LAMPIRAN 1
THE STAR (VIEWS) : MUKA SURAT 27
TARIKH : 9 JULAI 2018 (ISNIN)

> Pollution check

Dear Environment Minister, just take a drive along our highways and you will see motorcycles and heavy vehicles emitting thick smoke. They are polluting the environment. Please take action. – Millennial

LAMPIRAN 2
UTUSAN MALAYSIA (HELO KAMPUS) : MUKA SURAT 19
TARIKH : 9 JULAI 2018 (ISNIN)

Helo Kampus

f helo kampus

kampus@utusan.com.my

PROGRAM sukarelawan UMT... menjadi nadi kepada kelestarian projek konservatori di stesen penyelidikan Penyu di Pulau Redang, Terengganu.

Sains marin UMT diiktiraf dunia

HELO KAMPUS: Bagaimana UMT terus menerajui penyelidikan dalam bidang oseanografi dan sains marin?

DR NOR AIENI MOKHTAR: Fokus utama pengajian dan penyelidikan UMT adalah dalam bidang oseanografi dan sains marin selaras dengan bidang tujahan universiti iaitu Ilmu Kelautan dan Sumber Akuatik. Peranan itu diperluas melalui peranan Institut Oseanografi dan Sekitaran (INOS) UMT sehingga diiktiraf sebagai Pusat Kecemerlangan Pendidikan Tinggi (HICoE) pada 2012. INOS dipilih sebagai *Nod Ocean Biogeographic Information System* (OBIS) yang berperanan sebagai pusat pengumpulan data oseanografi Malaysia.

INOS yang dirajui Prof. Madya Dr. Aidy Mohamed Shawal M. Muslim, telah diiktiraf sebagai institut pertama di dunia yang menerima pengiktirafan *Accredited IODE Associate Data Unit* (ADU) bawah Suruhanjaya Oseanografi Antara Kerajaan UNESCO (IOC-UNESCO) pada 29 Januari 2018.

INOS turut dianugerahkan Akademi Global Guru Oseanografi (OTGA) Pusat Latihan Serantau (RTC) bagi Asia Pasifik. Ia juga merupakan institusi di Asia yang menawarkan program kerjasama Ijazah Sarjana *Erasmus Mundus* Biodiversiti Tropika dan Ekosistem (Tropimundo) bawah tajaan dana Suruhanjaya Eropah (EC) dan dilantik sebagai rakan strategik Tropimundo pada 1 September 2014 melalui jaringan kerjasama antarabangsa yang melibatkan sembilan buah universiti dari enam buah negara Eropah.

Bawah program IOC-UNESCO di Western Pacific (Westpac) pula, INOS dan Institut Pertama Oseanografi (FIO), China telah menjalin kerjasama dalam penyelidikan penerokaan Laut China Selatan yang melibatkan penajaan geran RM1.17 juta yang meletakkan Sistem Ramalan Laut menjadi rujukan penting bagi aktiviti-aktiviti ramalan kelautan dan cuaca di Laut China Selatan.

UMT merupakan sebuah universiti yang menjurus ilmu kelautan dan sumber akuatik, bagaimana UMT menyampaikan mesej kepada masyarakat berkaitan perundangan dan polisi kelautan negara serta kelestarian sumber laut?

UMT telah mengambil inisiatif dengan menubuhkan kumpulan penyelidik Kumpulan Kepentingan Khas (*Special Interest Group*/SIG) UMT - Tata Tadbir Oseanografi (*Ocean Governance*) berkaitan kelautan. Prof. Wan Izatul Asma Wan Talaat yang merupakan Ketua Penyelidikan Tadbir Urus Lautan bersama pasukannya telah memainkan peranan dalam membangunkan pusat rujukan utama bagi Kementerian Luar Negara serta berperanan memberi input tentang undang-undang pemuliharaan dan penggunaan mapan biodiversiti di kawasan luar sempadan negara, yang masih dalam peringkat rundingan Pertubuhan Bangsa-Bangsa Bersatu (PBB).

Kawasan yang mempunyai biodiversiti marin seperti terumbu karang, sumber perikanan dan mineral dasar laut yang tinggi diterokai oleh negara maju tanpa pengurusan serta perundangan yang sepatutnya. Oleh demikian, tindakan serta kawalan undang-undang kelautan dirangka bagi memberi perlindungan kepada ekosistem marin di kawasan berkaitan.

Selain itu, SIG ini juga terlibat dengan agensi lain seperti Kementerian Sains Teknologi dan Inovasi, serta Kementerian Sumber Asli dan Alam Sekitar sebagai penasihat berkenaan isu pengurusan laut dan sumber marin. Input-maklumat daripada penyelidikan ini membantu Malaysia dalam menyediakan kerangka polisi bagi 17 Matlamat Pembangunan Lestari (SDG) terutama SDG 14 iaitu Hidupan di Lautan dalam mencapai agenda utama SDG *Transformasi Dunia Kita: Agenda 2030* untuk pembangunan mapan.

UMT juga sinonim dengan penyelidikan yang berkaitan terumbu karang. Boleh Datuk jelaskan?

Terumbu karang ialah satu ekosistem marin yang unik, kompleks dan tinggi produk aktivitinya. Prof. Madya Dr. Zainuddin Bachok yang merupakan seorang pakar dalam bidang ini berserta pasukannya melaksanakan pelbagai usaha penyelidikan pemuliharaan dan kesedaran awam berkaitan terumbu karang. Ini termasuklah penentuan status litupan terumbu karang di Malaysia di Laut China Selatan, kajian struktur tropika terumbu karang yang melibatkan taburan komuniti plankton, ikan, intervertebrata dan proses pemetaan terumbu karang.

Pemetaan terumbu karang menggunakan kombinasi kaedah akustik *multibeam ecosounder* dan *side scan sonar*, penggunaan serta analisis foto udara melalui dron dan imej bawah air yang dicerap melalui kaedah transeksyen video.

Selain itu, kajian spesies komuniti terumbu karang terhadap perubahan alam sekitar dan cuaca juga sedang giat dijalankan. Ini melibatkan kajian spesifik berkaitan *chemotaxonomy-chemoresilience* karang; pembangunan teknologi *Omic* sebagai alat untuk menyelidik tahap tekanan karang, kajian tumbesaran serta pembiakan terumbu karang.

Bagaimana pula dengan penyelidikan yang berkaitan dengan penyu?

Unit Penyelidikan Penyu (Seatru) UMT telah mendapat perkenan Majlis Penasihat Santuari Penyu Negeri Terengganu pada 1993 untuk memulakan projek konservasi di Pantai Chagar Hutang, Pulau Redang.

Tahun ini genap 25 tahun Seatru menetapkan misi menjadikan Pantai Chagar Hutang sebagai hab rujukan bagi ilmu berkaitan konservasi dan biologi penyu di rantau ini. Kewujudan unit ini memberi kesan atas kemandirian spesis penyu di Pulau Redang dan peningkatan penyelidikan daripada pelbagai bidang berkaitan haiwan terancam.

Dr. Mohd Uzair Rusli yang merupakan Ketua Makmal Penyelidikan Luar Seatru memberi fokus kepada penyelidikan biologi seperti pemantauan pergerakan penyu dewasa dengan menggunakan satelit, menganggar nisbah jantina anak penyu yang dihasilkan, pemodelan pergerakan anak penyu di Laut China Selatan, pemantauan pergerakan pemangsa penyu di darat iaitu biawak air dan *black tip shark*, kajian penggunaan tenaga anak penyu ketika naik menggali daripada sarang dan taburan teritip di karapas penyu. Tidak terhad kepada penyelidikan biologi, Seatru turut menjalankan kajian impak sosial dan potensi ekonomi kepada komuniti pesisiran pantai yang berkait rapat dengan kehadiran penyu.

Selain penyelidikan yang menjadi teras utamanya, program sukarelawan penyu juga menjadi nadi kepada kelestarian projek konservasi di stesen penyelidikan di Pulau Redang. Program yang telah diasaskan pada 1998 ini membuka ruang kepada hampir 4,000 orang awam dari dalam dan luar negara untuk terlibat sama dalam usaha konservasi ini.

Bagaimana penubuhan Pusat Logistik dan Pengangkutan Maritim Malaysia (Maltrac) pula dapat melonjakkan lagi nama UMT di persada dunia?

UMT telah mewujudkan Maltrac bagi menjalinkan hubungan kerjasama yang baik antara universiti dan industri.

Maltrac bawah kendalian Pengarahnya, Prof. Madya Dr. Mohamad Rosni Othman merupakan pusat penyelidikan dan sumber data dan merupakan hasil kerja sama strategik antara The Chartered Institute of Logistics and Transport (CILT) dan UMT. Kewujudan pusat ini membantu menentukan penunjuk prestasi industri logistik, pengangkutan dan rantaian bekalan di Malaysia.

Selain itu, tujuan penubuhannya juga sebagai platform dalam melaksanakan strategi pengukuhan teknologi dan pembangunan modal insan dalam ekosistem logistik dan pengangkutan; mewujudkan program pengumpulan data pengangkutan negara serta meningkatkan jaringan industri, latihan serta penyelesaian dan penjanaan kewangan.

MUKADIMAH

DALAM usia 15 tahun, Universiti Malaysia Terengganu (UMT) telah berkembang sejajar dengan bidang kelautan dan sains marin yang telah dipertanggungjawabkan serta menjadi bidang tujahan utama institusi terbabit.

Bermula dengan Kolej Universiti Terengganu (KUT) kemudian ditukarkan kepada Kolej Universiti Sains dan Teknologi Malaysia (Kustem) dan akhirnya dinamakan UMT. Universiti awam di pantai timur ini diiktiraf sebagai pusat kecemerlangan serantau bagi kepakaran ilmu kelautan dan akuatik.

Pelbagai usaha giat dijalankan bagi memperkasakan bidang tersebut sehingga diiktiraf di peringkat kebangsaan dan antarabangsa.

Wartawan *Utusan Malaysia*, **MOHD. SAIFUL MOHD. SAHAK** menemubual Naib Canselor UMT, **Prof. Datuk Dr. Nor Aieni Mokhtar** bagi mendapatkan maklumat lanjut tentang usaha UMT bagi meningkatkan bidang penyelidikannya sehingga meletakkan UMT sebagai pusat rujukan kecemerlangan sains marin terunggul dunia.

LAMPIRAN 3
KOSMO (K2) : MUKA SURAT 22
TARIKH : 9 JULAI 2018 (ISNIN)

ZON House of Fire akan menyebabkan pengunjung yang mengalami fobia kepada api merasa takut yang melampau.

TAKUT kepada organ dalaman adalah salah satu daripada jenis fobia.

Terowong misteri bantu menguji diri

Pameran Survive The Bunker di Pusat Sains Negara, Bukit Kiara membantu orang ramai mengenal pasti jenis fobia yang mereka hadapi dengan menempuh lapan zon yang disediakan.

NORHAINI

NUR AMANINA

KETERUJAAN tiga saintis muda, Eddy, Hani dan Lina mahu meneroka Lembah Kiara, hutan berusia lebih 130 juta tahun bertukar cemas selepas mereka secara tidak sengaja memasuki sebuah kubu lama yang penuh misteri.

Menurut Johan yang merupakan jurupandu kepada pengembaraan tiga saintis tersebut, hutan itu sudah lama tidak dikunjungi dan tiada sesiapa yang berani datang ke situ melainkan mereka bertiga.

Selepas berjalan melalui denai dan anak sungai, mereka telah singgah untuk berteduh di dalam sebuah terowong kerana hari tiba-tiba hujan.

Saat kaki melangkah masuk ke terowong tersebut, Eddy, Hani, Lina dan Johan berdepan keadaan gelap gelita.

SERANGGA seperti lipas boleh mengundang rasa takut.

MELIHAT gambar menyeramkan boleh membuatkan pengunjung merasa tidak selesa.

Mereka mengalami ketakutan melampau setelah berdepan dengan haiwan seperti ular, lipas dan labah-labah, patung-patung dan organ manusia selain terpaksa mengharungi titi gantung yang tinggi.

Terowong misteri itu sebenarnya adalah tempat seorang saintis bernama Mark menjalankan kajian dan eksperimen.

Emosi takut yang melampau tanpa suatu sebab yang jelas ketika menyelusuri terowong untuk mencari jalan keluar telah menyebabkan mereka menjadi tidak rasional.

