UTM
UNIVERSITI TEKNOLOGI MALAYSIA

UTM PROSPERING LIVES

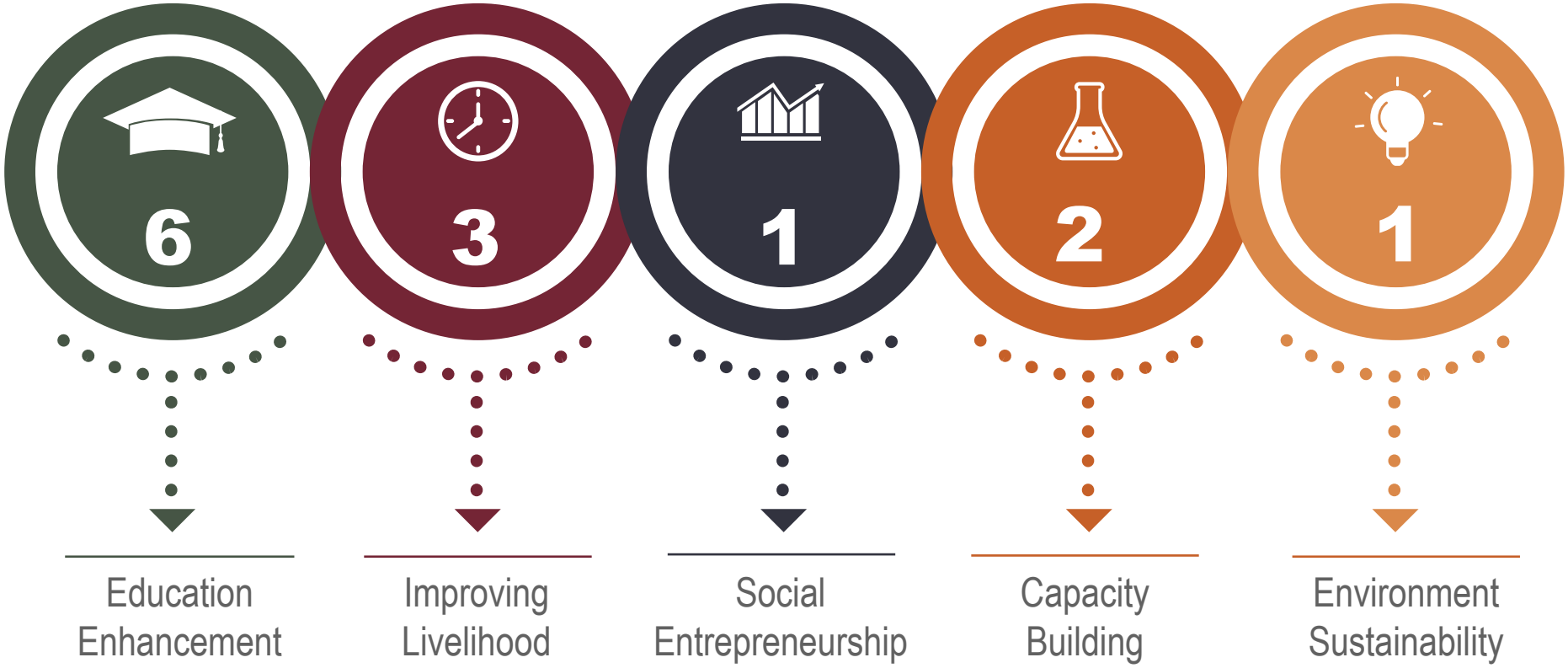
JULY – SEPTEMBER 2019

13 High Impact
Community Engagement
Projects 2019

innovative • entrepreneurial • global

School of Education, FSSH involved in SULAM project officiated by Dr Maszlee Malik

KEY FOCUS AREAS



“Little Genius” Center for Therapy and Learning for Children with Autism

13 HIGH IMPACT COMMUNITY ENGAGEMENT PROJECTS

Al-Quran Memorizing Application for Hearing-Impaired Students

Problem-based Learning in Stem Education to Develop 21st Century Skills and Low Carbon Awareness

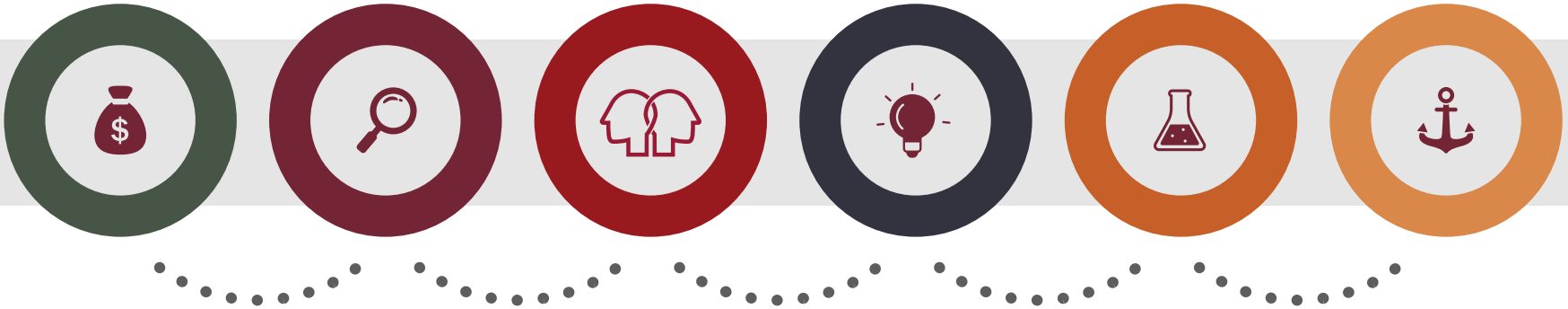
Integrated Stem Learning Methods to Increase Secondary Students' Ability to Solve Problems

