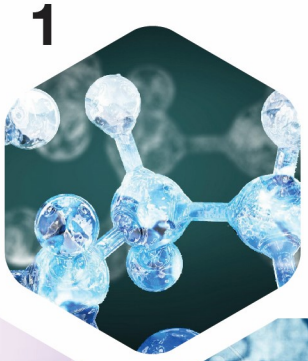
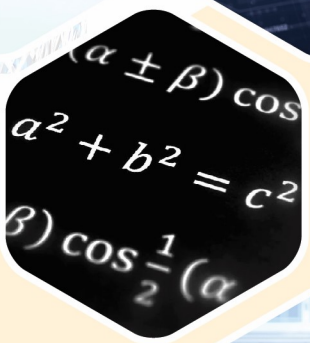
I-CReST 2021

INTERNATIONAL CONFERENCE ON RESEARCH AND PRACTICES IN SCIENCE, TECHNOLOGY AND SOCIAL SCIENCES





ABSTRACT BOOK

26 JUNE 2021

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I-CReST 2021

International Conference on Research and Practices in Science, Technology and Social Sciences

ABSTRACT BOOK

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UITM CAWANGAN SELANGOR KAMPUS DENGKIL

I-CReST 2021 International Conference on Research and Practices in Science, Technology and Social Sciences: ABSTRACT BOOK/

Editors Nurul Raihan Mohd Suib / Siti Khatijah Deraman / Salizatul Ilyana Ibrahim / Aisyah Salihah Kamarozaman / Mazhani Muhammad / Norzilah Musa / Nur Syazana Rosly / Azhar Abdul Aziz / Tengku Maaidah Tengku A. Razak / Farhah Abdullah / Marziah Mokhtar / Nor Hashima Mohd Sukor / Sathiyaperba Subramaniam / G. Nagamany Govindan / Ainul Hafiza Abdul Hair / Jebakumari Selvarani Ebenezer / Fatma Nadiah Abd Hamid / Zaid Mujaiyid Putra Ahmad Baidowi / Sharifah Norasikin Syed Hod / Nor Faridah Hanim Mat Junit

Preface

Assalamualaikum W.B.T. and greetings,

On behalf of the Centre of Foundation Studies, UiTM Selangor, Dengkil Campus, it gives me great pleasure to extend my warmest greetings and welcome all participants to the 2nd virtual International Conference on Research and Practices in Sciences, Technology and Social Sciences 2021 (I-CReST 2021). Thank you for your participation in the conference.
This annual conference aim of providing a global platform and ecosystem for academician, practitioner and researcher to present and constructively discuss their wide array of views on the cluster of Science, Technology and Social Sciences. I hope that our theme this year, "Embracing Research Culture & Fostering Academic Excellence", will trigger a meaningful collaboration and exchange of reliable, valuable information in areas of expertise.

The current abstract book features the contributions presented during virtual I-CReST 2021. We received more than 180 papers and participation from different countries including Malaysia, Brunei, Russia, Japan, Indonesia, Philippine and India. The abstracts illustrate the wide range of topics in the area of research and practices in Sciences, Technology and Social Sciences.

Last but not least, I would like to take this opportunity to thank all the I-CReST 2021 committees for the great work and dedication to ensure the success of the conference despite the difficult time of the pandemic. I also thank the sponsors for synergizing with us. Smart university-industry linkages are indeed vital in keeping research culture flourish and prosper.

Thank you.

Dr Salizatul Ilyana Ibrahim
Chaiperson of I-CReST 2021

Foreword

Assalamualaikum w.b.t.

Dear Authors, esteemed Readers,

I would like to welcome all the attendees to our second Virtual International Conference I-CReST 2021 hosted by Centre of Foundation Studies UiTM, Dengkil after we are successfully organized I-Crest 2020. I am honoured be part of it. The conference themed Harnessing Potential and Leading Transformational Change Research is a proof of the Centre's commitment to strive for academic dynamism and to deliver a platform for academicians and professionals to share their research findings and achievements to sanction for ideas to be explored and experience as well as expertise to be commissioned into. This is in line with UiTM's mission to place the university on the global map.

This conference shares an insight into the recent research and cutting-edge technologies, which gains immense interest with the colossal and exuberant presence of adepts, young and brilliant researchers, and talented student communities presenting their research works and findings with common enthusiasts. This online event will offer the same impactful academic sharing and networking opportunities although it is done online.

I am particularly happy to be present in this unique event today and to exchange views and share experiences with other high-level professors, colleagues and friends, representing many well-known Universities and Research Institutes together with members of relevant international organizations.

I congratulate you for your commitment and active participation and wish you all the success and also would like to take this opportunity to congratulate the organising committee of the Centre of Foundation Studies Dengkil Campus whose commitment and tireless efforts have made I-CREST 2021 happen.

I sincerely hope that this conference will discuss all the different facets of this exciting topic and come up with recommendations that will lead to a better, healthier, merrier world. I wish the conference great success.

Thank you.

Professor Dr. Saifollah Abdullah
Director
Centre of Foundation Studies
University Teknologi MARA (UiTM)
Cawangan Selangor, Kampus Dengkil

About the Conference

The Centre of Foundation Studies, Universiti Teknologi MARA (UiTM), Malaysia is pleased to announce its 2nd International Conference (I-CReST 2021) which will be held on 26th June 2021. With the theme, "Embracing Research Culture and Fostering Academic Excellence", the conference provides a platform for undergraduate and postgraduate students, academics, researchers, professionals, and industrial practitioners from various backgrounds to share ideas and research findings in their respective fields.

Due to the recent Covid-19 developments in Malaysia and in order to comply with the Movement Control Order (MCO) restrictions, I-CReST 2021 is made available to you online. Similar to last year's conference, I-CReST 2020 was also successfully conducted online with the theme, "Harnessing Potential and Leading Transformational Change". This year's event offers the same impactful opportunities for academic sharing and networking.

The conference provides opportunities for publication in proceedings with e-ISBN. The selected papers will be considered for publication in WOS/Scopus/MyCite/MyJournal indexed journals after a peer-reviewed process.

Theme Synopsis

I-CReST 2021's main theme addresses four tracks to encourage scientific writing/ publication across multidisciplinary research in the broad fields of:-

Physical Sciences:
Medical Physics; Nuclear Physics; Photonics; Optics; Spectroscopy; Device Physics; Material Science; Polymers; Nanotechnology; Solid State Ionics; Inorganic and Organic Chemistry; Natural Products Chemistry; Catalysis; Renewable and Sustainable Energy

Biological Sciences:
Botany; Forestry; Ecology; Zoology; Entomology; Microbiology; Biotechnology; Genetics; Bioinformatics; Nutraceutical; Cosmeceutical; Pharmaceutical; Pharmacology; Biomedicine; Health Sciences

Information Technology, Engineering and Mathematics:
Information Technology, Engineering and Mathematics; Human-Computer Interaction; Information Virtualization; Modelling and Simulation; Computer Security; Wireless and mobile communications; Software Engineering; Internet of Things; Data Analytics; Multimedia Computing; Information Retrieval; Electronic Learning; Artificial Intelligence and Machine Learning; Web Technology; Pure and Applied Mathematics; Mathematics Education; Mathematical Modelling; Mathematical Statistics; Fuzzy Mathematics and Applications; Operations Research

Social Sciences & Humanities:
Social Sciences & Humanities; Education/Pedagogy; Communication Arts; Information Communication; Linguistics/Neurolinguistics/Sociolinguistics; Literature and Poetry; Educational Management and Leadership; Early Childhood Education; Panicgogy; Civil Law; Economics and Financial Law; Human Right Law; Public Law; Islamic Law; Contract Law; Consumer Law; Comparative Law; Commercial Law; Competition Law; Constitutional Law; Environmental Law; Family Law; Medical Law; Private Law; Social Policy and Social; Legislation; Legal Education; Criminology; Al-Quran and Hadith; Aqidah and Islamic; Thoughts; Muamalat; Halal Management; Education and Shariah; Astrofiqh and Cosmofiqh; Dakwah and Human Development; Economics

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PLENARY SPEAKER: PROFESSOR DATUK DR. HALIMATON HAMDAN

Socio-Economic Impact of Scientific Research by Academics: Roles and Responsibilities

Professor Datuk Dr. Halimaton Hamdan

ABSTRACT

Malaysia has undergone significant economic transformation, driven by the influx of foreign and local investment centred around assets as well as development of technology, which is captured in GDP statistics as Total Factor Productivity. Now, the nation faces multiple challenges in sustaining growth as neighbouring nations start to attract a larger portion of FDI in the region. The COVID-19 pandemic, together with ongoing climate change, are increasing economic vulnerability and therefore new innovative ways of supplying solutions are needed in the country. A solution is to develop knowledge and associated technologies that would enable innovation-driven high value-add firms to be established in the country.

As part of this innovation pipeline, the development of knowledge and technologies must be managed strategically and tactically. Buoyed by the demand for innovative technologies, a global scientific research consortium of top scientists known as the Malaysia Institute for Innovative Nanotechnology (NanoMITe) was established in 2015. Its objectives are as follows:

1. Providing a global platform for scientific research, development and enabling empowerment of national nanotechnology capabilities and skills,
2. Driving nanotechnology-based industries for economic development and people's well-being,
3. Supporting the Government's implementation of a Sustainable Economy by focusing on engaging active world-class nanotechnology scientists at home and abroad,
4. Showcasing the culture of science, research activities and the economics of knowledge

NanoMITe hosts five (5) flagship programmes; each led by a Malaysia Research University:

Programme 1: Energy (UTM)
Programme 2: Wellness, medical and healthcare (UM)
Programme 3: Food and agriculture (UPM)
Programme 4: Electronics, device and systems (UKM)
Programme 5: Environment (USM)

Phase I of NanoMITe (2015-2020) consists of 18 scientific research projects, executed by 112 local academics and global collaborators. NanoMITe provides tremendous resources for carrying out high-impact research in different domains of nanotechnology. Together they drive the upstream sector of the Innovation Value Chain, crucial in the creation of ideas, knowledge, output and scientists via research. It is a concerted effort by the scientific community across the globe to train the young generation through an integrated educational and scientific research program which enabled translation of such technological solutions into entrepreneurial platforms. The goal of NanoMITe is to effectively bring new technologies into applications that benefit our society. NanoMITe consortium does not only generate knowledge and wealth, but also provide sharing of extensive world-class facilities through its members.

At the end of Phase I, a socio-economic impact assessment on NanoMITe was performed with two main thrusts:

- Assessing whether NanoMITe met these socio-economic objectives
- Identifying ways in which NanoMITe can measure and optimize its roles and responsibilities moving forward

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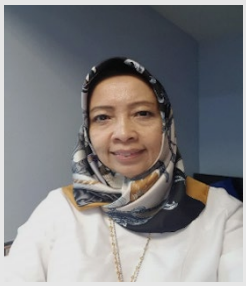
Biography



Professor Datuk Dr. Halimaton Hamdan is attached at Faculty of Technology & Informatics Razak, Universiti Teknologi Malaysia, Kuala Lumpur, a Chairperson of NanoMalaysia Institute for Innovative Technology (NanoMITe) Global Research Consortium and a Council Member of Akademi Sains Malaysia. She received her Ph.D in Physical Chemistry from University of Cambridge UK in 1989, M. Sc degree from Marshall University, USA (1981) and B. Sc degree from Indiana University, USA (1979).

Prof. Halimaton pioneered the Zeolites and Nanostructured Materials Research in Malaysia in 1990. Her invention, Maerogel; silica aerogel from rice husk, the lightest solid and best insulator known today was the product of 2008. Maerogel is patented in Malaysia and 22 other countries worldwide with an addition of another 12 patents on zeolites and mesoporous materials technology. Her current research includes synthesis and design of new generation hybrid, chiral, bifunctional and functionalized heterogeneous catalysts, drug delivery systems, nanostructured materials, aerogel nanofibers and functionalized silica nanosphere chain contributing to sustainable, green, renewable and waste-to-wealth technology.

Prof. Halimaton is a fellow of ASM, IKM and MSA, active TRSM, President of Malaysia Nanotechnology Association (MNA) and Chairman of the Board of Trustee for Yayasan My-Prihatin and Independent Member of Merdeka Board of Trustees. Halimaton is now the Chairman of the Governing Board of International Science, Technology & Innovation Center for South-South Countries Cooperation under the auspices of UNESCO (ISTIC).

INVITED SPEAKERS (SCIENCE & TECHNOLOGY)

Study of Mechanism on Nanocoated Mild Steel Surface

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ABSTRACT

Nanotechnology was introduced by physicist Richard Feynman in 1959. In general, nanotechnology can be defined as a science, engineering, and technology conducted at the nanoscale, which is about 1 to 100 nanometers. Nanotechnology-based devices are very potential in many applications due to their fast and efficient performance. Instead of that, it offered a new development in nanomaterials and it will be an alternative for current materials due to high demand in the application. Nanocoating is one of the new coating methods, nanocoating is becoming more visible in the consumer market and it is a high potential for wide application including in oil and gas industries, building construction, transport, medical equipment, and electronic communications. Various type of materials was used in nanocoating including Titanium Dioxide (TiO_2), Zink Oxide (ZnO), Aluminium (Al). Aluminum nanocoating was prepared on a mild steel surface using Electron Beam Thermal Evaporation in various conditions including deposition current, deposition time exposure, and annealing temperature. The optimum sample shows improvement of corrosion protection efficiency reached to 99.42 % with particle size is around 32 nm. The mechanism of nanocoating on mild steel surfaces was proposed and discussed.

Keywords: Nanocoating; mild steel; nanoparticles; corrosion protection

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Physical Behaviour of Titanium Dioxide Nanotube Arrays via Electrochemical Anodization Method for Ultra-Sensitive Humidity Sensor Detection

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ABSTRACT

Humidity sensors have become increasingly important and are widely used to improve quality of life and industrial processes. Humidity monitoring is a necessary activity in many industry fields such as chemical and medical industries. Over the past decades, titanium dioxide (TiO_2) has received wide attention in many promising areas such as sensors, solar cells, photocatalytic, and etc. This study focusses on highly ordered TiO_2 NTAs film was synthesized using electrochemical anodization method to investigate the effect of annealing temperature. Electrolyte solution of 0.3 wt% of ammonium fluoride (NH_4F), ethylene glycol (25 ml) and deionized water were used to facilitate the growth of TiO_2 NTAs. The synthesis was anodized at 35V with the anodization time of 120 minutes and annealed the samples within in the range of 350 to 550°C. Surface morphology (FESEM) images showed the diameter size of TiO_2 NTAs film become bigger when the anodization times increased. The average diameter of the obtained TiO_2 NTAs film for 450°C was approximately 44 nm and 58 nm. The changes of times were affected to the diameters of the TiO_2 NTAs structure. X-ray crystallography determining phase identification of crystalline structure material. The XRD demonstrating that the crystallite size of TiO_2 NTAs was increased as time anodization increased. The X-ray diffraction pattern showed the TiO_2 NTAs exhibit anatase phase with prominent (101) peak recorded for the sample prepared at 450°C with high crystallite size (29.17 nm). Optical characteristic of TiO_2 NTAs was evaluated by ultraviolet-visible spectroscopy (UV-Vis) showing the TiO_2 layer absorbs the incident light at UV region. This study also informative by presenting calculated optical band gap for 450°C is 3.24 eV. The current-voltage (I-V) characteristic of TiO_2 NTAs film showed the high current was measured for 450°C (1.12×10^{-5} A) and exhibit high sensitivity (177.5) for humidity detection. Recent studies on TiO_2 NTAs by anodization method have rarely reported its sensitivity.

Keywords: Titanium dioxide (TiO_2) nanotube arrays (NTAs); electrochemical anodization; electrical properties; humidity sensor detection

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Development of Hybrid (Organic-Inorganic) Antibacterial Agent

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ABSTRACT

Antimicrobial agents such as antibacterial agents and antibiotics are widely used to inhibit bacterial growth and combat pathogenic bacteria. However, the high release of these agents could create problems which are antimicrobial resistance and environmental pollution. Hence, there is a need to optimize the usage of these agents. One of the alternatives is incorporating these agents onto suitable carrier systems, such as incorporating organic and inorganic antimicrobial agents in an inorganic material, creating hybrid (organic-inorganic) antimicrobial agents. Our study has successfully developed hybrid antimicrobial agents by combining cationic surfactant (organic) and silver ions (inorganic) on zeolite. Zeolite is an aluminosilicate possessing a negative charge with a cation exchange capacity with high surface area to accommodate various molecules and ions. The Ag ions can be initially incorporated inside the zeolite framework, followed by cationic surfactant attachment such as hexadecyltrimethylammonium on the Ag-zeolite. This procedure creates a balanced amount of organic and inorganic antibacterial agents on the zeolite. The cationic surfactant molecules are located at the external sites, whereas the Ag ions are situated at the zeolite framework's interior areas. In this way, there are two possible antibacterial mechanisms (i) release of the antibacterial ions and compounds onto the media or surrounding, or (ii) adsorption of bacteria on the surface of the hybrid materials by the interaction with surfactant molecules, subsequently the death of the bacteria by the Ag ions. The various potential application of the hybrid antibacterial agents includes active ingredient in anti-biofouling paint, wound healing, coating surgery room and medical devices, and antibacterial products. In summary, the incorporation of organic and inorganic antibacterial agents on the carrier system creates hybrid antibacterial agents that could benefit humans and the environment.

Keywords: Antibacterial agent; hybrid material; surfactant; silver; zeolite

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Whole Genome Sequencing of *Klebsiella pneumoniae* Sequence Type 627

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ABSTRACT

Klebsiella pneumoniae is considered a threat to public health especially due to multidrug resistance emergence. It is largely oligoclonal based on multi-locus sequence typing (MLST); in Egypt, ST 627 was recently detected. Despites the global dissemination of this ST, there is still paucity of information about it. Herein, we used 4 *K. pneumoniae* ST627 for whole genome sequencing utilizing an Illumina MiSeq platform. Genome sequences were examined for resistance and virulence determinants, capsular types, plasmids, insertion sequences, phage regions, and CRISPR regions using bioinformatic analysis. The molecular characterization revealed 15 and 65 antimicrobial resistance and virulence genes, respectively. Resistance genes were mainly responsible for tetracycline, aminoglycoside, and fosfomycin resistance. The capsular typing has revealed that the four strains are KL-24 and O1v1. One plasmid was found in all samples known as pC17KP0052-1 and another plasmid with accession no. NZ_CP032191.1 was found only in K90. IncFIB(K) and IncFII(K) are two replicons found in all samples, while ColRNAI replicon was found only in K90. Thirteen insertion sequences were detected. Entero P88, Salmon SEN5, and Klebsi phiKO2 intact phage regions were identified. All samples harbored CRISPR arrays including CRISPR1 and CRISPR2. This study is the first comprehensive whole genome sequencing study about *K. pneumoniae* ST627 that disseminating in Egypt as well as worldwide. Our results shed light on critical tasks of mobile genetic elements in ST 627 in antibiotic resistance spreading.