Pengalaman yang dilalui kumpulan tersebut menjelaskan fobia yang dialami seseorang dan kini boleh dirasai oleh pengunjung pameran Survive The Bunker di Pusat Sains Negara (PSN), Bukit Kira, Kuala Lumpur.

Salah seorang pengunjung, **Norhaini Panot**, 35, berkata, jantungnya berdegup laju dan rasa berdebar-debar apabila memasuki ruang pameran yang gelap dan mempunyai kesan asap, bau serta bunyi yang menyeramkan.

"Saya seorang yang geli dengan haiwan eksotik, jadi saya membayangkan mungkin ada ular, katak atau cengkerik bergerak di bahagian kaki semasa masuk ke dalam Survive the Bunker.

"Oleh sebab keadaan yang terlalu gelap, saya terpaksa meraba-raba, bergerak perlahan-lahan dan cuba memijak dengan stabil sebelum meneruskan langkah," katanya kepada *Kosmo!* ketika ditemui di PSN baru-baru ini.

Guru bimbingan kaunseling Sekolah Kebangsaan Bukit Sentosa, Rawang, Selangor itu mengakui rasa sedikit berdebar dan sentiasa tertanya-tanya namun nekad untuk mencabar diri mencari jalan keluar.

Sementara itu, **Penolong Pegawai Sains PSN, Nur Amanina Yusuff**, 32, berkata, pameran Survive The Bunker yang mula dibuka pada 12 Oktober tahun lalu adalah pameran fobia yang mengetengahkan 12 jenis fobia daripada lebih 400 jenis kebimbangan tidak rasional dalam diri pengunjung.

"Pengunjung akan merasai pengalaman berjalan di dalam gelap dan menempuh lapan zon dengan dimulakan dengan pintu masuk sebelum melangkah ke zon jalan berselirat.

"Seseorang yang mengalami klaustrofobia iaitu fobia pada ruang tertutup atau isolofobia (fobila berseorangan) akan memberi respons membekukan diri, mahu melarikan diri atau melawannya dengan terus mara ke depan," katanya.

Cemas

Setelah berjaya melepasi zon berkenaan, pengunjung seterusnya akan berdepan dengan zon Exotic Isle yang menguji fobia kepada haiwan seperti monyet, ular, labah-labah dan lipas.

Pengunjung kemudian akan berdepan dengan zon Dark Alley. Mereka yang fobia dengan kegelapan akan merasa cemas dan takut.

"Zon seterusnya adalah zon api yang mengenal pasti fobia terhadap api (pirofobia). kawasan itu direka mempunyai kesan api dan asap.

"Selepas pengunjung melangkah ke zon seterusnya, mereka yang fobia dengan anak patung (pediofobia), rambut (chaetofobia), mayat (nekrofobia) dan darah (hematofobia) akan merasa takut apabila melihat patung-patung, organ dalaman dan bahagian badan manusia yang sebahagiannya mempunyai kesan darah," tambah Nur Amanina yang telah bertugas di PSN selama tujuh tahun.

Graduan Ijazah Sarjana Muda Biologi Universiti Sains Malaysia itu memberitahu, zon Loony Chamber pula merupakan tempat persembunyian saintis Mark.

"Sebaik pintu ditolak, pengunjung akan melihat gambar-gambar yang menakutkan lalu menimbulkan rasa tidak selesa.

Akhir sekali, pengunjung perlu melalui sebatang jambatan gantung atau

SAMBUNGAN...
KOSMO (K2) : MUKA SURAT 23
TARIKH : 9 JULAI 2018 (ISNIN)

SURVIVE the Bunker terbuka kepada pengunjung berusia tujuh tahun ke atas.

acrophobia walk yang akan memberikan rasa gayat atau takut kepada mereka yang fobia dengan ketinggian.

Ruang pameran berkeluasan kira-kira 600 meter persegi itu dipantau menggunakan kamera litar tertutup (CCTV) bagi memastikan pergerakan dan keselamatan pengunjung.

Fasilitator yang ditempatkan di hujung ruang pameran akan membantu memberi penjelasan kepada pengunjung tentang perasaan takut yang mereka alami selain maklumat tentang jenis fobia yang biasa dialami seseorang individu.

Tidak rasional

Katanya, Survive The Bunker hanya terbuka kepada kanak-kanak berusia tujuh tahun ke atas. Mereka yang mengalami masalah kesihatan seperti sakit jantung, hipertensi, asma serta ibu mengandung tidak digalakkan menyertainya.

ROSELIZA MURNI

BANDLER

Dalam pada itu, **Pensyarah Kanan Psikologi Klinikal Pusat Psikologi dan Kesejahteraan Manusia, Fakulti Sains Sosial dan Kemanusiaan Universiti Kebangsaan Malaysia, Dr. Roseliza Murni Ab. Rahman** berkata, fobia menurut perspektif sains adalah ketakutan atau kebimbangan yang tidak rasional terhadap objek atau situasi tertentu atau spesifik.

"Fobia boleh mengganggu kebolehan individu secara keterlaluan iaitu melebihi bahaya sebenar.

"Majoriti individu mempunyai ketakutan terhadap sesuatu namun ia bukan pada tahap fobia," katanya.

Fobia dibahagikan kepada dua jenis utama iaitu fobia sosial dan fobia spesifik.

Menurut Roseliza Murni, fobia sosial merujuk kepada ketakutan yang keterlaluan dan tidak rasional terhadap situasi sosial, iaitu situasi yang memerlukan interaksi dengan individu lain.

"Ketakutan yang tidak rasional ini perlulah berpanjangan sekurang-kurangnya enam bulan. Majoriti individu yang mengalami fobia sosial adalah daripada golongan kurang berpelajaran, bujang dan dari kelas sosioekonomi rendah," katanya.

Bagaimanapun, fobia spesifik yang diklasifikasikan berdasarkan lima jenis fobia.

Ia merujuk kepada ketakutan yang keterlaluan terhadap objek atau situasi sehingga individu terbabit mengelak dan boleh menyebabkan penderitaan.

"Fobia spesifik boleh dikategorikan terhadap fobia terhadap darah, suntikan atau kecederaan, situasi, persekitaran semula jadi dan haiwan.

"Antara jenis fobia spesifik lain pula adalah rasa takut atau mengelak situasi yang boleh menyebabkan tercekik, penyakit, bunyi kuat (akaoustikofobia), tempat luas atau terbuka (agorafobia) dan karakter memakai kostum seperti badut (koulrofobia)," tambahnya.

Bukan itu sahaja, Roseliza Murni juga memberitahu, jenis fobia yang lazim dialami masyarakat adalah fobia ular (ofidiofobia), ketinggian (akrofobia), penerbangan (avifobia atau aerofobia), petir dan kilat (astrofobia), tempat sempit atau tertutup (klaustrofobia). Pergigian (adontofobia), penyakit (nasofobia) dan bersendirian (isolofobia).

Fobia bagaimanapun berbeza dengan kebimbangan, ketakutan dan serangan panik.

"Individu yang mengalami fobia juga mengalami tahap kebimbangan dan ketakutan yang tinggi dan mereka seringkali mengalami serangan panik.

"Seseorang mengalami fobia disebabkan oleh beberapa faktor antaranya pengalaman secara langsung, pemerhatian, informasi yang salah atau faktor genetik," jelasnya.

Sementara itu, seorang penulis Amerika Syarikat yang merupakan pengasas bersama Program Neuro-Linguistik (NPL), **Richard Bandler** telah berkongsi pandangan beliau tentang cara-cara untuk mengatasi fobia menerusi beberapa langkah.

Menurut beliau, seseorang yang mengalami fobia perlu berhenti berfikir tentang ketakutan yang dialami.

"Dalam kebanyakan kes, fobia telah menjadi satu masalah besar kepada orang berfikir tentangnya sepanjang masa sekali gus merupakan satu pembaziran tenaga.

Gambaran melampau

"Saya meminta mereka untuk menilai berapa banyak masa yang mereka habiskan membimbangkan tentang fobia mereka setiap hari," katanya seperti yang dipetik dalam laman web majalah *The Best You*. Selain itu, Bandler menyarankan seseorang yang mengalami fobia mencari alternatif untuk ketakutan yang dialami dengan perasaan ingin tahu.

"Rasa ingin tahu boleh mengatasi ketakutan. Jika anda tidak mempunyai perasaan ingin tahu, anda tidak meneroka dunia yang anda tinggal," tambahnya.

Bukan itu sahaja, Bandler berkata, mereka yang mengalami ketakutan melampau perlu berhenti membuat gambaran melampau.

"Sebagai contoh, individu yang fobia pada ketinggian perlu berhenti membuat gambaran bahawa mereka perlu melompat apa berada di tepi tebing.

"Sebaliknya, bayangkan diri mereka menjadi santai dan selesa serta menjauhkan diri dari kawasan tebing. Sekiranya dilakukan dengan betul, ia boleh berlaku dalam keadaan tidak sedar," jelas beliau.

INFO Survive The Bunker

- Merupakan pameran fobia yang boleh dialami sendiri pengunjung
- Mengenal pasti 12 jenis fobia
- Mula dibuka pada 12 Oktober 2017

- Zon Survive the Bunker
  1. Pintu masuk
  2. The Labyrinth
  3. Exotic Isle
  4. Dark Alley
  5. House on Fire
  6. Drolly Doll
  7. Loony Chamber
  8. Acrophobia Walk

- **Lokasi:** Aras 2, Pusat Sains Negara, Bukit Kiara, Kuala Lumpur
- **Harga tiket:** RM4 (dewasa), RM2 (kanak-kanak 7 tahun ke atas)

LAMPIRAN 4
KOSMO (K2) : MUKA SURAT 23
TARIKH : 9 JULAI 2018 (ISNIN)

Penjelasan saintifik mengenai fobia

SAMBUTAN daripada pelawat terhadap pameran Survive The Bunker yang diadakan Pusat Sains Negara (PSN) sangat menggalakkan apabila telah menerima lebih 100,000 pelawat sejak ia dibuka pada 12 Oktober tahun lalu.

Menurut **Pegawai Sains, Seksyen Pameran PSN, Nur Amira Abd. Wahab**, terdapat sebilangan pelawat yang sanggup datang semula dengan membawa kenalan dan ahli keluarga mereka.

"Ada daripada pengunjung akan kembali semata-mata untuk merasai semula pengalaman sambil belajar yang mendebarkan ketika memasuki pameran tersebut.

"Justeru, PSN berharap dengan adanya pameran Survive The Bunker ini pelawat mempelajari sesuatu mengenai ketakutan, fobia dan sains di sebalik apa yang dilalui dan cuba mengaitkan dengan situasi dalam kehidupan seharian mereka.


NUR AMIRA

Tambah beliau, jika sebelum ini, masyarakat maklum bahawa ketakutan adalah situasi normal bagi sesetengah orang namun tidak ramai yang tahu mengapa dan bagaimana ia terjadi sehingga membawa kepada fobia selain langkah-langkah yang boleh diambil bagi mengawal perasaan takut dan fobia tersebut.

"Dari semasa ke semasa, PSN cuba menambah baik kandungan pameran berdasarkan maklum balas daripada pengunjung.

"Bagaimanapun, buat masa sekarang, PSN juga sedang mengkaji keperluan dan permintaan daripada pengunjung untuk menambah baik kandungan pameran.

"Semuanya masih di peringkat perancangan dan pameran Survive The Bunker siri baharu akan diwar-warkan kemudian melalui media sosial PSN," ujarnya.

LAMPIRAN 5
THE STAR (VIEWS) : MUKA SURAT 30
TARIKH : 7 JULAI 2018 (SABTU)

> Energy efficiency

On the recent increase in electricity tariff, can the government put in place the necessary regulations to require that houses, commercial/industrial buildings and schools in future be fitted with roof insulation to make them energy-efficient? – BS

LAMPIRAN 6
NEW STRAITS TIMES (OPINION) : MUKA SURAT 16
TARIKH : 9 JULAI 2018 (ISNIN)

ZAKRI ABDUL HAMID

SCIENCE AND HUMANITIES

NURTURE NEW BREED OF CITIZENS WITH 'STEMM', 'HASS'

Timely to review education policy to take on the challenges of tomorrow

Research allocation to local universities must reflect a balanced emphasis on STEMM (science, technology, engineering, mathematics and medicine) and HASS (Humanities, Arts and Social Sciences). REUTERS PIC

EXCEPT for the oil-rich countries on the Arabian Peninsula, the rich, industrialised countries of the West and Asia all owe their good fortune to their mastery of science, technology and innovation (STI).

