords: Disabled People; Fabricated Prosthetic Socket; Prosthetic Limb

Introduction

The project is a collaboration of Universiti Malaya (UM) and Pusat Latihan Perindustrian dan Pemulihan (PLPP) as institutions of knowledge that covers the teaching of prosthetic and orthotic in Malaysia. The technique used in PLPP in fabricating prosthetic sockets is thermoplastic which is polypropylene. Polypropylene socket is weaker compare to laminated socket (Maleque, Belal & Sapuan, 2017). A laminated prosthetic socket has shown to be more consistent during fabrication with only 25% of relative standard deviation for average strength while a copolymer socket with 61% from different facilities. Also, laminated sockets come from the same facilities have only 21% meanwhile the copolymer socket comes with 42% deviation (Gerschutz et al, 2012). This project aims to share the knowledge on lamination techniques used in UM to PLPP.

Methodology

This project is held in PLPP's Prosthetic and Orthotic Workshop. The project involved 15 PLPP trainers and four UM staff. All four common amputated area was covered which is transtibial, transfemoral, transradial and transhumeral. The curriculum covers the materials used in lamination, the steps of lamination and safety and precaution during laminating. Theory class was made once explaining the concept and safety of lamination. A practical session was done to practice the lesson learned in theory class. The knowledge transferred was studied during the author undergraduate study.

Results

Table 4: Devices made during the project

Devices made in PLPP	Devices made for community
Transtibial prostheses (Practical session)	Transtibial prosthesis
Ankle Foot Orthosis (AFO) (Practical session)	
Transfemoral Prosthesis (Practical Session)	

Figure 5: Class of PVA making

Figure 6: Making of AFO device

Discussion

The device fabricated by PLPP trainers is well made, high ecstatic value, and very durable. The trainers are well equipped to teach PLPP students when they can enroll. This helps PLPP to deliver a better product to their patients by providing the laminated socket. This technique also removes the use of the oven thus able to reduce the overhead cost of fabrication (Neama, Radhi, & Jweeg (2007).

Contribution

This project provides the great skill to the PLPP trainers and is able to increase the marketability of their trainees.

Impact

This technique is able to reduce the waste product generated from polypropylene usage. As the socket can be made just according to the timeline as compared to polypropylene that needs to be extended for vacuum suction.

Conclusion

The project is a success as the target crowd is able to use the device and materials provided independently. More curriculum can be added to the project to further the understanding in more detail also to be able to fabricate more complicated devices.

Acknowledgement

References

Maleque, M., Belal, F. & Sapuan, S. (2017). Mechanical properties study of pseudo-stem banana fiber reinforced epoxy composite. *The Arabian journal for science and engineering, 32*(2B), 359-364.

Gerschutz, M.J., et al., (2012). Strength evaluation of prosthetic check sockets, copolymer sockets, and definitive laminated sockets. *Journal of rehabilitation research and development*, *49*(3), 405.

Neama, H.F., Radhi, S.K. & Jweeg, M.J. (2007). An experimental comparative study between polypropylene and laminated lower limb prosthetic socket. *Al-Khwarizmi Engineering Journal*, *3*(1), 40-47.

AWARENESS CAMPAIGN OF CHEMICALS HAZARDOUS AMONG SCHOOL STUDENTS

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Abstract

Chemical and chemical processes comprise in everyone's life. The knowledge of chemical process handling is of paramount interest because any mishandling could lead to lethal results such as burning, diseases and even death. The knowledge of chemicals and chemical processes is something acquired through one's education. Unfortunately, chemical safety education is not fully taught at the primary or secondary school levels in Malaysia. Therefore, the goal of this campaign is to educate secondary school students about hazardous chemicals and the proper way to handle it. Due to the hit of the COVID-19 pandemic which started in late February 2020, all the lessons and workshops were conducted in a hybrid mode which comprised of live webinars, question and answer sessions with target students and questionnaires. Students' feedback was evaluated in terms of their understanding and the importance of chemical safety. Fifty percent (50%) of students were found to be very satisfied with the campaign and another half still prefer physical campaigns.

Keywords: Social Education; Hazardous Chemicals; Awareness Campaign; Food; Environment

Introduction

Hazardous chemicals are substances, mixtures, and articles that can pose a significant risk to health and safety if not managed correctly. They may have health hazards, physical hazards, or both. Examples of chemicals that can cause adverse health effects to include toxic chemicals. chemicals that cause skin damage. The exposure and sharing of knowledge about the dangers of hazardous chemicals with students are the best way to raise awareness among them.

Recently, we were shocked by the issue of air pollution that has disrupted the sustainability of the local communities. This has been long arisen among the community but was ignored, even though it can threaten human health in the community itself. This issue has been considered serious because it involves the

surrounding community in large groups because of negligence and selfishness by certain parties. Lack of awareness is one of the factors in the occurrence of such incidents. Society should have a high value of awareness of the hazardous chemicals towards the quality of life and the environment.

The implementation of awareness campaigns is a worthy platform that should be held in schools to cultivate and increase awareness toward the danger of hazardous chemicals and how to handle it properly in life among the students. Thus, the event is one of the initiatives that can help the government's efforts in overcoming the problem in the future and at the same time its help to build integrity toward the students who can contribute to society, the country, and the world.

Methodology

Firstly, discussion and planning of action with committee members needed to make the flow of the campaign go smoothly as planned. Secondly, seeking agreement with the instructors and school for the time and date to organise our awareness campaign. The venue of the event was taking place in the online meeting in "*Google Meet*" and the arrangement of time was decided by considering the availability of students and instructors. Five schools were involved in this campaign and so far we are done with for schools which are SMK Bandar Utama Damansara 4, SMK Damansara Utama, SMK Damansara Damai 1 and SMK La Salle PJ. Next, all the materials were provided to the committee members such as presentation slides, activities like game-on (Kahoot), question and answers (Q&A) sections to conduct this virtual campaign.

Results

Table 1: Data analysis based on questionnaire from the feedback form

Feedback*	Indicator of satisfactory*				
	Very unsatisfactory	**unsatisfactory**	**Moderate**	**satisfactory**	**Very satisfactory**
The level of knowledge and allows participants to understand the whole content of the program	0%	0%	13%	34%	53%
The objectives of the program are achievable and clear	0%	1%	7%	36%	56%
Feedback (Questions)*	**Indicator of answers***				
	Yes	**Maybe**		**No**	
Do you get important inputs about the hazardous chemicals	94%	6%		0%	
Will you share this knowledge with others?	81%	17%		2%	

225
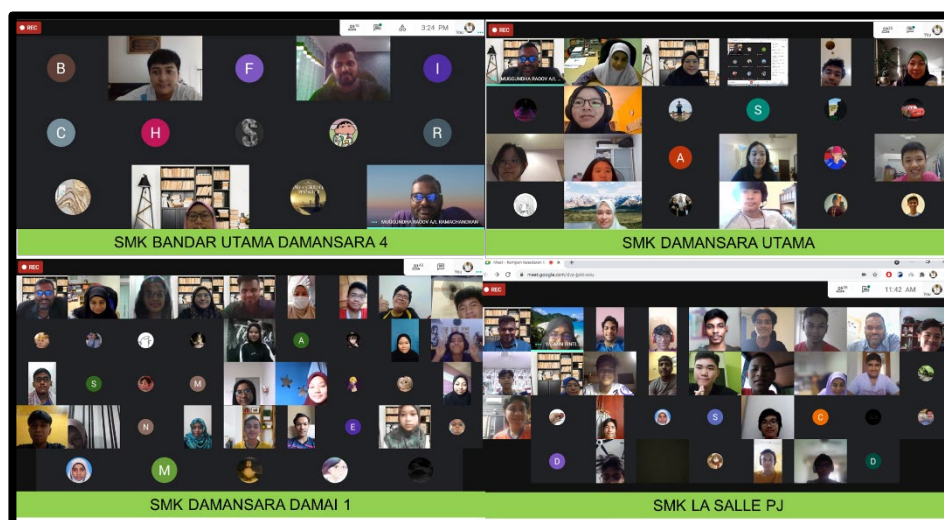
*Based on 100 of responses from 4 schools

Figure 1: Engagements with school students through Online Session "*Google Meet*"

Discussion
The effectiveness of the campaign was evaluated by a simple questionnaire from the feedback form and 50% of students are very satisfied with the campaign. Other students are expecting physical campaigns at schools for better understandings of the hazardous chemicals.

Contribution
Students are able to understand hazardous chemicals and the proper way to handle it.

Impact
Awareness / Social-education. Our program will give awareness to our community about the usage of hazardous chemicals in our daily life which may lead to illness and diseases if the quantity of chemicals exceeds the allowable levels. In addition to that, it may also pollute our environment and disturb our ecosystem.