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Sustainable Synthesis Using Biowaste as Catalysts

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ABSTRACT

Lately, increasing efforts has been devoted to the development of green catalytic systems in organic transformations by substituting toxic, polluting and expensive chemical reagents with more eco-friendly ones. Green organic reactions have offered many attractive characteristics such as environmental friendly, non-toxic and sustainable to the environment. In the search for new synthetic and catalytic protocols, the use of biowastes have emerged as an attractive source and recently being an active field of research devoted to accomplish greener chemical processes. In this proceeding, we would like to report the use of onion peel waste to accomplish organic transformations.

Keywords: Onion peel; biowaste; organic transformations; green chemistry; organic synthesis

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Proteomic Analysis of Prediabetes and Type 2 Diabetes Human Plasma by Two-Dimensional Gel Electrophoresis

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ABSTRACT

Type 2 diabetes represents a medical problem affecting millions of people worldwide. Prediabetes is considered the most significant risk factor for type 2 diabetes. Within ten years, individuals with prediabetes, impaired fasting glucose (IFG) and/or impaired glucose tolerance (IGT) have approximately 50% risk to progress to type 2 diabetes. The purpose of this study was to identify and analyse diabetes-related protein changes that occur in human plasma. We carried out quantitative proteomic analysis using plasma samples from control (CON, n = 5), prediabetes (PD, n = 6) and type 2 diabetes (ED, n = 5). Plasma samples were treated using the Multiple Affinity Removal System Spin Cartridge HU-6 (Agilent) to remove high abundance protein. The proteins were displayed using 13 cm, pH 3–10 isoelectric focusing strips for the first dimension and 12 % acrylamide gel electrophoresis for the second dimension. Protein spots were visualised using Coomassie staining and imaged using a Gel Doc TM XR+ Imager (BioRad). Images compared and analysed using PDQuest software (BioRad). The QTOF LCMS/MS were utilised for detecting the role of the identified proteins. Three sets of analysis were designed to compare the upregulation and downregulation of differences between; CON/ED group; CON/PD group, and PD/ED group. Pathway analysis was executed the biological routes that promote changes in protein pattern. There were 31 significantly proteins identified from 13 significant spots. All spots were detected upregulated except for two spots demonstrated downregulation which was in CON/PD and one in the CON/ED group of analysis. Top 5 canonical pathways analysis of differentially expressed proteins observed in PD compared to ED; LXR/RXR Activation, FXR/RXR Activation, Acute Phase Response Signalling, Extrinsic Prothrombin Activation Pathway and Intrinsic Prothrombin Activation Pathway. The identified proteins expressed may be involved in the development and progression of type 2 diabetes. Further investigation of candidate proteins is needed to explore.

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Phonemic Awareness: The Missing Anchor in Learning to Read and Write

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ABSTRACT

In the days when Primary 1 to Primary 3 school children were screened for literacy and numeracy achievement in the LINUS (Literacy and Numeracy Screening) programme (which was stopped in 2019) for the purpose of remediation, there has been a substantial number of school children failing to achieve the minimum constructs. Ratnawati et al. (2016) showed that a total of 857 Primary 3 school children out of a total of 84 916 children in Selangor in 2013 did not master the 12 literacy constructs in Bahasa Melayu (BM) at the end of that school year, with 236 unable to even master the two basic constructs of C1 and C2**. In Sarawak, a total of 1 131 Primary 3 school children failed the LINUS screening test for Bahasa Melayu in 2015 (Sarawak State Education Department, 2016). Why has three years of remediation (pemulihan) while these students were in Primary 1 to 3 failed to help them achieve mastery? We believe the main reason for this is the neglect of mastery of phonemic awareness in the remedial teachers' attempts to help their struggling readers to learn to read and write. Phonemic awareness is the ability to hear (the what and where) and manipulate the sounds of the letters and letter combinations in spoken words. Phonemes are the smallest sound bits in spoken words and they combine to form syllables and words. English language has 44 phonemes while Bahasa Melayu has 32. Phonemic awareness has been shown to be the strongest single determinant or predictor of success in learning to read in a young child or, conversely, the likelihood that s/he will fail (for example, Adams (1990)). In this paper, we will present a case study with two struggling readers to highlight the importance of phonemic awareness as a building block in acquisition and mastery of literacy skills.

**C1 - ability to read and write letters (vowels and consonants)
C2 - ability to read and write open syllables (suku kata KV)

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Facile Preparation of ZIF and Ti/ZIF Thin Films for Stable Photodegradation of Methylene Blue

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ABSTRACT

Methylene blue (MB) is categorized as harmful pollutants in the ecosystem by adversely impacting the quality of the water. In recent years, zeolitic imidazolate frameworks (ZIF) have been used as photocatalyst for degradation of MB. However, ZIF is often used as powders that suffer from poor recyclability and low percentage of recovery. To overcome the drawbacks, fabrication of ZIFs into thin films might lead to ease in storage, good separation and improve reusability. Herein, we report on the fabrication of ZIF-L, Ti/ZIF-L, ZIF-8, and Ti/ZIF-8 thin films for the photodegradation of MB in aqueous solution. The synthesis of ZIF from 2-methylimidazole (2-MeIM) and zinc nitrate hexahydrate ($Zn(NO_3)_2.6H_2O$) was performed in the presence of water and solventless method, to give ZIF-L and ZIF-8. The incorporation of titanium (Ti) was carried out by the addition of titanium isopropoxide (TTIP) to both ZIFs. The fabrications of thin films were done by pasting the ZIF pellets onto a Mylar substrate using epoxy resin. All of the ZIFs were characterized using field emission-scanning electron microscopy coupled with energy dispersive X-ray (FESEM-EDX), transmission electron microscopy (TEM), X-ray diffraction (XRD), thermal gravimetric analysis (TGA), Fourier transform infrared spectroscopy (FTIR), and UV-Vis diffuse reflectance (DR UV-Vis). Intriguingly, the ZIFs obtained are highly crystalline and can be sufficiently reused for at least four cycles in the photodegradation of MB. The photodegradation efficiency towards MB under UV light irradiation followed the order: Ti/ZIF-8 > Ti/ZIF-L > ZIF-8 > ZIF-L as the percentage of degradation was measured at 96.35%, 94.33%, 91.04% and 88.35% respectively. In particular, Ti/ZIF-8 had the highest removal efficiency as the best thin film photocatalyst prepared for the degradation of MB among the ZIFs.

Keywords: Photocatalysis; thin film; ZIF-L; ZIF-8; methylene blue

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Environmental Pollutants Emerge from Evasive Usage of Disposable Face Masks

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ABSTRACT

Since the emergence of Covid-19 pandemic, the application of disposable face masks has been widely adopted as a preventive measure to tackle the transmission of SARS-CoV-2 virus. This has dramatically caused an unprecedented rise in the manufacturing and usage of disposable face masks, creating a new form of environmental contamination owing to improper disposal, leading to release of heavy metals and toxic chemicals such as Volatile Organic Chemicals (VOCs) which also affects human health. This study focuses on the microfibers, heavy metal and VOCs released from disposable face masks that were submerged in different pH solutions to simulate distinct environmental conditions if these face masks were littered. The leachates were analysed using GF-AAS, suggesting that traces of heavy metals including lead, cadmium and chromium were detected. Pyrolysis GC-MS identified VOCs including 2,4-Dimethylhept-1-ene and 4-methylheptane from the disposable face masks. Besides, FESEM performed on disposable face masks highlighted morphological and chemical degradation after leaching, confirming the hazards of releasing a comparable micro or nanofiber into the marine environment. The toxicity of some of the heavy metals and chemicals found raises the concern of proper manufacturing and disposal of these face masks to reduce the environmental and health impact.

Keywords: Disposable face masks; heavy metals; VOCs; microfibers

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INVITED SPEAKERS (SCIENCE SOCIAL)

Writing a Successful FRGS Proposal

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ABSTRACT

The role of an academic, from an early career lecturer to a professor, at the university is not only to convey existing knowledge but also to create new knowledge through research activities. To conduct any systematic empirical research that is funded, we need to start with a good research proposal. Submitting a good proposal is a requisite to win a research grant. Among the many research grants available for a lecturer is the prestigious Fundamental Research Grant Scheme (FRGS). The grant is provided by the Ministry of Education (MOE) to promote basic research that can contribute to enhance intellectual level, create new technologies and promote a dynamic research culture in line with the national agenda. This presentation is intended to guide the prospective researchers the method to write a successful research proposal. The presentation will highlight the method, guidelines, and some examples.

Keywords: Lecturer, research grant, winning strategies

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Addressing the 3 'Rs' Through the Scholarships of Teaching and Learning During the Pandemic Covid-19: Strategizing Your Academic Career Pathways

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ABSTRACT

As the landscape of higher education is fast changing due to the demands of Industrial Revolution 4.0 and of late Covid-19 pandemic, academics are challenged in strategizing their duties. Aside from the obvious duty of teaching (some prefer to say facilitating their students' co-curation of knowledge), there is still a need to stay afloat the world of academe via research, publication and network. The concept of 3 'Rs'; 'Recognized', 'Respected', and 'Referred', is a concept this paper hopes to focus on through a thorough understanding of the Scholarship of Teaching and Learning (SoTL). The added value of this presentation is the deliberation of the focus through the proposed practical strategies applicable amidst the challenges of pandemic Covid-19. Based on the idea of working within constraints, this presentation pinpoints the 'what, how and why' in charting the academic career pathways despite the constraints brought by the Covid-19 pandemic.

Keywords: Scholarships of Teaching and Learning (SoTL), academic career pathway, IR4.0 and Covid-19 pandemic

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The Language of Power and the Power of Language: From a Means of Communication to a Key to Academic and Professional Success

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ABSTRACT

People all over the world have become aware of the value of their linguistic capital more than ever before. More and more parents even among the modest families and with limited financial means choose to expose their children from very early age to different foreign languages, and English in particular. They do, indeed, strongly believe that their mother tongues and even their official language(s) are not of much value and are not the key to a successful career. The aim of this presentation is to discuss the power of language and the language of power in order to show how the mastery of the key languages in a society can lead to professional and academic career. The talk focuses on the Moroccan context and is based on fieldwork research relying on triangulation so as to guarantee the validity and reliability of the findings. The main hypothesis underlying the present study is that a person "linguistic capital" and mastery of foreign languages in general and the elite language in particular, French in the case of Morocco, determines his/her professional success and social position in society. The following research questions are addressed:

1. What is the status of the different languages in use in Morocco?
2. What are the most privileged languages on the Moroccan linguistic landscape?
3. What role does the mastery of languages in general and foreign ones in particular play in a person's academic, professional and social success? Why?

The answers to all these questions reveal the role of language mastery in the individual's position and status in society.

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Advocating for Open Science: Practical Tools and Strategies for Researchers to Increase Reproducibility and Transparency

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ABSTRACT

Writing and publishing reproducible and transparent scientific research, as well as sharing research data allow researchers to validate research results and to reuse data for teaching and building upon the work of others. Therefore, to publish reproducible and transparent scientific research, open science collaborations are required. This implies sharing articles, datasets, analysis scripts and all phases of the research processes openly. The keynote speech will explore some of the practical tools and strategies that could be used to increase reproducibility and transparency in scientific research.

Keywords: Data sharing; open science; reproducibility; transparency; I-CReST2021

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ABSTRACT

PHYSICAL SCIENCES

I-CReST 2021:016-049 – Zn/ZnO/TiO_2 and Al/Al_2O_3/TiO_2 Photocatalysts for Photocatalytic Degradation of Benzene-toluene-xylene

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ABSTRACT

This paper presents the findings on the preparation of deposition of titanium dioxide (TiO_2) particles on zinc/zinc oxide metal via anodic oxidation process in sodium hydroxide (NaOH) solution with the investigation on the effect of applied voltage, sonification process and addition of hydrogen peroxide (H_2O_2). The photocatalytic performance of prepared zinc/zinc oxide/titanium dioxide (Zn/ZnO/TiO_2) film was evaluated in the degradation of benzene, toluene, xylene (BTX) under ultra violet (UV) light irradiation. It was demonstrated that the high applied voltage (12V) contributed to high photocatalytic activity as 88.2% of BTX degradation was observed due to the increase formation of porosity. The photocatalytic degradation with sonication was found to give a significant different in photocatalytic activity as 97% of BTX degradation was observed in 3 hours reaction compared to without sonication (70%). The addition of H_2O_2 during photocatalytic reaction was found to have contributed to the high BTX degradation but as the amount of hydroxyl radical increased, the photocatalyst performance decreased. The optimum reaction time with addition of H_2O_2 was found to be in 3 hours. A comparative study on the use of different metal/metal oxide toward BTX degradation by using Al/Al_2O_3/TiO_2 plate was also investigated. The Al/Al_2O_3/TiO_2 photocatalyst prepared in the concentration of 3.5 M of sulphuric acid (H_2SO_4) had BTX degradation up to 42.48% within 4 hours irradiation under UV light. However, its photocatalytic performance was found to be lower than that of Zn/ZnO/TiO_2. The TiO_2 coating and formation of metal/metal oxide (Zn/ZnO and Al/Al_2O_3) were demonstrated by field emission scanning electron microscopy (FESEM) and energy-dispersive X-ray spectroscopy (EDX). It was demonstrated that the formation of large porosity on Zn/ZnO/TiO_2 photocatalyst had contributed to the large amount of deposition of TiO_2 on the surface of photocatalyst thus demonstrated the high photocatalytic performance in BTX degradation under UV light irradiation.

Keywords: Anodic oxidation; Al/Al_2O_3/TiO_2; benzene-toluene-xylene; photocatalysis; titanium dioxide$_2$; volatile organic compounds; Zn/ZnO/TiO_2

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I-CReST 2021: 016-049

I-CReST 2021:030-052 – Antibacterial Activity of Phyto-synthesized Silver Nanoparticles using *Persicaria Odorata* Leaves Extract against *Pseudomonas aeruginosa* and MRSA

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ABSTRACT

Antimicrobial resistance of pathogenic bacteria has become an alarming threat, particularly in developing new antibiotic drugs. For many years, silver nanoparticles (AgNPs) have been studied for its antibacterial activity to tackle this issue. However, the biocidal activity of biosynthesized AgNPs towards resistant bacterial strain is not yet extensively studied. Therefore, our study aims to evaluate the biocidal effects of phyto-synthesized AgNPs using *Persicaria odorata* leaves on both Gram-positive and Gram-negative bacteria. The formation of AgNPs was confirmed using ultraviolet-visible (UV-Vis), Fourier transform infrared (FTIR), X-ray diffraction (XRD), energy-dispersive X-ray spectroscopy (EDX), and high-resolution transmission electron microscope (HR-TEM) analysis. Notably, absorption spectra corresponding to strong surface plasmon resonance peaks of AgNPs was measured around 424 nm. The morphology of AgNPs are almost spherical shape with size ranges from 10 to 23 nm. The antibacterial assays of AgNPs using disc diffusion technique (DDT) analysis show that the AgNPs exhibit better antibacterial activity against the Gram-negative bacteria of *Pseudomonas aeruginosa* as compared to the Gram-positive bacteria of Methicillin-Resistant *Staphylococcus aureus* (MRSA). The bacteriostatic action based on the minimum inhibition concentration (MIC) analysis for MRSA and *P. aeruginosa* was satisfactory at 31 µg/mL. More importantly, the minimum bactericidal concentration (MBC) of AgNPs against *P. aeruginosa* (63 µg/mL) was better compared to MRSA (125 µg/mL), suggesting a good bactericidal effect of AgNPs on Gram-positive bacteria. Based on the findings, we found that the presence of *P. odorata* leaves extract is responsible for the formation of AgNPs and its antibacterial activity. These results further consolidate that the phyto-synthesized AgNPs specifically using *P. odorata* leaves possess a promising antibacterial activity of importance in the healthcare field.

Keywords: Silver nanoparticles; phyto-synthesis; *Persicaria odorata*; Antibacterial activity; resistant bacteria

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I-CReST 2021:041-021 – Resistivity Dependence of Magnetoresistance in Monovalent Doped $La_{0.85}Ag_{0.15}Mn_{1-x}Fe_xO_3$ (x = 0, 0.05) Manganites

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ABSTRACT

Resistivity dependence of magnetoresistance of monovalent doped $La_{0.85}Ag_{0.15}Mn_{1-x}Fe_xO_3$ ($x = 0, 0.05$) manganites prepared using conventional solid-state method have been studied. The phase identification investigated using X-ray diffraction (XRD) pattern, showed all samples were single phase rhombohedral crystal structure. An analysis using Rietveld refinement show that unit cell volume slightly increase from 351.92 Å^3 ($x = 0$) to 352.14 Å^3 ($x = 0.05$) indicates Fe substitution introduce small change in lattice distortion. From temperature dependence resistivity curves, Fe substitution caused increased in resistivity in the temperature region of 30-310 K while applied magnetic field of 0.8 T decreased the resistivity for both samples. It is suggested that the increased of resistivity in metallic region may due to the scattering effects as electron-electron and electron-magnon scattering parameters increased due to Fe substitution. The observed decreased in resisvity indicates sensitivy of the samples to the presence of magnetic field which lead to magnetoresistance (MR) effect. The magnetic field of 0.8 T improved spins alignmnet between Mn ions thus conduction of charge carrier increased and resistivity decreased. Large room temperature MR with value of 29% is obtained for $x = 0$ sample which exhibit low resistivity of 15 Ωcm. While the MR effect decreased to 3% for $x = 0.05$ sample which exhibit high resistivity with value of 25 Ωcm. The decreased of MR effect may be related to localization of charge carrier as a result of Fe substitution at Mn-site. The substitution enhance electron-phonon interaction indicates by increased of activation energy, E_a from 101.55 meV (x=0) to 106.29 meV (x=0.05). The observed large MR effect for $x = 0$ sample indicates its potential application for spintronic applications such as magnetic sensor devices. Magnetoresistive study reveal that the observed MR is influenced by the resistivity of the samples.