Indeed, with few exceptions that prove the rule, a nation's economic prosperity is determined less by the richness of its natural resources than by the rich ingenuity of its human resources.

Wisely, therefore, investing in STI has been and will continue to be a cornerstone of Malaysia's economic strategy for decades.

Growing up in a multicultural and multireligious country like ours, however, influenced and moulded over centuries by the movement of seafarers from ancient civilisations in China, India and the Middle East, I have always been conscious that in this modern age, balanced progress is required ever more so.

I am often reminded by Distinguished Professor Datuk Shamsul Amri Baharuddin, the founding director of Universiti Kebangsaan Malaysia's Institute of Ethnic Studies, that when all is said and done, the survival of this country hinges on the ability of our various communities to come together to form a united nation. No amount of technological advances could ensure peace and prosperity if we, the citizens, are at loggerheads.

Sixty-one years after Merdeka, this nation is still "a work in progress".

What we are going through at present, according to Shamsul, is a state of social cohesion. What we need for a prosperous and inclusive society is true national unity, notwithstanding our ethnic and cultural differences.

"Social cohesion," he says, "is a situation where there is peace, stability, prosperity and wellbeing in a society, specifically one which is multi-ethnic, because there exists a strong social bonding built over many years" of co-existence.

To help us achieve national unity there must be greater understanding among our diverse communities, facilitated by the behavioural sciences in moulding our future generations to have a stake in this blessed country.

Our emphasis on the mastery of science, technology, engineering, mathematics and medicine (STEMM) is essential in light of the explosion of advanced technologies that one would anticipate with the advent of the Fourth Industrial Revolution.

Many observers believe, therefore, that STEMM can and should remain the bedrock of our science-driven socio-economic development. The growing view is that our children's education needs to be completed with a sense of national purpose or "soul".

As Professor Tan Sri Dzulkifli Razak, former vice-chancellor of Universiti Sains Malaysia and the 14th president of the International Association of Universities eloquently expressed it: "Science needs to find its roots once again because STEMM is no longer able to bridge meaningful dialogue with religions, ethics, arts-oriented disciplines such as humanities, and management. STEMM must be widened to allow for the streaming of religions, ethics, arts and management as its integral support."

Some scholars have termed this complementary set of disciplines HASS — which stands for the Humanities, Arts and the Social Sciences.

This notion has been around for some time, but, it has been gaining traction now given the challenges faced by countries aspiring to meet the 2030 Development Agenda set by the United Nations and the fact that science alone can't solve many of the problems the world is facing today, which are often cross-sectoral and multidisciplinary in nature.

Increasingly, countries are seeing the value of HASS in research allocation. For example, in Canada — a diverse, multicultural country like Malaysia — the national government will reportedly invest C$925 million (RM2.8 billion) over the next five years not only in science and health, but also in HASS research. The Canadian budget also includes C$275 million (RM844 million) for interdisciplinary and high-risk research to be administered by the Social Sciences and Humanities Research Council (SSHRC).

Along with Canada's health and science-based funding agencies, SSHRC provides special funding schemes to support STEMM and HASS interdisciplinary work.

These initiatives not only provide strategic funding to support top researchers, but attest to the value of the HASS disciplines in full partnership with STEMM.

These initiatives are part of Canada's focus on mobilising the value of science and technology, which the government recognises cannot succeed without a simultaneous and clear focus on the human, cultural, and creative aspects of modern society.

It is, therefore, timely, with a new government in place, for us to review our education policy to incorporate and integrate STEMM with HASS so that a new breed of citizens can be nurtured to take on the challenges of tomorrow.

Research allocation to our universities must now reflect a balanced emphasis on both sets of disciplines.

What is needed is to inculcate a critical mindset among our young people so that their minds can be liberated and nimble enough to innovate new products and processes to thrive in the world of the 21st century.

The writer is joint chairman of MIGHT and chairman of the board of directors of Universiti Malaya

Many observers believe, therefore, that STEMM (science, technology, engineering, mathematics and medicine) can and should remain the bedrock of our science-driven socio-economic development. The growing view is that our children's education needs to be completed with a sense of national purpose or 'soul'.

LAMPIRAN 7
NEW STRAITS TIMES : MUKA SURAT 7
TARIKH : 9 JULAI 2018 (ISNIN)

Meeting nation's tunnelling needs

Tun Dr Mahathir Mohamad launching the TTA, the first of its kind academy to train tunnelling specialists using TBM technology, in 2011.

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OVER the years, Malaysia has recorded steady economic progress. Its cities, especially Kuala Lumpur, continue to expand and grow robustly.

However, rapid urbanisation brought about by the influx of job seekers in search of better prospects has put a strain on how people live and commute within dense geographical spaces.

In the case of Klang Valley, this necessitated a public transport solution that will move the masses in an efficient manner and not further contribute to congestion and pollution.

The answer to this was Malaysia's Klang Valley Mass Rapid Transit (KVMRT) that would traverse above ground through suburban neighbourhoods and underground in built-up city areas.

However, building an MRT line underground is a complex job and requires experts, skilled manpower and machinery capable of taking on tunnelling works.

Realising the need for skilled human capital to meet the project's tunnelling requirements and develop future expertise for this niche field, MMC Gamuda KVMRT (T) Sdn Bhd (MGKT) set up the Tunnelling Training Academy (TTA) in 2011.

TTA is the first tunnelling school in the world to upgrade the knowledge, skills and performance of workers in the tunnelling industry using variable density tunnel boring machine (VD TBM) technology.

To date, TTA has provided training to 1,000 young professionals and skilled workers since the academy started enrolling students in 2011.

The academy is targeting to produce 1,600 highly skilled workers and experts in tunnelling by 2022.

TTA offers three types of training — skills, vocational and specialist that are based on German technology from Siemens and Bosch.

Skills training is for school leavers while the vocational training is for those with experience in technical, mechanical engineering or other niche fields. The specialist or advance training is for qualified engineers.

All programmes — taught in English — are centred on the tunnelling process and the operations of the VD TBM and underscore the importance and relevancy of Technical and Vocational Education Training (TVET) for Malaysian youths who prefer to get started on the job right away.

The duration of the training programmes range from six weeks to three months, in which trainees are enrolled into extensive courses if they show interest to scale up.

Apart from acquiring skills that are in high demand, recruits enrolled in the academy are also equipped with hands-on experience when they are directly involved in underground works for the MRT including mastering the operations of the VD TBM.

While its primary role is to help the country revolutionise the construction industry, TTA will also help the government reduce dependency on foreign expertise by upskilling local talents with tunnelling knowledge.

TTA's role and responsibility have become increasingly relevant in realising the government's vision to develop the nation.

Its training modules are internationally recognised after the academy was invited to train engineers from India on the operations of the TBM. The academy has also received training requests from Vietnam and the Middle East.

Among the characteristics of TTA includes its emphasis on the importance of occupational safety and health, specialisation of training modules, job exposure, professional facilitators, well-equipped training facilities and employment benefits.

MGKT manager Salehudin Md Shaarani said he is proud of graduates from the academy, who are currently working on the MRT project. Due to their skills, TTA graduates are also sought after by international construction firms.

"I am grateful to be given the opportunity to train the younger generation on the skills and knowledge of the tunnelling industry. They have shown great commitment and passion by putting their skills and knowledge into practise.

"As a student of TTA who underwent specialist training, I am proud to count the tunnel crew as my fellow trainees after witnessing first-hand how they have become experts in tunnelling works," said Salehudin when met at the construction site for the Bandar Malaysia North MRT station here, recently.

TTA, he said, deserved to be recognised as the pioneer for TVET since the academy has successfully produced skilled human capital in a niche industry.

"Works involving tunnel construction is intricate and the process has become sophisticated since we are using the latest technology in our MRT projects. This has resulted in increased demand for engineers, technicians, operators, mechanics and electricians in this sector.

"The academy is not only upskilling the local workforce but we are also providing them with a competitive edge in the global market," he said adding that some of the graduates have found jobs in other countries like Singapore.

The TVET route to success

KUALA LUMPUR: Since its establishment seven years ago, TTA has improved the lives of the younger generation through its internationally recognised courses.

This was evident in the career path of the pioneer batch of trainees, who began their training in 2011.

Among them is Said Khudri, 28, from Raub, Pahang. Said was only a crew member at a tunnel construction site earning a monthly salary of RM1,200 when he enrolled into the academy.

After completing his course at TTA, he was appointed as a senior supervisor, earning more than RM3,000 a month.

"The academy has changed my views on the industry. My first experience at the MRT Cochrane construction site after completing the course at TTA was an eye-opener especially when I was tasked to supervise the slurry treatment plant.

"My current responsibilities are more challenging as I need to monitor the construction of the project and look after the safety of my charges. Their safety is my utmost concern," he said.

His colleague, Mohd Nor Shafiq Hadi Misro, 25, could not stop singing praises for the academy. Similar to Said, Shafiq joined TTA after completing his Sijil Pelajaran Malaysia.

He declined admission for a Civil Engineering Diploma course at a polytechnic here due to financial constraints but has come to terms that he made the right choice by joining TTA.

"The academy changed my life. I was exposed to many skills and practical know-how, including the method of installing a "cutter head" replica and operating a tunnel boring machine," said Shafiq, who now earns more than RM4,000 monthly compared to RM1,700 when he first started in 2012.

Muhammad Haizad Abdul Karim, 25, from Bukit Mertajam, Penang, was absorbed into MMC Gamuda five years ago after completing a year at the academy.

He started his career as a forklift operator earning RM40 daily before he was promoted to the position of assistant supervisor. He is now earning more than RM2,000 a month.

"In the early days, I had doubts operating a forklift, especially when I had to manoeuvre the machinery through narrow areas. However, my previous supervisor helped to improve my skills a lot.

"Tunnel construction is not an easy task. Having said that, I am excelling in my profession now. I learn new things at work almost every day," he said.

Pioneer batch of TTA trainees (from left) Said, Salehuddin, Nor Shafiq and Haizad are now specialists in their fields.

LAMPIRAN 8
THE STAR (STARBIZ) : MUKA SURAT 9
TARIKH : 9 JULAI 2018 (ISNIN)

New cohort continues drive in innovation ecosystem

Accelerator programme focuses on fintech, Internet of Things and robotics

CYBERVIEW Sdn Bhd, the company leading Cyberjaya's transformation into a Global Technology Hub, has shortlisted five startups to participate in the latest instalment of its Cyberview Living Lab Accelerator (CLLA) Programme.

The startups have been working out of CoInnov8, Cyberview's collaborative smart city space, for over a month and will undergo four more months of intensive work under the programme.

"The latest instalment of our accelerator programme is testament to the success of the past instalments.

"For example, the Demo Day which was held last October saw satisfactory response from ecosystem partners, venture capitalists, and corporate partners towards the last cohort of the programme. In fact, the amount of funds raised by the previous cohort comes up to RM12.28mil," said Cyberview managing director Mohd Najib Ibrahim.

The five startups participating in the latest instalment of the CLLA Programme are fintech players EPC Blockchain, MEDKAD and CheQQme, IoT solutions provider Touchless, and Ideasparq Robotics, an automation company which provides robotics solutions.

According to Najib Ibrahim, Cyberview has been focusing on the areas of fintech and the Internet of Things (IoT) for the past two instalments of the programme, but have decided to open up to startups in the area of robotics this time around. This is in tandem with the market's increased appetite and attention towards these three areas, especially with Robotics being a focal point for innovation leaders making strides under Industry 4.0.

"Fintech has seen tremendous growth in the past few years, with global fintech investments hitting new record levels every year. In the middle of this is blockchain, which is expected to be the future of financial infrastructure.

"For IoT, the Malaysian market itself holds so much potential. According to the Malaysia National IoT Strategic Roadmap, the initial economic potential for the country in this particular area will be RM9.5bil GNI creation by 2020 and is expected to experience exponential growth to reach RM42.5bil in 2025.

"We have also decided to include robotics this year as it is one of the most important areas in emerging technology with research stating that the global industrial robotics space is expected to reach US$40bil by 2020. This solidifies even further how we need to move in line with global and regional trends," he added.

He also lauded the Prime Minister's recent announcement to revive Malaysia's Multimedia Super Corridor (MSC) plan.

Finnext Capital is the programme manager, working with Cyberview for the second time to ensure that the startups are equipped with sufficient guidance and resources throughout the five-month period.

Finnext Capital is an innovation enabler consulting firm which provides professional advisory to both corporations and startups.