Homegrown Farming for Middle Childhood to Stimulate Social Behavior

Organic Vegetable Crop Program Community Project for Healthy Food Supplies

English Enhancement Program for SK Taman Cahaya Masai through English-in-action Camp

Design and Development of Medical Plastic Enclosure based on IEC 60601-1 Standard



Portable Low Direct Current Stimulation Device for Medical Applications in Mental Health Patients

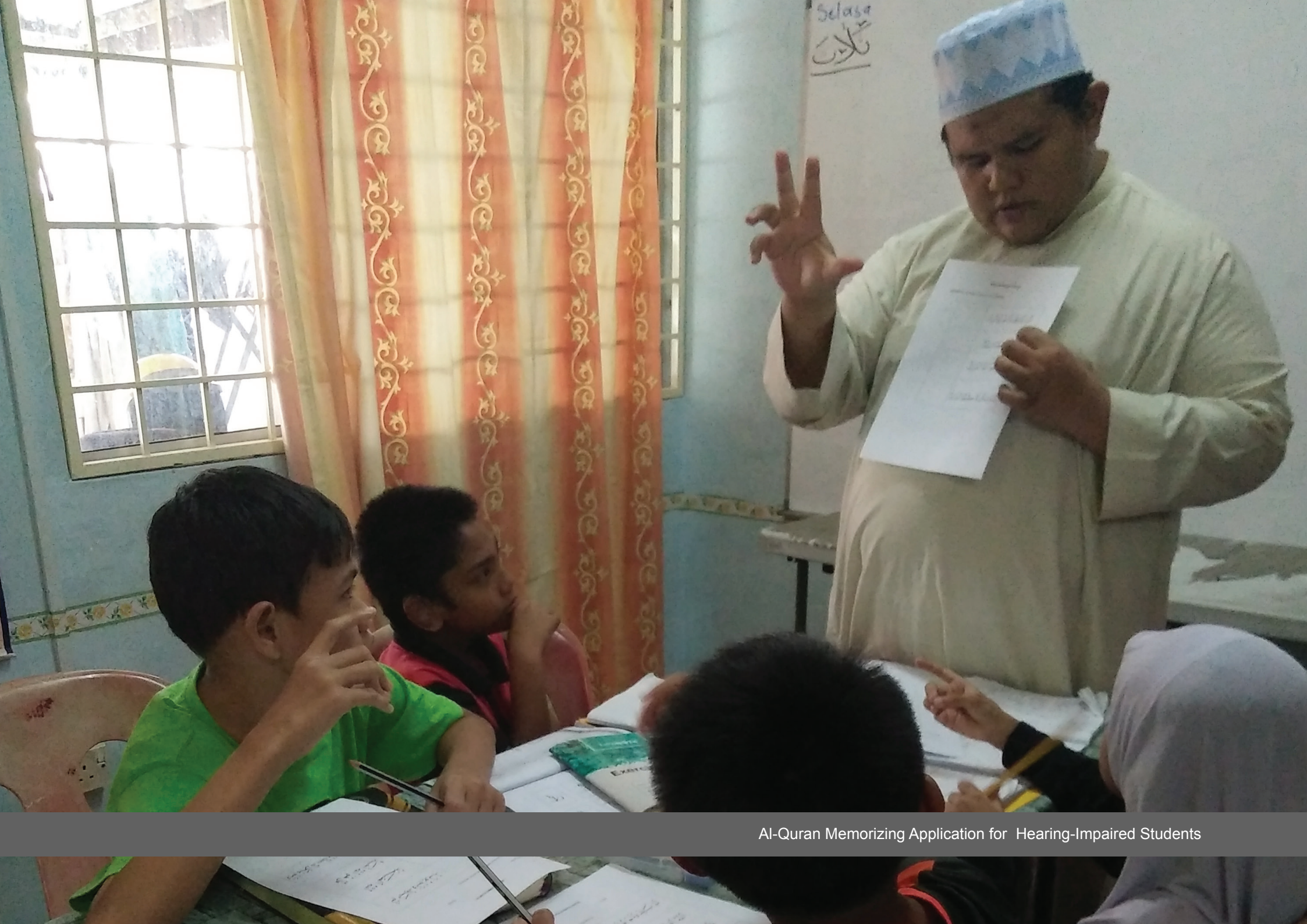
Developing Resilient Women Entrepreneurs in Malaysia's Tourism Sector