Keywords: Fe substitution; magnetoresistance; manganite; resistivity

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I-CReST 2021: 041-021

I-CReST 2021:051-033 – Facile Synthesis and Characterization of Thin Mesoporous Silica/Gold Film Nanocomposites on Anodized Aluminium Oxide–Glass Substrate

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ABSTRACT

Thin film based on gold nanoparticles is typically used as heterogeneous catalyst in the industrial processes, due to their high stability and good reusability. For the first time, a thin mesoporous silica/gold film nanocomposite ($[Au_3Pz_3]C_{10}$TEG/$silica_{hex}$) on different substrates were fabricated from sol-gel method to be used as potential catalyst. To synthesis the $[Au_3Pz_3]C_{10}$TEG/$silica_{hex}$ composite, a medium comprised of dry ethanol, deionized water, and hydrochloric acid was added to gold(I) pyrazolate complex ($[Au_3Pz_3]C_{10}$TEG) according to the ratio of $[Au_3Pz_3]C_{10}$TEG/ [TBOS]/ [EtOH]/ [HCl]/ [H_2O] = 1:60:504:10:1.2:266. Interestingly, 70 μL of the sol-gel solution can be spin-coated on substrates such as glass, anodized aluminium oxide (AAO) or mixture of AAO-glass. It was found that $[Au_3Pz_3]C_{10}$TEG/$silica_{hex}$ fabricated on combination of both AAO-glass substate gave the best quality based on its surface thickness, layer uniformity and film brittleness. Thin film of $[Au_3Pz_3]C_{10}$TEG/$silica_{hex}$_AAO-glass showed a light brownish colour under daylight and a pinkish red colour under UV light, suggesting the preservation of Au(I)-Au(I) interaction. Moreover, there are no apparent peaks being observed in X-ray diffraction result of the film suggesting that sample was grown perpendicularly to the glass substrate and in parallel according to the 1D direction of AAO pores. Based on the scanning electron microscope (SEM) images, the presence of $[Au_3Pz_3]C_{10}$TEG/$silica_{hex}$ to the AAO had successfully filled the channel of 100 to 200 nm diameter. The SEM images also suggested the successful penetration of the nanocomposites along the direction of AAO pores to give a 1D arrangement with the channels oriented perpendicularly to the glass substrate.

Keywords: Anodized aluminium oxide; glass; gold; nanocomposites; thin film

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I-CReST 2021:055-034 – Conductive Thin Films as Emissive Layer in Organic Light Emitting Diodes (OLEDs) Featuring Conjugated Ethynylated Chalcones

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ABSTRACT

Conjugated ethynylated chalcones have attracted great attention as the potential framework with new hybrid moieties, that utilized as active electronic components which are extended conjugated system (C≡C) and chalcone system with donor-π-acceptor (D-π-A) system. Therefore, in this study, ethynylated conjugated chalcones with general formula A−C_2H_2C(O)ArCCAr−D were successfully synthesized which A consists of anthracene ($C_{14}H_{10}$) 5b and pyrene ($C_{16}H_{10}$) 5c substituents, while D consists of CF_3. All these compounds have been characterized by typical spectroscopic and analytical techniques such as Infrared Spectroscopy (IR), Ultraviolet-Visible (UV-Vis), ^{1}H and ^{13}C Nuclear Magnetic Resonance (NMR), UV fluorescence, TGA analysis as well as IV curve characterization and for their electrochemical properties in the form of thin films. In turn, quantum chemical calculation using Gaussian 09 software was used to support and compared with the experimental results. These compounds can be used as active electronic components in OLEDs because the results show the increment of voltage as the current increase. The maximum voltage which is 200 V can be applied to 5b and 5c compounds. Indeed, conjugated ethynylated-chalcones as organic electroluminescent materials have great potential as active materials in electronic devices. These molecular wires candidates have wide possibilities to be used as in electronic devices in future.

Keywords: Acetylide; conjugated system; emissive layer; OLEDs; thin film

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I-CReST 2021:057-035 – Preparation of Titania/Hollow Copper Oxide as Photocatalyst in the Photodegradation of Naphthalene

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ABSTRACT

Due to the potential environmental applications, photocatalytic reactions occurring on the surface of titania (TiO_2) have garnered a wide interest. However, the limited absorption from the solar spectrum, recombination of photogenerated electrons (e^-) and holes (h^+) pairs and direct modification on its surface restrict TiO_2's performance. Therefore, structural modification of TiO_2 in defined microstructures is suggested to boost its photocatalytic activity as it possesses pore systems and higher surface areas. In this study, the synthesis of novel core-shell composite photocatalyst that consists of commercially available TiO_2 particles encapsulated in a hollow copper oxide shell (CuO/*void*/TiO_2) is reported. The synthesis method was divided into three parts, which were the synthesis of C/TiO_2 using glucose solution as the carbon source, followed by a layer of of CuO with different concentrations (0.5 – 1.5 mol), before removing the carbon through calcination to form CuO/*void*/TiO_2. The obtained photocatalysts were characterized by transmission electron microscopy (TEM) equipped with energy dispersive X-Ray (EDX), X-ray diffraction (XRD) analysis, Fourier transform infrared (FTIR) spectroscopy and ultraviolet–visible–near–infrared (UV-vis-NIR) spectroscopy. It was shown that the existence of TiO_2 particles as the core consists dominantly of anatase phase and small amount of rutile phase TiO_2, where they were successfully coated with CuO shell. The optical properties of the CuO/*void*/TiO_2 photocatalysts showed reduction in band gap energy (E_g), where the light response was broadened from UV to visible light for more efficient solar energy use. In the photocatalytic activity testing, it was observed that CuO(1.0)/*void*/TiO_2, synthesized with 1.0 mol of CuO showed higher degradation percentage of naphthalene under UV (67.8%) and visible light (71.2%) irradiations as compared to other concentrations of CuO and the TiO_2 directly covered by CuO (*dir*-CuO(1.0)/TiO_2). It can be concluded that CuO/*void*/TiO_2 photocatalysts have been successfully obtained and the photocatalysts displayed the good photocatalytic ability under both UV and visible light irradiations.

Keywords: Titania (TiO_2) core - Copper oxide (CuO) shell; hollow core-shell particle; naphthalene

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I-CReST 2021: 057-035

I-CReST 2021: 072-061 – Determination of Heavy Metals (Cadmium and Lead) in Canned Cockles by using Atomic Absorption Spectrometry

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ABSTRACT

The main initiative of this study was to determine the concentration of the heavy metals namely cadmium and lead in canned cockle by using wet digestion method as the method of extraction and atomic absorption spectroscopy as the analytical instrumentation. Results indicated that the combination of nitric acid-perchloric acid with the ratio of 1:3 produced the most satisfactory percentage recovery for cadmium and lead which were 107.121 % and 111.642 % respectively with correlation variation 2.903 % and 19.296 % respectively. The optimized method was validated by evaluating calibration curve, linearity, limit of detection (LOD), limit of quantification (LOQ), intra-day and inter-day assays of precision accuracy. Good coefficient of determination were obtained at $R^2 = 0.9963$ and $R^2 = 0.9993$ for both cadmium and lead respectively. Limit of detection and limit of quantification for cadmium were 0.077 ppm and 0.233 ppm respectively. Meanwhile, the LOD and LOQ for lead were 0.23 ppm and 0.78 ppm respectively. The coefficient of variation (CV %) for intra-day and inter-day assays of cadmium were in between 0.42 % - 1.10 %, and 11.31 % - 18.28 % respectively. Meanwhile for lead, the intra-day and inter-day assays were in between 1.38 % - 2.87 % and 12.03 % - 17.63 % respectively. From the analysis of two different brands of local canned cockles (Brand A and B) this study discovered that the amount of cadmium and lead detected in both brands exceed than the permissible limit stated by Food and Agriculture Organization of United Nations (FAO).

Keywords: Heavy metals; cadmium; lead; canned cockles; atomic absorption spectrometry

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I-CReST 2021: 072-061

I-CReST 2021:080-067 – Sustainable Microalgal Biofuel Production from *Chlorella vulgaris* and *Nannochloropsis* sp. using Renewable Terpenic Solvents

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ABSTRACT

Microalgae are considered as the third generation biofuel feedstock due to their rapid growth rate, lipid accumulation capacity and carbon fixation ability. Hazardous volatile organic solvents such as hexane are conventionally used in the process of lipid extraction from microalgae to produce biofuel. However, such petrochemical-derived solvents are now being strictly regulated in the chemical industry. Consequently, the aim of this work is to evaluate the feasibility of using greener solvents such as renewable terpenes to replace petrochemical-based volatile organic solvents for microalgal biofuel production. In this study, two microalgae strains were employed, i.e. *Chlorella vulgaris* and *Nannochloropsis* sp, for lipid extraction using various terpene solvents (d-limonene, α-pinene, *p*-cymene, terpinolene and α-phellandrene) and hexane for comparison purposes. All terpene solvents provided better performance than hexane in terms of crude lipid extraction capacity, saponifiablity and overall biodiesel yield. The fatty acid methyl ester (FAME) profiles were suitable for biofuel production, indicating that terpenes display the same specificity but improved extraction capacity than hexane. Moreover, terpene solvent recycling can be successfully accomplished. The present study demonstrates that terpene solvents, specially limonene, significantly outperform conventional organic solvents in key aspects involving quantity and quality of microalgal biodiesel produced; hence showing a promising prospect as alternative solvents for developing sustainable third-generation biofuel production processes.

Keywords: Biofuel; terpenes; green solvents; *Chlorella vulgaris*; *Nannochloropsis* sp.

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I-CReST 2021:087-075 – Dispersive Solid Phase Extraction Coupled with High Performance Liquid Chromatography for the Extraction of Phenol from Water

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ABSTRACT

The usage of phenols in marketplace has been increasing tremendously, which has raised concerns on their toxicity and potential effect as emerging pollutants. Phenol structure has closely bonded groups of phenyl and hydroxy, thereby making its functional characteristics closely similar to the structure of alcohol. As a results, phenol is used as a based compound for the commercial home base products. Hence, a simple and efficient procedure is required to determine the low concentration of phenols in environmental water sample. In this research, a developed method of combining the magnetic nanoparticles (MNP) with surfactant Sylgard 309 were developed to overcome the drawbacks in the classic extraction methods. In addition, this developed method improved the performance of extraction when MNP and surfactant Sylgard 309 in solid phase extraction were used separately as reported in previous research. This MNP-Sylgard 309 were synthesised with coprecipitation method and will attract phenolic compounds in environmental water samples. The response surface methodology was used to study the parameters and responses in order to obtain an optimised condition using MNP-Sylgard 309. The parameters included the effect of pH, extraction time and concentration of analyte. Meanwhile the responses measured were the peak area of chromatogram and percentage recovery. From this study, the results of the optimum condition for extraction using MNP-Sylgard 309 was pH 7, extraction time of 20 mins and concentration of analyte of 0.5 µg mL^{-1}. Under optimized conditions, the MNP-Sylgard 309 showed a low limit of detection of 0.665 µg mL^{-1} and limit of quantication was between 2.219 µg mL^{-1}. The application of MNP-Sylgard 309 was successfully applied on environmental water samples such as water samples from different locations of lake and river water. High recovery (76.23% - 110.23%) were obtained.

Keywords: Phenol; magnetic nanoparticles; water; dispersive solid phase extraction

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I-CReST 2021: 087-075

I-CReST 2021:110-100 – Formation of Silicon Nanograss on Silicon Substrate Using ICP Etching

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ABSTRACT

In this work, the formation of unwanted silicon nanograss was investigated during plasma etching process. The silicon substrate (silicon nitride-silicon-silicon nitride) was etched by wet etching process. The thickness of silicon and silicon nitride are 400 µm and 200 nm, respectively. Substrate was immersed in Buffered Oxide Etch (BOE) solution to remove silicon nitride layer and Potassium Hydroxide (KOH) solution to remove 310 µm layer of silicon. Silicon membrane was produced after wet etching process. Then, silicon nitride layer on the other side was etched by Inductively Coupled Plasma (ICP) etching. The formation of silicon nanopillars and unexpected silicon nanograss were observed on the silicon surface. During the etching process, redeposition of the silicon nanograss occurred on the silicon membrane. SEM and FESEM were used to study the morphology of the silicon nanograss, while EDX analysis was used to determine the composition analysis of the nanograss. It was found that the formation of the silicon nanograss had a greatest influence on parameter setting used during plasma etching prosess as well as micromasking effect.

Keywords: MEMS; silicon nanograss; ICP etching

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I-CReST 2021:117-116 – Optimization of Nanocellulose Production from Raw Oil Palm Leaves by the Taguchi Method

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ABSTRACT

Nanocellulose has wide-ranging applicability in architecture, manufacturing, and medical fields. Literature has shown that ball milling is an alternative greener pretreatment process for isolating cellulose from oil palm leaves (OPL) without chemicals. In this research, Taguchi orthogonal array was employed to statistically optimize the ball milling pretreatment of raw oil palm leaves for the relevant reaction parameters (milling time, frequency, ball to sample mass ratio, and solvent volume) and the crystallinity index of cellulose. The optimum ball-milling condition was established to require a milling duration of 60 min, the ball to sample mass ratio of 20:1, milling frequency of 900 rpm in the absence of water or solvent. Under an optimized condition, the crystallinity of the ball-milled OPFL improved from 19.09% to 24.48% based on the X-ray diffractogram and showed reduced particle size from 34 µm to ~10 µm. The reduced peak intensities at 1610 cm^{-1} and 3270−3290 cm^{-1} in the Fourier-transform Infrared (FTIR) spectra of the ball-milled OPL confirmed the increase in the apparent crystallinity and chain-ordering. Conversely, the increased peak intensity at 800−1300 cm^{-1} indicated that the crystallinity of the OPL was improved after the ball-milled treatment. The FESEM micrographs of the balled-milled OPL-derived nanocellulose exhibited a smoother surface, showing partially fragmented sections after the ball milling treatment. The FESEM micrographs proved that the treatment removed an appreciable amount of amorphous particles. The outcome seen here was due to the removal of an appreciable amount of amorphous particles. The Taguchi-derived empirical- and physicochemical characterizations data showed that milling time and solvent volume (P-value < 0.05) significantly influenced the resultant nanocelluloses' crystallinity with 60-min as the recommended solventless milling time.

Keywords: Nanocellulose; taguchi orthogonal design; ball milling; crystallinity; oil palm leaves

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I-CReST 2021: 117-116

I-CReST 2021:120-107 – Preliminary Studies and Characterization of Oil Palm Frond Leaves Silica-based Bonded Lipase

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ABSTRACT

Despite the benefits of bio-based enzymes, the high production-and separation from reaction mixture costs hamper their industrial applications. While enzymes are often immobilized on solid supports for enhancing stability, recovery, and activity, there are concerns that the synthetic and non-biodegradable nature of the support materials could negatively impact the environment. Hence, there is an urgent need for new enzyme supports to be developed from sustainable and readily available biodegradable materials. This study proposed the preparation of low-cost support comprising co-precipitated magnetite nanoparticles, graphene oxide, and silica from oil palm frond leaves (OPFL) for *Candida rugosa* lipase (CRL) immobilization. The support and immobilized CRL were characterized by Raman spectroscopy and atomic force microscopy, FESEM, and FTIR techniques. Raman spectral results indicated that GO was successfully synthesized from graphite, while atomic force and field-emission scanning micrographs verified the surface presence of CRL on the support. The FTIR data showed amide bonds at 1390 cm^{-1}, 1500 $cm^{-1,}$ and 1650 cm^{-1}, which corroborated the covalent bonded CRL on the support. The best condition for immobilizing CRL onto the support was a 16 h immobilization time using pentanoic acid:ethanol molar ratio of 1:1. The conditions favored the highest protein loading (15.17±0.06 mg/g), and a good immobilization efficiency (72.34±0.64%) which delivered the highest ethyl pentanoate (EP) concentration at 74.46±0.74% (specific activity=56.77±1.42 µmol/min/g) compared to free CRL (48.75±0.70%). The findings conveyed that the fabricated support had adequately activated and stabilized the CRL for appreciable production of EP and permitted the immobilized lipase recovery by induced magnetism.

Keywords: Silica; hybrid composite; support matrix; immobilized CRL; esterification

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I-CReST 2021:130-121 – The Evaluation of Electrochemical Properties of Monosubstituted-alkoxy Chalcones Containing Triphenylamine as Semiconductor for Organic Light Emitting Diodes (OLEDs) Materials

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ABSTRACT

In recent years, the development of organic molecules in optoelectronics devices are well developed due to their unique properties such as low cost, easy to synthesis and having electronics behaviour according to charge carrier mobility which determine the efficiency of the devices. Organic Light Emitting Diodes (OLEDs) are one of the optoelectronics devices that consist of organic compounds act as a semiconductor which capable in charge transfer due to the π-system in their molecular structure. In this present study, a novel series of chalcones derivatives containing triphenylamine (TPA) molecule with different length of alkoxy ligands act as a substituent (OC_nH_{2n+1}) (where n= 6, 7, 8) which displaying D-π-D architecture were successfully synthesized, whereas TPA has good hole-transport properties with high light emitting efficiency while alkoxy ligand stabilized the molecular structure and this combination enhance the charge transfer to occur and increase their conductivity. The assessment of these series were successfully characterised via spectroscopic and analytical analyses such as infrared (IR), UV-Visible (UV), Nuclear Magnetic Resonance (NMR) and thermogravimetric (TGA) analysis. In turn, the quantum mechanical theory was calculated in HOMO – LUMO energy band gap which proved the value of energy separation of these derivatives exhibits semiconductor properties at around 3.27 to 3.29 eV. The conductivity of these derivatives was recorded via Keithley Instrument with voltage max to 200 V and the findings of these organic compounds exhibits electroluminescence properties were observed with applied voltage up to 20 V in the form of fabricated thin film.