Conclusion
The effectiveness of the campaign was evaluated by a simple questionnaire from the feedback form and 50% of students are very satisfied with the virtual campaign. However, about 50% of students are expecting a physical campaign at their schools to get a clear picture. The current allocated budget is too small, and it would be great if more budget was allocated so that more students and schools can participate in this campaign. In the future, we would like to conduct this works physically for students to get better understandings of hazardous chemicals.

References

Yap, C. K., Peng, S. H. T., & Leow, C. S. (2019). Contamination in Pasir Gudang Area, Peninsular Malaysia: What can we learn from Kim Kim River chemical waste contamination?. *Journal of Humanities and Education Development (JHED)*, *1*(2), 84-87.

ECONOMIC GENERATION THROUGH COMMERCIAL BANANA CULTIVATION

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Abstract

The agriculture-based economy contributed to income generation for various communities in Malaysia. The community involved in this study is the patients (ex-drug addicts) from Rumah Sinar Kasih, KL. Problems faced by the participants (ex-drug addicts) are the difficulty in getting jobs after completing rehabilitation programs and the have lacked of knowledge in agriculture. This project provides participants the opportunity to learn about agriculture skills, especially in banana cultivation. Participants undergo short training courses and were guided by researchers in banana cultivation and other agriculture-based activity such as biochar production and acclimatization of tissue culture plantlets. This project is aimed to help the participants to generate income through the sale of banana fruits (long term) and the production of biochar and banana seedlings (short term). At the end of this project, participants could find employment in agriculture-related fields or generate income after the completion of their recovery process.

Keywords: Banana Cultivation; Biochar; Tissue Culture; Income Generation; Seedlings

Introduction

Entrepreneurship in the field of agriculture contributed to the nation's economies and the entrepreneurial culture should be nurtured at various levels in the community. In Malaysia, bananas are the most produced fruit, planted in almost 35,000 hectares of

land with the production of more than 350,000 metric tonnes per year (MT). It accounted for 24% of Malaysia's total fruit production in 2017 (MOA, 2019).

Drug abuse is a complex issue and has been a serious public health problem in Malaysia. The high relapse rate which has been consistently over 50% for the past decades has been worrying (Tam & Foo., 2013). The community involved in this study is the patients (ex-drug addicts) from Rumah Sinar Kasih, KL. The recovery process from drug addiction often involves a person making a significant change(s) to improve their quality of life, including overall health and wellness. It can also help teach people to feel empowered in their lives and reach their full potential (Doran, 2021).

Problems faced by the participants (ex-drug addicts) are the difficulty in getting jobs after completing rehabilitation programs and lack of knowledge in agriculture. Through this project, the university contributes to knowledge and provides a platform for economic generation for participants through commercial banana cultivation. This project is to provide the participants with the opportunity to learn about agriculture skills especially in banana cultivation so that participants can find employment in agriculture-related fields or generate income after completion of their recovery process. The main objective of this project is to help the community to generate income through the sale of banana fruits (long term) and the production of biochar and banana seedlings (short term).

Specific objectives:

1. To train and guide the community on commercial banana cultivation in the farm.
2. To guide and provide exposure to biochar production from agricultural waste.
3. To empower the community in generating an agriculture-based economy.

Methodology
This project was divided into 5 stages which are as follows:

1) The production of banana tissue culture plantlets in university
Universiti Malaya (UM) provides the tissue culture banana seedlings of two varieties ie. berangan (250 plantlets) and tanduk (200 plantlets) in a polybag.

2) Workshop of banana tissue culture and and biochar production
Workshop was done to expose participants to the technique used for the production of banana seedlings and to train participants on biochar production from agricultural waste.

3) Distribution of banana tissue culture seedlings to community and planting in the farm.
Before the planting of banana seedlings took place, the soil in the farm was tested for *Fusarium* pathogen.

4) Planting of banana seedlings in the farm and assessment.
After the plot was ready, the planting of banana seedlings was done by the participants.

5) Workshop on business management in agriculture and study on the mental health of participants during the project.

A workshop on agriculture business management was done to expose participants on handling the sales of banana plants as well as other agricultural business activity. While survey on the mental health of participants was done during the project.

Results

Figure 1: Workshop on banana tissue culture in Universiti Malaya and tissue culture banana seedlings.

Figure 2: Workshop of biochar production and banana planting in Gombak (planting site).

Figure 3: Planting of banana seedlings, site visit and field assessment by researchers

Figure 4: Banana farm by the participants and fruiting of banana plants

Figure 5: Online workshop on agriculture business management (during pandemic)

Figure 6: Harvested banana fruits are ready for sale

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Table 1: Level of Mental Health of Participants in Recovery

	N	Minimum	Maximum	Average	SD
WHO-5	12	16.00	100.00	52.33	28.845

Table 2: Emotion of the Participants in Recovery

Emotion	N	Average	SD
Stress	12	7.42	2.610
Anxiety	12	6.67	2.774
Depression	12	5.83	2.443

Discussion

In this project, planting bananas by using tissue culture-based seedlings was chosen based on several advantages that the seedlings offered. Banana plantlets produced through tissue culture technique not only reduce the risk of disease movement from one farm to the other but also produce uniform and high yield of fruits increasing the overall production and profits (Naeem at al., 2018). Participants were initially exposed to the plant tissue culture technique in a workshop conducted in Universiti Malaya (**Figure 1**). At the same time, researchers propagate the banana plantlets in the laboratory. Before planting of banana seedlings take place, 50 participants attended another workshop on banana planting on the farm and the production of biochar (**Figure 2**). Participants also learned how to acclimatize the banana seedlings. Through this knowledge transfer, the participants are expected to get a short-term source of income from the sale of banana seedlings as well as the biochar production while waiting for the sale of banana fruits.

To ensure this activity gets high returns, planting banana plants with tissue culture seedlings is recommended as clone plants ensure consistently high quality and quantity fruits to be harvested. University supplies the plant seedlings to the community as well as the technique for seedlings care and planting. Planting of banana seedlings in the farm was done after a screening of soil was completed. From the result, the soil was free from *Fusarium* pathogen. The planting of banana plants was done in two phases. The first phase involved 250 banana cv. berangan plantlets while for second phase it involved 200 banana (tanduk and nangka) plantlets. Site visit and assessment by the researcher was done periodically during the project (**Figure 3**).

After nine months of planting, banana plants produced fruits and were ready to be harvested about two months later. Almost 60 percent of the plants were fruiting and harvested when matured (**Figure 4**). Participants also were exposed to marketing in the agriculture business through workshops conducted by our collaborators (**Figure 5**). This is to ensure a smooth sale of the banana fruits. This program was expected to help overcome the financial problems of the participants and further improve their livelihood. The sale of banana fruits was done by the participants to generate their income (**Figure 6**) and the process was monitored by Sinar Kasih.

Other than income generation, a study was also done by our collaborator on the participants' mental health and emotion during the project. It showed that during the project, participants displayed moderate mental health and quite low emotion which could be due to many factors. This suggested that the participants need a strong supports system to be able to undergo success recovery process and adjustment to society as well.

Contribution

From this project, participants are able to generate income and can increase career opportunities in agriculture especially in the area of banana cultivation. Planting of bananas from tissue culture seedlings does not require replanting for up to three generations. Therefore the community will get fruit sales revenue of three times from each planting cycle. Banana seedlings supplied by the university can be used as capital for further next planting.

Impact

This project helps the participants to obtain agricultural skills during their recovery process. Participants could then be employed in the agriculture sector or generate their own income by using the skills acquired. This will give a positive impression of the community towards the participants (ex-drug addicts).

Conclusion

This project had successfully provided participants with agricultural skills, especially in banana planting. Participants are now able to find employment or generate income in the agriculture sector after the completion of their recovery program. This project helps them in the process of their recovery and adjustment to society as well as to help to improve their standard of living.

Acknowledgement

References

Doran. K. (2021). Stages of change in the recovery process. American Addiction Centre.https://www.recovery.org/drug-treatment/recovery-process.

MOA. (2019). "Booklet Statistik Tanaman 2018."

Naeem, M., Baloch, W.M., Rajput, K.L. and Memon, A.J. (2018). Banana tissue culture. *International Journal of Scientific & Engineering Research*, *9*(9), ISSN 2229-5518.

Tam, C.L. and Foo, Y.C. (2013). A Qualitative study on drug abuse relapse in Malaysia: Contributory Factors and Treatment Effectiveness. *International Journal of Cllaborative Research on Internal Medicine & Public Health*, *5*(4), 2017-132.