Integrated Platform for Easier Access to Information Under the Purview of Majlis Agama Islam Selangor

Sustainability in Rural Human Capital Development Under Centre for Advancement in Rural Education Informatics (ICARE) UTM-KEJORA

Effective Microorganism (EM) Application in Food Wastes Management

Low Cost Apartment Community Rejuvenation Program For Flat Bandar Bukit Puchong



Al-Quran Memorizing Application for Hearing-Impaired Students

Al-Quran Memorizing Application for Hearing-Impaired Students

Dr. Norziha Binti Megat Mohd Zainuddin

Augmented Reality (AR) is a virtualization technology that combines the virtual world with the real world and act as a teaching and learning process. This technology is able to assist hearing-impaired students with the ability to acquire knowledge through visual methods as the primary learning medium. Hence, mAR-Quran was developed by applying AR technology specifically to facilitate hearing-impaired students in memorizing the Quran. mAR-Quran was developed based on the Tahfiz Akhyar Method, a memorization method, by arranging the verses of the surah in correct sequences. 10 hearing-impaired students from the Akademi Tahfiz Pekak have tested the effectiveness of mAR-Quran. The findings showed that there was an improvement in the student performance before and after the application. In conclusion, the application of the Quran can enhance the mastery of self-learning among the students.

Improving Livelihood

★★★★★

4 QUALITY EDUCATION

IMPACT

COMMUNITY

- **10** Hearing impaired students
- **Develop Hafiz & Hafizah**
- Improve recitation and memorization of the Quran

ACHIEVEMENTS

- **3** Journals
- **1** Proceeding
- **2** **BEST PAPER AWARD**
- **2** **BRONZE MEDAL AIREX & NALI**

ECONOMY

- Easy access anytime and anywhere
- **Can be applied to normal student**
- As reference to other replication development

SUSTAINABILITY

- **Home** life long learning
- **20** **hearing impaired students + 20 parents**
- **Expand to other surah**

Portable Low Direct Current Stimulation Device for Medical Applications in Mental Health Patients

Portable Low Direct Current Stimulation Device for Medical Applications in Mental Health Patients

Dr. Aini Zuhra Binti Abdul Kadir

In Malaysia, statistics showed that 1 in 4 population was reported to be diagnosed with a mental health problems. The treatment of certain mental health problems may include the use of transcranial electric stimulation.

Transcranial Direct Current Stimulation (tDCS) is a form of neuro-stimulation device which involves the application of constant, direct low electric current delivered to the brain area of interest via electrodes placed on the scalp. However, the usage of tDCS device was found to have several design related issues such as non-portable, expensive and non-compliant with the Medical Device Act, 2012. Therefore, the aim of this study is to design and fabricate a portable tDCS device prototype that can generate constant low direct current between 2 to 6mA. This device is made to be affordable for Malaysian mental health patients.

The project involves a multidisciplinary team, in which UTM plays a role to lead in the design and fabrication activities for the prototype development of tDCS device. The prototype will then need to be handed over to the Medical team for functional as well as clinical tests. The prototype device was successfully handed over to the medical team from various hospitals to proceed with clinical trial at research scale. Subject to the trials, feedbacks from medical doctors, housemen, psychiatrists and patients were gathered for future improvement of the device. The device is also being prepared for SIRIM and MDA approval.

Improving Livelihood

★★★

IMPACT

COMMUNITY

4 Hospitals
1 University
1 LOC

ECONOMY

The device is affordable & portable

Potential Commercial Partner
Active Scientific Sdn Bhd

SUSTAINABILITY

Promotes a " Made in Malaysia" Product Policy

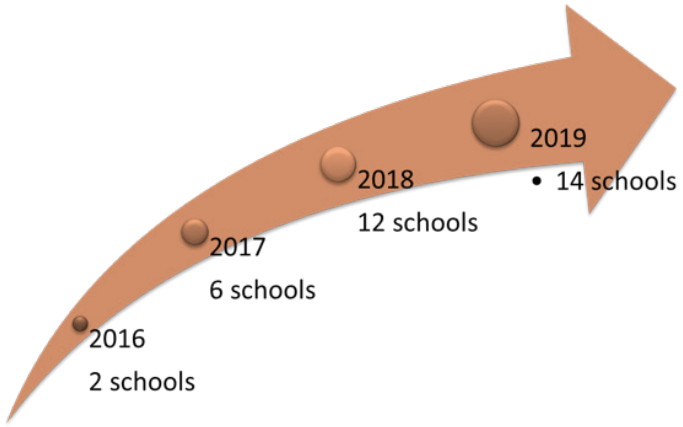
Problem-based Learning in Stem Education to Develop 21st Century Skills and Low Carbon Awareness

Problem-based Learning in STEM Education to Develop 21st Century Skills and Low Carbon Awareness

Assoc. Prof. Dr. Fatin Aliah Phang Binti Abdullah

The pressing challenges in this new millennia in science and technology and sustainable development demand 21st century skills to be imparted at school level. To achieve this, conventional teaching approach is no more relevant to be applied by teachers. Therefore, Problem-Based Learning (PBL) through integrated Science, Technology, Engineering and Mathematics (STEM) education was conducted at secondary schools in Johor since 2016. The STEM teachers were trained using CEE modules of Active Learning, Cooperative Learning and PBL. The teachers also created their own yearly lesson plan and problems in Low Carbon Society (LCS) for the students to learn. Later, the teachers conducted the PBL LCS class among Form 2 students at their schools for 1 year. They were supervised by experts from UTM to ensure that they can become expert teachers and can be promoted to trainers in the future. Studies published from this project show that PBL LCS can promote LCS, Higher Order Thinking, 21st Century learning, STEM Education and other professional skills among the students.