Keywords: Triphenylamine; chalcones; D-π-D architecture; conductivity; electroluminescence properties

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I-CReST 2021:133-124 – Effect of Tween 40 and Pluronic P123 Surfactant on Optical Properties of Zinc Sulphide Nanoparticles

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ABSTRACT

Nanoparticles (NPs) has good optical properties that allows excitation at various wavelengths, emission life spans as well as brighter emission and high quantum yield due to the quantum confinement effect as well as the surface effect. Ionic surfactants are commonly used to inhibit clots by enhancing the optical properties of NPs due to their high absorption rate and solubility cause by charge of surfactants, however ionic surfactants cause high toxicity to NPs. To address this problem, non-ionic surfactants were selected to replace ionic surfactants. This study focuses on the effect of the type and concentration of non-ionic surfactants namely Tween 40 and Pluronic P123 on the optical properties of the zinc sulphide Nanoparticles (ZnS NPs). ZnS NPs coated with Tween 40 and P123 surfactants in different ratios of 1: 2, 1: 4 and 1: 6 were synthesised by colloidal method. The zeta potential value of ZnS NPs:P123 at an optimum ratio of 1: 6 is obtained at -477 mV indicates that ZnS NPs: P123 is more stable and less toxic compared to ZnS NPs: Tween 40 (1: 4) which is obtained at -93 mV. However, bare ZnS give a zeta value of -390 mV. Emission under UV light shows all ZnS NPs coated with different surfactants emitted blue light at wavelengths of 365 nm with different intensities. The energy band gap, Eg also shows an increasing trend when surfactants were added compared to the bare ZnS NPs which possessed 4.80-4.96 eV. Where, ZnS NPs: Tween 40 surfactants with a ratio of 1:6 give the highest value of 4.96 eV at shoulder absorption of 276 nm. The highest emission intensity of blue peak photoluminescence emission is obtained at at 301 nm for ZnS NPs:Tween 40 (1:4). Optical properties of ZnS NPs: Tween 40 shows better properties compared to ZnS NPs:P123 due to Tween 40 has shorter alkyl hydrophobic tail group. While, P123 surfactant is a block copolymer that has a very long PPO hydrophobic tail group resulting in a reduction in optical properties of ZnS NPs.

Keywords: Zinc Sulphide; nanoparticles; optical properties

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I-CReST 2021: 133-124

I-CReST 2021:146-141 – Mode-Locked GeSe-based Pulse Generation in Thulium/Holmium Fiber Laser

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ABSTRACT

A mode-locked Thulium-Holmium doped fiber laser (THDFL) with a Germanium Selenide (GeSe) saturable absorber (SA) is demonstrated for operation in the 2.0 µm wavelength region. The SA device is fabricated by drop-casting the GeSe onto an arc-shaped fiber which is then incorporated into the THDFL to induce mode-locked pulses. Stable mode-locking is attained at 1908.78 nm, with pulse duration of 1.67 ps and output power of 2.74 mW at a maximum pump power of 476 mW. The results of this work show that the GeSe can be a viable alternative for ultrafast photonics applications in the 2.0 µm. region.

Keywords: Fiber laser; mode-locked; arc-shaped fiber; GeSe

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I-CReST 2021:152-159 – Synthesis and Characterization of Metal-organic Framework (MOF-5) Material and Cholinium-based Ionic Liquids

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ABSTRACT

Metal organic frameworks (MOFs) has come to an interest in many applications for their high porosities and large surface areas. It also has high potential as a host material for ionic liquids (ILs) for many applications. A nanoporous MOF-5 and five types of cholinium-based ionic liquids were synthesized and characterize. MOF-5 was prepared by direct solvothermal method. Zinc nitrate and terephthalic acid had been used as the starting materials and dimethylformamide as solvent. All ionic liquids were synthesized through acid-base reaction by using choline hydroxide as the cation source. MOF-5 was characterized by XRD analysis and FTIR to study the structure of the synthesized material. For ionic liquids, ^{1}H NMR and FTIR help to determine the structure and purity of the synthesized materials. Thermal analysis also was carried out to know the stability of ionic liquids. The results obtained will help in confirming the synthesized materials as well as the physical property of the products. Molecular dynamic simulation was carried for choline alanate and it shows that choline and alanine ion pairs are having stronger interaction compared to the same charge ions.

Keywords: Metal-organic framework; ionic liquids; cholinium-based ionic liquids; synthesis; characterization; acid-base reaction

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I-CReST 2021: 152-159

I-CReST 2021:153-149 – Q-Switched Bismuth doped fiber laser with Nb_2C Saturable Absorber

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ABSTRACT

A Q-switched pulse generation in the 1.3 μm wavelength region is demonstrated in a bismuth-doped fiber laser (BDFL) using niobium carbide (Nb_2C) as the saturable absorber (SA). The SA is made using the solution casting technique and then formed into a film for easy insertion into the laser cavity to initiate the Q-switching operation. The highest output power and pulse energy measured were 0.74 mW and 53.7 nJ, respectively, at a central wavelength of 1314 nm and a pulse duration of 7.58 μs. The findings indicate that the Nb_2C may be a suitable option for obtaining a Q-switching operation in the 1.3 μm region.

Keywords: Fiber laser; saturable absorber; Q-switching; bismuth niobium carbide

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I-CReST 2021:167-167 – The Hydrodynamic Characteristic of Vegetative Channel with Dunes at Turbulent Flow

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ABSTRACT

This study focuses on the influence of rigid emergent vegetation on two symmetrical dunes, imitating the river bedform with varying angles of leeside in a turbulent flow. The model of a vegetative open channel with dunes was built in a laboratory flume, where 10 mm diameter wooden rods with 0.4 m in length were arranged upward from the bed with crossing pattern configuration to act as the rigid emergent vegetation; and river pebbles with size about 30 to 50 mm were used to construct the dunes of 3º, 6º and 9º lee angles. The water flow was set to be turbulent at Reynold's number of more than 4000. Velocimeter or vectrino was used to take the reading of flow velocity in a 3-dimensional axis and from the data taken, analyses of the influence of vegetation and dunes on the velocity, turbulent intensity, and turbulent kinetic energy (TKE) were performed. Channel with vegetation indicates lower velocity compared to non-vegetated channels since eddies and vortices were generated by the rods. Steeper the dunes, higher the velocity reading at all locations except at the lee position, where the values distribution illustrates non-significant difference at all angles. The recirculation region establishment at lee causes the deceleration of the flow. The flow over the second crest also suggested higher velocity in contrast to the first crest as the reattachment made collision between the internal boundary layer and the shear layer. The turbulent intensity profiles were recorded at higher value at the bottom near the bed and decreased as they moved upward to the water surface. Measured data shows that the steeper dunes and vegetation amplified the turbulent intensity in the flow. It was observed that the turbulent kinetic energy (TKE) profiles tend to be higher moving away from the bed in comparison with the turbulent intensity (I) which presented higher magnitude near the bed. This is more apparent especially for the lower dunes angle at 3° and 6° which is higher near the water surface compared to near the bed surface. This may be due to the TKE magnitude being a summation of the fluctuated velocity in x (u'), y (v') and z (w') directions which v' and w' may also increase in the presence of dunes and vegetation. Analysis indicated no significant difference of TKE and I for 9°dunes angle for both vegetated and non-vegetated channels. The lee region has the same TKE profile for both channels with and without vegetation at all dunes angles except for 9° dunes which resulted with slightly higher TKE.

Keywords: Hydrodynamics; turbulent intensity; turbulent kinetic energy; vegetative channel; pebble bed dunes

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I-CReST 2021: 167-167

I-CReST 2021:170-169 – Conductivity by Quantum Mechanical Tunnelling in Hexanoyl Chitosan/PVC-NaI-MPImI Electrolyte

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ABSTRACT

Polymer electrolyte composed of hexanoyl chitosan/PVC blend as the host polymer, sodium iodide (NaI) as the salt and 1-methyl-3 propyl imidazolium iodide (MPImI) as the ionic liquid were prepared by solution casting method. The X-ray diffraction (XRD) reveals the variation in conductivity from the structural aspect. Sample with higher amorphous content exhibits higher conductivity. The highest room temperature ionic conductivity of 1.34 x 10^{-4} S cm^{-1} was exhibited by hexanoyl chitosan/PVC-NaI containing 8 wt.% MPImI which is one order of magnitude higher than ionic liquid free electrolyte system. The effect of MPImI concentration on the dielectric properties of hexanoyl chitosan/PVC (90:10)-NaI complexes were investigated in the temperature range of 303 to 343K. Dielectric properties of the samples were strongly dependent on frequency, conductivity of the sample as well as temperature. The frequency dependence of the conductivity was found to obey universal power law. The conduction mechanism of the electrolyte system was interpreted by the quantum mechanical tunnelling (QMT) model.

Keywords: Hexanoyl chitosan; PVC; Sodium iodide; MPImI; EIS; XRD

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I-CReST 2021:184-186 – Characterization of Maltodextrin-chitosan based Polymer Electrolyte with the Addition of Polymerized Ionic Liquid (PIL)

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ABSTRACT

Liquid electrolyte is a commonly used electrolyte in electrochemical device industry. However, the potential of solid polymer electrolyte (SPE) has been widely explored due to promising performance with flexible form. This study focuses on preparation of SPE based on maltodextrin-chitosan doped with ammonium bromide (NH_4Br) and polymerized ionic liquid (PIL) via solution casting method. A polymer blend electrolyte with composition of 70 wt. % of maltodextrin and 30 wt. % of chitosan (PB3) is the most amorphous blend composition which has been confirmed by X-ray diffraction (XRD) deconvolution analysis. The plasticized electrolyte containing 30 wt. % PIL (PIL3) has the highest conductivity of 2.52×10^{-3} S cm^{-1}. The interaction between maltodextrin-chitosan-NH_4Br and plasticizer is confirmed by Fourier Transform Infrared (FTIR) spectroscopy. All electrolytes exhibit a non-Debye behaviour. Thermogravimetric analysis (TGA) shows that the electrolytes are stable up to 270 ºC. Differential scanning calorimetry (DSC) analysis shows that the highest conducting electrolyte has the lowest glass transition temperature (T_g) value. Cyclic voltammetry (CV) result confirms that the specific capacitance, C_{sp} is increased as the scan rate is reduced which proved that this polymer electrolyte is suitable to be applied in energy devices.

Keywords: Maltodextrin-chitosan electrolyte; Polymerized ionic liquid; Solid polymer electrolyte; XRD deconvolution, Electrochemical Impedance Spectroscopy

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I-CReST 2021:006-002 – Prevalence of Diabetic Retinopathy in Pregnancy & Correlation of HbA1c with Fetal Macrosomia

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ABSTRACT

WHO estimated that diabetic retinopathy is responsible for 37 million cases of blindness worldwide. Current pregnancy status increases the risk of development and progression of diabetic retinopathy. Hence, in this study we aim to identify the prevalence of retinopathy in pregnant women and the risks associated with it. A retrospective study of 1054 pregnant women with gestational diabetes mellitus and known case of diabetes mellitus was conducted. Data obtained from computerized clinical case notes included demographic details, ophthalmology assessment, insulin dosage, HbA1c level, body mass index, mode of delivery and baby's weight. The prevalence of diabetic retinopathy among pregnant woman with gestational diabetes mellitus or chronic diabetes is 0.7%. The risk associated with development of diabetic retinopathy could not be properly assessed as the number of patient with diabetic retinopathy was extremely small (7 patients). Prevalence of diabetic retinopathy in pregnant women with diabetes mellitus and gestational diabetes mellitus is low as most patient does not have a longstanding diabetes mellitus which heavily influence the development of diabetic retinopathy.

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I-CReST 2021:006-011 – Maternal Caffeine Consumption during Pregnancy and the Risk of Miscarriage

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ABSTRACT

The main objective for this study is to determine the relationship of caffeine consumption and amount of caffeine consumed with miscarriage. This was a cross-sectional study involving 67 pregnant women from Early Pregnancy Assessment Unit (EPAU) of Hospital Sg. Buloh. A validated questionnaire was made and was used in this study. These questionnaires were randomly distributed among women who were diagnosed to have miscarriage. The data was analyzed using SPSS version 22. A total of 67 respondents' data were collected among pregnant woman who were diagnosed with miscarriage in EPAU of Hospital Sg. Buloh. 46 (68.7%) of the patients consumed caffeine which show majority of them took caffeine. However, this study revealed that there was no association between caffeine consumption with type of miscarriage (p=0.54). There was also no association between amount of caffeine consumption with type of miscarriage based on frequency (p=0.89) and number of cup of caffeine consumption (p=0.59). There was no significant association between caffeine consumption and amount of caffeine consumed with miscarriage. Tea is the most common type of caffeine beverage consumed. However, further research needs to be done with larger sample of patients.

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I-CReST 2021: 006-011

I-CReST 2021:010-103 – Effect of Vacuum Drying Temperature and Sugar Carrier Ratio on Physical Properties of Dried Honey Powder

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ABSTRACT

Converting honey from liquid form into powder is known to be very challenging. High amount of low molecular weight sugars (up to 65%) such as fructose and glucose caused honey to have a very low glass transition temperature (Tg), thus converting into a stable powder form at room temperature is unachievable without the aid of materials with higher Tg. Honey is also sensitive to heat temperature where higher drying temperature increases unpleasant compound like 5-hydroxymethylfurfural (HMF), hence reducing the honey quality. Therefore, the objective of this study was to determine the effect of low vacuum drying temperature (30°C and 40°C) and sugar carrier (sucrose, maltodextrin and dextrose) ratio (50% - 70%) on the physical properties of Tualang honey powder. Honey powder produced was assessed in terms of moisture content, hygroscopocity, Tg and crystallinity state using X-ray diffraction (XRD). Irrespective the drying temperature used, moisture content of honey powder decreased as the amount of carrier increased. Hygroscopicity were affected by the temperature and carrier ratio where the amount of water absorbed after 6 hours exposed to atmosphere with 76% RH were around 6.7 – 2.3 g/100 g dry solids. Tg was generally increased as carrier ratio increased but increasing drying temperature from 30°C to 40°C did not affect the Tg value. Higher crystalline portion was observed on honey-dextrose powder on XRD at higher temperature. Honey-maltodextrin and honey-sucrose powder showed amorphous and crystalline portion, respectively at both temperatures used.

Keywords: Honey; vacuum drying; glass transition temperature; hygroscopicity

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I-CReST 2021:034-037 – Introgression of Sub1 into Drought Tolerant Rice Line with Drought Tolerant QTL qDTY3.1

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ABSTRACT

Frequent incidences of drought have affected rice cultivation and production in Malaysia, especially in rainfed ecosystems. The present study was carried out to introgress the submergence tolerance QTL (*Sub1*) from IR64-*Sub1* into a drought-tolerant rice line, namely UKM91 with drought yield QTL ($qDTY_{3.1}$) using the marker-assisted breeding technique. This study reports the beneficial effect of the introgression of *Sub1* on the agro-morpho-physiological traits under reproductive stage drought stress (RSD) and non-stress (control) conditions. Selected lines were also screened under vegetative stage submergence stress (VS) to evaluate the survival percentage. The effect of *Sub1* present singly outperformed the effect of *Sub1*+$qDTY_{3.1}$ combination in both RSD and control for grain yield (GY). Lines with only *Sub1* also recorded a higher number of panicles and thousand-grain weight compared to lines with *Sub1*+$qDTY_{3.1}$ and $qDTY_{3.1}$ under RSD, suggesting the role of *Sub1* in conferring drought tolerance. The best-performing lines recorded GY advantage up to 1713.39 kg ha^{-1} and 1027.98 kg ha^{-1} over UKM91 in RSD and control, respectively. It was also found that the lines had a 100% survival percentage after 14 days of VS, which was higher than survival recorded for IR64-*Sub1*, owing to the low reduction of chlorophyll content and low shoot elongation percentage. The lines developed in this study could mitigate the effect of climate change and reduce yield loss while serving as precious genetic materials for more breeding programs in the future.

Keywords: Drought; marker-assisted breeding; rice; *Sub1*; submergence

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I-CReST 2021:035-032 – Floristic Variation and Distribution of Tree Communities in Relation to Soil Factors at Pulau Dayang Bunting Forest Reserve, Langkawi

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ABSTRACT

A study was conducted to determine floristic variation and distribution patterns of tree communities in relation to soil factors at Pulau Dayang Bunting Forest Reserve, Langkawi. Ten study plots of 20 m × 25 m each were selected and all trees with diameter at breast height (DBH) of 5 cm and above were enumerated and identified. Soil samples were collected from all ten plots and the soils were analyzed for texture, pH, base cations, available nutrients including Mg, P, K and inorganic nitrogen of ammonium-N and nitrate-N. A total of 521 trees which comprised of 71 species, 57 genera and 27 families were recorded. Euphorbiaceae was the most speciose family represented with 12 species, while *Diospyros transistoria* (Ebenaceae) was identified as the most frequent species which occurred in nine plots (90%). Density wise, Euphorbiaceae and *Diospyros transistoria* recorded the highest density for both family and species level, respectively. The diversity results show that Shannon Diversity Index (H') and Margalef's Index was low at (3.64) and (11.19), respectively and the evenness index however was high (0.85). Euphorbiaceae had the highest Family Importance Value Index, FIVi, of 11.11% while *Diospyros transistoria* was the most important species with SIVi of 6.31%. Soil analyses showed that the plots of the study area were dominated with sandy silt loam texture (40%), whilst the percentage of organic matter ranged from 4.45% - 26.21%, and the mean pH value of 6.48 ± 0.09. The floristic variation and distribution pattern of tree communities were observed among all study plots which were associated to the soil variables as revealed by the Redundancy Analysis (RDA) with a total explained variation of 75.4%. The results indicated that soil characteristics are among environmental factors that play role in floristic variation and distribution of trees at the study site.