According to Siti Shafinaz Mohd Salim, acting head of Technology Hub Development Division, the priority is to provide these startups with problem statements that reflect the needs of Cyberjaya's main stakeholders and its community. This is to ensure that a solid purpose and direction is set for these startups who already have at least a minimum viable product that can enrich the smart city ecosystem in Cyberjaya, and possibly the nation.

"They come to us because they need assistance, which includes mentorship and market access. It has always been our aim to engage with startups and provide them with a suitable launchpad towards the next phase of their commercialisation plan," said Shafinaz.

The accelerator offers participants a programme value up to RM100,000 which comprises resources, facilities, mentorship, networking, market access opportunities, and other assistance.

"The CLLA Programme is unique in a sense that it supports startups with solutions that contribute to a smart city's needs, and balances the scale between meeting the Cyberjaya community's present demands and moving in tandem with the different moving parts of the tech space," said Najib Ibrahim.

"We are always ecstatic when startups take the learnings from our programme and are able to expand their businesses either to local or global markets.

"One example is LuxTag, one of the startups from the last instalment of our accelerator programme which secured a hefty amount of funding recently. This pushes their valuation up significantly. But more importantly, this would allow them to further their mission and business goals," added Najib Ibrahim.

According to him, the key to transforming Cyberjaya as a Global Technology Hub is the impact of technology and innovation on society and the way communities live and do things.

The CLLA Programme provides the opportunity for startups to test and tweak their ideas in a real life city setting, which would allow them to engage with the community within the city and assess the potential impact and values of their innovation.

"Cyberjaya is a ready and safe testbed for startup founders to pilot their ideas. Twenty percent of Cyberjaya's total population are early tech adopters, which simply means that the community here is always ready to provide feedback on what works and what does not," Najib Ibrahim said.

LAMPIRAN 9
UTUSAN MALAYSIA (MY SEKOLAH) : MUKA SURAT 22
TARIKH : 9 JULAI 2018 (ISNIN)

Modul 10 Minit Perhimpunan raih anugerah inovasi, kreativiti 2018

MODUL 10 Minit Perhimpunan (M10MP) yang dibangunkan secara kerjasama antara *Utusan Pelajar* dan Institut Pendidikan Guru (IPG) Kampus Ilmu Khas dinobatkan juara Pertandingan Kumpulan Inovatif dan Kreatif dalam Karnival Inovasi dan Kreativiti Pendidikan (KIKP) 2018 di Kuala Lumpur, baru-baru ini.

Pengiktirafan itu diberikan kerana modul berkenaan menepati amalan yang menyokong pembudayaan dan pemerkasaan inovasi dalam sektor awam melalui Horizon Baharu Kumpulan Inovatif dan Kreatif yang menekankan aspek keberhasilan dan potensi pengembangan projek.

Pengarah IPG Kampus Ilmu Khas, Dr Mohd Suhaimi Mohamed Ali berkata, modul yang bersifat *unpack curriculum* ini merupakan amalan berimpak tinggi berpusatkan murid bagi membantu membentuk kemenjadian mereka dalam waktu yang singkat di samping membangunkan pengurusan perhimpunan sekolah yang lebih bermakna dan efisien.

"Selepas meraih kejayaan dalam karnival sama pada tahun lalu, kini modul berkenaan fokus terhadap Kumpulan Inovatif dan Kreatif untuk melihat sejauh mana kerelevanannya diguna pakai kepada murid dan guru sewaktu perhimpunan mingguan sekolah," katanya dalam satu kenyataan menerusi e-mel baru-baru ini.

Karnival anjuran IPG Kampus Ilmu Khas ini melibatkan 45 penyertaan inovasi daripada siswa guru, pensyarah, pengurusan serta Kumpulan Inovatif dan Kreatif.

Penganjuran karnival ini sebagai platform bagi menyemarakkan budaya penyelidikan dan inovasi seperti yang digariskan dalam Perancangan Strategik IPG Kampus Ilmu Khas 2017-2021.

Panel penilai terdiri daripada pakar inovasi dari universiti awam dan juga wakil industri.

Majlis perasmian penutupan disempurnakan oleh Pengarah Pengurusan Kualiti dan Keutuhan mewakili Rektor IPG Malaysia, Abu Bakar Mohamad Rashid.

ABU BAKAR MOHAMAD RASHID (belakang, empat dari kanan) dan Mohd Suhaimi Mohamed Ali (belakang, tiga dari kanan) bersama-sama pemenang utama Pertandingan Karnival Inovasi dan Kreativiti Pendidikan 2018 di IPG Kampus Ilmu Khas, Kuala Lumpur, baru-baru ini.

LAMPIRAN 10
UTUSAN MALAYSIA (MEGA SAINS) : MUKA SURAT 17
TARIKH : 9 JULAI 2018 (ISNIN)

Mega SAINS

SISA SAYUR ELAK TANAH RUNTUH

PROF. Dr. Rohayu Che Omar (kiri) bersama penyelidikinya, Nurul Atiqah Dzulkifli (kanan) dan Amina Hanna Zainal Abidin menunjukkan bahan-bahan kitar semula dari sayur sayuran terbuang untuk mengelakkan tanah runtuh di lereng bukit.

Oleh LAUPA JUNUS
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USAHA menjalankan kerja-kerja penyelidikan dan pembangunan (R&D) kadangkala didorong oleh pelbagai faktor dan biasanya bertujuan menyelesaikan satu-satu masalah dengan menghasilkan inovasi.

Namun yang memberi kelainan apabila R&D dijalankan yang diinspirasikan daripada pemerhatian atau kejadian, sekali gus mencari sebab dan puncanya.

Ini yang berlaku kepada Pensyarah Kanan dan Pengarah Institut Infrastruktur Tenaga, Universiti Tenaga Nasional (Uniten), **Profesor Madya Dr. Rohayu Che Omar**.

"Rumah kami terletak di tebing sungai Kelantan di Pasir Mas dan setiap tahun kelihatan macam hendak runtuh.

"Saya kerap memerhatikan ibu saya membuang sisa sayuran dan air daripada sayuran yang rosak di tepi sungai itu.

"Apabila mendapati tanah tersebut semakin baik dan tidak berlaku runtuhan, ia memberi inspirasi kepada saya untuk menjalankan kajian bagaimana perkara itu berlaku," ujarnya.

Sejak itu beliau terfikir mencari sebab unik di sebalik peristiwa tersebut iaitu bagaimana sisa sayuran dan air sayuran yang rosak yang dikisar dan dicampak ke tebing sungai boleh menyebabkan tanah tersebut kukuh.

Justeru selepas teringat perkara tersebut, beliau memohon geran penyelidikan Skim Geran Penyelidikan Teroka (ERGS) Kementerian Pendidikan Tinggi pada 2010.

Selepas menerima dana penyelidikan tersebut yang berjumlah RM275,000, beliau memulakan penyelidikan bagi mencari punca peranan sayur sayur rosak dalam penstabilan struktur cerun.

Kajian tersebut mendapati apabila sayuran atau sisa sayuran rosak, ia mengeluarkan bakteria yang kemudiannya mengeluarkan karbon karbonat yang mengikat tanah yang sudah hancur yang berfungsi sebagai simen.

Selain beliau, turut terlibat sebagai ahli kumpulan penyelidik di institut berkenaan adalah Rasyikin Roslan, Intan Nor Zuliana Baharuddin dan Dr. Fathoni Usman. Kumpulan penyelidikan tersebut memfokus kepada dua kajian utama. Pertama, kajian tanah serta analisis makmal bahan asas tanah, dan kedua, cadangan reka bentuk menghasilkan inovasi dinamakan *Bio-vege-grout* yang mesra alam.

Bio-vege-grout merupakan sebuah inovasi yang menggabungkan penyelidikan dalam bidang geologi persekitaran, kejuruteraan awam dan mikrobiologi. Cecair *Bio-vege-grout* diperkaya dengan bakteria baik yang berupaya memperkukuh struktur tanah, di samping menggalakkan pertumbuhan tumbuhan seperti rumput dan paku pakis. Daripada sistem dalam *Bio-vege-grout* adalah *colufinus* yang menutup lapisan permukaan.

Cecair ini diperoleh daripada proses penapaian sayur-sayuran terbuang, terutama sayuran yang mengandungi ferum yang tinggi. Proses ini kebiasaannya mengambil masa lebih kurang sebulan. Ia didapati sesuai untuk digunakan hampir semua jenis tanah seperti tanah pasir, tanah liat dan tanah gambut.

INOVASI Colufnas iaitu gentian yang diperbuat daripada daun nanas, petola dan hampas kelapa yang berfungsi menghalang hakisan dan bertindak sebagai baja.

MENGUJI KEBERKESANAN

Projek penyelidikan tersebut turut mendapat kerjasama dari Jabatan Kerja Raya (JKR) dan Projek Lebuhraya Utara-Selatan (PLUS). Daripada kerjasama ini, kumpulan penyelidikan Dr. Rohayu berpeluang menguji keberkesanan inovasi mereka, di samping sokongan kewangan.

Setakat ini, *Bio-vege-grout* telah diuji di 12 lokasi cerun yang terdedah kepada ancaman tanah runtuh, termasuk Jeli, Gua Musang (Kelantan), Kuala Kangsar, Ipoh (Perak), Chendering (Terengganu) dan Cameron Highlands (Pahang).

Dr. Rohayu menyasarkan pengurangan kes-kes berkaitan ekologi, seperti hakisan tanah dan tanah runtuh di Malaysia, sekali gus mengurangkan bilangan kes kematian disebabkan kemalangan jalan raya.

Beliau berkata, petola kering digunakan bagi mengelakkan tanah terhakis dan ia menggalakkan pembentukan humus dan diletakkan pada permukaan yang mempunyai tahap hakisan yang tinggi, manakala cecair daripada sayur-sayuran campuran adalah untuk menambah kekuatan tanah dan mengikat tanah yang perol.

Selain petola, bahan sayuran lain yang boleh digunakan adalah adalah kangkung, bayam dan sawi iaitu pelbagai jenis sayur boleh digunakan selagi tidak mengandungi asid yang tinggi.

"Cecair tersebut bertindak seperti simen yang mengikat tanah seperti seakan-akan batu. Cecair yang dihasilkan menerusi proses penapaian dimasukkan ke dalam atau bawah permukaan," katanya.

Sayur yang dikeringkan dijahit dan diletak di atas permukaan dan beberapa jenis sayuran seperti petola digunakan sebagai geotekstil, manakala daun nanas digunakan sebagai benang pengikat dan tingkatkan kadar penguraian. Paip polivinil klorida (PVC) pula dimasukkan ke dalam tanah dalam lebih kurang lima hingga 10 milimeter dan dimasukkan cecair ke dalam tanah menerusi paip berkenaan.

Fungsi petola geostekstil

i. Halang hakisan
ii. Bertindak sebagai penahan daripada runtuhan
iii. Terurai secara semula jadi dan menjadi baja
iv. Rendah karbon
v. Kos rendah

LAMPIRAN 11
BERITA HARIAN (DIDIK) : MUKA SURAT D64
TARIKH : 9 JULAI 2018 (ISNIN)

Manfaatkan air hujan

Inovasi kerjasama SKSSAS dengan MBPJ mampu jimat air terawat

Oleh Firjani Naziruddin
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Petaling Jaya

Dalam usaha mengatasi masalah pembaziran air sebanyak 50,000 liter setahun di negara ini, Sekolah Kebangsaan Satu Sultan Alam Shah (SKSSAS) bekerjasama dengan Majlis Bandaraya Petaling Jaya (MBPJ) untuk menjalankan projek 'Air Gutter'.

Projek yang menggunakan Sistem Pengumpulan dan Penggunaan Semula Air Projek Air Hujan (SPAH) itu membantu mengoptimumkan penggunaan air hujan untuk tujuan aktiviti harian.

Penolong Pegawai Seni Bina MBPJ, Encik Imran Shawal Samsudin, berkata projek berkenaan dapat menjimatkan kos sebanyak RM5.00 sebulan dan jika dijalankan secara menyeluruh, lebih banyak kos boleh dijimatkan dalam tempoh setahun.