IMPACT



Education Enhancement

★★★★★

Sandy Beach Resort is one of the resort which has successfully adopted the SST Model.

Developing Resilient Women Entrepreneurs in Malaysia's Tourism Sector

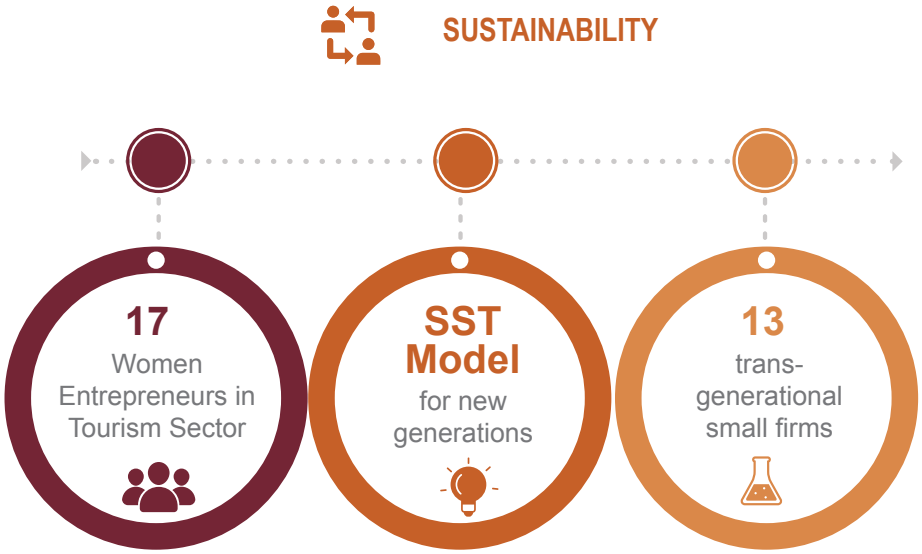
Assoc. Prof. Tpr. Dr. Hairul Nizam Bin Ismail

For the last five years, emphasis on women entrepreneurship has been given special attention in the country especially under the Economic Transformation Programme (ETP) and 11th Malaysian Plan. Recently, the 2050 National Transformation still focuses on the prospects of the changing gender roles with increasing participation of women in the workplace and in leadership position. This includes, tourism entrepreneurship as one of the ways to strengthen the ability of the community, or to be more specific, to be part of the success.

Within this context, the issue remains as to how the business women's community is able to adapt and respond to the changing world economic and demand from the society within the context of seasonality, trends and shock. It is so relevant to our country nowadays since business women are expected to expand beyond their traditional operation of Small-Medium Enterprise by taking opportunities of tourism economic growth from operation such as accommodation, transportation, services and supporting services related to tourism entrepreneurship.

Hence, to overcome this challenge UTM has developed an SST Model to assist women entrepreneurs with the ability for women entrepreneurs to cope with service knowledge based economy especially in tourism which is very much influenced by the factor of Seasonality, Shock and Trends (SST).

IMPACT



Value chain of the tourism business will be strengthened to overcome challenges arising from SST.

Social Entrepreneurship

★★★

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

IOI PROPERTIES

IGCESH 2018

Integrated STEM Learning Methods to Increase Secondary School Students' Ability to Solve Problems

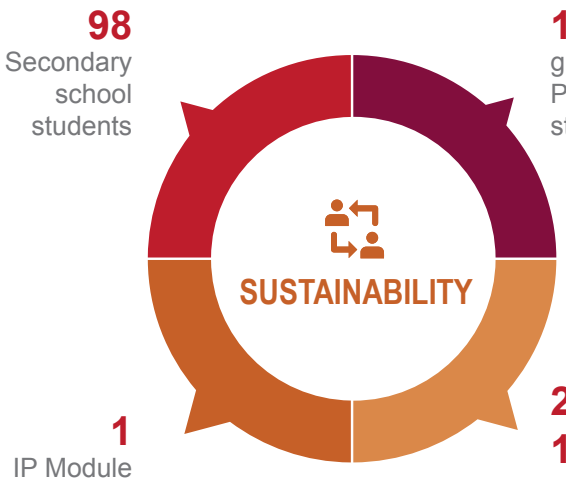
Integrated STEM Learning Methods to Increase Secondary School Students' Ability to Solve Problems

Assoc. Prof. Dr. Zaleha Binti Ismail

Problem solving is one of the 21st century skills that students need to master to navigate through everyday life. However, one of the major problems arising currently is learning mathematical related problems with real-world context. The Integrated Science, Technology, Engineering and Mathematics (STEM) learning approach is an alternative method to problem solving in the STEM subjects. The concept of learning through this method is still unknown and the impact of the Integrated STEM approach on improving student problem solving skills need to be explored in greater depth.