Keywords: Floristic variation; forest; Langkawi; redundancy analysis; soil factors

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I-CReST 2021: 035-032

I-CReST 2021:042-144 – Emotional Quotient Level and its Associated Factors among Medical Interns in Malaysia

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ABSTRACT

Emotional intelligence is crucial for medical professionals. A higher emotional quotient (EQ) enhances physician and patient well-being increases patient safety and makes healthcare teamwork better. However, studies about EQ among medical interns are lacking. Therefore, this study aims to determine the level of EQ among medical interns and the factors associated with it. This nationwide cross-sectional study recruited medical interns from 17 randomly selected Malaysian hospitals accredited for medical intern training. All medical interns reported to the selected hospitals from January to April 2020 were invited to answer an online questionnaire. The questionnaire incorporated USMEQ-i to measure EQ, Connor-Davidson Resilience Scale-10 items (CD-RISC-10) for resilience, Brief-Cope to assess coping styles, Preparedness for Hospital Practice questionnaire (PHPQ) to assess internship preparedness, DUREL-M for religiosity, and questions related to sociodemographic and undergraduate training. A total of 524 from 870 medical interns (60.2%) responded. Mean (SD) EQ score was 3.08 (0.58). Significant factors positively associated with EQ include resilience score (adjusted b=0.65, 95% CI 0.58, 0.72, p <0.001), preparedness for internship (adjusted b=0.11, 95% CI 0.09, 0.13, p <0.001), approach-style coping (adjusted b=0.17, 95% CI 0.11, 0.24, p <0.001), and religiosity (adjusted b=0.09, 95% CI 0.01, 0.17, p <0.001). In contrast, avoidant-style coping (adjusted b=-0.19, 95% CI -0.28, 0.11, p <0.001) is negatively associated with EQ. Adjusted R2 of 67.6% substantiated the goodness of fit of the regression model. This study showed that a few modifiable factors might influence EQ; namely resilience, coping style, preparedness for the internship, and religiosity. The findings could guide timely and targeted intervention to increase EQ during medical school or internship preparation programs.

Keywords: Medical interns; resilience; emotional intelligence; USMEQ-I; coping styles

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I-CReST 2021: 042-144

I-CReST 2021:047-058 – Diet Composition of Wild Stump-tailed Macaque (*Macaca arctoides*) in Perlis State Park, Peninsular Malaysia using Metabarcoding Approach

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ABSTRACT

Stump-tailed macaque, *Macaca arctoides* is reported to be distributed only in the northern part of Malay Peninsula. This macaque has been neglected in term of scientific studies compared to other Malaysian macaques. Understanding dietary diversity is a fundamental task in the study of stump-tailed macaque in its natural habitat. Thus, this study aims to determine the diversity of plants consumed by Malaysian stump-tailed macaque using MiniSeq sequencing of chloroplast trnL. Intensive scientific observations with scanning sampling have been conducted at Wang Kelian Forest areas in Perlis State Park, Malaysia. DNA was extracted from three fecal samples, and chloroplast trnL DNA was amplified and sequenced using the Illumina MiniSeq platform. Sequences were analyzed using the CLC Genomic Workbench software. A total of 145 plant species from 46 families were successfully identified as being consumed by this macaque. The most abundant species were yellow saraca, *Saraca thaipingensis* (11.70%), common fig, *Ficus carica* (9.33%), aramata, *Clathrotropis brachypetala* (5.90%), sea fig, *Ficus superba* (5.44%), and envireira, *Malmea dielsiana* (1.70%). However, *Clathrotropis* and *Malmea* are not considered Malaysian trees because of limited data available from Malaysian plant DNA. Our study is the first to identify plant taxa up to the species level consumed by stump-tailed macaques based on a DNA metabarcoding approach. This result provides an important understanding on diet of wild *M. arctoides* that only reside in Perlis State Park, Malaysia. The data can assist government authorities and organizations such as the Forestry Department of Peninsular Malaysia, the Department of Wildlife and non-governmental organizations in formulating management plans and conservation of stump-tailed macaque based on dietary preference.

Keywords: *Macaca arctoides*; stump-tailed macaque; plant metabarcoding; Malaysian primates

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I-CReST 2021: 047-058

I-CReST 2021:054-101 – Relationship and Bioaccumulation of Total Arsenic in Marine Fish and Macroalgae

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ABSTRACT

Arsenic is an element that is classified as toxic and dangerous to the environment. Seafood and seaweed are major sources of human exposure to arsenic. Arsenic content of fish and seaweed are commonly reported separately. There are limited studies that have been established to identify the relationship between arsenic accumulation in fish and macroalgae. Therefore, arsenic was determined in four types of Indian mackerel (*Rastrelliger kanagurta*, *Rastrelliger faughni, Scomber australasicus*, and *Rastrelliger brachysoma*) and three types of red macroalgae *Kappaphycus* spp. (*K. malesianus*, *K. striatum*, and *K. alvarezii*). The analytical method used was inductively coupled plasma-optical emission spectrometry (ICP-OES) after microwave digestion using nitric acid (HNO_3) and peroxide acid (H_2O_2). Dynamic reaction cell gas of oxygen was employed to remove polyatomic interference such as chlorine from the marine organism. The method was validated for the limit of quantification (LOQ), precision and trueness for reliable and accurate results. Arsenic in the four types of Indian mackerel and three types of *Kappaphycus* spp. ranged between 0.217 to 3.711 mg/kg and 0.966 to 4.299 mg/kg, respectively. There were no significant correlations (r^2=-0.002, $p < 0.05$) between the arsenic content of the fishes and microalgae studied. The Bioaccumulation factor (BAFs) in macroalgae was higher (3000 to 12000) than that in fish (2000 to 10000). The results suggest that arsenic concentration increase in marine organism may not be indicative of the increasing dietary exposures from algae to predator fish.

Keywords: Arsenic; macroalgae; fish; ICP-OES; bioaccumulation factor

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I-CReST 2021: 054-101

I-CReST 2021:065-048 – Primates of Genting Highlands, Pahang and Mixed Species Association during Covid-19 Outbreak

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ABSTRACT

Malaysian forests have high primate diversity with 25 species. However, diversity of primates in Genting Highlands has yet to be determined. Interestingly, no report available to describe primate mixed-species association during Covid-19 outbreak in Malaysia. Thus, we determine diversity of Malaysian primates in Genting Highlands, Pahang Malaysia and their potential mixed species association. The observations were carried out throughout 2020 at Genting Highlands however the mixed species association survey was focused between 14-24th April 2020 using ad libitum sampling. Five Genting Highlands primate species were observed at which include *Symphalangus syndactylus* (siamang), *Trachypithecus obscurus obscurus* (dusky langur), *Presbytis siamensis siamensis* (Malayan pale-thighed surili), *Macaca nemestrina* (southern pig-tailed macaque), and *Macaca fascicularis* (long-tailed macaque). Primates in Genting Highlands were seen interacting among themselves during the third phase of the MCO. Strict controls on public movement are believed to have created environmental conditions that enabled Genting Highlands primates to move and interact freely among themselves.

Keywords: Malaysian primates; Genting Highlands; Movement Control Order

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I-CReST 2021: 065-048

I-CReST 2021:067-051 – Diet Assessment of the Dusky Langur *Trachypithecus obscurus* in UKM Campus, Bangi using a Chloroplast tRNL DNA Metabarcoding

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ABSTRACT

The Dusky langur (*Trachypithecus obscurus*) is a leaf-eating monkey that is classified as near threatened by IUCN Red List. Even though several feeding ecology studies of *T. obscurus* have been conducted in Malaysia, a comprehensive record on their diet is considered inadequate. The combination of plant DNA barcoding and high-throughput sequencing is becoming an important tool for understanding the diet of herbivorous primates. The direct observation and microscopic examination of the stomach or feces are considered time consuming and require training in the identification of food plants. Therefore, we used a chloroplast tRNL DNA metabarcoding to identify the diversity of plants consumed by the Dusky leaf monkey in Bangi, Malaysia. We also evaluated whether DNA-based analysis was consistent with field observation data conducted at the same study site. DNA was extracted from four fecal samples, and chloroplast tRNL DNA was amplified and sequenced using the Illumina MiniSeq platform. Sequences were analyzed using the CLC Genomic Workbench software A total of 15,787 operational taxonomic units (OTUs) were described in *T. obscurus* individuals and assigned to 39 orders, 83 families, and 273 plant genera. The OTUs were dominated by Malpighiales (10.39 %), Fabales (7.44 %), and Malvales (2.78 %), indicating that the orders are the primary plants in their diet. At genus level, the diet of *T. obscurus* is dominated by *Hevea* (6.23 %), *Rideliella* (4.22 %) and *Taliparitі* (2.57 %). A comparison of dietary determination methods found that 30 orders and 20 genera were shared through DNA metabarcoding and field observation. A total of 51 orders and 252 genera of plants can only be identified using the DNA metabarcoding, implying that this approach provides a comprehensive and accurate identification. However, 14 orders and 63 genera of plants could only be determined by field observations and could not be classified using the DNA metabarcoding. This comparison indicates that both approaches are significant in determining the diet of *T. obscurus*. Metabarcoding complement observation data

to classify plants that are overlooked while in the field. Overall, the data gained through this study may provide important insights for management and conservation of *T. obscurus*.

Keywords: *Trachypithecus obscurus*; Dusky langur; plant metabarcoding; Malaysian primates

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I-CReST 2021: 067-051

I-CReST 2021:079-066 – Antifungal Activity of Mahogany (*Khaya Senegalensis*) Leaf Extract nn Selected Fungi

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ABSTRACT

Khaya senegalensis A. juss (meliaceae) commonly known as African mahogany, is a popular medicinal plant in Nigeria. It belongs to the family Meliceae. This study was aimed to determine the effect of leaf aqueous extract of *Khaya senegalensis* on some selected disease causing fungi. In this study, the phytopathogenic fungi isolated from spoiled bread were identified based on morphological and cultural characters. Mucor and Rhizopus stolonifera Were identified. Leaf aqueous extracts of different concentrations (100, 200, 300, 400 and 500 mg/ml) of *Khaya senegalensis* were added to the growth media prior to inoculation. The aqueous extracts reduced the mycelial growth of the fungi, and this effect gradually increased with increasing concentration. It could be emphatically concluded that the tested plant extract can effectively control fungi causing some diseases in plants. This makes it potential fungicide in disease management as the method is cheap and environmentally safe as they showed fungicidal and fungitoxic ability.

Keywords: Fungi; leaf extract; mahogany; *Mucor*; *Rhizopus stolonifera*

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I-CReST 2021: 079-066

I-CReST 2021:084-073 – Effects of Different 1RM Evaluation Method for Quadriceps Muscle among Novice Weight Lifter

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ABSTRACT

Before starting any resistance training, a therapist must determine a patient's 1-Repetition Maximum (1RM) load. The 1RM load can be determined using a free-weight (FWs) or a machine weight (WM). However, due to different clinical settings, different machines or equipment being used. Therefore, this study aimed to investigate the compatibility of 1RM load identified using the FWs method and using MW. Overall, 51 participants (Male =19/ Female 32) performed a separate session of 1RM evaluation using Quadriceps bench and sandbags. The mean load of the 1RM test using Quadriceps bench and sandbags was compared using paired t-test, and Bland's Altman plot was used to determine the compatibility between the two methods. There are significant differences ($p< 0.05$) between the 1RM load identified using the Quadricep bench (6.84 ± 2.34 kg) and sandbags (7.94 ± 2.25kg). Bland's Altman analysis shows the SD agreement between these two methods falls between SD ± 1.96 with a high value of 1.1 and a low value at -3.3. In conclusion, the 1RM test using a machine can significantly produce different load ranges, either underestimating or overestimating a patient's 1RM load by 2.2 kg.

Keywords: Muscles; quadriceps; physiotherapy; resistance training; weight

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I-CReST 2021:096-112 – Galactogogue Intake Pattern among Malaysian Mothers

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ABSTRACT

Effective breastfeeding is recognized as a demanding activity that requires ongoing dedication with suitable techniques and skills. Prime concern of breastfeeding mothers is their capabilities in producing adequate and high-quality breast milk. There are several confounding factors that responsible for the success rate of this activity especially through dietary intervention such as galactagogue consumption. Advancement in food technology derived many maternal supplements and widely introduced in commercial market. This study aimed to determine the pattern, types of galactagogue consumption and causes of intake among breastfeeding mothers in Malaysia. It also determined the association of galactagogue consumption between several demographic factors. N=119 of mothers across Malaysia with three different ethnicities were successfully recruited and fulfilled the survey questionnaire. Questionnaire was designed based on mixed of dichotomous question and Likert scales which divided into two main parts; Part A (Demographic and breastfeeding status); Part B (Galactogogue intake status). As overall, it was reported that, the used of galactagogue among respondents was selective towards natural source of galactagogue such as food and herbs compared to synthetic and formulated one. In addition, Chi-square test on the consumption status of galactagogue indicated that only the employment status was significantly different with p=0.017. Generally, participants also choose to use galactagogue only when they need it. Factors such as crack and sores nipple, removed of breast tissue, after birth relactation, small or no breast engorgement, worrisome of milk adequacy, eagerness to exclusively breastfeed, stress of house chores and workload, too frequent breastfeeding and crying baby after breastfed were determined to significantly causes the galactagogues consumption among mothers. The consumption of galactagogue was proven to lean on many other factors such as employment which indirectly affect the lifestyle of breastfeeding mothers as well as the breastfeeding practice. The causes of galactagogue intake also represented the real difficulties faced by the breastfeeding mother such as breast milk adequacy issues, maternal and infant satiety towards breastfeeding. Successful breastfeeding is always a great challenge, and it influences their ways to rationalize their decision to consume suitable galactagogue.

Keywords: Galactogogue; breastfeeding; milk production

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I-CReST 2021:096-113 – Knowledge and Preferences of Soy-based Galactagogue among Malaysian Mothers

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ABSTRACT

Galactogogue is food or drug which has been used for decades to increase breastmilk production and encourage successful lactation. Intervention through formulated galactagogue is one of the strategies for the breastfeeding mothers to enhance human milk quality and quantity. Soybean is a good source of protein as it provides all essential amino acids and contains phytoestrogen composition which posed a positive of lactogenic effect on breastfeeding practice. Since soy products are very popular as galactogogue in Malaysia, this study reviewed the pattern and types of soy galactogogue usage among breastfeeding mothers in Malaysia. Moreover, association between maternal galactogogue and soy galactogogue's knowledge with its consumption is also determined in this study. N=119 mothers across Malaysia were recruited to fill up the survey questionnaire. This questionnaire was designed based on mixed of dichotomous question and Likert scales which was divided into two main parts; Part A (Demographic and breastfeeding status); and Part B (Galactogogue intake status). Galactogogue Knowledge Score and Soy Galactogogue Knowledge Score of respondents who took galactogogue were compared to those who did not. Next, comparison analysis was done among the type of galactogogues to the respective knowledge score. The same analysis has been done among soy galactogogue consumers using Mann-Whitney U test (as the total knowledge score was less than 10) in which the data was expressed as median (IQR) and the value of $p<0.05$ was determined as statistically significant. The was a significant difference of general galactogogue knowledge between the users and non-users with $p=0.001$. Among the users of commercial galactogogoue, non-significant difference was reported for general knowledge, but significant difference was reported for soy galactogogue knowledge among the commercial users compared to who not with $p=0.025$. In addition, there was a significant different of soy galactagogue knowledge score between soy galactagogue users especially for soy-based food users compared to non-users with $p=0.003$. In summary, consumption, and practice towards soy galactogogue among Malaysian breastfeeding mothers is determined to be dependent on personal preferences.

Keywords: Soy-Galactogogue; breastfeeding; knowledge and practice

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I-CReST 2021:099-087 – Morphological Identification of *Erwinia* sp. that Associated with Pineapple Heart Rot Disease

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ABSTRACT

Bacterial heat rot disease is one of the major pathogens threatening pineapple industries in Malaysia. The pathogen that caused bacterial heart rot is *Erwinia* chrysanthemi. The symptoms appeared as water soaked lesion arising from the basal, bloated and darker and infection border on the plant leaves. The presence and emergence of numerous species of *Erwinia* sp. has increased and the need of understanding the symptoms and morphological characteristics is important for establishing and implementing practical disease management. Other problem is the lack of research on how to prevent the bacterial heart rot disease because there are no satisfactory solutions to overcome this problem. This study was conducted to characterize the morphological characteristics of *Erwinia* sp. that causing the bacterial heart rot disease in pineapple. The phytopathogenic bacteria that suspected as *Erwinia* sp. were isolated, sub-cultured and observed on light microscope. Based on the research study, bacteria B1 has been identified and suspected as genus of *Erwinia* sp. that caused the bacterial heart rot disease in pineapple.

Keywords: Pineapple; bacterial heart rot disease; morphological characteristics; *Erwinia* sp.

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I-CReST 2021:106-097 – Effects of Reading on Tear Film Stability Among Soft Contact Lens Wearer

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ABSTRACT

To study the effects of reading on non-invasive tear break-up time (NIBUT) among soft contact lens wearers and to demonstrate the correlation between CLDEQ-8 with the NIBUT before reading and after reading. Methods: The Demographic Questionnaire, Contact Lens Dry Eye Questionnaire-8 (CLDEQ-8), were completed by 18 soft contact lens wearer (36 eyes) (17 females and 1 male). As a baseline, NIBUT were measured using modified bowl perimetry before reading. Subjects were then asked to read a 20 minute validated hard copy text silently. The NIBUT test were repeated after the reading task. Results: A sample of 18 contact lens users (36 eyes) were recruited for this study. The mean age was 22.89 ± 1.687 years old while the mean refractive power of contact lenses ranged from plano to -5.75D (1.44 ± 0.504D). There are 20 eyes (55.6%) of the contact lens wearer wore less than -3.00D meanwhile 16 eyes (44.4%) wore more than -3.00D contact lens power respectively. The mean of pre-NIBUT and post-NIBUT were 6.43 secs (SD;1.250) and 3.22 secs (SD;0.964) respectively. A significant difference between pre-NIBUT and post-NIBUT was found using paired t-test: $p < 0.001$. A negative poor correlation of CLDEQ-8 was found with pre-NIBUT ($r = -0.266$) and post-NIBUT ($r = -0.150$). Conclusions: The values of NIBUT decreased after 20 minutes near reading task among soft contact lens wearer. Sustained 20 minutes of reading influences the tear stability, resulted in disruption of the tear film layer caused tear film instability scored of CLDEQ-8 with NIBUT before and after reading. There was poor correlation between scores of CLDEQ-8 with NIBUT before and after reading.