HEALTH VIRTUAL WALKING FOOTBALL CLUB

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Abstract

Childhood obesity is a growing concern in Malaysia. Approximately 30% of our schoolgoing children are either overweight or obese. Poor diet and sedentary lifestyles are the main causes of obesity in Malaysia. Walking Football (WF) was the intervention used as an exercise regime to increase physical activity in this program. Following the Movement Control Order imposed by the Government due to the COVID-19 pandemic, only four schools in the Petaling Jaya district were selected for the Virtual Walking Football Club (VWFC) program. Based on body mass index (BMI) criteria of ten school pupils ranging from normal, overweight, or obese were selected to form a team for each school. The virtual exercise regimes were specially crafted for overweight individuals to improve fitness levels and football skills by coaches certified as trainers in walking football. The participants followed the exercise regimes, guided by their school teacher for three months with daily exercise logged in individual google forms. Three out of four schools recruited ten participants to form their school teams. One failed to recruit students due to difficulties in coordinating students movements. The use of virtual exercise modules in the form of videos guided the teachers to deliver was feasible but had a few limitations including the accessibility of proper gadgets, internet access, and coordination of participants for exercise schedules. The virtual exercise program is feasible but limitations in delivery of the exercise modules need proper coordination and commitment from the stakeholders and access to suitable facilities.

Keywords: Walking Football; Overweight; Children; Pandemic; Virtual

Introduction

The National Health and Morbidity Survey in 2015 revealed that 38% of Malaysia's school-going children are either overweight or obese. The main cause of obesity is poor diet intake and a sedentary lifestyle. Walking football was first introduced to several schools in Petaling Jaya district in 2017 to combat obesity in school children by encouraging them to be active in walking football as a sport. This program had shown positive results in improving fitness level, increase in muscle mass, and a reduction in body fat percentage after three months. In 2018, the Walking Football Club in more schools in Petaling Jaya and in Penang, and included normal-weight school children as well. This program was awarded the Flagship Acknowledgement Award in 2018 and has signed a memorandum of agreement with the Walking Football Association of the United Kingdom to formally train existing coaches in walking football sport. However, due to the COVID-19 pandemic and the enforcement of movement control measures during this period, schools were closed nationwide with an undetermined timeframe

and this has impacted WFC programs. These abrupt changes have called upon us to adapt to the new norms in physical distance and have resulted in the development of virtual exercise modules, and a virtual walking football club (VWFC) was formed. This study was conducted to determine if virtual exercise modules in walking football can improve participant's fitness levels and improve their anthropometric measurements, as well as to explore the feasibility of this method in delivering exercise programs in school children.

Methodology
This was a quantitative study to measure the body mass index changes, fitness level of participants using the eight-minute-walking test in participants via virtual exercise modules. The feasibility of this method will be determined by a pre-and post questionnaires given to participants and the participants' exercise log entries that will be monitored by the teachers.

Location of study: Four schools in Petaling Jaya district within 10 km radius from Universiti Malaya.

Sampling: A stratified random sampling method was used whereby the assigned school teacher invited interested participants who were suitable to be included in this program according to their body mass index. A ratio of 1: 5 of normal and overweight or obese participants were included in the school team of ten participants.

Objectives:

1. To introduce virtual walking football exercises to primary school students;
2. To measure the anthropometric measurements pre and post VWFC program;
3. To measure participants' fitness levels using eight-minutes-walking test pre- and post VWFC program.

Method: Two walking football coaches developed and compiled twenty exercise videos, specially crafted for overweight children. These videos were divided into two categories. One was to increase participants' fitness levels and another on how to develop and increase participants' football skills. The twenty videos were further divided into four monthly schedules to suit the fitness improvement progression of the participants as the program goes. The development of the exercise modules took three months to complete from December to February 2021. All the videos and schedules were emailed to the teachers who shared the exercise modes with the participants in a specified time schedule as planned.

The assigned teachers were taught how to do BMI measurements of suitable participants and how to conduct eight-minutes-walking-tests. They were given specific instructions on how to do the measurements online and written guidelines were also individually emailed to them. The delivery of the exercise modules, discussions on incorporating the WFC program into the new school schedule, and participants' recruitment were completed in the middle of March 2021.

The teachers were first allowed to view all the exercise modules and monthly exercise regimes. They addressed the feasibility of conducting the program with the participants' other school schedule changes. Once all exercises and schedules were vetted and agreed upon, the participants were taught the correct exercise technique by

the teachers. These steps were important to streamline the embarkation of the program on the same module in all schools and progress synchronously. Exercises were taught in stages and under close supervision and guidance by their teachers. The first exposure to a specific exercise is to ensure participants perform it in the correct technique and to reduce the risk of injuries.

The program lasted for one month until it was temporarily withheld during fasting month in the middle of April 2021. This temporary withholdment continued with the school's term break and the unforeseeable prolonged closure of schools due to rising COVID-19 infections in schools.

Results

Although the virtual WFC exercise modules were meant to be adopted outside the school environment, there were a few issues identified in this program. There were communication issues with teachers involved in this program when the teachers involved failed to join in virtual discussions on this program as they had to attend to other urgent school matters. Although the recruitment of the participants by the teachers were participants as there were times when participants did not attend school due to cluster breakout of COVID-19 infections in their schools.

The participants were recruited from different classes, hence the coordination to pursue the program together as a team was challenging. Physical education class slots and co-curricular activities were already replaced with other mainstream school subjects] due to time restrictions?]. It was discovered that a third of the participants did not own their electronic gadget to access the exercise modules on their own at home. The use of gadgets for online learning and exercise was troublesome in this new way of learning.

Following the completion of the first virtual training, the exercise monthly regime was incomplete as there were scheduled closures during school holidays and unscheduled school closures due to the MCO.

Conclusion

Online learning is an alternative method to fulfill the needs of physical activities in school pupils. There is a need for good communication and coordination between stakeholders in the delivery of the exercise modules. Limitations in internet access and availability of proper gadgets to continue with the program in one-third of the participants need to be addressed. These virtual exercise videos will be helpful in ensuring the continuity of the participant's activities during unpredictable school closures, during the weekend and school holidays as it can be practiced at any time. This virtual program can also be implemented in schools or communities whereby audiovisual facilities are not available.

Acknowledgements

References

National Health and Morbidity Survey (NHMS) (2015). *Nutritional status of children (age <18 years old), nutritional status*. Non-communicable diseases, risk factors & other health problems (Vol 2) Ministry of Health, Putrajaya.

Zulkarnain Jaafar et al (2018). Anthropometrical and fitness level changes following a 12-week walking football program for obese primary school children aged 8-1. *Medicina dello Sport*,71, 451-460 DOI: 10.23736/S0025-7826.18.3285-4

Yin Ying Chan et al (2017) Physical activity and overweight/obesity among Malaysian adults: findings from the 2015 National Health and morbidity survey (NHMS)

Nurul Izzah A., Nadia M., Wan Rozita W.M., Tengku Rozaina T.M., Rafiza S., et al. (2019). The Prevalence of Overweight and Obesity and Its Association Factors among Malays' Adolescents: Findings from Seafood Consumption Survey in Peninsular Malaysia. J Child Obes 4:2.

Cindy M.G., Nanette Mutrie K., Annie S.A., Shaun T., & Sally Wyke (2013). Weight management for overweight and obese men delivered through professional football clubs: a pilot randomized trial. *Int J Behav Nutr Phys Act*. Oct 30;10:121. doi: 10.1186/1479-5868-10-121.

METHADONE MAINTENANCE TREATMENT & JOB EMPLOYMENT & QUALITY OF LIFE FOR EX-DRUG ADDICTS IN LEMBAH PANTAI

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Abstract

This study aims to find the relationship of the duration of methadone maintenance therapy (MMT), employment status and quality of life (QoL) of opiate drug patients in Lembah Pantai. A cross-sectional study was designed for 169 opiate drug patients whom under the MMT in Universiti Malaya Medical Centre. The participants were structurally interviewed using the World Health Organization Quality of Life Brief Questionnaire (WHOQOL-BREF). The study found that the duration of MMT has a significant relationship with employment status. Moreover, employed patients scored higher psychological domain of QoL compared to unemployed participants.

Keywords: Opiate; Methadone Maintenance Treatment; Employment; Quality of life

Introduction

Most of the former drug addicts have a hard experience to be accepted in society and thus resulting in unemployment especially during the economic recession (Nagelhout, et al., 2017). Furthermore, this will have a negative consequence on the quality of life in patients (Feelemyer, Des Jarlais, Arasteh, Phillips, & Hagan, 2014). This study aims to find the relationship of the duration of methadone maintenance therapy (MMT), employment status and quality of life (QoL) of opiate drug patients in Lembah Pantai.