Hence, this project involves developing a problem-solving process framework through Integrated STEM specializing in Mathematics subject. This process template can contribute to the idea of generating mathematical learning problem solving. The framework is suitable to be used and applied in schools and learning institutions.

IMPACT



Periodic implementation

Improve skills & knowledge

Low Cost & Easy Hands-on activity in classroom

Education Enhancement

★★★★

4 QUALITY EDUCATION


BENGKEL
ANALISA SENARIO PROSES
BAGI PELAKSANAAN INISIATIF
SISTEM GERBANG ISLAM SELANGOR (SGIS)-FASA 1
18 - 20 NOVEMBER 2015
Dewan Putra Perdana 2, Level 1
Putrajaya Shangri-La Hotel
KERJASAMA STRATEGIK ANTARA

Integrated Platform for Easier Access to Information under the Purview of Majlis Agama Islam Selangor

Assoc. Prof. Dr. Mohd Nazri Bin Kama

The Selangor Islamic Gateway System (SGIS) is an initiative by MAIS to enhance the Selangor Islamic Religious Council ICT Infrastructure and info structure to ensure an easy access of information needed by its partnering agencies and the public. The platform was developed by UTM and is a Single Window, Web-based approach to integrate information flow and online services of Selangor Islamic Agencies.

BAKTISUCI SOLUTIONS

Capacity Building

★★★

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

IMPACT

98 Secondary school students

1 graduated PhD student

1 IP Module

2 Index Journals,
1 Non Index Journal,
1 Proceeding,
1 Book Chapter

Continuous Application after completion

1 Manual

Homegrown Farming for Middle Childhood to Stimulate Social Behavior

Homegrown Farming for Middle Childhood to Stimulate Social Behavior

Lar. Dr. Sapura Binti Mohamad

Children learning experience often focuses on a standard assessment curriculum where most interaction happens inside the four walls of a classroom. To date, outdoor learning has been an extension syllabus to support classroom teaching. Hence, UTM has developed an outdoor learning program to get children engaged with nature and have a sense of ownership over their surroundings. The context of outdoor learning through home grown farming becomes a transition zone from indoor to outdoor that creates adventure experiences. The program was participated by 20 children and they were monitored to examine changes in their behavior through hands-on approaches. The program showed that the children were able to learn on how to design their vegetable pocket as well as maintaining the crops

IMPACT

20
Middle Childhood (6-12 years old)

Sustain supply of vegetables

Increase social well-being

Low Cost & Healthy Diet

TADIKA Twinkle Tots

Education Enhancement

★★★

Sustainability in Rural Human Capital Development under Centre for Advancement in Rural Education Informatics (ICARE) UTM-KEJORA

Sustainability in Rural Human Capital Development under Centre for Advancement in Rural Education Informatics (ICARE) UTM-KEJORA

Assoc. Prof. Dr. Shahida Binti Sulaiman

The community project known as UTM-KEJORA Centre for Advancement in Rural Education Informatic (iCARE), is a continuation of the 2012-2017 iCARE project. The second phase of the project starting in 2018 covered research and development in education informatics through various activities. One of the sustainability programmes was under iCARE My English (iME) at the selected schools called iME@School in which English teachers conducted the programme themselves. The second phase of the project also included the implementation of the iCARE My Community (iMC) programme under the Faculty Endowment, School of Computing for UTM Bottom 40% (B40) undergraduate students who are from Southeast Johor region and selected to receive KEJORA financial assistance. This group of students will participate in a number of programs related to soft skills, personality development and skills certificates applicable to their respective fields and further contribute to their own community during the semester or after graduation as mentors, facilitators and subsequently iCARE alumni.

Education Enhancement

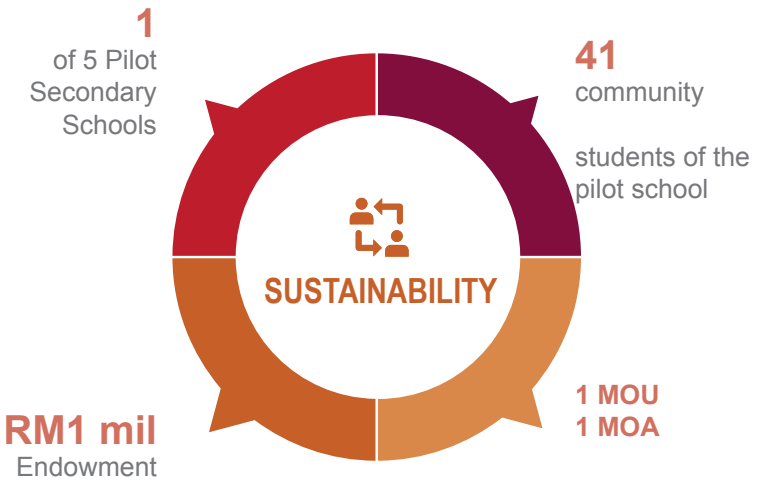
★★★★★

4 QUALITY EDUCATION

KEJORA

@iCARE

IMPACT



Mobile technology and apps for iME@School programme

MOA with endowment

IEEE ComSoc VTS Best Social Activity Award 2016

English teachers at one of the pilot schools has successfully conducted iME@School programme as in the Community Engagement (CE) impact study 2018