Keywords: Contact lenses; non-invasive tear break up; reading, tear film stability

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I-CReST 2021: 106-097

I-CReST 2021:109-099 – Optimization of Exopolysaccharide Production and its Partial Characterization from *Paenibacillus polymyxa* for Agricultural Application

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ABSTRACT

Paenibacillus polymyxa as beneficial microbes that is reported can produce exopolysaccharides (EPS) as non-toxic biomaterials that is very good for plant and soil health. The present work aims to develop an optimum medium for EPS production by *P. polymxya* ICA-B02 and its characteristics influencing soil aggregation. At first, several medium formulations from previous published literature were tested for their potency to support EPS secretion. Then, the one factor at one time (OFAT) method was used to optimize EPS production. From this study, the optimal concentration of sucrose, yeast extract and KH_2PO_4 at 30, 30, 3 g L^{-1}, respectively gave cell mass of 15.94 g L^{-1} and EPS about 16.44 g L^{-1}. These results revealed that the optimized medium was able to support cell growth of *P. polymyxa* ICA-B02 with the specific growth rate of 0.774 h^{-1} which was increased about 488.19 %. The EPS production was increased up to 571.02 % with productivity about 0.456 g $L^{-1}h^{-1}$ after 36 hours of cultivation. Furthermore, Fourier transform infrared spectroscopy analysis showed the presence of hydroxyl, carboxyl groups and glycosidic linkages, which showed the composition of the polysaccharide bound by α-(1→6). The scanning electron micrographs analysis showed EPS appears as a homogenous spherical with irregular porosity. The EPS structure resulted in a higher water absorption/ retention capacity, which is an attractive feature for a sticky agent for soil aggregation. The new production medium for the cell mass and EPS production was optimized from *P. polymxya* ICA-B02 creating the potential application as a source of beneficial microbes for sustainable agricultural practices.

Keywords: *Paenibacillus polymyxa*; exopolysaccharide; optimization; cell mas; agriculture; soil aggregation

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I-CReST 2021: 109-099

I-CReST 2021:123-120 – Design of Synthetic Biology Tools for Cyanobacteria

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ABSTRACT

Cyanobacteria are photosynthetic microorganisms that have been an attractive host for synthetic biology applications. They have the potential to express eukaryotic genes due to their easy genetic manipulation. However, there is no plant transgenic genes have been expressed in cyanobacteria. Expression plasmid with neutral site have been proposed to integrate heterologous genes and to prolong survival of genes in cyanobacteria. In this study, 3 gene sequences have been designed for cloning and expression purpose in cyanobacteria. All these genes were synthesized by GenScript, which are cloned into a shuttle vector, pUC57. The DNA sequences were obtained from the NCBI GenBank with the following reference numbers for *4CL*: *A. thaliana* (U18675.1), *CHS*: *Petunia x hybrida* (AF233638.1) and *CHI*: *Pueraria lobata* (D63577.1). Each gene sequences consists of P*psbAI* promoter, synthetic ribosome binding site (RBS), translational start site and translational stop site. Restriction enzyme site was also introduced both at upstream of the translational start site and downstream of the translational stop site. The size of the P*psbAI*:*4CL*, P*psbAI*:*CHS* and P*psbAI*:*CHI* was approximately 2092 bp, 1383 bp and 968 bp, respectively. The P*psbAI*:*4CL*, P*psbAI*:*CHS* and P*psbAI*:*CHI* was designed for cloning into a modular expression plasmid, pCV0055 which consists of the chromosome integration site NSII for *Synechococcus elongatus* PCC7942. Cloning of the target genes using synthetic biology approach would allow plant transgenic genes to be compatibly expressed in cyanobacteria.

Keywords: Cyanobacteria; plant genes; synthetic biology

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I-CReST 2021:127-115 – Optimization of Extraction Temperature and Time for Antioxidant of *Lentinus Edodes* Mushroom Using Response Surface Methodology (RSM)

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ABSTRACT

Lentinus edodes is an edible mushroom that is known as a macro-fungus in the realm of modern biotechnology field. On that note, this study investigated on crude polysaccharide yield and its antioxidant activity optimized by response surface methodology (RSM). Central composite design (CCD) was employed to optimize the time and temperature of the extraction process. Results indicated that the data were adequately fit into the second-order polynomial models. Independent variables temperature (A) and time (B) were found to have a significant linear, quadratic and interaction effects on total carbohydrate content (TCC), total flavonoid content (TFC) and DPPH radical-scavenging activity. Meanwhile, ANOVA analysis exhibited that the models were very significant (p<0.001) for TCC, TFC and DPPH radical-scavenging activity. The optimal extraction time and temperature were 225 minutes and 65°C produced 55 mg/mL of carbohydrate content (TCC); 420 minutes and 100°C with 53 mg/mL of flavonoid content (TFC), and 225 minutes and 65°C with 75.5% optimum inhibition percentage of DPPH radical-scavenging activity. The models were validated, and the experimental values obtained were higher to the predicted optimum values which were 66 mg/mL, 67 mg/mL and 84.6% of TCC, TFC and DPPH radical-scavenging activity, respectively.

Keywords: *Lentinus edodes*; extraction; Response Surface Methodology (RSM); Central Composite Design (CCD)

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I-CReST 2021: 127-115

I-CReST 2021:129-130 – Analysis of Antioxidant Compounds and Antimicrobial Activities of Hygienic Travel Soap from Dabai Fruits Oil

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ABSTRACT

Dabai fruit (*Canarium odontophyllum*) is an exotic fruit found in Sarawak and has been locally known by its richness in nutritional values. Dabai fruits is prominent among locals due to its high level of antioxidants which contributes to health and beauty. Therefore, this research discovered on dabai's pure oil that was successfully extracted from its fruit through solid-liquid extraction process to be used as travel soap. Dabai soap was further analyzed using Attenuated Total Reflectance - Fourier Transform Infrared (ATR-FTIR) spectrometers for screening of antioxidant compound. It was found that dabai soap can be fabricated to a small ball size, that dissolves during hand wash and leave no residue which could avoid recurrent infection. It can be portable in size and a user-friendly soap that could be used to encourage frequent hand-washing culture. The use of dabai oil in producing it as a travel soap is also to replace palm oil in saponification process. The dabai travel small ball soap is invented to improve its size as it can be rolled between fingers during hand washing. As a result, the FTIR spectrum showed that the presence of O-H group, C=O for carboxyl group, C=C for aromatic and C-O were coherent with the structure of antioxidant. The presence of these antioxidants ensures the effectiveness of dabai fruits soap for health and beauty purpose.

Keywords: *Canarium odontophyllum*; travel soap; antioxidants

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I-CReST 2021: 129-130

I-CReST 2021:137-127 – Spatial and Temporal Distribution of *Oryzaephilus surinamensis* Toward Effective Management of Storage pest

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ABSTRACT

Spatial and temporal distribution analysis is a fundamental study for effective management system of storage pests. Therefore, this study has been conducted on *Oryzaephilus surinamensis* (Linnaeus), saw-toothed grain beetle, as one of the most ubiquitous storage pests on rice grains in Malaysia and worldwide. The spatial and temporal mapping were conducted to understand the behavior and distribution of the pest in the warehouses in relation to the warehouses condition. In this study, nine warehouses have been selected from each zone; Klang (center), Pasir Gudang (south), and Seberang Prai (north) with 3 warehouses from each zone. Klang showed the highest abundant (69%), continue with Pasir Gudang (27%), and Seberang Prai (4%), which poor sanitation and inconsistent in fumigation time as the contributing factors. Significant difference resulted in abundance of the pest species between zones ($p<0.05$, $p= 0.00$), as well as between warehouses $p<0.05$ (p-value= 0.00-0.011) in three consecutive months. Based on the spatial analysis, SADIEShell_122 and Surfer8 software, the distribution of the *O. surinamensis* in several warehouses were significantly aggregated, $p<0.05$ ($p=0.0385$-0.0513) and $Ia > 1.0$ (1.212-1.579), whilst non-significant and regularly distributed, $p>0.05$ ($p=0.1154$-0.91032) and $Ia> 1.0$ (0.852-0.929). The pattern of aggregation may cause by the volume of the rice stock that stored for a certain time duration. These preliminary findings are found to be very valuable and important in the postharvest management strategy for rice industry.

Keywords: storage pest; behavior; movement; rice storage; Malaysia

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I-CReST 2021: 137-127

I-CReST 2021:138-135 – Population Size of Reticulated Python (*Malayopython reticulatus*) and Monitor Lizard (*Varanus salvator*) at Mersing, Johor, Peninsular Malaysia

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ABSTRACT

A short census on reticulated python (*Malayopython reticulatus*) and monitor lizard (*Varanus salvator*) was conducted at Mersing, Johor from 22nd September until 30th October 2020 based on one debating point on how many numbers of reticulated python and water monitor lizard in Mersing, Johor. Thus, this study specifically focusing on two different habitats which are mangrove and palm oil plantation. Two methods of samplings were used which are passive and active sampling. Passive sampling method used several types of traps which are 3ft x 1.5ft x 1.5ft cage trap, 'twitch-up' snare and modified Small Game snare. Cage traps was deployed in $2km^2$ x $2km^2$ plot randomly. Meanwhile 'twitch-up' snare and modified small game snare was installed at every 50m in the transient arrangement in the established plot. Observation method was also used to increase the data collection and was conducted two times daily during the sampling period. The analysis on the estimated population size of reticulated python shows that the plantation habitat represents higher number of individuals ($5.25 \pm 2.622/km^2$) compare than the mangrove habitat ($0.5/km^2$). Meanwhile, the number of monitor lizards at mangrove habitat is higher ($13.464 \pm 6.121/km^2$) compared to palm oil plantation habitat ($8.916 \pm 1.409/km^2$). Most of the individuals captured in this study are within 2300mm SVL/1100kg W to 3100cm

SVL/1100g W for reticulated python and 420mm SVL/8000g W up to 720mm SVL/8000g W for monitor lizard. The preliminary assessment on the presence of parasites shows the evidence that both species had high probability to be infested by ectoparasite and blood parasite.

Keywords: Biodiversity; population; water monitor lizard; reticulated python

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I-CReST 2021: 138-135

I-CReST 2021:139-131 – UAP inhibition by using Uridine Towards the Red Palm Weevil, *Rhynchophorus ferrugineus* (Coleoptera: Dryopthoridae) Adult

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ABSTRACT

The Red Palm Weevil (RPW) is scientifically known as *Rhynchophorus ferrugineus*, Olivier (Coleoptera: Drypthoridae) is one of the economically vital pest for plants from family of Arecaceae. The infestation of RPW in Malaysia was first reported at Terengganu in 2007 on many coconut trees. Despite their rapid populations growth which causing the infestation to be worst, there are still lack of study regarding the efficient methods and alternatives to supress this pest. Current method which is pheromone trapping seems not to be the most efficient way to reduce the infestation of the RPW as the population of the weevil keeps increasing drastically. Chitin is an essential component found in insects especially in digestive gut and played an important role during the molting process. Hence, chitin synthesis inhibitor was an initiative in controlling most of the pest as it will abrupt the chitin production that eventually lead to fatality. Thus, this study had been conducted to understand the effects of the uridine with a different concentration on the weight and internal chitin layer on the hindgut of the RPW. Samples gained from Department of Agriculture (DOA) were treated with the uridine through their diet consumption which was sugarcanes by food dipping technique. The weight of the RPW were recorded before and after the uridine treatment before being dissected to analyse the histology of the hindgut. The results obtained showed that the significant reduction of the mean weight in RPW after the treatment was from the 1000 mg L^{-1} uridine concentration compared to the other two groups of uridine concentration, 500 mg L^{-1} and 1500 mg L^{-1}. The histological data displayed a resemblance among the samples from different concentrations and days of treatment. Therefore, the effect of uridine in inhibiting the UAP pathway of the RPW can be analysed further to be one of the initiative that can be used in halting the population of this pest by disrupting the chitin production.

Keywords: *invasive species; chitin inhibitor; palm pest; histopathology*

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I-CReST 2021:141-189 – Zinc Solubilization by Low Molecular Weight (LMWOA) Organic Acids using Agar Plate and Broth Method

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ABSTRACT

Zn deficiency has been identified as the major cause of low yield in rice. Flooding and submergence bring about an available Zn reduction due to pH changes and the formation of insoluble Zn compounds. In order to make it available, organic acids in terms of low molecular weight organic acids (LMWOA) are needed both in deficiency or toxicity condition. However, without plant, organic acids inside flooding rice soil are considered low. The potential of synthetic chelates and natural, aromatic or aliphatic low molecular weight organic acids (LMWOA) in providing metal concentrations in solution that are both environmentally safe and high enough to increase plant uptake up to levels adequate to heavy metal solubilizitaion and phytoextraction. Hence the present study was undertaken with the following objectives, to determine the effects of organic acids on solubilization. Results showed citric acid could positively solubilized different forms of Zn sources used in the study (zinc oxide, and zinc carbonate). While for zinc solubilizing in broth method by organic acid showed that a significant increase of Zn solubilization was recorded in malic acid at 10 mM. Highest increase of Zn solubilization was zinc sulfate with 0.79 mg L^{-1} compared to zinc oxide and zinc carbonate. Similar observation was recorded for citric acid.

Keywords: Zinc; Solubilizing; Low molecular weight organic acids; Agar method, Broth Method

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I-CReST 2021:150-162 – Physico-Mechanical and Antimicrobial Properties of Biodegradable PLA film incorporated with *Zingiber officinale* Essential Oils

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ABSTRACT

Current interest in green technology and food safety together with the extension of food shelf-life has led to the studies on the use of biodegradable packaging with antimicrobial properties. The aim of this study was to evaluate the physico-mechanical and antimicrobial properties of biodegradable polylactic acid (PLA) polymer incorporated with essential oils (EOs) extracted from *Zingiber officinale* (ginger). Supercritical fluid extraction method was used to extract the EOs and the yield obtained was 3.63 ± 0.05 % dry basis. Ginger EOs at 1%, 2% and 3% were incorporated in PLA film using solvent casting technique. For physico-mechanical properties, the result showed that the thickness of PLA films was not affected by the incorporation of the EOs. The water vapour transmission rate, elongation-at-break and opacity were significantly increased with the increasing concentration of EOs incorporated in the film, however tensile strength was decreased. The antimicrobial activity of the films was evaluated on *Escherichia coli* and *Staphylococcus aureus* microbes using disc diffusion method. The inhibition zones of *S. aureus* were obtained for PLA films added with 1%, 2% and 3% ginger EOs however, inhibition zone of *E. coli* was obtained only for PLA with 3% EOs. This indicates that PLA film with ginger EOs is effectives as antimicrobial agent at minimum of 3% concentration against both pathogenic bacteria *E. coli* and *S. aureus.*

Keywords: Biodegradable film; PLA; essential oil; antimicrobial, ginger

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I-CReST 2021:156-152 – Expression of IL-1β, IL-6, and TNF-α in rat molar periodontium tissues after concurrent orthodontic wire placement and *Enterococcus faecalis* inoculation

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ABSTRACT

Periodontal disease is a chronic inflammatory disorder which is associated with more than 700 species of bacteria. *Enterococcus faecalis* is usually a commensal microorganism and not recognized as a periodontal pathogen. However, it is responsible for 90% of enterococcal infection in human. The presence of *E. faecalis* in the oral cavity raises the question of whether periodontal disease has relationship with this microorganism. The aim of our study is to observe the expression levels of inflammatory cytokines IL-1β, IL-6, TNF-α following infection with *E.faecalis* and orthodontic wire placement. Rats were divided into 3 groups containing 4 rats each 0 day, 7 days, 14 days induction period. 0.2mm sterile orthodontic wire inserted into the inter dental space of maxillary right 1st and 2nd molar and 0.5 ul of *E. faecalis* suspension of 1.5x10^{8} CFU/ml of bacteria injected into the gingival sulcus between maxillary right 1st and 2nd molar area once a week during respective induction period. Gingival tissue samples and maxillary samples were collected from respective group after induction period for RNA extraction and cDNA conversion. The RT-PCR was carried out in 10ul reaction as instructed ChamQ Universal SYBER® qPCR master mix (Vanzyme). The two step amplification was performed in a thermocycler (Bio-Rad CFX96 Connect™ real-time PCR) as follows: initial denaturation at 95℃, 30 sec; denaturation 95℃ 10 sec; annealing temperature 60℃ 30 sec; for 40 cycles. RT-PCR analysis shows upregulation of IL-1β, IL-6 and TNF-α expression levels after 7 days of induction which has been decreased significantly after 14 days induction period compared to control (0 day) group. This study revealed acute inflammatory response of periodontal tissue in response to *E.faecalis* infection and ligature orthodontic wire which suggest ability to shifting of this commensal microorganism to pathogenic state within the periodontal tissue and could play a critical role in periodontal disease progression.

Keywords: Periodontal disease; *E. faecalis*; inflammatory cytokines

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I-CReST 2021: 156-152

I-CReST 2021:166-166 – Transmission of Total Immunoglobulin E(IgE) from Maternal Serum's to Human Milk

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ABSTRACT

Maternal atopic factor may be a valuable predictor to herald the atopic potential that can be carried to the infants. This immunological link must be understood to relate the heredity of various allergic manifestations among individuals. It has a great deal of interest due to its potential in predicting and preventing atopic diseases especially among exclusively breastfed infants since its reliance of immunity factor is higher to the mother. Postnatally, mothers could affect their infant's allergy status since the transmission of their immunologic factors especially the Immunoglobulin E (IgE), through human milk. The objective of this paper was to determine the correlation between maternal serum's Total Immunoglobulin E (T-IgE) and specific immunoglobulin E (s-IgE) with the same composition in human milk. A total of N=36 lactating mothers were recruited based on convenience sampling basis from Dengkil, Selangor and Kuantan, Pahang. The radioallergosorbent test (RAST) which using radioimmunoassay test namely ImmunoCAP 100 (Thermo Fisher Scientific/Phadia, Uppsala, Sweden) was used to detect IgE from maternal serum. ab108650 Immunoglobulin E (Inge) Human ELISA Kit (Abcam) has been used to determine IgE concentration quantitatively in human milk with minimum detectable concentration of Inge at 5.0 IU/ml. The findings reported that T-IgE was ranged between 82-233 kU/L(mean±SD of 142.27±41.49kU/L), s-IgE to cow milk ranged between 0.10-0.48 kU/L(mean±SD of 0.251±0.09 kU/L) and s-IgE to soy ranged between 0.02-0.22kU/L(mean±SD of 0.127±0.04kU/L). However, the concentration of IgE in human milk was below detection limit even though spike and recovery test on reliability and validity of the methods presented 85% accuracy. The outcome concludes that, the presence of T-IgE in human milk do not depend on the plasma concentration. The transmission hypothetically did not occur or occur by chance in small amount due to several physiological factors such as the presence of IgE binding factors (IgE-BFs) in human milk which capable to suppress the synthesis of IgE and shorter half-life span compared to another immunoglobulin (Ig).