***Sistem pengumpulan** dan penggunaan semula air hujan dikumpul daripada bumbung dan disalurkan ke tangki penyimpanan air.*

***Encik Zulkifli (duduk)** mendengar penerangan Encik Imran Shawal mengenai sistem pengumpulan dan penggunaan semula air hujan.*

***Encik Imran Shawal (tiga dari kanan)** berbincang dengan guru mengenai sistem pengumpulan dan penggunaan semula air hujan dikumpul untuk menyiram pokok dan kemudahan landskap.*

***Murid SKSSAS** memenuhkan kolam menggunakan air hujan.*

Pelbagai kegunaan

Beliau yang mengetuai projek itu berkata, cara pelaksanaan Air Gutter ialah dengan mengumpulkan air hujan di bumbung kemudian disalurkan ke beberapa tangki penyimpanan air hujan sebelum digunakan untuk pelbagai aktviti.

"Air terbabit boleh digunakan untuk menyiram tumbuh-tumbuhan, membersihkan tandas dan mengambil wuduk.

"Projek rintis dijalankan di kawasan kolam air, tempat mengambil wuduk dan taman bersebelahan Program Pendidikan Khas Integrasi (PPKI) di SKSSAS," katanya.

Kurangkan risiko banjir

Encik Imran berkata, kelebihan sistem SPAH adalah mengurangkan kebergantungan kepada bekalan air terawat, menangani masalah krisis air, selain mampu mengurangkan potensi berlakunya banjir.

Sementara itu, Guru Besar SKSSAS, Encik Zulkifli Noordin, berkata menerusi perojek itu, secara tidak langsung dapat menggalakkan murid untuk menjimatkan air dan mengajar mereka untuk bijak menguruskan kemudahan air.

"Melalui pengaplikasian di sekolah, murid juga dapat mendidik ibu dan bapa di rumah untuk melakukan SPAH bagi kegunaan harian," katanya.

LAMPIRAN 12
SUNDAY STAR (STAR EDUCATE) : MUKA SURAT 6
TARIKH : 8 JULAI 2018 (AHAD)

Cover story

Marking a huge milestone

UiTM is paving the way for Malaysia to some day become a space-faring r

By REBECCA RAJAENDRAM
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IN the words of American astronaut Neil Armstrong as he set foot on the moon in 1969, "That's one small step for a man, one giant leap for mankind."

The palpable pride emanating from Universiti Teknologi Mara's (UiTM) staff and students could be felt as their pride and joy, the UiTMSAT-1, made its way to to the International Space Station (ISS).

They watched the live feed of SpaceX's rocket launch from their Shah Alam campus last Friday.

"T-Minus six, five, four, three, two, one.

"We have liftoff."

The nanosatellite, Malaysia's first to make it into space, was transported on board SpaceX's Dragon cargo spacecraft that was pushed into space by the Falcon 9 rocket.

The 15th cargo resupply mission happened during the early hours at Cape Canaveral Air Force, Florida, in the United States.

About 19 months in the making, the nanosatellite was developed by UiTM postgraduate students Syazana Basyirah Mohammad Zaki and Muhammad Hasif Azami together with others in a project called Joint Global Multi-Nation BIRDS-2 Project, that is being hosted by Japan.

The team consisted of 10 postgraduate students - two from the Philippines, three Japanese and three from Bhutan - at the Laboratory of Spacecraft Environmental Interaction Engineering, Kyushu Institute of Technology, Japan.

The main objective of the project is to expose the participants to a comprehensive and state-of-the-art hands-on experience to develop a nanosatellite.

Both Bhutan and the Philippines also developed their own CubeSats - Bhutan-1 and Maya-1 - that will be delivered to Japan's ISS module, known as Kibo, and will be launched into orbit.

Each CubeSat, measures 10cm×10cm×10cm and weighs one kilogramme.

All the CubeSats had to pass a technical and safety check by Japan Aerospace Exploration Agency (JAXA), Tsukuba Space Centre, Japan, before being sent to Florida.

UiTM Centre for Satellite Communication director Assoc Prof Mohamad Huzaimy Jusoh says the nanosatellites will be released into orbit by the middle of August.

If all goes well, he says that the ground station located at the Faculty of Electrical Engineering will receive the Morse Code signal from the nanosatellite 30 minutes after deployment.

"It will be a tense 30 minutes as we wait to see if our nanosatellite works," he explains.

Assoc Prof Mohamad Huzaimy also says that they will be able to transmit data from three ground stations in Japan, Bhutan and the Philippines.

He adds that UiTMSAT-1 will enter into a low Earth orbit, about 400km above the clouds, and will remain in orbit for about two years.

The short lifespan, he explains, is because the Earth's gravitational force will pull the CubeSat out of orbit over time, and will become non-functional.

The satellite will be travelling at a speed of 28,000 km/h and pass over Malaysia five times a day, he adds.

He says there are six missions onboard the UiTMSAT-1.

The demonstration of an Automatic Packet Reporting System (APRS) Digipeater which will enable the CubeSat to be a base station for amateur radio communication.

The demonstration of the nanosatellite's Store and Forward.

"We have antennas on UiTMSAT-1, which allows us to collect and transmit data from rural areas to our ground stations," explains Assoc Prof Mohamad Huzaimy.

It will also be an Earth Imaging Camera and a demonstration of UiTM's first commercial off-the-shelf global positioning system (COTS GPS) technology.

Then there is the measurement of Single Event Latch-up Detection which he says is the measurements of electromagnetic and plasma radiation from the sun which can affect and degrade the surface of the nanosatellite especially its solar panels.

Finally, there is the measurement of Magnetic Fields using an Anisotropic Magneto Resistance (AMR) Magnetometer.

"This is for magnetic measurements, the AMR Magnetometer is tasked to measure the space electromagnetic fields to comprehend the magnetic observation that we are currently measuring from six stations in Malaysia," he explains.

Congratulating UiTM, Higher Education director-general Datin Dr Siti Hamisah Tapsir said the launching of UiTMSAT-1 to the International Space Station is a major milestone for Malaysian higher education.

"This signifies the existence of a culture of academic excellence within the Malaysian higher education ecosystem because UiTMSAT-1 involved two of UiTM's postgraduate students.

"This is an indicator that research is an integral part of postgraduate education in Malaysia," she told *The Star*.

Dr Siti Hamisah said the Department of Higher Education will continue to support the pursuit of research excellence in Malaysian higher learning institutions.

To infinity and beyond

UiTM first ventured into the realms of space travel in 2012.

Former UiTM vice-chancellor Prof Tan Sri Dr Sahol Hamid Abu Bakar was a key figure in UiTM's vision to go beyond the skies.

He says the project was originally called the UiTM Satellite Training Programme.

"It was always my dream to put UiTM on the world map.

"During that period, satellite trading and research was well discussed among academia around the world," he adds.

He says that the dean of the Faculty of Electrical Engineering Prof Dr Mohd Nasir Taib is instrumental in bringing this vision to life as he was the one who continued to support the project right up to completion.

Although his term as vice-chancellor ended in 2016, Prof Sahol Hamid says: "I feel my dream came true and it's a great achievement for UiTM."

Assoc Prof Mohamad Huzaimy, who supervised the Malaysian students throughout the project, would often travel to Japan to monitor the development progress of the CubeSat.

Syazana Basyirah says there were many challenges when designing and developing the nanosatellite.

"But the biggest challenge in producing UiTMSAT-1 was the time crunch," she adds.

An incredible sight as SpaceX's Dragon cargo spacecraft makes its way to the International Space Station. — Photos courtesy of UiTM

A nail-biting moment as Prof Hassan (right) watches the live feed of the launch with (from left) deputy vice-chancellor (Academic Affairs) Prof Mohamad Kamal Harun, Prof Mohd Nasir and Assoc Prof Mohamad Huzaimy from the Shah Alam campus.

Prof Sahol Hamid says the project was originally called the UiTM Satellite Training Programme.

SAMBUNGAN...
SUNDAY STAR (STAR EDUCATE) : MUKA SURAT 7
TARIKH : 8 JULAI 2018 (AHAD)

ıation.

The UiTMSAT-1 nanosatellite will be deployed into orbit in August from the International Space Station.

(From left) Syazana Basyirah and Muhammad Hasif pose with the UiTMSAT-1.

The launching of UiTM-SAT-1 to the International Space Station is a major milestone for Malaysian higher education.

Datin Dr Siti Hamisah Tapsir

Dr Siti Hamisah says the launch of UiTMSAT-1 signifies the existence of a culture of academic excellence within the Malaysian higher education ecosystem.

Although each of the 10 team members were given specific and critical tasks in the development of all three nanosatellites, it was still a race against time.

"We were having meetings twice a day towards the end of the project.

"We didn't have any weekend time off," she says.

They had less than 15 months to design and develop their nanosatellite and would be working almost every day in the laboratory, she adds.

It was a long, tedious process, shares Syazana Basyirah, where each component had to be tested to ensure it could withstand the harsh conditions in outer space.

Factors such as temperature, stability (due to the strong vibrations during the rocket launch) and zero gravity had to be taken into account. The nanosatellite also had to be assembled in a clean room to make sure there are no dust particles on it.

After all their hard work, Syazana Basyirah says she is grateful for the opportunity to learn and be part of the whole process to create a nanosatellite.

Muhammad Hasif thanked UiTM and the Education Ministry (formerly known as the Higher Education Ministry) for sending them to Japan to be part of the BIRDS-2 programme.

"Especially since we are students but are allowed to be involved in such a significant project," he explains.

"I was also very nervous during the rocket launch and now, we are looking forward to the deployment event (in August) which is the most crucial part," he adds.

Both postgraduate students were sent to Kyushu Institute of Technology under a special scholarship given by the ministry.

UiTM vice-chancellor Prof Emeritus Datuk Dr Hassan Said says UiTMSAT-1 marks another milestone for the public university and proves that UiTM can be a player in the global arena.

"We can achieve what we believe we can achieve, and that is UiTM's strength," he adds before watching SpaceX's spacecraft launch into outer space from the UiTM Shah Alam campus.

He says that the university has built its own ground station at the Faculty of Electrical Engineering for remote acquisition and data collection.

The ground station has been fully operational since last December.

Prof Hassan adds that he hopes UiTM will one day build a more sophisticated satellite.

"This is the beginning for us to reach an even higher level of success.

"UiTMSAT-1 is paving the way for Malaysia to become a space-faring nation," he explains.

He is very proud of the two students, Syazana Basyirah and Muhammad Hasif, who were part of the BIRDS-2 programme.

UiTM has also approved the building of a Centre of Excellence for satellite research and development, shares Prof Hassan.

Right now, the university has a Center for Satellite Communication.

He hopes this centre will be a regional hub to conduct high impact research.

LAMPIRAN 13
SUNDAY STAR (STAR EDUCATE) : MUKA SURAT 12
TARIKH : 8 JULAI 2018 (AHAD)

schools

Young science warriors shine

FIRST-time competitor, SMK (P) Temenggong Ibrahim beat 1,450 students from 31 schools in Batu Pahat district to win first place in the inaugural CCM STEM UP Challenge 2018.

The competition aims to nurture secondary school students' interest in Science, Technology, Engineering and Mathematics (STEM) and shape them to become future innovators of Malaysia.

SMK (P) Temenggong Ibrahim teacher Bahiah Akil was overjoyed after her school was crowned champion in the inaugural challenge.

"The results came as a total surprise. We did not expect to take the top spot as this was our first time joining a science competition," said Bahiah who teaches Biology at the school.

She added that the students worked hard and went through intensive preparation for the competition.

"The students ran a number of experiments and data collection related to STEM and together with the Physics teacher, Puan Norhayati Salamon, we discussed and came up with the idea of developing a mini vacuum cleaner for children.

"Children do not like to do housework. The mini vacuum cleaner encourages them to assist their parents with household chores in a fun way," she said.

The students, she added, completed the science project a week before the competition and practised their presentation before pitching it to the judges. "Overall, it was a challenging competition as the quizzes were quite tough and we faced fierce rivalry from the other schools but I am so proud of our students' accomplishment," she said.

All smiles as the team from SMK (P) Temenggong Ibrahim bag top honours in the challenge.

The champion team consisted of Stella Pui Hui Min, Ng Wan Li and Lim Jin Qian.

Stella said she prepared for the competition by going through revisions books on Chemistry, Physics, Biology and Additional Mathematics. She also took part in online quizzes.

"We went through various rounds and categories as a team before I was chosen as one of the top three finalists to represent my school with two teammates in the grand finale," said Stella, who hopes to become an accountant.

SMK (P) Temenggong Ibrahim won a RM5,000 cash prize, a 3D printer, medals, backpacks and certificates of achievement.