Organic Vegetable Crop Program A-Community Project for Healthy Food Supplies

Organic Vegetable Crop Program A-Community Project for Healthy Food Supplies

Dr. Ong Pei Ying

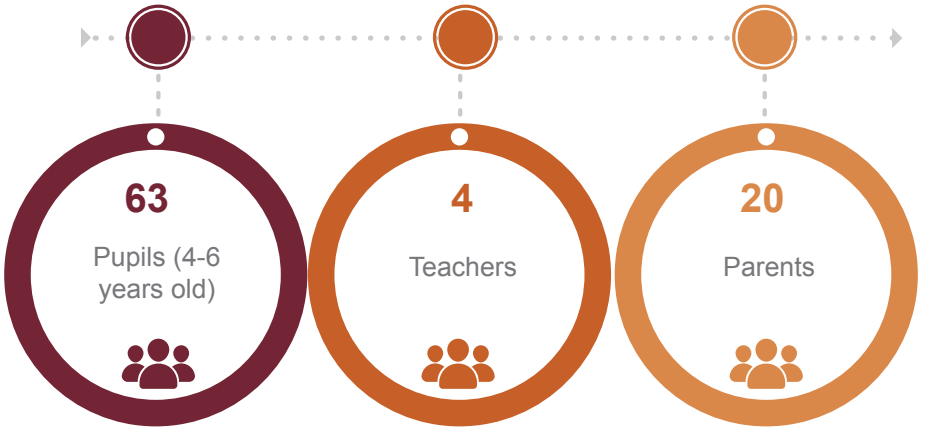
Agriculture is one of the top economy generators in Malaysia. It is also an important source of food supply for the country. Currently, Malaysia is still importing agriculture produce from abroad while at the same time the population is growing. Studies have also shown that there is a lack of supplies for healthy food sources. Therefore, UTM has developed an initiative called 'ORGANIC VEGETABLE CROP PROGRAM" which aims to introduce organic farming to communities. The end objective of this iniative is to ensure that organic farming is communicated to communities of all ages in support of boosting the country's agricultural industry.

Education Enhancement

★★★

IMPACT

SUSTAINABILITY



Improve knowledge & skills on organic vegetables/soil

Low Cost & Easy to handle in classroom

Integrated module

IOI PROPERTIES FELDA

Effective Microorganism (EM) Application in Food Wastes Management

Effective Microorganism (EM) Application in Food Wastes Management

Dr. Leong Hong Yeng

Yong Peng Lucky Garden (YPLG) is a R&R (rest and recreation) comprising supermarket, restaurant, food court cum tourist complex and merchandise shops. An average of 150 to 200 buses stop at YPLG daily for a toilet and meal break. Sanitization is a major challenge at YPLG especially at food court and washroom. In addition, food wastes management is one of the issues faced at YPLG. Zenxin Agriculture Sdn. Bhd together with UTM aimed to develop a close loop system by minimizing kitchen wastes at YPLG. The EM (Effective Microorganism) technology was introduced to YPLG by incorporating EM in food wastes management and sanitization of food court and toilet.

8 restaurants, homestays, and home owners were involved in the project. The citrus fruit wastes were fermented with EM technology and upcycled into new products - dish wash detergent.

ZENXIN
ZENXIN AGRICULTURE SDN BHD
诚兴农业有限公司

Environment Sustainability

★★★

6 CLEAN WATER AND SANITATION

13 CLIMATE ACTION

IMPACT

Continuous Practice after 6 months completion

EM - applied in toilet cleaning to control odour

Replicated at Astana Rimba Teluk Batik Resort

5% activated EM (EMAS) is sprayed on the floor and toilet bowl

English Enhancement Program for SK Taman Cahaya Masai Through English-In-Action Camp

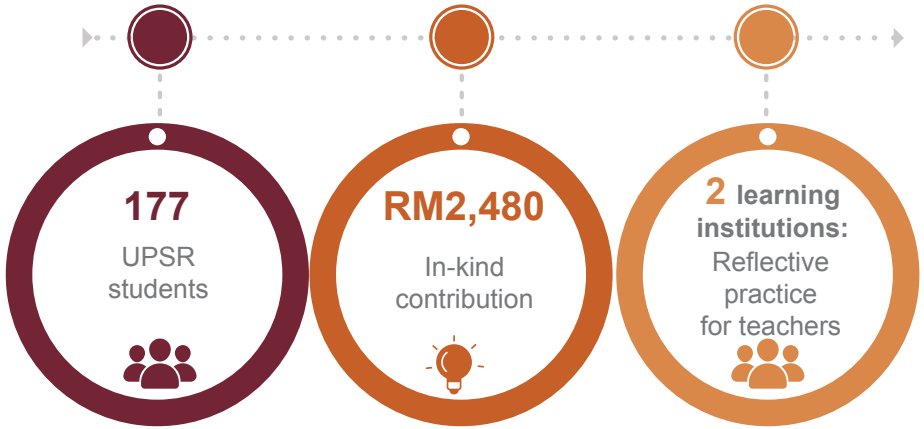
English Enhancement Program for SK Taman Cahaya Masai Through English-In-Action Camp