Keywords: Immunoglobulin E(IgE); human milk; blood serum; transmission

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I-CReST 2021:169-168 – Effects on Maternal Macronutrient Intake Towards Human Milk's Fatty Acids Composition

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ABSTRACT

Whilst human milk's fatty acids contribute to 50% of energy among exclusively breastfed infants, fatty acids such as monounsaturated fatty acid (MUFA) and long chain polyunsaturated fatty acids (LC-PUFA) plays the important roles for healthy growth of infants. Fatty acids components in human milk are vary widely accordance to the maternal diet during lactation but has not been sufficiently studied. The objective of this paper was to determine the correlation between maternal macronutrient intake with human milk's fatty acids composition among exclusively breastfeeding mothers. A total of N=36 lactating mothers were recruited based on convenience sampling basis from Dengkil, Selangor and Kuantan, Pahang. A 24-hour dietary recall (24HR) was used to capture mother's dietary intake in the past 24 hours. The human milk sample was collected in the next day morning after the diet recall and stored before proceeded to another fatty acids extraction and transesterification process namely Blight and Dyer method. The composition of fatty acids methyl esters was analysed and quantified by a gas chromatography (Agilent 7890A), equipped with a flame ionization detector (FID) and Agilent Chromatography Workstation software. As overall, the most abundance fatty acids found was SFA ranged (81.90 to 97.7 %) followed with MUFA (2.3 to 18.1%), but PUFA was below detection limit (BDL). Result also indicated that palmitic, stearic, and oleic acids were the three major types of fatty acids determined from human milk. Correlational study also determined that, there was no significant correlation between the human milk's SFA and MUFA with the same dietary intake and another macronutrient like carbohydrate and protein. Even though there was no significant correlation determined for the most composition, various pattern of correlation was found in the study. Human milk's SFA only had a positive correlation with dietary carbohydrate but negative with the rest. Different pattern also showed for human milk's MUFA which only negatively correlate with carbohydrate and fats while positive for the rest. Thus, overall, this fat composition is known to have higher variation in terms of concentration of its components compared to another macronutrient even within the same population. Apart from geographical factors, factors such as maternal nationality and age had a significant impact towards human milk's fatty acids composition.

Keywords: Fatty Acids; human milk; Mono-Unsaturated fatty acids (MUFA); Saturated Fatty Acids (SFA)

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I-CReST 2021:173-176 – Optimization of Enzymatic Synthesis of Structured Lipid from Rambutan Kernel Stearin (RKFst) and Fluidized Palm Oil (FPO)

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ABSTRACT

Structured lipid containing long-chain fatty acids were produced by lipase catalyzed transesterification of rambutan kernel fat stearin (RKFSt) and fluidized palm oil (FPO). The production of structured lipid was optimized based on the arachidic acid (mmole) incorporated in the reaction products using Response Surface Methodology (RSM). The STLKR:FPO molar ratio (Sr,), enzyme loading (E1, based on substrate), water content (Wc, based on substrate) and reaction temperature (Tr) were significant factors after analyzed by 24 full factorial design. The same factors were then used to determine the optimal reaction conditions by central composite design (CCD). The ranges of each parameters selected were as follows: Sr = 4:1-10:1; E1 = 10-30%; Wc = 0-5% and Tr = 45-65°C. Results from CCD indicated that the highest incorporation of arachidic acid was at STLKR:FPO molar ratio of 8.32:1; enzyme load of 24.73%; water content of 1.67%; and temperature of 65oC. From the model, the calculated amount of arachidic acids incorporated was 25.89 mmole and it was very close to experimental result of 24.80 mmole. It showed that the model chosen was correct. The main fatty acids present in the structured lipid were arachidic acid (51.99%) and oleic acid (31.29%) which were 83% of the whole fatty acid content. The results indicated that the most probably TAG in the structured lipid was AOA with the melting point of 37.18oC, solid at room temperature and melted at body temperature which is quite comparable to cocoa butter.

Keywords: Structured lipid; kernel fat; palm oil; response surface methodology; transesterification

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I-CReST 2021:175-177 – Intake Distribution of Fat-soluble Vitamins among Lactating Mothers and its Relationship with Human Milk's Fatty Acids

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ABSTRACT

Lipid composition such as fatty acids is the second-most abundant composition of human milk which predominantly providing dietary energy to infants. On the other hand, the bioactive components such lipid-soluble vitamin (A, D, E and K) also required in small amount to maintain and regulate the quality of human milk. Both parameters were interrelate based on physiological mechanism as both derived from dietary fats and involved in the same path of intestinal absorption. The objective of this paper is to determine the distribution and correlation of maternal micronutrient intake of lipid and water-soluble vitamins towards human milk's fatty acids composition of exclusively breastfeeding mothers. A total of N=36 lactating mothers were recruited based on convenience sampling basis from Dengkil, Selangor and Kuantan, Pahang. A 24-hour dietary recall (24HR) was used to capture detailed information regarding the micronutrient intake of the respondent in the past 24 hours. The data on micronutrients intake per mother was tabulated using Nutritionist Pro. (NP) software. The human sample was collected in the next day morning after the diet recall and proceeded to fatty acids extraction and transesterification process using Blight and Dyer method. The composition of fatty acids methyl esters was analysed and quantified by a gas chromatography (Agilent 7890A), equipped with a flame ionization detector (FID) and Agilent Chromatography Workstation software. The highest mean of intake occurred during the fifth to sixth months with, 1067.37±629.66 µg RE/day for vitamin A, at the first two months with, 0.89±0.84 µg RE/day of vitamin D, during the first two months with, 5.85±2.49 mg/day while the fifth to sixth months with, 17.28±11.74 µg /day of Vitamin E and at the first two months of lactation period. Even though the was no significant correlation determined for the vitamin intake with human milk's fatty acids composition, various pattern of correlation was found in the study. Human milk's Saturated Fatty Acids (SFA) only positively correlated to vitamin D while human milk's mono-unsaturated fatty acids (MUFA) were positively correlated to Vitamin A, E and K and negatively correlated to the rest. As a conclusion, human milk's fatty acids composition has less dependency to micronutrient dietary intake.

Keywords: Fatty Acids; human milk; Lipid-Soluble Vitamin

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I-CReST 2021:183-185 – Foraging Behaviour of the Stingless Bee, *Tetrigona apicalis* (Hymenoptera: Apidae) and its Responses Towards Temporal and Climatological Factors

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ABSTRACT

Stingless bees are known to be efficient pollinators of many crops as about 30% of human food is derived from bee-pollinated crops. In this study we quantified the flight activity and foraging behaviour of *Tetrigona apicalis* and investigate the environmental factors related to foraging behaviour of *T. apicalis*. The factors include time of day, temperature (°C), relative humidity (%), and wind speed (ms-1). The study was taken place at a Meliponine sanctuary at the Malaysian Genome Institute (MGI), Bangi from May to October 2019. The number of bees entering and leaving the nest were counted through direct observations, at an interval of 5 minutes per hour from 9 a.m. to 5 p.m. Our result showed that flight activity of *T. apicalis* are peaked around 9.00 a.m. to 11 a.m. and decreased gradually as the relative humidity also saw a decrease from 80% to 40% until the evening. The minimum temperature observed was 26°C with optimum temperatures ranging between 26°C and 32°C. High wind speeds of 1.4 ms-1 affected flight activities with wind speeds increasing afternoon. The results showed influences from temporal and climatological factors towards their foraging behaviour.

Keywords: Stingless bees; temporal; climatological; foraging; behaviour

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I-CReST 2021:186-190 – Eye Health Literacy and Attitude Towards Common Eye Diseases: A Population-based Survey

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ABSTRACT

Cataract, diabetic retinopathy and glaucoma are the primary causes of visual impairment in Malaysia. Exploration of the awareness and knowledge of common eye diseases in the local population is essential as such information is valuable for healthcare practitioners in devising strategic measures that can impart a positive attitude towards eye care in the community. A cross-sectional study was done to determine the awareness, knowledge, and attitude towards cataract, glaucoma, and diabetic retinopathy among the community living in Puncak Alam. The study further evaluated whether a family history of eye diseases, previous eye examination experience, age and gender are related to awareness of the diseases. An online survey comprised of closed-ended and open-ended questions was distributed to 44 adults living in Puncak Alam. Overall, the highest awareness exhibited towards cataract (79.5%), followed by glaucoma (54.5%) and diabetic retinopathy (25%). Positive attitudes towards eye examination were observed. Family history of eye diseases, past eye examination experience, age and gender were not significantly associated with awareness of eye disease ($p>0.05$). Overall, the respondents have the right knowledge of cataract, but glaucoma and diabetic retinopathy were lacking. As these ocular diseases are asymptomatic, an early eye examination is crucial. Eye care practitioners may devise strategic health promotion measures to increase awareness of the importance of undergoing a routine eye examination and encourage positive attitudes towards regular eye examination.

Keywords: Awareness; knowledge; attitude; eye diseases

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I-CReST 2021:017-014 – Student's Perception on Mathematics: A Case Study on Peer Mentoring Programme

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ABSTRACT

Students' negative perceptions have a huge impact on understanding mathematics. This perception is vital and likely to affect students' attitudes to learning and consequently, influence the students' performance. This negative perception is believed to be one of the factors contributing to high failure rate in Pre-Calculus examination at UiTM Cawangan Kelantan. The aims of this research paper are: first, to determine the significant mean difference between student's perception on mathematics subject and gender, second, to determine the relationship between Mentor's Professionalism, Teaching and Learning Activities and Infrastructure towards Student's Perception on Mathematics and third, to determine the most important factors that affect Student's Perception on Mathematics Subject. The questionnaire was distributed to 60 students involved in Peer Mentoring Programme. The findings showed that the student's perception towards Mathematics among student's gender is equal. The findings also revealed that there were significant positive relationships between mentor's professionalism (low positive correlation), teaching and learning activities (moderate positive correlation) and infrastructure (low positive correlation) towards student's perception on Mathematics. From these three factors, only teaching and learning activities was classified as the most important factor that affect the student's perception on Mathematics. This suggests that the peer assistance in learning (Peer Mentoring Programme) had proven to have a positive impact on student's perception in learning Mathematics.

Keywords: Mentor's professionalism; teaching and learning activities; infrastructure; student's perception on mathematics subject

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I-CReST 2021: 017-014

I-CReST 2021:024-015 – New Algorithms for Encryption and Decryption Data using Laplace Transformation for Data Security

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ABSTRACT

Cryptography is derived from Greek word 'crypto' means secret and 'graphy' means writing that is used to conceal the content of a message from all except the sender and the receiver and is used to authenticate the correctness of message to the recipient. Nowadays, the increasing growth of technology has become a concern for our society in terms of the security for data and personal information. Thus, cryptography has a crucial and essential role in achieving the primary goals of security objectives, such as authentication, integrity, confidentiality and non-repudiation. This paper aimed to produce algorithms for data encryption and decryption using Laplace Transform for data security. The cryptography algorithms are then being applied to provide security for data, information and many other applications. This paper produced new algorithms for encryption and decryption data using laplace transformation for generalized hyperbolic functions. The algorithm proposed by using this method is a way to keep the data safer with higher confidentiality. The result of this research is a proof that cryptography algorithms can be applied to provide strong security.

Keywords: Cryptography; laplace transforms; encryption; decryption; cipher text

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I-CReST 2021:039-019 – Scheduling Technique based on Graph Coloring of Commuting Involution Graphs in Symplectic Groups $S_4(2)'$

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ABSTRACT

Let G be a finite group and X be a subset of G. The commuting graph, denoted by $C(G, X)$, is a simple undirected graph, where $X \subset G$ being the vertex set and two distinct vertices $x, y \in X$ are connected by an edge if and only if $xy = yx$. In this paper, a scheduling technique was proposed that related to a graph coloring through the results of commuting involution graphs in symplectic groups. The main contribution was to discover the scheduling technique in the suborbits of symplectic groups $S_4(2)'$. In addition, a procedure for generating the scheduling technique with known chromatic number was presented and used to obtain the algorithms as the suborbits of the symplectic groups may get larger.

Keywords: Commuting graph; symplectic group; suborbit; graph coloring; chromatic number

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I-CReST 2021:045-025 – Roger 3450 Martial - Based Rectangular Patch Slot Antennas RPSA for RFID applications using High Frequency Simulation System HFSS

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ABSTRACT

Rectangular Patch Slot Antennas RPSA are getting becoming more likable and popular for practice in wireless implementations such as RFID applications especially in the UHF band thanks to its low-profile structure. This kind of antenna is able to deliver large communication distances but this antenna has Narrow bandwidth and low gain are the major drawbacks of Rectangular Patch Slot Antenna RPSA. The radiation properties of Rectangular Patch Slot Antenna RPSA are affected by many designing factors like feeding techniques, manufacturing substrate, patch and ground structure. Antennas geometrical and the material are properly defined by select Roger Ro 3450 substrate with dimensions of 50mm × 50mm. with dielectric constant of relative permittivity εr = 3.66 and of loss tangent (tan δ) of 0.004 and the substrate thickness is 0.8mm. The radiator is fed by coaxial probe inserted in the middle of the patch. The ground plane is printed in another side of the substrate with dimensions of 50mm × 50mm. Circular Polarized CP antenna introduce a higher probability of a successful link comparison with other types because it is deal with coaxial probe feeding techniques. Circular polarized CP antenna that has been designed to use feed structure with vertical ground surrounding a radiating element. S11 represents how much power is reflected from the antenna, and hence is known as the reflection coefficient or return loss S11 must be at acceptable level ≤ -10dB. The other factor of Rectangular Patch Slot Antenna RPSA design to cut the patch at two and four corners (slots 5mm) to enhance the antenna gain which will affect considerably the operating frequency. This project aims to show and find the best feed point area that has an exceptional antenna return loss (S11). The gain, S parameters, directivity and efficiency, radiation pattern of the designed Rectangular Patch Slot Antennas RPSA are obtained by using ANSYS High Frequency Simulation System (HFSS 13.0).

Keywords: Rectangular patch antenna, rectangular patch slot antenna, feed line technical, circular polarized CP and RFID technology, substrate materials Roger 4350 and FR4 glass-epoxy.

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I-CReST 2021:046-028 – A Review: Education Research in Electrical and Electronic Engineering

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ABSTRACT

Electrical and Electronic Engineering education is one of the most important fields in the needed Industrial Revolution (IR 4.0) Era. However, education studies related to the field of Electrical and Electronic Engineering are rarely conducted. Therefore, a study on the latest Electrical and Electronic Engineering in education is needed. This paper aims to review the effectiveness of the research of Electrical and Electronic Engineering in education and to define future research perspectives of technology in education. A review protocol consisting of both automatic and manual searches is used to ensure the retrieval of all relevant studies. The findings show almost of Electrical and Electronics Engineering education research shows its effectiveness and improve the understanding of the subject to be studied. In other views, we also prospect the future research perspectives of Electrical and Electronics Engineering education and propose that more rigorous intervention studies could be conducted to further explore the integration of Electrical and Electronic Engineering and other educational fields.

Keywords: Engineering education; electrical; electronic

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I-CReST 2021: 046-028

I-CReST 2021:053-031 – On Modular Ideals, Primitive Ideals and Polynomial Rings over Nil Rings based on Learning Theories

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ABSTRACT

The concept of modular ideals has a relation to the identity element of rings. We argue that a ring, which contains a modular right ideal which is proper, leads to an assumption that the ring is like to contain identities, although the ring does not contain any identity. A maximal ideal which is contained in a maximal modular right ideal is called a primitive ideal. We compare the definition of the primitive ideal which was defined by Smoktunowicz and which was defined by Gardner and Wiegandt as well as Divinsky. We provide the general form of primitive ideals. One of the applications of primitive ideals is the theorem of the form of primitive ideals in polynomial rings over nil rings. We give some examples as insights into the theorem. In addition, we provide examples of selected concepts. On the other hand, mathematics symbols may differ from one article to another. It may not be a problem for experts, but it is a problem for beginners and non-mathematicians. Bruner's learning theory provides some solutions for the problem. Therefore, various learning theories have been analyzed and applied to our presentation on this paper including all of the concepts, theorems, and notations.

Keywords: Modular ideals, primitive ideals, polynomial rings, nil rings, learning theories

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I-CReST 2021:064-090 – Students' Perception on Characteristics of Effective Lecturers Using Fuzzy Conjoint Method

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ABSTRACT

The purpose of this study is to discover the perception of undergraduate students from Faculty Computer and Mathematical Sciences, University Technology MARA Shah Alam, towards the characteristics for effective lecturers. It is well known that performance of the lecturers is one of the important factors contributes to the education system. Students can be highly motivated to learn or in contrast, the students can be demotivated to learn because of the lecturers' approaches. In this study 13 characteristics of effective lecturers are evaluated, which include master or high knowledge of the subject, prepared and organised, approachable and friendly, have a sense of humour, and forgiving. Questionnaires were distributed to 62 students. Fuzzy Conjoint Method (FCM) is used to rank the most important characteristic of effective lecturers from students' perception. Out of 13 characteristics of effective lecturers, the result shows that sense of belonging is the most preferred characteristics of effective lecturers follow by respect students and the third characteristic is forgiving. The important of the finding in this study shows that the rapport aspect is important to the students in determine the characteristics of effective lecturers. It is suggested that the lecturers should create nurturing, supporting and caring environment in the class.

Keywords: Characteristic; effective lecturers; fuzzy conjoint method; students perception

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I-CReST 2021:066-050 – Investigation on Equivalent Circuit for Electrochemical Sensing Reaction of an Extended-gate FET pH Sensor

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ABSTRACT

This paper presents the study of the equivalent circuits for an electrochemical sensing reaction of an extended-gate field effect transistor (EGFET) sensor for pH detection. To understand the sensing mechanism of the EGFET sensor, various equivalent circuits that consist of resistors and capacitors at the gate of the FET representing the reference electrode, sensing electrode, and the pH solution were constructed. Then, to study and understand the behavior of the sensing reaction, the circuit configurations and the values of the discrete components were manipulated and simulated using the LTSpice XVII software. The circuit configurations were considered the input of the sensor and the changes of the MOSFET ID regarding the various circuit configurations and component values were recorded and analyzed. We found that the capacitor(s) connected directly to the MOSFET gate is the main factor that changes the ID whereas the resistors did not induce any changes on ID. This can confirm the theoretical electrochemical reactions happening on the sensing electrode surface that described the involvement of ionic exchange. The participation of ions can be related to the capacitor mechanism involving charges.