The challenge was organised by Chemical Company of Malaysia Berhad (CCMB) in partnership with the Academy of Sciences Malaysia. It was opened to students in Forms Four and Five in the science stream or their schools' science club in the Batu Pahat district.

CCMB Group Managing Director Nik Fazila Nik Mohamed Shihabuddin said that nurturing students' creativity, critical thinking and problem-solving skills is crucial in the unfolding Fourth Industrial Revolution, which emphasises science and technology to reshape the way people live and work.

"The advent of science and technology has changed our way of life in many ways.

"Through STEM, industries such as the chemical and polymer industries that CCMB operates in, have introduced innovative products and formulation through extensive research and interactive approach.

"The challenge not only boosts students' interest in STEM but also creates an inquisitive mind, eye for detail and strong analytical skills," she said.

Nik Fazila thanked the Academy of Sciences Malaysia and members of the Young Scientists Network for their support and contribution in making the challenge a success.

Academy of Sciences Malaysia fellow Prof Dr Yang Farina Abdul Aziz commended CCMB's efforts to get students excited about learning STEM through the challenge.

"As a body entrusted to inspire interest in science, technology and innovation, the Academy is committed to conducting various STEM initiatives as one platform to nurture the interest among school students," she said.

SMK Tinggi Batu Pahat won second place while SMK Dato Seth took third place. The Most Outstanding Science Project was awarded to SMK Seri Gading for its Water Cleaning Project.

LAMPIRAN 14
SUNDAY STAR (STAR EDUCATE) : MUKA SURAT 9
TARIKH : 8 JULAI 2018 (AHAD)

Campus

Sparking an interest in STEM

BASED on the belief that science, technology, engineering and mathematics (STEM) are bodies of knowledge that stem from curiosity and should therefore be introduced to people in their early years of childhood, the Grand Challenge Scholars Club of Taylor's University School of Engineering gathered a total of 38 children aged five to 12 to learn more about STEM in a fun, relaxed environment.

The full-day "Engineering My Future" (EMF) workshop, held at Taylor's Lakeside Campus was coordinated by a committee of 11 Grand Challenge scholars, comprising a variety of game stations and in-class lessons to nurture a love for STEM among young children.

"The aim of EMF is to spark interest in STEM among children of a young age. As Grand Challenge Scholars, we want to do our part to raise awareness so that more people can be involved in and contribute to the fields of engineering, science, and technology.

"We also opened the workshop to primary school pupils for free as we did not want financial restrictions to hinder them from learning STEM," said EMF organising leader and Grand Challenge Scholar How Yu Yi.

Executed by students from both the School of Engineering and School of Education, the workshop creatively introduced STEM-relevant topics to participants through small group activities.

One of the five game stations demonstrated a potato battery connected to zinc and iron electrodes to light up LED lights.

Another station allowed participants to build water filters with coal and soil to understand how a water filtration system works.

Other game stations included activities to teach children about the hydroponic system, an alternative way to plant; identification of various kinds of herbs; and assessing individual learning styles to introduce children to personalised learning.

A student from Taylor's University School of Engineering demonstrates to an EMF participant how potatoes become batteries when connected to electrodes.

In addition, EMF collaborated with the School of Education students to deliver a one-hour long lesson plan on STEM to the children.

Learning about strength and stability, the older participants were tasked to build a structure out of straws and tape to hold a cup of marbles three inches above a table surface.

Another lesson saw nine-year old participants and younger, build structures using toothpicks and plasticine to increase their understanding of stable buildings.

Explaining their lesson plan, third-year Bachelor of Education students, Jessica Balakrishnan and Sin Xiaoqi, shared: "We decided to teach about strength and stability [to] applied skills from our lectures to plan our lesson.

"Our lesson activities included asking participants to identify stable objects in the classroom to check their prior knowledge on the topic, building and improving on the strength and stability of a structure with limited materials, and assessing student mastery through topic discussion."

The day-long activities culminated in an award ceremony to recognise the best students of the day.

A total of three awards were presented to the Best Group and two Most Outstanding Participants who received 3D-printed trophies.

Additionally, each EMF participant received certificates of participation as an encouragement to further pursue STEM.

"EMF is a workshop dedicated to create an interest in STEM among school pupils. Having conducted this workshop for secondary school students over the past three years, this year we engaged with younger children as we believe in the importance of introducing STEM from young.

Moreover, this initiative fits into the requirement for our Grand Challenges scholars; which is to build awareness about STEM in our younger generation," said Taylor's University School of Engineering, Faculty of Built Environment, Engineering, Technology and Design head of school Prof Dr Satesh Narayana Namasivayam, who was present at the EMF awards ceremony.

He hoped that more young children will find a fascination for STEM thanks to the workshop.

EMF was sponsored by Institution of Mechanical Engineers Malaysia and Institution of Engineering and Technology Malaysia.

LAMPIRAN 15
SUNDAY STAR (STAR EDUCATE) : MUKA SURAT 11
TARIKH : 8 JULAI 2018 (AHAD)

schools

Celebrating their hard work

One for the album as the top achievers (from left) Muhammad Afiq, Gai, Ooi, Ng, Mohd Azrai, Azreen Marissa and Nabil take a group photo.

OVER 99% of this year's graduating batch from Kolej Yayasan UEM (KYUEM) have received conditional offers from top-notch universities in the United Kingdom (UK), Ireland, Australia, the United States, Canada and Hong Kong.

They received their completion of studies certificates in a graduation ceremony that was graced by Selangor Ruler Sultan Sharafuddin Idris Shah and Tengku Permaisuri Selangor Tengku Permaisuri Norashikin.

Nine of the graduating students received conditional offers to Cambridge and Oxford Universities; 24 to Imperial College London and 21 to the London School of Economics.

The college recorded an overall high academic performance – last January's result showed 90% of all grades gained at the A-Level examinations were graded at A*, A or B and over 60% gained at least 3 A grades.

Based on their A-Level examination results, three of KYUEM graduating students gained Top in the World awards – Top in the World for Mathematics (AS Level) went to Nabil Thoo Min Ren who hopes to continue his studies in Mathematics with Economics at University College London.

Two high achievers in Marine Science (AS Level) are Farah Diana Mohamed Faizal who will be pursuing Geography at the University of Bristol, and Muhammad Aiman Ahmad Suhaimi who has accepted the conditional offer to pursue International Relations with Quantitative Methods at University of Edinburgh.

The ceremony saw seven outstanding graduates presented with Special Awards.

These are Ng Xuan Yi with the Scholar of the Year; Nabil Thoo Min Ren with the Academic Excellence Award (Arts); Joseph Ooi Boon Han (Academic Excellence Award (Science)); Gai Min-Qi (Academic Excellence Award (Mathematics)); Muhammad Afiq Samsudin (Best Progress Award); and Mohd Azrai Zain Ariffin and Azreen Marissa Adif received the Male Sports and Co-Curricular Award and Female Sports and Co-Curricular Awards, respectively.

The new principal of KYUEM, Peter Hodge congratulated all 240 graduating students.

"We are extremely proud of our students and their individual success stories.

"We are also very proud of what they go on to achieve as they leave our grounds as successful and well accomplished individuals fully prepared for university and able to meet future challenges with confidence," he said.

He said credit is also due to the teachers and academic mentors who provided guidance to students in their academic work and the experienced counsellors who further supported them in their university application journey.

LAMPIRAN 16
NEW SUNDAY TIMES (NEWS) : MUKA SURAT 14
TARIKH : 8 JULAI 2018 (AHAD)

TIME CAPSULE OF HISTORY

KUDAT HAS POTENTIAL TO BECOME WRECK DIVING GEM

Area may be home to shipwrecks of historical importance

OLIVIA MIWIL
KOTA KINABALU
olivia@nstp.com.my

Baszley Bee Basrah Bee

LOCATED 190km northeast of Sabah's capital, Kudat boasts the potential to emerge as a gem for wreck diving.

This follows claims that its seabed is home to undiscovered shipwrecks of historical importance.

Authorities, villagers, diving fraternity, and historians believe more shipwrecks are to found near the area as the sea was the main passing route for vessels in the past.

However, dedicated websites indicate that remnants of shipwreck sites in Kudat were looted by local fishermen and some of the ceramics from the wreckage have made their way to antique shops.

Knowing the risks of losing national treasures by over promoting the shipwrecks, researchers and the diving community choose to keep a low-profile about the area until full protection for the historical items is put in place.

Universiti Malaysia Sabah archaeologist and senior lecturer Baszley Bee Basrah Bee said there were at least 70 known shipwrecks in Sabah, 35 of which are of historical value dating from the 10th to 20th century.

He said Kudat used to serve as main maritime route via the South China Sea and Sulu Sea to Southeast Asia about 1,000 years ago.

"During the Song Dynasty (960-1279 CE), a Chinese outpost was built at Tanjung Simpang Mengayau in Kudat to monitor and collect tax from Chinese junks that passed through the sea route.

"The station, however, was abandoned when the Ming Dynasty implemented a closed-door policy," he said.

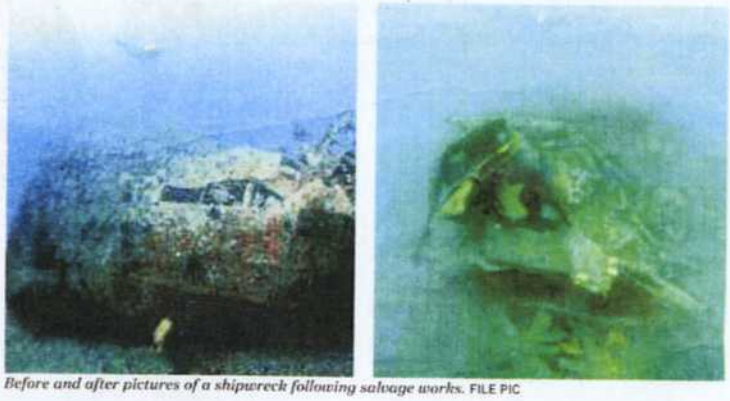
The waters off Tanjung Simpang Mengayau alone have five Chinese junks from the Song Dynasty, two of which had been salvaged with permission. The shipwrecks are nicknamed Mengayau Wreck and Kudat Wreck or Dragon Jade Wreck.

Over the years, fishermen had also discovered three shipwrecks — Skulls Wreck, Tiga Papan Wreck and Cannon Wreck — with 1,000 years of history within the area, but none were salvageable as yet.

Other historical shipwrecks found in the district waters were ships belonging to Britain, Spain, the United States and Portugal, all of which originated prior to the 20th century.

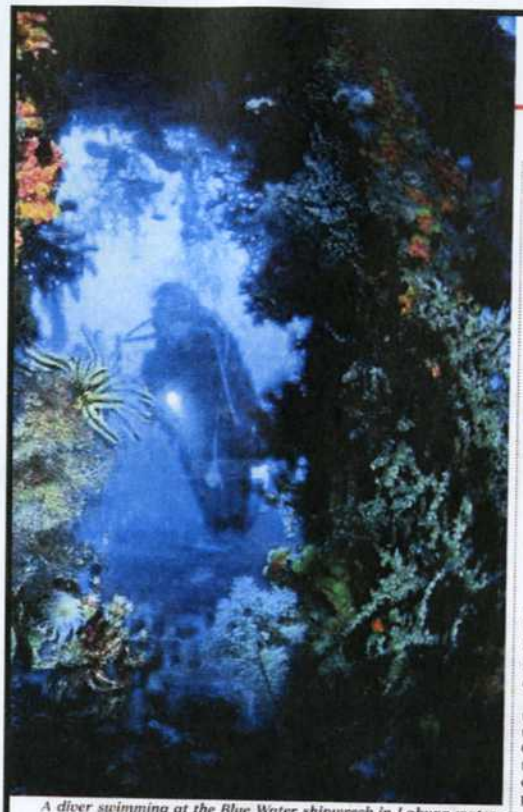
There was also a discovery record of seven shipwrecks belonging to the British East India Company off Pulau Balambangan and Pulau Banggi.

The ships were identified as the *Phoenix*, *Anstruther*, *General Baird ship*, *Thornhill*, *Fanny*, *Wilhem Ludwig* and *Mangsi*.



Before and after pictures of a shipwreck following salvage works. FILE PIC

SAMBUNGAN...
NEW SUNDAY TIMES (NEWS) : MUKA SURAT 15
TARIKH : 8 JULAI 2018 (AHAD)



A diver swimming at the Blue Water shipwreck in Labuan waters recently. Kudat used to serve as the main maritime route via the South China Sea and Sulu Sea to Southeast Asia about 1,000 years ago. PIC COURTESY OF CLEMENT LEE

Baszley, however, said no salvage work was done on the seven European ships, which were believed to had sunk around the 18th and 19th century.