Dr. Hema Rosheny Binti Mustafa

The English-in-Action camp is a collaboration between Universiti Teknologi Malaysia (UTM) and Sekolah Kebangsaan Taman Cahaya Masai that aims to enhance English language proficiency among Year 6 pupils. The 6-hour camp was held to enhance pupils' productive language skills, particularly speaking and writing. The activities conducted included Candy Confession, Groovy Grammar, Word Categories, and Sentence Building. Pupils showed competitive spirit by participating actively in the program.

IMPACT

SUSTAINABILITY



Grammar Rule Song: Internalisation of grammar rules

Continuous practice in classroom

Manageable Implementation in a class of 40 pupils

Education Enhancement

★★★

4 QUALITY EDUCATION

Low Cost Apartment Community Rejuvenation Program for Bandar Bukit Puchong Flat

Low Cost Apartment Community Rejuvenation Program for Bandar Bukit Puchong Flat

Assoc. Prof. Dr. Gurupiah Mursib

The Institut Sultan Iskandar (ISI), in collaboration with the Faculty of Built Environment & Surveying (FABU) UTM have taken a social responsibility to develop and implement the Rejuvenation Program for Bandar Bukit Puchong Low Cost Apartment Community (BBP). The program has brought a positive impact in the effort to transform the community to improve the quality of life of the lower income group hence achieving its rejuvenation goals. This was observed by comparing the attributes presented by the community prior to the programme where they were more passive in nature. To date, the community has been successfully upgraded to become a proactive, capable and an independent community. The Subang Jaya Municipal Council (MPSJ) had also endorsed the program as a model to be replicated to other low-cost housing.

MAJLIS PERBANDARAN SUBANG JAYA

ISI INSTITUT SULTAN ISKANDAR

REJUVINASI PANGSAPURI 560 BUKIT PUCHONG

Capacity Building

★★★★★

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

IMPACT

Design and Development of Medical Plastic Enclosure Based on IEC 60601-1 Standard

Dr. Aini Zuhra Binti Abdul Kadir

In Malaysia, the need for stimulation of medical device is alarming, where mental illness is predicted to become the second biggest health concern by 2020. In supporting the demand, this program therefore aims to improve the existing stimulation device by developing an affordable, portable, and user-friendly device, compliant with SIRIM and Medical Device Act 2012 (MDA). The device also will be able to facilitate psychiatrists in performing clinical trials among mental illness patients in local hospitals. The program was executed in collaboration with the psychiatrists from Clinical Research Centre of Hospital Sultanah Aminah, Monash University, Hospital Permai, and Hospital Kluang, and in association with industrial medical distributor, Active Scientific Sdn. Bhd. Early collaboration activities had taken place and the promising results led to the motivation of this program.

HSA HEBHK PERMAI

MONASH University MALAYSIA

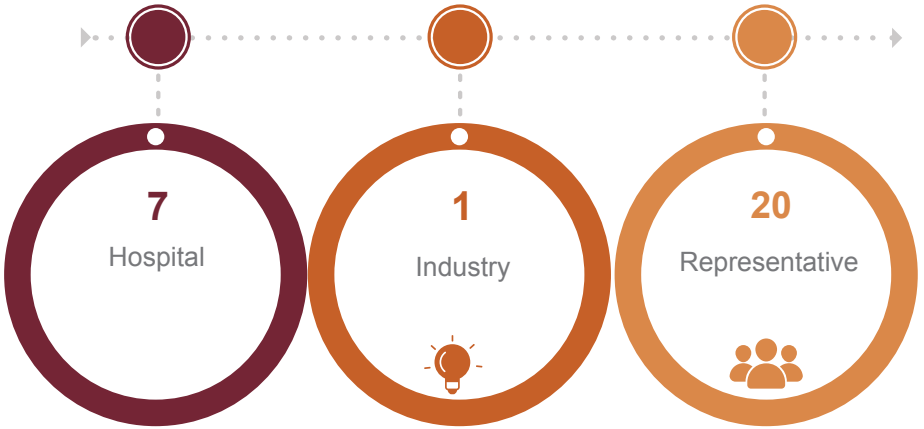
Improving Livelihood

★★★★★

3 GOOD HEALTH AND WELL-BEING

IMPACT

SUSTAINABILITY



- Reduce wastes - no tooling using 3D printing technology
- Reusable electrodes - conductive composite
- Ergonomic wearable for Malaysian population

UTM in the News

UTM charters its own path towards a sustainable future and introduces inventive problem solving that creates value for society at large

Selamatkan Sungai Skudai

Sungai Skudai dicemari sampah domestik terutamanya dari kediaman setinggan di kawasan sungai itu.