Methodology

A cross-sectional study was designed for 169 opiate drug patients whom under the MMT in Universiti Malaya Medical Centre. The participants were structurally interviewed using the World Health Organization Quality of Life Brief Questionnaire (WHOQOL-BREF) (Vahedi, 2010). The statistical analysis was done using JASP software. The p-value of the Independent Sample t-Test of employment status was compared to the duration of MMT and QoL.

Results

There are of four domains of QoL namely physical, psychology, social and environment. The Pearson's r value for all domains was in the range of 0.4 to 0.68 with p-value less than 0.001 as tabulated in **Table 1**.

Table 1: Correlation of QoL domains

Pearson's Correlations						
Variable		**Physical**	**Psychology**	**Social**	**Environment**
1. Physical	Pearson's r	—			
	p-value	—			
2. Psychology	Pearson's r	0.577 ***	—		
	p-value	< .001	—		
3. Social	Pearson's r	0.428 ***	0.395 ***	—	
	p-value	< .001	< .001	—	
4. Environment	Pearson's r	0.609 ***	0.680 ***	0.499 ***	—
	p-value	< .001	< .001	< .001	—
* p < .05, ** p < .01, *** p < .001					

Table 2 displays the comparison of the employment status of patients with the duration of MT and the domains of WHOQOL-BREF. The p-value of the duration of treatment, psychology, and environment domains were 0.035, 0.016 and 0.003. Meanwhile, the physical and social domains have more than 0.05 p-value.

Table 2: Independent Sample T-Test of Duration of Treatment, QoL Domain & Employment Status

Group Descriptives							
	Group	**N**	**Mean**	**SD**	**SE**	**W**	**p**
Duration of MMT	Unemployed	28	32.750	26.841	5.072	1548.0	0.035
	Employed	141	43.142	28.898	2.434		
Psychology	Unemployed	28	53.929	12.528	2.368	1472.5	0.016
	Employed	141	59.085	12.412	1.045		
Environment	Unemployed	28	57.750	14.380	2.718	1341.5	0.003
	Employed	141	65.858	13.746	1.158		
Physical	Unemployed	28	54.321	9.866	1.864	1611.5	0.058
	Employed	141	57.461	11.905	1.003		

Social	Unemployed	28	62.250	19.252	3.638	1771.5	0.193
	Employed	141	65.199	20.427	1.720		

Note. For all Mann-Whitney U tests, the alternative hypothesis specifies that Unemployed Group is less than Employed Group.

Discussion

The four domains of QoL have a significantly moderate positive correlation as evident in **Table 1**. Past studies have shown that the overall QoL of drug addict patients were increased after following addiction treatment (Manning, et al., 2019). The duration of MMT has a significant relationship with employment status as the p-value is 0.035 which is below 0.05. Unemployed patients scored lower psychological domain of QoL compared to employed participants. For physical domain, both groups of patients suffering from Hepatitis and was explained with the p-value of 0.058. The limitation of this study is it is only a cross-sectional study and no causal relationship could be drawn and it is pre-pandemic data. Therefore, this research needs to be continued to ensure the sustainability of the project and prevent the patients from relapsing.

Contribution

This project is also in a collaboration with NGO Rumah Sinar Kasih and Cure & Care San Peng.

Impact

The impact of this project includes the domain of behavioural, health and well-being, and economy and finance. The participants were given treatment, psychospiritual therapy and job placement.

Conclusion

The QoL of patients under MMT has a significant positively correlated. The employed patients generally have much higher psychological quality satisfaction compared to the unemployed patients. Most patients of both groups suffered from Hepatitis which was reflected in the p-value of the physical domain score. This study needs further analysis in the post-pandemic context in the future.

Acknowledgement

References

Feelemyer, J. P., Des Jarlais, D. C., Arasteh, K., Phillips, B. W., & Hagan, H. (2014). Changes in Quality of Life (WHOQOL-BREF) and Addiction Severity Index (ASI) among participants in Opioid Substitution Treatment (OST) in Low and Middle Income Countries: An International Systematic Review. *Drug and Alcohol Dependence*, 251-258.

Manning, V., Garfield, J. B., Lam, T., Allsop, S., Berends, L., Best, D., Lubman, D. I. (2019). Improved Quality of Life Following Addiction Treatment Is Associated with Reductions in Substance Use. *Journal of Clinical Medicine*(8), 9. doi: 10.3390/jcm8091407

Nagelhout, G. E., Hummel, K., de Goaij, M. C., de Vries, H., Kaner, E., & Lemmens, P. (2017). How economic recessions and unemployment affect illegal drug use: A systematic realist literature review. *International Journal of Drug Policy*, 69-83.

Vahedi, S. (2010). World Health Organization Quality-of-Life Scale (WHOQOL-BREF): Analyses of Their Item Response Theory Properties Based on the Graded Responses Model. *Iranian Journal of Psychiatry*, 140-153.

SYMPOSIUM 9: EDUCATION

FROM A USER TO A USER: REQUIREMENTS IDENTIFICATION FOR QURAN LEARNING APPS

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Abstract

Learning Quran among special needs children can be challenging due to several factors such as reduced attention span. There has been increasing awareness of the necessity of religious education for these students. However, more efforts are needed, especially on the use of technological solutions such as mobile apps to assist learning. More specifically, it is still unclear what features a mobile app for learning the Quran should incorporate to solve the needs and challenges of the special needs child, their parents, and teachers (i.e., target group). We hypothesized that engaging the target group in the identification of challenges and solutions early in the problem requirement phase will promote the development of compelling features for the app. To test this notion, several tools, and frameworks such as design thinking were adopted to assist this process. It was found that these methods enable the identification of leading features for the mobile apps for Quran education. Therefore, these strategies are effective to understand the challenges and needs of this target group, while proposing the most relevant elements needed for the app. Future studies should investigate the effectiveness of the app by conducting several key evaluations (i.e. usability, performance).

Keywords: Quranic Learning; Mobile Apps; Design Thinking; Special Needs Children

Introduction

Teaching the Quran to special needs children remains a challenge given the diverse types of disabilities these types of children possess. Additionally, these learners often battle to remain focused and motivated during a specific learning session. Although limited, existing literature on teaching Quran using information technology to the special needs children proposed a model for a mobile learning game for the deaf and blind students (Hussain et al, 2014), identified challenges of the special needs in learning Quran (Mud et al, 2021) and the use *takrir* (repetition) on an interactive mobile application to facilitate recitation among the autism children (Senan et al, 2017). However, these studies are limited in adopting full-scale gamification elements,

personalised learning and progress monitoring management in a mobile application for Quran lessons needed to observe a child's learning progress closely and effectively. The proposed research aims to identify the functional requirements of a mobile application for assisting Quran learning to diverse types of special needs

children such as autism, slow learners, down syndrome and ADHD. Specifically, what features should the mobile apps encompass? and what techniques can be used to identify these elements?

Methodology
The researchers (with NGO partner) conducted a problem interview with the stakeholders including teachers and parents of a special needs child. Their pain points were documented. These methods were necessary to identify the essential components of the mobile application so that the solutions developed to resolve the pain points of the identified target user. The design thinking framework was adopted during this process as it offers an innovative method to understand the target group, explore and create solutions, and iteratively deliver them. Such iterations are key to a cost-effective (in terms of time and funds) approach in creating and testing solutions quickly. The value proposition canvas adapted from the business model was also employed in this work to identify the relationship between the features of the mobile apps with the challenges indicated by the target user. A total of 34 teachers and parents who resides in Kuala Lumpur, Selangor, or Nilai (Negeri Sembilan) were involved in the process of identifying the features of the mobile apps. The teachers were responsible for teaching the special needs children at the participating learning centers for this study (i.e. Yayasan Faqeh, Projek Rintis Fakih, PPKI SK (1) Sultan Alam Shah). Given several restrictions due to the Covid-19 pandemic, all interviews and discussion sessions were conducted online for a duration of 6 months (June 2020 – December 2020). Methods of discussions include phone calls, emails, online meetings and Whatsapp communication.

Results
Among the most dominant challenges experienced by the teachers and parents in teaching effective Quran lessons to the children is 1) limited personalised teaching sessions between them and the child (due to other critical commitments), 2) issues trying to maintain a student's engagement during learning, 3) a child needs frequent time-off period to encourage prolonged learning motivation, and 4) lack of efficient tools in tracking a student's learning progress. An example of a persona canvas is shown in Figure 1(a). Figure 1(b) shows the mapping between the identified features of the mobile app with the solutions needed by the target user (i.e. teachers, parents and special needs children). Among the key features required for the app development is 1) availability of individual and personalized accounts, 2) practice lessons in short intervals and small chunks, 3) online progress monitoring in real-time, and 4) gamification elements such as leader board, points, rewards, ratings, badges and

progress bar. Figure 3 shows some examples of the prototype mobile app features developed based on these findings.