"All ceramic, crew's personal items, ship equipment, cooper nails and plates had been looted.

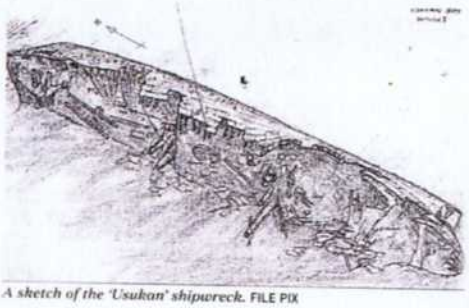
"An artifact, for example the Celadon dragon and wedding fish, is sold between RM5,000 and RM22,000," he said.

He said there were also shipswrecks dating to World War 2, which were sunk by the US, when the ships passed through Kudat waters to escape from the Philippines.

"(However), there was no warship, as no battle took place in Kudat waters.

"Instead the shipwrecks were of Japanese oil tankers, cargo and miner destruction vessels (which were using the sea route).

"Even if there were warships such as destroyers, they could be at the Balabac island off the Philippines, the exclusive economic zone at Sprathys Islands, or at other Asean countries."



A sketch of the 'Usukan' shipwreck. FILE PIX

Salvage work on World War 2 shipwrecks being carried out in the waters off Kota Belud, last year, by a Chinese vessel. FILE PIX

Expert: Overpromotion of wreck sites risks exposing artifacts to thieves

KOTA KINABALU: Over promoting ungazetted shipwrecks in Sabah waters risks exposing valuable historical artifacts and their location to thieves.

When it comes to protecting underwater shipwrecks, Malaysia tourism ambassador for diving Clement Lee, 66, said it was best to keep a low-profile of the undiscovered treasures before the final profiling of the shipwrecks.

"Over promoting them at (an early) stage will jeopardise the efforts to protect them. It is the responsibility of the diving community, in particular, to preserve the treasures.

"Although some (divers) had discovered them, many kept quiet because of the sunken treasure," he told the New Straits Times Press.

The Labuan-born diver with 35 years of diving experience said local fishermen used to ask him to join them in locating underwater artifacts, but he refused and told them not to retrieve anything from shipwrecks.

Lee recalled those fishermen were in bad shape possibly due to decompression sickness as they spent too long underwater searching for shipwrecks.

"Shipwrecks are treasures to Sabah waters."

He emphasised the importance of the capsized ships.

"Once the shipwrecks are removed, we have nothing left.

"Take for example, the salvage of Japanese shipwrecks off Kota Belud last year. The state lost RM2 million in (tourism revenue) annually. This is estimated (by taking into account that) there are about 150 to 200 Australians who come for the wreck diving every year," he said.

Early last year, a company, Ugeens Berjaya Enterprise, commissioned a Chinese vessel to carry out salvaging work on three Japanese World War 2 shipwrecks – *Higane Maru*, *Hiyori Maru* and *Kokusei Maru* – at wreck dive sites in Usukan off Kota Belud.

A diver exploring the wreckage of a World War 2 Japanese warship.

The salvage work, which was purportedly for a research project in collaboration with Universiti Malaysia Sabah, angered the fishing and diving community.

The salvaging work resulted in the destruction of marine habitats around the shipwrecks.

In **Kudat**, Lee said there could be between 10 and 20 undiscovered shipwrecks in the area.

"Kudat has the potential to be developed, provided that it is properly planned, as it has hectares of (gazetted area), such as Tun Mustapha Park, two horns of the bay (Simpang Menguyau and Pitas), as well as Kota Marudu.

"The diving industry has many attractions, such as coral reefs, nudibranch, big fishes and shipwrecks. Annually, about 75,000 divers visit here, which generates about RM450 million.

"I have a lot of requests particularly from the United Kingdom, Australia, and the US. They are happy to dive at the World War 2 shipwreck sites," he said.

Lee said Labuan was a good destination for wreck diving as four shipwrecks – Clement Wreck, Blue Water Wreck, Australian Wreck, and American Wreck – were ready to be explored.

"Every time when I dive to a shipwreck, I am physically relating myself to that point of time in history. Take a warship, for example, I would imagine the moment before it sank where people were screaming (for their lives).

"People may think shipwrecks are just bundle of iron and steel, but they are more than that. All shipwrecks in Sabah should be protected. They are time capsules because of their historical significance."

LAMPIRAN 17
THE STAR (TECH) : MUKA SURAT 6
TARIKH : 9 JULAI 2018 (ISNIN)

Making facial recognition less biased

By LEVI SUMAGAYSAY

IF a picture paints a thousand words, facial recognition paints two: It's biased.

You might remember a few years ago that Google Photos automatically tagged images of black people as "gorillas," or Flickr (owned by Yahoo at the time) doing the same and tagging people as "apes" or "animals".

Earlier this year, the *New York Times* reported on a study by Joy Buolamwini, a researcher at the MIT Media Lab, on artificial intelligence (AI), algorithms and bias: She found that facial recognition is most accurate for white men, and least accurate for darker-skinned people, especially women.

Now – as facial recognition is being considered for use or is being used by police, airports, immigration officials and others – Microsoft says it has improved its facial-recognition technology to the point where it has reduced error rates for darker-skinned men and women by up to 20 times. For women alone, the company says it has reduced error rates by nine times.

Microsoft made improvements by collecting more data and expanding and revising the datasets it used to train its AI.

From a recent company blog post: "The higher error rates on females with darker skin highlights an industry-wide challenge: AI technologies are only as good as the data used to train them. If a facial recognition system is to perform well across all people, the training dataset needs to represent a diversity of skin tones as well as factors such as hairstyle, jewellery and eyewear."

In other words, the company that brought us Tay, the sex-crazed and Nazi-loving chatbot, wants us to know it is trying, it's really trying. (You might also remember that Microsoft took its AI experiment Tay offline in 2016 after she quickly began to spew crazy and racist things on Twitter, reflecting the stuff she learned online. The company blamed a "coordinated attack by a subset of people" for Tay's corruption.)

Microsoft says it has reduced error rates for darker-skinned men and women by up to 20 times. — TNS

In related news, IBM announced that it will release the world's largest facial dataset to technologists and researchers, to help in studying bias. It's actually releasing two datasets this fall: one that has more than one million images, and another that has 36,000 facial images equally distributed by ethnicity, gender and age.

Big Blue also said it improved its Watson Visual Recognition service for facial analysis, decreasing its error rate by nearly tenfold, earlier this year.

"AI holds significant power to improve the way we live and work, but only if AI systems are developed and trained responsibly, and produce outcomes we trust," IBM said in a blog post. "Making sure that the system is trained on balanced data, and rid of biases, is critical to achieving such trust." — The Mercury News/Tribune News Service

LAMPIRAN 18
THE STAR (WORLD) : MUKA SURAT 25
TARIKH : 9 JULAI 2018 (ISNIN)

Under constant watch: A file photo of a facial recognition system for law enforcement being displayed at the NVIDIA GPU Technology Conference in Washington, DC. — AFP

Privacy fears show up in use of facial recognition

Critics: Tech might give rise to Big Brother state

WASHINGTON: The unique features of your face can allow you to unlock your iPhone, access your bank account or "smile to pay" for some goods and services.

The same technology, using algorithms generated by a facial scan, can allow law enforcement to find a wanted person in a crowd or match the image of someone in police custody to a database of known offenders.

Facial recognition came into play last month when a suspect in a shooting in Annapolis, Maryland, refused to cooperate with police and could not immediately be identified using fingerprints.

"We'd have been much longer in identifying him without that system," said Anne Arundel County police chief Timothy Altomare.

Facial recognition is playing an increasing role in law enforcement, border security and other purposes around the world.

While most observers acknowledge the merits of some uses of this biometric identification, the technology evokes fears of a "Big Brother" surveillance state with studies showing that facial recognition may not always be accurate, especially for people of colour.

A 2016 Georgetown University study found that one in two American adults, or 117 million people, are in facial recognition databases with few rules on how these systems may be accessed.

A growing fear for civil liberties activists is that law enforcement will deploy facial recognition in "real time" through drones, body cameras and dash cams.

Clare Garvie, lead author of the 2016 Georgetown study, said in the past two years, "facial recognition has been deployed in a more widespread and aggressive manner" in the United States, including for border security and at least one international airport.

Some say facial recognition should not be deployed by law enforcement due to the potential for errors and abuse, including Brian Brackeen, chief executive officer of facial recognition software developer Kairos.

"As the black chief executive of a software company developing facial recognition services, I have a personal connection to the technology," Brackeen said.

"Facial recognition-powered government surveillance is an extraordinary invasion of the privacy of all citizens."

The Georgetown study found that facial recognition algorithms were up to 10% less accurate on African Americans than Caucasians.

While more accurate facial recognition is welcomed, civil liberties groups say specific policy safeguards should be in place.

Evan Selinger of the Rochester Institute of Technology said facial recognition is too dangerous for law enforcement, adding: "It poses such a severe threat in the hands of law enforcement that it cannot be contained by imposing procedural safeguards." — AFP

LAMPIRAN 19
NEW STRAITS TIMES (LIFE & TIMES) : MUKA SURAT P6
TARIKH : 9 JULAI 2018 (ISNIN)

bots **cool tools**

CYBERSHOES

HAVE you experienced virtual reality (VR) on devices such as the HTC Vive, and simply cannot get enough of it?

Here is an accessory that will go the distance in making you feel as though your virtual reality experience has entered the next level — Cybershoes.

Being an affordable and innovative VR accessory, the Cybershoes is worn on your feet so that you can walk, run or flee through a VR environment, making the entire experience even more realistic. With the Cybershoes strapped directly onto the user's feet, the user will be seated in a swivel bar stool for an optimal and safe experience.

Currently compatible with just about all VR games, the Cybershoes will play nice with the likes of SteamVR, the HTC Vive, Oculus Rift and Windows Mixed Reality.

Wearing the Cybershoes might feel a bit weird and out of place at first as one gets used to controlling the in-game movement through exterior physical movement, but it has a low learning curve that will have you up and running in no time.

As long as you already have your very own VR setup, you can pick up the Cybershoes and enhance the overall experience.

Setting up the Cybershoes is a snap. It also has far more uses apart from conventional VR gaming since it can be used in training and planning for industrial facilities, enhance existing physical rehabilitation programmes for the elderly with a fun tool, as well as help lead a potential home buyer to walk through a virtual build up of the new home without even having to be on-site.

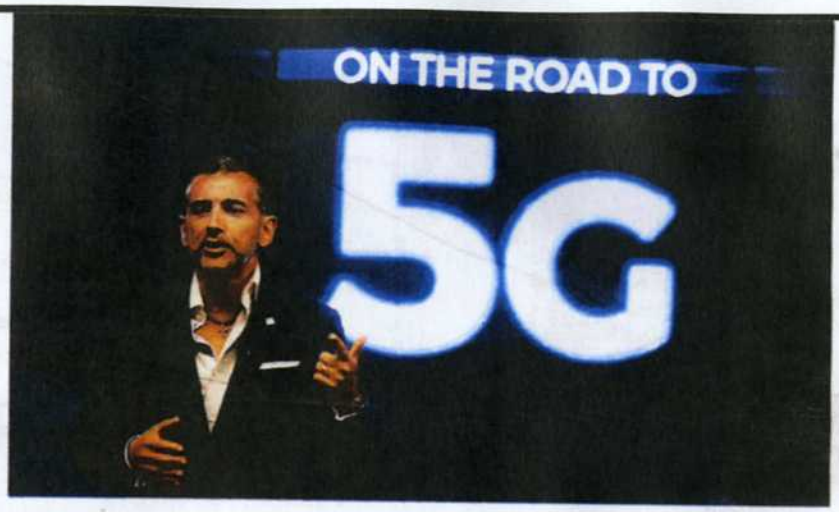
Having a small footprint does not matter to the Cybershoes since it features directional tracking within the device itself, while relying on highly accurate analogue technology to detect the difference between small steps and fast steps.