Sungai Skudai diancam sisa sampah domestik setinggan

JOHOR BAHRU

ADIB AZHARI

Sungai ketiga terbesar di Johor Bahru iaitu Sungai Skudai berdepan dengan risiko pencemaran lebih dahsyat jika masalah setinggan berhampiran lembangan itu tidak diatasi segera.

Datuk Bandar Majlis Bandaraya Iskandar Puteri (MBIP), Datuk Adib Azhari Daud berkata, hasil kajian yang dilakukan oleh pakar daripada Universiti Teknologi Malaysia mendapati kualiti air Sungai Skudai telah diklasifikasikan pada kelas tiga dan empat, bergantung pada keadaan semasa.

"Punca utama sumber pencemaran dan kemerosotan paras air Sungai Skudai adalah disebabkan oleh masalah setinggan di rizab sungai itu.

"Ini berikutan tindakan pembuangan sisa sampah domestik terus ke Sungai Skudai, saliran terus sisa daripada aktiviti komersial dan industri, effluen dari loji rawatan sisa serta sistem saliran tidak sistematik.

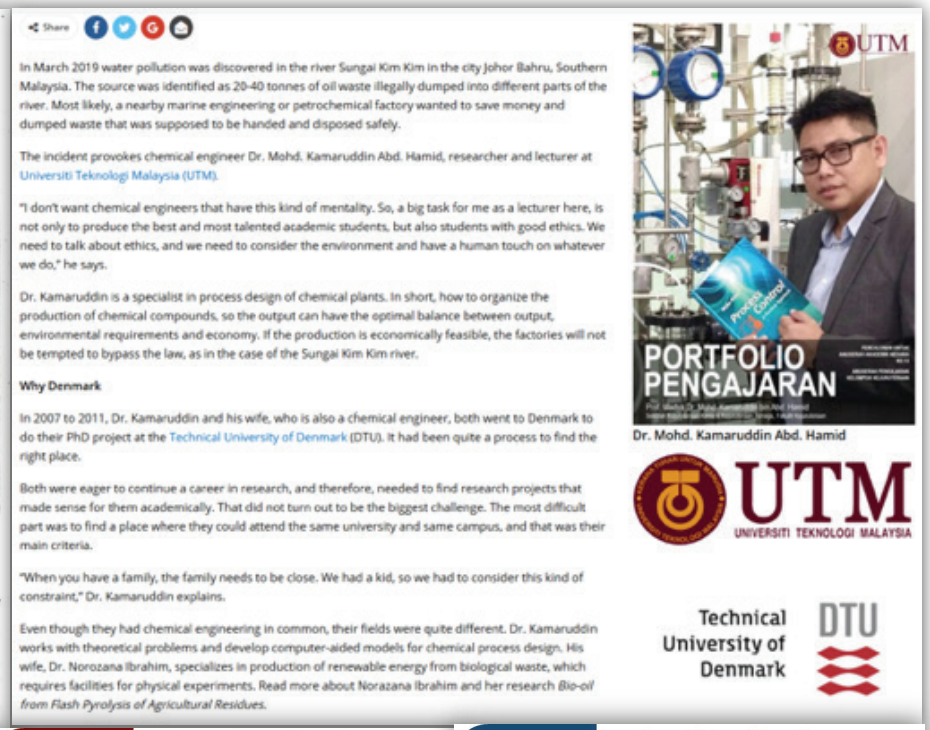
"Oleh itu, MBIP telah mengambil langkah proaktif dalam usaha memulihara Sungai Skudai dengan mewujudkan pelan pemuliharaan Sungai Skudai yang akan memfokuskan kepada pemuliharaan sungai, kualiti air dan penggunaan optimum sebagai *public realm* kepada penduduk di samping mendatangkan kesan positif terhadap sosio ekonomi kawasan tersebut," katanya.

Sungai Skudai ialah lembangan sungai ketiga terbesar di Johor Bahru dan menjadi salah satu sumber air terpenting di sekitar kawasannya, namun kini daan semasa sungai tersebut semakin tercemar.

Adib Azhari berkata justeru penyediaan kajian rancangan kawasan khas (RKK) Sungai Skudai merupakan salah satu pelan tindakan segera yang dirancangan dalam pelan pemuliharaan Sungai Skudai oleh pihak MBIP.

"Kajian ini lebih menumpukan kepada penyelesaian masalah pencemaran sungai melalui aspek perancangan secara menyeluruh dengan mewujudkan mekanisme pelaksanaan dan pengurusan berkesan termasuklah perancangan guna tanah, kawalan pembangunan, garis panduan dan pelaksanaan penguatkuasaan.

"Rancangan ini adalah suatu bentuk rancangan pemajuan disediakan bagi suatu kawasan yang dipilih secara khusus bertujuan menentukan tindakan pelaksanaan pembangunan dan pengurusan sesuai kawasan tersebut," katanya.




Thank You

Coordinated By:
Centre for Community and Industry Network
&
Office of Corporate Affairs
Universiti Teknologi Malaysia

https://corporateaffairs.utm.my/corporatepublication/corporate-ebook/utm-prospering-lives/