Figure 1: (a) Persona canvas of the target group, (b) Mapping of the features of the mobile apps with the needs of the target group

Figure 2: Examples of features developed for the mobile apps

Discussion

The use of principles adopted from design thinking and business model canvas has given a unique and improved approach for the identification of vital elements needed for developing a Quran learning application for special needs children. These methods have not been reported in any of the previous studies. The inclusion of partners gave added advantage to the researchers to better understand the types of challenges these target groups (i.e. parents and teachers) experienced before the proposal of suitable solutions. As a result of this two-way interaction, a prototype application that was developed would have a higher interest rate to beutilized among teachers, parents and special needs children.

Contribution

In terms of the theoretical contribution, the findings highlight that engagement and inclusion of the target groups early in the identification of solutions lead to increased interest and awareness on the most challenging issues in dealing with teaching the special needs children Quran lessons. The cohesive understanding of these challenges enables these target groups to propose solutions that benefit shared interests.

Impact

The proposed work is impactful on the awareness of teachers and parents in using technology such as mobile applications to assist the special needs children to learn the Quran. This is because such methods could provide personalized learning sessions in short intervals and fun gamified settings. Furthermore, the involvement of the target groups during the challenge- solution identification stage may lead to behavioral change in viewing how such engagement
could create a more valuable technological solution.

Conclusion

Developing a mobile app for Quran education for special needs children is advantageous with the addition of parents and teachers of this group during the requirement gathering so that features of the mobile app can be identified based on the needs of the target group. This process is further aided by several useful tools and frameworks such as design thinking and business models. These techniques can be adopted for future applications irrespective of the subject area. Further evaluations with these groups are needed to identify their usability, performance, and functionality.

Acknowledgement

References

Hussain, A., Jomhari, N., Mohmad Kamal, F., & Mohamad, N. (2014). Fakih: modelling mobile learning game to recite Quran for deaf children. International Journal on Islamic Applications in Computer Science and Technology, 2(2), 8-15.

Mud, S. C., & Ali, M. M. (2021). Learning Al-Quran for Children with Disabilities. *Jurnal Hadhari*, *13*(1), 135-146.

Senan, N., Ab Aziz, W. A. W., Othman, M. F., & Suparjoh, S. (2017). Embedding repetition (Takrir) technique in developing Al-Quran memorizing mobile application for autism children. In MATEC Web of Conferences (Vol. 135, p. 00076). EDP Sciences.

DESIGN AND DEVELOPMENT OF AR GAME AND LEARNING MODULES OF BASIC LANGUAGE AND NUMERACY LITERACY SKILLS FOR KNOWLEDGE TRANSFER PROGRAMME

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Abstract

The global COVID-19 pandemic situation in 2020 has a great impact on the educational systems, which shifting physical classes into online classes. Information and Communication Technology tools are necessary and essential for supporting and engaging students for their meaningful online learning environment. AR technology has been integrated for motivating students to increase their learning during the first and second phases of this project. Currently, this project named #WeAlsoHaveDreams is extended to design and develop the AR game and learning modules for basic language and numeracy literacy skills among primary school students. Vuforia Engine and Unity were used to develop the AR games for Malay, English and Mathematics learning. Four modules were designed and developed for these three subjects of learning. These modules provide the guidance, manual setting, steps and tips to assist school teachers for teaching basic language and numeracy literacy skills, especially for this knowledge transfer program. These modules also offer the opportunities to learn new skills and knowledge among the children via AR technology and encourage them to build positive characters and minds. In addition, the community-based learning approach is a participatory learning process to facilitate the broader participation in creating attitudes toward community development, by offering skills and knowledge for all students.

Introduction

The COVID-19 pandemic caused the closures of all schools and suspensions of physical classes since the spring of the year 2020. The transformation of physical classes into online classes has had a great impact on the educational system. The online classes open the opportunity for teachers or practitioners to use information and communication technology to engage students for their online classes and foster students 21st century learning skills in this meaningful online learning environment (Lian, Chai, Zheng, & Liang, 2021; Rizun & Strzelecki, 2020). AR games, work as new learning tools to engage students, and allow training and learning in a realistic environment. #WeAlsoHaveDreams project currently is extended and enhanced the AR learning module to AR-based learning game for Malay, English and Mathematics learning instead of AR learning module for creating simple AR animation in conducting school learning activities. Thus, this paper proposes the design and development of AR games for teaching and learning Malay, English and Mathematics to enhance meaningful online learning environments for primary school students via community-based learning approach.

Methodology

This project is designed to use a mentor-mentee program, which means the mentor provides support, knowledge, and guidance to the mentee, who receives this knowledge and skills. This collaborative mentoring involves a sustainable relationship between a person (mentor) perceived to own more experience, knowledge and a person (mentee) perceived to have less knowledge (Zanchetta et al., 2017). Vuforia Engine and Unity were used to develop the AR game for Malay, English, and Mathematics learning. Four modules were developed for these subjects learning, consisted one module for Malay language, one module for English language, and two modules for Mathematics learning. These modules provide the guidance, manual setting, steps and tips to assist school teachers for teaching basic language and
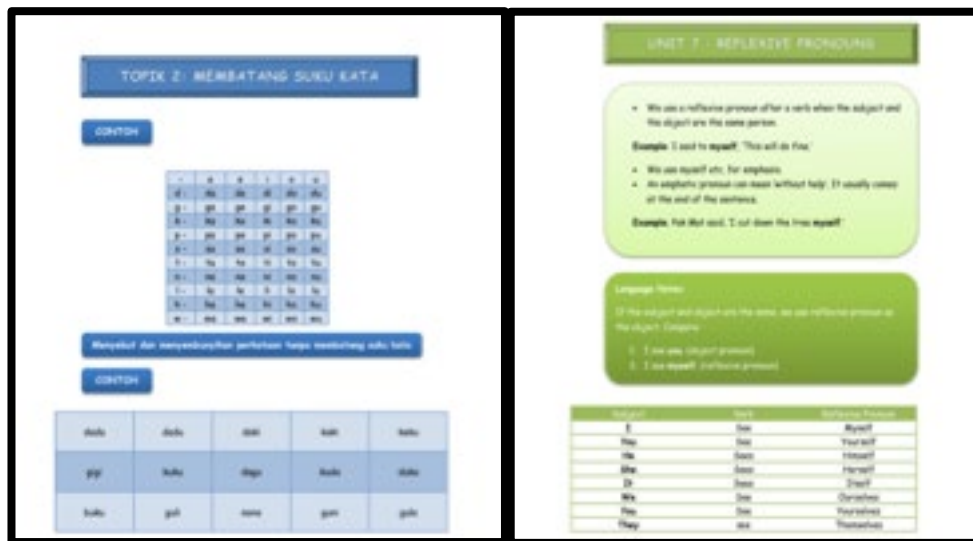numeracy literacy skills, especially for this knowledge transfer program.

Results

Figure 1: Snapshots of AR game for Mathematics learning.
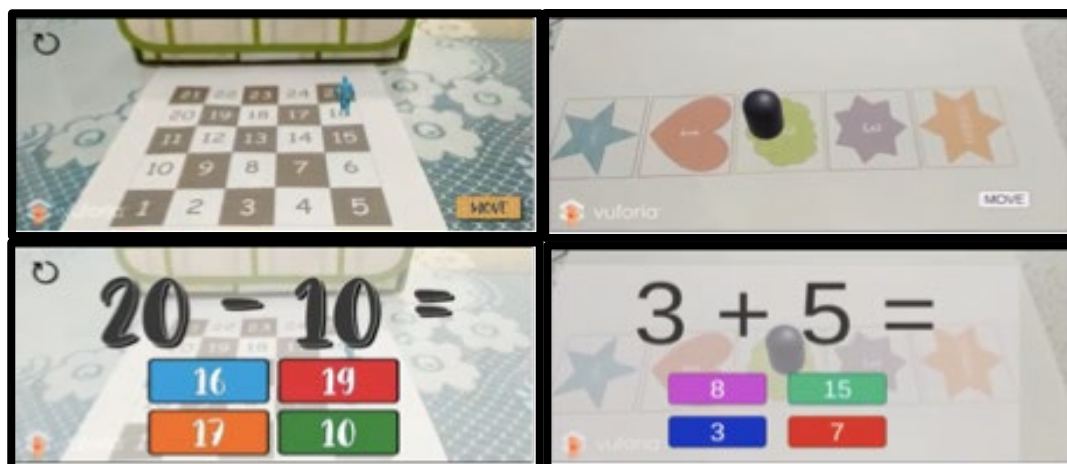

Figure 2: Examples of Malay and English learning module.