The unique soles on the Cybershoe also allows users to perform a walking movement while being half-way seated without any physical discomfort even after long hours of use, while letting you get in some exercise as you play.

www.cybershoes.io

LAMPIRAN 20
NEW STRAITS TIMES (LIFE & TIMES) : MUKA SURAT P12
TARIKH : 9 JULAI 2018 (ISNIN)

bots highlITes



5G TECHNOLOGY
ALEXANDRE Fonseca, CEO of Altice Portugal, speaks during the first demonstration of the 5G technology in Lisbon, Portugal. The Portuguese unit of telecoms firm Altice, the country's largest operator, is working with Chinese electronics giant Huawei to make Portugal a leader within Europe in the development and roll-out of next-generation 5G networks. The demonstration followed two years of research and testing, which puts the partners ahead of their competition in Portugal. When implemented on a larger scale, with a denser network of smaller antennae than the current 4G standard, the 5G technology will allow data transfer speeds 50 to 100 times faster than now. REUTERS

AUTONOMOUS MINI BUS
AN Apolong self-driving mini bus by King Long was exhibited at the Consumer Electronics Show (CES) Asia in Shanghai. China's Internet giant Baidu announced it had begun mass-producing the country's first autonomous mini bus, as the firm prepares to roll them out in tourist spots and airports.

The 14-seater Apolong, about one-third of the size of a normal bus, has no steering wheel, driver's seat, accelerator or brake. The vehicle has the "fourth level" of automation as defined by the Society of Automotive Engineers, meaning it can operate within an enclosed location without human intervention. EPA

TOWARDS CASHLESS FUTURE
RAZER, a lifestyle brand for gamers, has launched the Razer Pay e-wallet in Malaysia. Making its global debut in Kuala Lumpur last Wednesday, Razer Incorporation's co-founder and CEO Tan Min-Liang and executive chairman of Berjaya Corporation Tan Sri Vincent Tan made the collaboration announcement.

With Razer Pay, users can transfer funds to family and friends in just a few steps. They can also transfer money quickly from their Razer Pay e-wallet to their bank account and vice versa. Targeted at youth and millennials, Razer Pay is also designed for online transactions. For example, users who love games and video entertainment can purchase PIN codes instantly for popular services such as zGold MOLPoints, Steam Wallet, Garena, Sony PlayStation, Spotify, iflix and Astro NJOI.

SPACE-BOUND DRAGON
THIS SpaceX photo from Nasa shows SpaceX's Dragon spacecraft as it lifted off on a Falcon 9 rocket from Space Launch Complex 40 at Cape Canaveral Air Force Station in Florida.

Dragon is carrying more than 2,676 kg of research, equipment, cargo and supplies that will support dozens of scientific investigations aboard the International Space Station. Nasa astronauts Ricky Arnold and Drew Feustel used the space station's Canadarm2 robotic arm to capture Dragon when it arrived at the station on July 2. AFP

FASHION AI
A MODEL demonstrates Alibaba's Fashion AI technology, with the chosen item's details being displayed on the mirror, at a pop-up store in partnership with fashion brand Guess, on the sidelines of the Artificial Intelligence on Fashion and Textile Conference at the Hong Kong Polytechnic University in Hong Kong, China. REUTERS

LAMPIRAN 21
THE STAR (SCIENCE) : MUKA SURAT 7
TARIKH : 9 JULAI 2018 (ISNIN)

Combating cancer with the poliovirus

A killer virus from the past is being adapted to hunt cancer cells.

By YEN DUONG

THE virus that causes polio is like an over-eager guard dog that ravages nerve cells and paralyses people, as it did to former US President Franklin Delano Roosevelt.

But what if we could train that dog to only attack invaders like cancer cells and leave friendly brain cells alone? That's exactly what Duke University researchers did.

In a study published in the *New England Journal Of Medicine*, doctors modified poliovirus and inserted it into brain tumours. Historically, only 4% of brain tumour patients survived at least three years after diagnosis, but 21% of the study patients lived that long. Researchers hope this method could also treat other cancers.

"Poliovirus had evolved as one of the most potent cell-killing viruses there is," study author Dr Darell Bigner of Duke said. "(The scientist who created this thought that) the cell-killing ability of nerve cells could be redirected to kill the brain tumour cell. This virus is capable of working on virtually all solid tumours."

Glioblastoma is the most aggressive type of brain cancer. Doctors grade brain tumours on a scale from one to four based on how fast they grow. Glioblastomas are grade IV. The National Brain Tumour Society, which helped fund the study, estimates about 79,000 people will be diagnosed with a brain tumour in 2018.

Three years after graduating from college, Michael Niewinski of Boca Raton, Florida, had a grand mal seizure. He was diagnosed in 2011 with a grade II brain tumour. After the standard approach of surgery, radiation therapy and chemotherapy, the tumour progressed to grade III in 2015. Last year he was diagnosed with a grade IV glioblastoma, and joined the next phase of the study.

"It was bittersweet when they told me I had the grade IV," Niewsinski said. "I was like oh no, this is bad, but that's the only reason I became eligible for the trial, so it's like a blessing and a curse."

After the tumour recurs, or comes back, patients don't have many treatment options. The Duke study recruited 61 patients with recurrent glioblastoma to try the poliovirus approach.

"Virtually every single (glioblastoma) recurs," Bigner said. "Those patients all die within a year or less. That's why these long term survivals are so important in telling us this (study) is different."

Changing the code

The researchers cut out the poliovirus genes that held instructions on how to spread through the brain, and replaced them with the same genes from the common cold virus. This trained the guard dog to attack where they pointed it, instead of running wild through all the cells. Then they drilled a small hole in patients' skulls and put the virus into the tumours, using CT scans to guide the surgery.

"It redirected the killing ability," Bigner said. "It lost the ability to kill nerve cells, but retained the ability to kill cancer cells."

Our immune systems fight off invaders, but our white blood cells don't get the memo with cancer cells. Cancer cells form when our normal cells duplicate and reproduce without dying off. Sometimes cancer cells hide from our immune system by pretending to be regular cells.

The poliovirus technique turbo-boosts the immune system to attack those masquerading cancer cells.

Because we are vaccinated against polio as kids, when the poliovirus starts killing tumour cells, our immune system jumps in and kills the virus.

But our attack dog has already done what it actually meant to do – infect certain helper white blood cells and trigger inflammation, which happens when blood cells rush to the scene.

"The tumour cell contents spill into this sea of inflammation, and the immune system recognises the mutated cells and it sets up an immune reaction," Bigner said. "The infected cells help turn on the killer white blood cells. The inflammatory reaction is what sensitises the killer white blood cells, which can travel anywhere in the brain and kill tumour cells."

After his poliovirus injection, Niewinski's inflammation response fought off his tumour.

"I'm seeing exactly what they said we would see," Niewinski said. "For a couple months you see this huge immune reaction, and then it reached the peak of all that swelling, and then you see it go down. I'm at that point now."

For the 38 patients whose tumours grew even after the poliovirus injection, researchers offered an older chemotherapy drug. To enter the clinical trial, the patients' tumours already failed to respond to standard chemotherapy. So they didn't want to try the usual drugs again. Surprisingly, combined with the poliovirus treatment, the older drug disintegrated many of the tumours.

Researchers use Phase I trials like this one to figure out the best dose of a drug to be useful without too many side effects. In Phase II of the trial, which is starting in a few weeks at three other sites across the nation, the researchers will compare patient outcomes of using only poliovirus versus following the virus with the chemotherapy drug.

"We're excited about the early promising results from the Duke trial," said Dr Elizabeth Gerstner of Massachusetts General Hospital Cancer Center, which will take part in the Phase II trial. "It's important to confirm those results and address some of the questions of how efficacious this is."

Optimistic outlook

Since his poliovirus injection in August 2017, Niewinski, one of the first patients in the Phase II study, has experienced no side effects. In October he followed up with the chemotherapy drug, and has noticed a difference in his bimonthly MRI scans. In particular, he can see his ventricles, which are highways that carry protective fluid through the brain.

"I know the tumour is getting smaller because I'm beginning to see parts of my brain (on the MRI scans) that I didn't know were there before," Niewsinski said. "I have a ventricle close by my tumour that looks like a path going down my brain. Between two of my scans, that ventricle opened up, like something was pinching it before."

Phase III studies include many patients at different institutions. Phase III is the last stop before researchers seek approval from the Food and Drug Administration.

When a treatment gets "breakthrough" status as this poliovirus approach did, it spends less time on clinical trials and gets approved faster. The median development time for all FDA drugs is eight years, while "breakthrough" status drugs are approved in closer to five years, according to a 2017 study in the *Journal Of The American Medical Association*.

If the Phase III trials are successful, the poliovirus treatment may be available to patients in the next three to five years, estimated Dr Evanthia Galanis of the Mayo Clinic in Minnesota, which is not involved in the study.

"Glioblastoma is a complex and challenging disease, and a comprehensive approach to new treatment development includes multiple angles," Galanis wrote via e-mail. "We need more than one clinical trial to solve this difficult problem."

The Mayo Clinic is also developing virus and immune-system related approaches to treat glioblastoma, Galanis wrote. Another Phase I trial is in the works to add immune system compounds that have worked on skin cancer, called checkpoint inhibitors, to the poliovirus injection.

"Checkpoint inhibitors by themselves don't do anything to glioblastoma," Bigner said. "But the [skin cancer] tumours that respond are ones with white blood cells in them, called 'hot tumours'. Glioblastoma is almost always cold. The virus converts cold tumours into hot ones."

Fighting other cancers

Soon Duke will start Phase I of applying the poliovirus to breast cancer and skin cancer. To work, the poliovirus must be inserted directly into the tumour cells, which isn't always possible with different types of cancer. But Bigner is hopeful that this technique can be applied to many other cancers.

"In animal models and in the lab, we've shown the virus works on prostate cancer, lung cancer, breast cancer, pancreatic cancer, stomach cancer," Bigner said. "We haven't found anything that it doesn't work within the laboratory."

If the breast cancer and skin cancer trials are successful, Bigner hopes to expand to other types of tumours. Gerstner, from Massachusetts General Hospital, said we should be careful about jumping to conclusions about the effectiveness of polio to fight other cancers.

"The challenge is that humans are not animal models or petri dishes," said Gerstner. "You do have to start somewhere, with petri dishes, and then you move to animal models. It's hard looking at pre-clinical data (to tell) how successful it will be in humans."

Niewinski, the Phase II patient who has been battling brain cancer since 2011, is grateful to be in the study and amazed by the solution.

"It's nuts how genius it is," Niewinski said. "Polio was killing people in the 1920s and 30s and 40s, and now it's helping me get cancer out of my brain. It's pretty nuts." — The News & Observer/TNS

Dr Alan Friedman performs a glioblastoma biopsy at Duke University Hospital. Glioblastoma is the most aggressive type of brain cancer. —TNS

LAMPIRAN 22
BERITA HARIAN (DUNIA) : MUKA SURAT 32
TARIKH : 8 JULAI 2018 (AHAD)

Calon vaksin AIDS lulus ujian awal

[FOTO HIASAN]

Vaksin percubaan *dilaporkan berjaya mencetus maklum balas imun pada manusia.*

Paris: Selepas hampir 40 tahun mencari vaksin AIDS, saintis mengumumkan, sejenis ubat percubaan akhirnya berjaya mencetus maklum balas imun pada manusia dan melindungi monyet daripada jangkitan.

Dilihat sebagai selamat untuk manusia, calon vaksin itu kini memasuki fasa seterusnya iaitu proses percubaan pra-kelulusan dan akan diuji pada 2,600 wanita di Afrika selatan untuk melihat sama ada ia menghalang jangkitan HIV.

Tiada jaminan

Walaupun keputusan setakat ini menggalakkan, pasukan penyelidik dan pakar luar memberi amaran tiada jaminan HVTN705 atau Imbokodo yang bermaksud batu dalam bahasa Zulu akan berfungsi dalam fasa percubaan seterusnya.

"Walaupun data ini agak meyakinkan, kita perlu berhati-hati," kata ketua kajian, Dan Barouch, profesor di Sekolah Perubatan Harvard.

"Hanya kerana ia melindungi dua pertiga monyet ketika percubaan makmal, tidak bermakna ubat itu akan melindungi manusia.

"Kita perlu menunggu hasil kajian sebelum tahu apakah vaksin ini akan melindungi manusia dari jangkitan HIV," katanya.

Keputusan percubaan Imbokodo dijangka akan diperoleh pada 2021 atau 2022.

Buat masa ini, mereka yang dijangkiti HIV bergantung kepada rawatan anti-retroviral (ART) yang menghalang virus sepanjang hayat untuk kekal sihat. **AFP**