Discussion

This AR game learning module for Malay, English, and Mathematics learning is emphasized simplicity by using and ease of facilitating teachers to use AR game learning tools to enhance and improve the whole basic literacy skills teaching and learning process. In such a context, students are able to receive knowledge and skills in an engaged and interactive learning environment. These modules also offer them opportunities to learn new skills and knowledge among the children via AR technology and encourage them to build positive characters and minds. In addition, the community-based learning approach is a participatory learning process to facilitate the broader participation in creating attitudes toward community development,
by offering skills and knowledge for all students.

Contribution

This project is a valuable contribution for the school stakeholders, teachers and students for enhancing the necessary knowledge and skills (basic language and numeracy literacy) transferring from the higher educational institutions via community-based learning approach
and AR technology.

Impact

This study may have a great impact on behavioural, awareness, social education and human rights with the project's aim to foster the mastery of basic literacy skills among young students of the B40 community (low income group).

Conclusion

AR technology should be integrated in schools learning to engage and enhance students' learning especially during and post COVID19 pandemic and encourage students to equip themselves with 21st century learning skills. This social engagement project is also endeavoured to improve students' engagement, increase their practices, and increase their retention and success in middle and higher education. This new developed AR game learning module is attempted to assist teachers to engage students in Malay, English, and Mathematics learning via this knowledge transfer programme, increase students' motivation, interactions and collaboration, and improve their confidence to be successful learners. In future, this AR game learning module need to be implemented and evaluated its effectiveness and feasibility so that it will be generalized for all Malaysian schools.

Acknowledgement

References

Lian, J., Chai, C.S., Zheng, C., & Liang, J-C. (2021). Modelling the relationship between Rizun, M., & Strzelecki, A. (2020). Students' acceptance of the COVID-19 impact on shifting higher education to distance learning in Poland. *International Journal of Environmental Research and Public Health*, *17*, 6468. https://doi.org/10.3390/ijerph17186468

Zanchetta, M.S., Bailey, A., Kolisnyk, O., Baku, L., Schwind, J., Osino, E., Aksenchuk-Metersky, K., Mehari, N., Babalola, O., Christopher, J., Hassan, A., Leong, N., Mohamed, M., Nemhbard-Wedderbrun, P., Rodrigues, A., Sales, R., Salvador-Watts, L., Santiago, L., Sizto, T., Stevenson, M., & Yu, L. (2017). Mentors' and mentees' intellectual-partnership through the lens of the transformative learning theory. *Nurse Education in Practice*, *25*, 111-120. http://dx.doi.org/10.1016/j.nepr.2017.05.009

COMMUNITY ENGAGEMENT DURING PANDEMIC

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Abstract

Middle-Aged Adult women in Malaysia are lack memorizing skills in learning Arabic. This is because the majority of Malaysian do not understand Arabic. Furthermore, Arabic is a complex language, and usually learning a second language is time-consuming. Little that we know that there are many learning methods available that have been developed by the language expert to assist non-native Arabic speakers to learn Arabic easily. From our observations, since the outbreak of the pandemic, there have been many online classes that are widely advertised on social media platforms. This is because, during a pandemic, many have to sit home, and they more time on social media. Therefore, this is the best time to engage with the community and assist them in studying the Quran. As online learning seems to be acceptable to many people at various levels, this has made it easier for us to reach the community to engage with informal learning. The objectives of this community project are: 1) to provide an opportunity for middle-aged women (40-60 years old) to learn Arabic using the Sekejap method using mobile apps, 2) to train and evaluate the student on the SEKEJAP, 3) to increase self-skills among undergraduate student to work in group and planning in disseminating information to middle-aged adult. We trained the SEKEJAP method to the NINETY (90) students from the Software Engineering department who registered Social Engagement course for FOUR (4) weeks. They were taught to memorize and translate Arabic words using the SEKEJAP method. As a result of this study, we had been able to create awareness among the respondents to learn the Arabic through Quran easily and in faster ways. In addition, the program not only cultivates the awareness of middle-aged women in understanding the Quran literally, but it also gives confidence to students to provide online services to the community during this pandemic season.

Keywords: Community Engagement; Online Learning; Learning Language; Middle-aged Woman

Introduction

The modern university is more than a place of instruction, learning, research, and discovery. It is also a repository of knowledge in the modern period. The times have

changed, and the demands of society have increased. To remain relevant, colleges must develop and transform to meet a broader range of social demands. In Malaysia, community engagement programs have been implemented at the university level, where students and faculty have collaborated to contribute to the local community in addressing identified needs, deepening students' civic and academic learning, enhancing community well-being, and enriching the institution's scholarship (Rafique et al., 2021). Although the Covid 19 pandemic that hit the world has changed our work pattern, this commitment to the community must continue by using the state of art technologies. In the educational context, we have seen tremendous growth in online learning activities involving students, professionals, and non-professionals (Reference language). Even though the use of information and communication technology in disseminating information has been practiced a long time ago but now computer usage has become widely used to reach the community in order to fulfill their current needs. As a Muslim, Quran learning is part of the spiritual journey to find peacefulness and contentment in life. In the past, people were not much interested in learning Quran via online because people believe that attending class physically is more effective in the learning process. However, since the pandemic, people have no choice rather than to meet using a video conferencing platform in order to pursue Quranic learning. Hence, the online learning method has been widely accepted and become an alternative to traditional learning during the pandemic (R.Radha, 2020). Al-Quran is a book of guidance for a human being, and it was written in Classical Arabic. Therefore, Muslims all over the world, especially those who do not speak Arabic, was interested in learning Arabic. The purpose of learning Arabic is to understand the message of Allah s.w.t. during prayer and supplication (Baharun et al., 2020). In Malaysia, many teaching methods have been used to teach Arabic to children, youths, and even the elderly.

Methodology

The students were divided into eighteen (18) groups, where one group had five (5) members per group. Students will have to undergo short training for four (4) weeks in order to get used to the teaching method taught to them. Figure 1 is a brief diagram of the online community engagement activities.
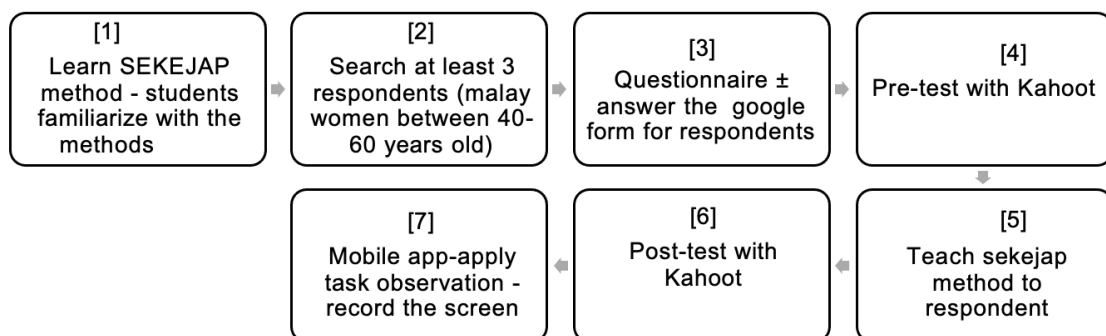

Figure 1: The brief diagram of the online community engagement activities.

The students were required to search respondents among their family members or friends and invite them to participate in learning Arabic via video conferencing. Later the students are required to approach at least three middle-aged women per group. Prior to the learning session, they need to make an appointment with the respondent. Later they need to teach the middle-aged women Arabic using the provided teaching material. The activities with middle-aged adults have been conducted to increase self-confidence among the students

Results

As a result of this project, we had been able to create awareness among the respondents that there are many ways in learning Arabic interestingly using technology. We also manage to train the students to increase their confidence by approaching middle-aged adults in order to disseminate new knowledge in Arabic learning. Figure 2 shows the students teaching middle- aged women.

Figure 2: Our students are teaching the middle-aged women

Discussion

Online learning is important to ensure that the dissemination of Quran knowledge is not interrupted even though the country is facing pandemic problems. Not many Malaysians are aware of the learning methods available for them to explore. As Al-Quran is important for Muslims, it must be appreciated by understanding the Arabic word contains in the sentence of the Quran. The teaching of the Quranic Arabic should be taught interestingly to the public in order to build long-term motivation and satisfaction in learning. Learning Arabic is not only for the purpose of communication. but it is also important to seek an understanding of the content of the Quran. Furthermore, learning Arabic through the Quran is preferable where a teacher can make various examples of Arabic words from the sentence/ayah of the Quran. Therefore, the existence of experts in the Quran Tafseer is important to avoid misinterpretation of the Quran.

Contribution

This project has contributed to the awareness for the public to seek Arabic learning opportunities that can suites their needs in Quran understanding.

Conclusion

The program not only cultivates the awareness of middle-aged women in understanding the Quran literally, nonetheless it also gives confidence to students to provide online services to the community during this pandemic season.

Acknowledgement

References

Baharun, H., Abd Rahman, S., Ahmad, H., Mat Saad, N. S., & Jamal, I. H. (2020). Quranic Understanding among Non-Native Speaker of Arabic: Malaysian Experts' Perspectives. GEMA Online® Journal of Language Studies, *20*(2), 203-223. https://doi.org/10.17576/gema-2020-2002-12

R.Radha, K. M., Dr.V.Sathish Kumar, Dr.AR.Saravanakumar. (2020). E Learning during Lockdown of Covid-19 Pandemic: A Global Perspective. *International Journal of Control and Automation, 13*.

Rafique, Z., Habib, S., Mahmood, A., & Rosilawati, Y. (2021). Enhancing University Community Engagement among Students: An Assessment of effects of pre and post Training program. *Ilkogretim Online, 20*(5). https://doi.org/10.17051/ilkonline.2021.05.289

STEM MENTOR-MENTEE PROGRAM

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Abstract

The decline in the enrolment of Science stream students at the secondary school level is very worrying. This problem is more acute in urban poor communities. Therefore, the Ministry of Education Malaysia and the National STEM Association have led the STEM Mentor-Mentee Program where teachers and students have collaborated with STEM professionals and students to conduct STEM activities. Our education system had constraints such as not having enough knowledge to implement any STEM-related activities as they did not have modules or guidelines for teaching and learning. Therefore, through the STEM Mentor-Mentee program, the school syllabus was taught using smart interactive learning modules that allow students to engage in science activities. Due to the COVID-19 crisis, the physical activities were halted and continued with virtual mentoring activities via the online platform. STEM activities are conducted in groups based on the Mentor-Mentee concept, one mentor and five mentees (1:5). Teaching is more focused and students' opportunities to ask questions are higher to increase comprehension. This approach provides space and opportunity for the mentee to communicate with the mentor. Thus, the weaknesses of the mentee can be identified by the mentor.

Keywords: STEM; Mentor-Mentee; Modules

Introduction

With the advancement of technology along with the vision of Malaysia to be a fully developed country in her mould, it is essential to supply a reliable workforce with high critical thinking and the necessary skills to drive the country forward. To pursue this aim, strengthening the STEM programs in Malaysia is crucial. STEM is the acronym for Science, Technology, Engineering, and Mathematics (STEM). STEM education is an approach in the teaching and learning process which combines the content and skills in all the four areas aforementioned. Through STEM Mentor-Mentee Program, the mentees' performance before and after joining the program such as (a) communication skills, (b) teamwork skills, (c) knowledge application skills, (d) social responsibility and (e) lifelong learning, (f) critical thinking skills, (g) creativity, (h) problem-solving skills, (i) decision-making skills corresponding to the modules were evaluated. The mentor capability of mentoring the mentees before and after joining the STEM

programs was also assessed in the study. The research question of the study was as follows; What is the personal quality that can be observed in mentors during the mentoring session?; How the mentors adapt: (a) The requirement of the mentoring environment in teaching young students? (Communication) (b) The problems that they experienced in mentoring activities as compared to classroom teaching? (Lifelong Learning); How do mentors innovate their methods of mentoring based on the guideline given in the module? (Knowledge Application); What is the personal quality that can be observed in mentees during the mentoring session?; and How the mentees understand: (a) The teaching environment conducted by their mentors? (b) The problems they experienced in the activities as compared to classroom teaching. (Lifelong Learning).

Methodology

The STEM Mentor-Mentee Universiti Malaya (UM) program continues virtually after implementing the Movement Control Order (MCO). After the first and second waves of COVID-19 occurred, the university found it difficult to carry out school activities, especially those involving primary schools given the strict SOPs by the Ministry of Education and the school authorities. In 2021, UM has communicated with Sekolah Menengah Islam Darul Ehsan and they are interested in running a STEM Mentor-Mentee program for form 3, 4, and 5 students. Among the subjects requested by teachers and students are Mathematics, Additional Mathematics, English, Economics/Business, History, etc. Learning sessions in schools were somewhat disrupted due to the COVID-19 crisis. Therefore, the program was conducted virtually through online learning platforms such as Google Meet, Zoom and WhatsApp. Specifically for the mentor-mentee program, one mentor was responsible for a maximum of five mentees for their guidance. From the activities, the data were collected using a questionnaire, observations, interviews, and analysis based on the STEM-related modules and programs.

Results

Table 1: Mentor's observation of mentees during the activities.

Mentor	Descriptions
Chong Jing Chuan, Faculty of Business and Accountancy	"Through the activities conducted, I encouraged them to start thinking about the phenomenon around them from the scientific perspective so that they will try to find out the answer for the questions. Curiosity can improve their critical thinking skill. When they start to do so, they do not rely wholly on their teachers to teach them bits of knowledge, but they start to dig deep to find out the solution."
Nur Azlin Nazera, Faculty of Medicine	"I have helped increase my mentees' understanding of STEM topics. I was able to do this by helping them run the modules based on the module activity while giving more information on the topics. I was able to identify that my mentees understood the topics being taught by asking simple, concise questions. The mentees can answer the questions asked and can relate the topics taught to daily life. "

| Thara, UM Mentor | "All students are given assignments to complete Mathematics and Science questions together. From the assignments given, I could see their skills in group work. They help each other and share knowledge and solve questions accurately. " |
| Azinuredayu, UM Mentor | "Mentees always work hard to solve problems and always ask the mentor to get an opinion in solving a problem." |

Figure 1: Virtual STEM Mentoring was conducted through an online platform due to an increase COVID-19 cases in 2021. Mentor handled the activities according to student's timetable to avoid conflict with their school's classes.

Discussion

The ratio of one mentor to five mentees approaches in the program aimed to create a more interactive learning environment in a smaller circle. With this approach mentees were able to reach to mentor comfortably and improve the communication skills and teamwork within their group. Besides, the mentor also experienced handling smaller groups and interacting to improve their social responsibility and knowledge application skills during the mentoring session. In this program, every mentor is responsible to conduct at least five sessions with their mentee within three months. A previous study shows that a one-year personal mentoring program was effective for girls in STEM. In comparison to the waiting-list group, the treatment-group participants showed greater levels of desirable short-term and long-term developments. The findings indicate online mentoring for promoting interests in STEM is two-fold. On one hand, STEM promotional efforts can start before their STEM interests tend to decline. On the other, the quality of the mentor can be easily tracked and improved (Stoeger *et al.*, 2013).

Similarly, STEM education in a developed country setting is also emphasised on the fostering relationships among the STEM subjects and education as early age of the group. The educational environment in these countries comprises formal and informal settings. One of the informal place-based environmental education is the Mentor-Mentee program. This concept is being applied in a non-profit organization called Big Brothers and Big Sisters. This organization mobilized middle-class volunteers to provide support and guidance to poor, delinquent children(Schwartz & Rhodes, 2016).

Mentors develop their own smart interactive learning module that was expected to spark the interest of science stream education to the young students. By using different activities and modules to learn Science and Mathematics instead of the common school curriculum, students can have a better understanding and improve their critical

thinking in real-life situations. The mentors come out with their smart interactive activities to learn the school syllabus such as additional mathematics and sciences subjects. Based on the study "First-Year Students' Priorities and Choices in STEM Studies", the findings indicate that experiences in secondary school and good teachers are important in choosing a STEM study. To prevent drop-out key factors are the relevance of the study is the student to have their own choice, social and academic integration, and supportive mentoring systems (Elster, 2014).

The program also trained the mentor's social responsibility skills and knowledge application skills. A mentor stated that "throughout this journey, I learned many things and amongst it are perseverance and patience. Dealing teenagers are not an easy feat and I had learned it". Effective mentoring is a key component of academic and career success that contributes to overall measures of productivity. Mentoring relationships also play an important role in mental health and in recruiting and retaining students from groups underrepresented in STEM fields(Sani, 2019).

Contribution
All the modules involve concepts in STEM education. By carrying out this activity, students/mentees are easier to understand and comfortable to interact and ask questions with the facilitator/mentor, which consists of UM students.

Impact
Students show interest and tend to actively engage in STEM-related activities through virtual learning. The involvement of mentors (UM students) and the help of learning modules are very helpful to increase students' interest and understanding of the STEM modules conducted. Teachers also gave positive feedback on the efforts made because it can help the student to improve their knowledge of STEM-related subjects. Thus, interest in STEM can be nurtured among the younger generation again.

Conclusion
Generally, STEM empowerment among the younger generation through activities such as a Mentor-Mentee program, with various module content is a step up from the typical mentoring approach. A Mentor-Mentee program such as organized by UM STEM Centre will not only aid in STEM development for the mentee but also help develop some important soft skills for the mentors which can later become very useful for the mentors. Skills such as effective communication, teamwork, and problem-solving will be a bonus for young graduates entering the job market. Additionally, the STEM Mentor-Mentee program also allows the students as the mentees to see the real-life applications of STEM-related fields. This ensures their understanding of the importance of STEM in life and hopefully can motivate them to pursue their education and career in a STEM-related field.

Acknowledgment

References

Elster, D. 2014. First-Year Students' Priorities and Choices in STEM Studies--IRIS Findings from Germany and Austria. *Science Education International, 25*(1), 52-59.

Sani, R. (2019). The crucial role of mentors in STEM education. from https://www.nst.com.my/education/2019/05/486609/crucial-role-mentors-stem-education

Schwartz, S. E., & Rhodes, J. E. 2016. From treatment to empowerment: New approaches to youth mentoring. *American journal of community psychology, 58*(1-2), 150-157.

Stoeger, H., Duan, X., Schirner, S., Greindl, T., & Ziegler, A. 2013. The effectiveness of a one-year online mentoring program for girls in STEM. *Computers & Education, 69*, 408-418.

DETERMINING SAFE SCHOOL, SAFE ENVIRONMENT AND SAFE CITY FOR CHILDREN THROUGH BUILD ENVIRONMENT

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Abstract

The United Nations Children's Fund (UNICEF) Child-Friendly City assemble a guideline as an effort to ensure our cities are child friendly align with the UN Convention on the Rights of the Child. However, how far cities in Malaysia are currently safe for children? The research aims to investigate children's perception of safety and to assess if build environment factors are among safety concerns to them. Multiple approaches were used at 5 different primary schools in the urban areas focusing on children aged 7 years old until 9 years old using approaches such as arts, communication and literature activities. Three different conditions of safety were assessed that are safe at school, safe transportation and safety in the city. It is found that the children couldn't distinguish clearly elements of safety related to the building environment through communication but be able to express their feelings on safety towards things that are much closer to them like friends and family members. Interestingly, those children's be able to express better about safety issues related to transportation and about their city through arts and literature. In addition, observation assessments were also made towards the location of the school and the neighbourhood and it is found that safe environments for children are still far from the UNICEF Child-Friendly City Guiding Principles.

Keywords: Built Environment; Safe School; Safe Environment; Safe City

Introduction

Children are our nation's future and have the same rights to live life to the fullest. With respect to safety, children's safety is one of the main concerns either at home, at school and even surrounding them. The responsibility of ensuring the safety of a child however commonly goes back to the adult, parents, teachers, or caretaker. This is due to the ability of children to perceive safety by themselves, to assume the level of danger that endangered them and also the ability to protect themselves from the threats. Either in the form of physical or emotional safety, children are seen lacking in the ability to distinguish what is right and what is wrong and this has led to their vulnerability. About 598 children aged 7 years old to 9 years old from 5 primary schools participated in the

program which lasted about 3 months before the COVID19 pandemic strike in 2020. According to Wood et. al (2008), there is a relationship between demographic factors, the built environment, social capital and perceived safety. Perceived safety is found different among respondents in Wood et.al (2008) study whereby different living conditions such as living in a well-maintained housing areas are relatively safer. In relation to build environment, safety elements can be seen since the beginning of city planning such as in the Garden City by Ebenezer Howard or the New Urbanism also amplifies the need for safety in the build environment. However, how much sensitivity is given towards the needs of safety and children? How far children's are being involved in the planning and indirectly contributing to the liveability of children in our neighbourhood?

Methodology
The methodology used in this project is by using a mixed methodology whereby it is seen most suitable with children age 7 years old until 9 years old. About 598 students were involved from 5 primary schools located in Selangor and Kuala Lumpur chosen by the funder provider based on the history and background of the school in the issue of safety. An expert talk on the definition of safety and some introduction about the program was held at the beginning of the program and smaller groups were formed afterward for better engagement. Each group facilitator will ask questions related to safety such as the definition of safety, how do they feel about school safety, safety while using any kind of transportation to school and safety in the city. The discussion was very relaxed so that it won't intimidate and scare the children. The facilitator was trained to ask the questions beforehand and the outcome of the discussion was written down by the children themselves instead of the facilitator on a separate piece of paper. After the discussion, the facilitator will give each student another paper to draw about safety at school and in the city. There are no specific instructions about the drawing and the students are given the freedom to draw anything they can think about safety in school or safety in the city whichever they feel most concerned to them. A simple survey was also carried out to achieve the quantitative method but the reliability of the quantitative survey will be also defined by the qualitative data using the triangulation method. While the drawings of the children were accessed individually by the researchers focusing on a specific issue drawn by the children. Finally, the survey results were tabulated using SPSS and the triangulation method is used to triangulate all data to achieve the outcome of the project.

Results
It is found that physical safety is the most concern among 598 children followed by a verbal and social safety. Physical safety keywords like "*Pukul*", "*Tolak*" and "*Tendang*" are the most frequent words found under the category of physical while words such as "*Bodoh*" and "*Jahat*" are associated with a verbal category. Not much data be able to extract related to the built environment from the literature content. The result of the art activity best explain the students' concern about the built environment like safety on the road and while crossing the road as these action is very much easier to express using art compared to physical safety like pushing friends. The survey was intended to ask the children's perception of safety. *Cramer's' V* is used as an analysis method to assess the relationship between variables with the age of the children. It is found that there are

weak relationships on how the children's perceived safety and their age. Therefore, the age of children cannot be used to define safety. Instead, there is no significant between 7 years old until 9 years old of age.

Discussion

Table 1 shows children's perception of safety in the neighbourhood and in the city. Results found that threats related to transportation and the city can be found in the art activities and survey results. Few examples such as the ability for the children to walk to school safely, the lack of children-friendly environment with many small industries and commercial areas surrounding the school and the mobility of the children in the neighbourhood. Better triangulation of all outcomes is best to be understood by the **Figure 1** below.

Table 1: Result shows majority of children feel unsafe to be alone but not really while traveling on a school bus.

	N = 598	
Safety in neighbourhood and in the city	**Safe**	**Unsafe**
I went to the grocery store alone	23.4	**76.6**
I went to a lonely playground alone	6.1	**93.9**
I took my own school bus	48.5	**51.5**

Fig 1: Thematic map showing components of safety for a child and the child surrounding like the neighbourhood, the city and the transportation also giving threat to them.
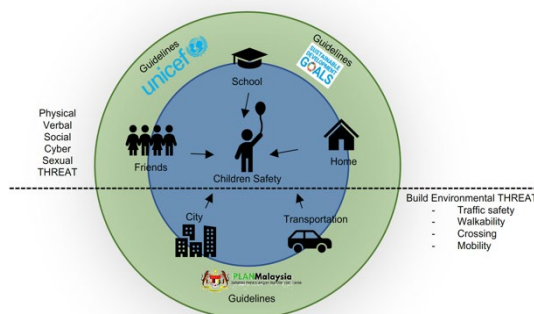
Contribution and Impact

The research has directly contributed to the understanding of how children in the age of 7 years old to 9 years old perceived safety and be able to identify the level of our schools and cities align with the UNICEF Child-Friendly City. Researchers find behavioural, awareness and social education as the huge impact of the research.

Conclusion

As a conclusion, children's best interest and importance in building an environment are still lacking. The result concludes that there are no significant in terms of the age of children sampled in the study and approaches like art and literature activities are found

as the best method to draw their perception about tangible safety. Safety escalates much on the emotion and emotion of the children are best to express using art and literature as a medium of communication. Due to COVID19, in-depth interviews with parents and teachers cannot be conducted thus contributing to the inconclusive recommendations for the project.

References

Osher, D., Kelly, D. L., Tolani-Brown, N., Shors, L., & Chen, C. S. (2009). UNICEF child friendly schools programming: Global evaluation final report. *Washington, DC: American Institutes for Research*.

Malone, K. (2006). United Nations: a key player in a global movement for child friendly cities. In *Creating child friendly cities* (pp. 25-44). Routledge.

Wood, L., Shannon, T., Bulsara, M., Pikora, T., McCormack, G., & Giles-Corti, B. (2008). The anatomy of the safe and social suburb: an exploratory study of the built environment, social capital and residents' perceptions of safety. *Health & place*, *14*(1), 15-31.