Keywords: Extended-gate field effect transistor (EGFET); LTSpice XVII; electrochemical reactions

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I-CReST 2021:071-056 – Enhanced Design Consideration for Mobility Support in IoT

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ABSTRACT

Various IoT applications (such as real-time patient monitoring, and vehicle tracking systems) require mobility support. Unfortunately, the standard RPL proposed only considers static wireless sensor network (WSN). A reliable mobility support for RPL is important to guarantee continuous connectivity among devices. Poor mobility support also leads to data loss, more consumed energy, increased delay and degradation of application performance. Various solutions have been proposed to tackle the mobility issues but lack to consider different mobility models with respect to appropriate factors. This paper presents several mobility models to be implemented in different IoT mobile applications. Knowing the details mechanism with respect to different mobility models allows a better implementation of application specific RPL mobility support. Mobility models is much related with the mobility patterns, which are the actual movement behaviour of the moving objects. Several factors that determine the movement behaviour are velocity, obstacles, whether it is individual or group-based movements, and so on. Considering all the factors and different mobility models, the enhanced design of mobility support for RPL is proposed in this paper.

Keywords: Internet-of-Things (IoT); mobility model; RPL

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I-CReST 2021: 071-056

I-CReST 2021:074-059 – Factors that Influence Information Security Behaviour of Home User

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ABSTRACT

Pandemic Covid-19 situation has enforced most companies imposes the staff to work from home basis as mode of operational. Due to that the number of home computer users is increasing faster than ever. This scenario indirectly highlighted home users' information security as an important field to be investigated. This is not only a matter of securing home users' personal and work information, but also as Internet users that access from home become a perfect breeding ground for security hackers targeting organizations and also as individual including misbehaviour of spreading illicit or ethically disputed content. Therefore, this paper aims to investigate the factors that influence the information security behaviour of home user. As for this study, 201 respondents among employees in an ICT agency are being analyzed using quantitative approach through the online survey questionnaires. From the findings, it has been concluded that the perceived severity, perceived susceptibility, response efficacy, cues to action and perceived benefit has been identified as the factors that influenced the information security behaviour of home users. Perceived severity was found to be the factor that influenced how users react to implement or not the security features on their devices. It might be irrational to suppose, that any security experience or history background by individuals in a home environment is the way they act at home. It will be more fitting to enforce social norms in cyber protection to enhance security. Overall, users seem like the idea of these automated security features due to its practicality and manageable. It is hoped that, such mandatory and forceful interventions are also necessary in the case of the home user if the overall security is to be enhanced. While the option of using automatic security, features is often available to users at home, but it is up to their discretion to use it or ignore it.

Keywords: Information security behaviour; home user; security; threats; ethical

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I-CReST 2021:083-070 – The Effect of Oil Price, Interest Rate, Consumer Price Index and Exchange Rate on Food Price

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ABSTRACT

Food security is the concern of every nation including Malaysia. Malaysia needs to revamp the way it addresses food production if it serious about achieving food security. Local rice production has become inactive in the last 30 years. Food price will affect the food security crisis in Malaysia. This paper aims to examine the relationship and response of food price on oil price, interest rate, exchange rate, consumer price index (CPI) impulse. This research was conducted using Augmented-Dickey Fuller test, multiple linear regression (MLR) analysis using ordinary least square (OLS) and impulse response function (IRF) analysis under VAR model. Monthly data are taken from January 2011 until February 2021. Findings suggest that oil price has a major effect on the cost of food. From the analysis of impulse response functions, food prices respond positively to any shock in oil prices. Our findings indicate that price volatility has a positive relationship with oil price and food security. Since oil price inflation is detrimental to food security, it is important to diversify energy demand in this market, moving away from a dependence on fossil fuels and toward an optimum mix of renewable and non-renewable energy supplies that would benefit both energy and food security.

Keywords: Food price; oil price; exchange rate; interest rate; consumer price index

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I-CReST 2021: 083-070

I-CReST 2021:091-080 – An Improvement of Tokenization Technique in Malay Text Corpus

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ABSTRACT

Tokenization is a fundamental process of data pre-processing in the Natural Language Processing (NLP). Data pre-processing becomes one of the important steps in processing text document before implementing knowledge extraction. The text can be segmented into sentences, phrases and words. There are several tokenizer tools available online such as Python NLTK, Stanford Tokenizer and Regex Tokenizer. In this paper, we focused on the improvement of tokenization method in comparison to the existing tokenizer tools. This paper also improved the tokenization method in a larger dataset for Malay text corpus. Tokenization helps to identify meaningful keywords. Thus, this process contributed to knowledge extraction. Training dataset used in this paper was about 542 sentences which consisted of 92,113 characters. Existing online tokenizer tools had a limitation in terms of the number of sentences and characters in the dataset. Based on the previous study, the dataset was tested up to 50, 000 characters. Several experiments were performed which gave promising results. The improvement on the technique of tokenization showed that the result was better than previous studies in terms of the size of the dataset.

Keywords: Tokenization; Malay corpus; tokenizer; pre-processing

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I-CReST 2021:097-085 – Using Latent Dirichlet Allocation to Identify Text Messages Topic in Mental Health Mobile Therapy

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ABSTRACT

A text message used in mental health therapy is typically a mixture of terms and hidden treatment content, it implies the possibility of what treatment activities and goals are essential. Exploring the latent topics and themes of the text messages used in mobile therapy is important to understand how these components could deliver appropriate treatment to a particular mental illness. The objective of this study is to identify text message topics sent by psychiatrists related to therapy for depression. This study uses Latent Dirichlet Allocation (LDA) that is available in Machine Learning for Language Toolkit (MALLET) to identify topics and words within each therapy message. The LDA experimented with 55 sample text messages, 15 topics and 2000 number of iterations. The probability distribution resulting from LDA was used to identify the topic for each document and topic with the highest number of documents. The topic-word distribution was used to analyse the top ten terms which then was used to recognize the theme of each topic and label them with topic names. The results show that all 15 topics were relevant to depression therapy. In addition, the terms used in each topic derived from the LDA successfully represent the content and topic for depression therapy. According to our study, the Gain and Advantage topic was found as the principal topic to the most text messages used in the study. Others such as side effects, care and wellbeing, general information and focus on today's opportunity are among the commonly used content. Appropriately use of language style – motivational, supportive and encouragement- and content could potentially strengthen mobile therapy text messages approach in improving depression level.

Keywords: Latent dirichlet allocation; topic modelling; machine learning; text message therapy; depression

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I-CReST 2021:108-117 – Willingness to Pay for the External Cost of Last Mile Delivery Services in Jakarta

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ABSTRACT

The growth of the e-commerce business has caused the use of goods vehicles in urban areas to increase, especially in the last mile delivery. Last mile delivery is the final part of logistics services from courier to consumers which can produce air pollution that harms environment. The last mile delivery system in the e-commerce business is considered the most expensive, inefficient and polluting part of the entire logistics supply chain. In addition, the pollution can cause various respiratory diseases for the people of Jakarta, Indonesia. This study aimed to analyse the value of the willingness to pay (WTP) for last mile delivery (LMD) service users due to the impact of negative externalities. The determination of the WTP value used the Contingent Valuation Method (CVM) method based on a hypothesis of the compensation cost for air pollution of 10,000 IDR/package. The survey was conducted online of 400 respondents who lived in Jakarta. The results showed that the WTP value was 11,493 IDR. This high WTP value was due to the fact that Jakarta residents already have awareness regarding the dangers and impacts of air pollution on health.

Keywords: Last mile delivery; external cost; willingness to pay; stated preference; contingent valuation method; air pollution

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I-CReST 2021:111-110 – Integrating Interactive Multimedia: Teaching and Learning Mathematics for Online Distance Learning

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ABSTRACT

Mathematics is the subject that has the least frequency in using technology in the school. It is preferred chalk and talk method rather than use technology or presentation. Due to pandemic Covid19, the suitable method for the teaching and learning process is within virtual learning. The same goes for teachers who need to change the method and think about how to implement it through online learning. Interactive multimedia is one of the best media that can attract students to learn in distance education especially for Mathematics subjects that most suitable to be conducted on traditional method. It is more challenging as this new era has happened suddenly and it create emergency online learning where most teachers do not expert in enhancing the interactivity learning at first. The purpose of this study is (1) to identify students 'perception towards interactive multimedia in learning Mathematics during online distance learning and (2) to understand students' motivation towards interactive multimedia in learning Mathematics during online distance learning. The sample selected for the questionnaire survey is 100 Mathematics students. Based on the finding, it showed there are positive perception and high motivation towards interactive multimedia in learning Mathematics during online distance learning.

Keywords: Mathematics education; interactive multimedia; virtual learning

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I-CReST 2021:112-134 – Affecting Factors that Committing Motorcyclists Violations at RLC

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ABSTRACT

The Railway-Road crossing (RLC) in Indonesia has a very high level of accident vulnerability. Based on data from the Integrated Road Safety Management System (IRSMS) from 2013 to 2019, the total accidents at DKI Jakarta railroad crossings reached 101 cases, of which 80% were fatal accidents that caused death. This research aims to analyze the behavior of motorcyclists violating RLCs based on the theory of Traffic Locus of Control. The research instrument is a video recorder and questionnaire. The video recorder is used to recognize the behavior of motorcyclists on RLCs, and to find out the weaknesses of the engineering system. Questionnaires were distributed to 384 motorcyclists (Mage = 31.09; SD = 5.74) who committed violations at RLCs in three locations, namely Kalibata area South Jakarta, Central Jakarta Industrial road intersection, and an RLC in Sentiong area Central Jakarta. The questionnaire used is a Multidimensional Traffic Locus of Control scale (T-LOC) which is consisting of four domains, i.e. self, other drivers, road and environment, and fate. From the results of data processing, the psychological factors of T-LOC that most roles as predictors of violations are age, self, other drivers, and road and environment. Therefore, efforts are needed to control the warning and safety facilities at railway crossings as well as legal affirmations to reduce the level of violations committed by motorcyclists.

Keywords: Accident; motorcyclist; traffic locus of control; the railway-road crossing; violent behavior

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I-CReST 2021:113-129 – Airport Selection Preference in Central Java Multi Airport Region

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ABSTRACT

The development of Yogyakarta–Solo–Semarang Region (Joglosemar) has the aim of boosting the economy of the central part of Java Island since the three cities form the economic axis of the area. The role of the region is affected by the availability of good transportation infrastructure. The Yogyakarta–Solo–Semarang (Joglosemar) region meets the characteristics of multiple airport regions as the three cities' airports are located close to each other (Multi Airport Region). Adisutjipto International Airport (JOG) in Yogyakarta City had been running on its capacity so that the government has opened a new and bigger airport, i.e., Yogyakarta International Airport (YIA) in Kulon Progo Regency to replace Adisutjipto International Airport (JOG). The opening of the new airport means more options for passengers in Yogyakarta–Solo–Semarang (Joglosemar) region who can now choose between the three airports based on variables such as the available schedules, airlines, distance to the airports, and the available airports' services or facilities. This study uses revealed and stated preference methods to identify airport selection preferences in the Yogyakarta–Solo–Semarang (Joglosemar) area with a multinomial logit model. The results of this study indicate that the distance between the domicile regency or city and the airport, flight frequency, flight schedule, accessibility, and travel time to the destination airports are variables that affect the preference for airport selection in the Yogyakarta–Solo–Semarang (Joglosemar) area.

Keywords: Airport; multi-airport region; multinomial logit model; revealed preference; stated preference

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I-CReST 2021:114-140 – Analysis of Driving Speeds of Private Vehicles and Contributing Factors on The Cipali Toll Road (Cikopo-Palimanan)

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ABSTRACT

The high number of accidents that caused 23,529 people to die in 2020 in Indonesia, triggered concern to encourage concrete efforts to reduce the fatalities of the victims. Speed is still regarded as the largest contributor to traffic accidents and the core of the problem of road safety. The purpose of this research is to analyse the driving speed and psychological factors that play a role based on the Theory Planned Behaviour, which is introduced by Ajzen, namely attitude, subjective norm, and perceived behavioural control and belief. The research conducted on private vehicle drivers who commit driving violations exceeding the maximum speed limit on the Cikopo-Palimanan (Cipali) Toll Road, which are detected by using a speed gun. Furthermore, 219 drivers who committed violations (Mean age = 37.9 years, SD = 6.9) were given a questionnaire based on the TPB. The results shown that the behaviour violates the speed limit because law enforcement is still considered weak, and respondents want to reach their destination faster or save travel time. The implication of this finding is that efforts to control speed, law enforcement and traffic engineering are needed to create safety roads.

Keywords: Speed; toll roads; theory of planned behaviour (TPB); behavior violating the speed limit; violation

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I-CReST 2021:115-137 – Computation accuracy for location mapping of dental clinics in Malaysia

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ABSTRACT

The availability of oral health services is one of the key determinants of oral health in prioritising the provision and development of dental in Malaysia. However, not much is known about the geographical distribution of dental health services and spatial patterns associated with dental service access, especially in low resource areas without formal addresses. This study aimed to assess the use of web applications with geolocation features to map dental clinics' location and validate the accuracy of geolocation data from Geolocation API by Google Maps Platform and open-source geocoder built for OpenStreetMap data. We geocoded 2,973 address records representing the dental clinic locations obtained from the Dental Practitioners Information Management System (DPIMS) based on the registration of dental practitioners. We compared two computation geocoding methods, i.e.(1) a free geocoding provider (method A) and (2) an in-house geocoder (method B). Using the web apps, we designed and piloted a quick survey for health workers to validate their dental clinic geolocation using smartphones for a period of 6 months (January - July 2020). Through this method, geolocation data and details of the dental clinics, including the type of service,will automatically be captured, and mapped. The radius of a circle around the geocoded location represents the accuracy of the estimated location in meters. Data without accuracy positional and geo-coordinates were assigned to the Control group. The sample involved 143 dental facilities (47 primary dental clinics and 96 private clinics). Among them, 2,830 facilities were assigned as controls, while 51 facilities were assigned to the test group. Our results indicated that address point geocoding produces geocoding match rates similar to those observed for computation geocoding, with 68.8% and 72.1% of addresses geocoded to the exact address using A and B, respectively. The median radius distance between actual facilities locations and where the points were collected on the mobile devices was measured at 15.4 meters (IQR 12.0 m –18.7 m). (Parameter proximity radius < 10 points: very high; 10 to 50 points: somewhat high accuracy; > 50 points: poor accuracy). In addition, it was found that the accuracy of mapping varied among dental facilities and declined in less populated areas with fewer prominent landmarks. Our study found that (Method B) showed better accuracy than (Method A) in mapping the geo-coordinates of dental clinics at a difference of 0.44 points, and the accuracy of the mapping reduces in less populated and lower density areas.

Keywords: Geolocation; self-assessment; public health; periodontitis; oral health service

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I-CReST 2021:119-123 – Interior Point Method for Nonlinear Optimization

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ABSTRACT

The line search methods are effective tool to solve nonlinear optimization problems. A variant line search method namely interior point estimation method has been effectively efficient to solve nonlinear constrained optimization problems. In this paper we will present an interior point estimation method that solves perturbed Karush Kuhn Tucker conditions in a primal-dual optimization problem. At each iteration of the interior point estimation method, the algorithmic process computes the direction in which to be proceeded, and then calculates the suitable step length along the search direction. In order to compute the search direction, interior point estimation method utilizes Newton method and a merit function to decide a step length that balances the conflicting situation of reducing the objective function with satisfying the constraints. The proposed computation method is investigated on some test problems and real world problems. Further numerical comparison with existing methods shows that the computation process is efficient.

Keywords: Interior point method, newton method, merit function

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I-CReST 2021:124-145 – Contribution of Nano Crumb Rubber to Hot-Mix and Warm-Mix Buton Rock Asphalt with used Waste Engine Oil

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ABSTRACT

The development of movement and the density of the population, has an impact on increasing transportation facilities and infrastructure. Rubber has been widely used in various fields, including as a raw material for vehicle tires. Crumb Rubber is one of the results of processing with used tire waste grated, this result has been used as an added asphalt material as an aggregate binder in the asphalt mixture. The problem with using Crumb Rubber is in the process of mixing with asphalt which cannot mix evenly so it requires certain technology for its use. In this research, nano-sized crumb rubber has been used which aims to facilitate the mixing process and increase the benefits of Crumb Rubber. The test was carried out using the Asphalt Concrete Wearing Course (ACWC) specification asphalt mixture for hot and warm mixtures of Buton rock asphalt with used waste engine oil. The research began with the process of modified asphalt to obtain the optimum asphalt content. Furthermore, the hot-mix and warm-mix asphalt was added with Nano Crumb Rubber (NCR) 0%, 0.6%, 1.2%, 2.4% and 4.8% to the asphalt content in the mixture by dry process. This addition was made during the process of mixing asphalt with aggregate. By using the Marshall Standard and Immersion test, it can be seen that there is an increase in the performance of the asphalt mixture with added material on the stability and susceptibility of the asphalt mixture. This research has shown the results of the effect of using waste tire rubber and waste engine oil on Buton rock asphalt in hot-mix asphalt and warm-mix asphalt.

Keywords: Nano crumb rubber; waste engine oil; moisture susceptibility; hot-mix ACWC; warm-mix ACWC

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I-CReST 2021:125-132 – Perception Measurement after Service Upgrade towards Feeder Ridership (Case Study: Mikrotrans Jakarta)

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ABSTRACT

The provision of feeder services is a major factor in the success of the public transport system, particularly in a metropolitan city. The public transport user in Jakarta tends to use a private motorcycle or online motorcycle taxi (ojek) in accessing the trunk line i.e. Mass Rapid Transit, Commuter Line, and Bus Rapid Transit. In-depth interviews with stated preferences are held in four urban villages in Cilandak and Kebayoran Baru Sub-district, South Jakarta. The study area was chosen because there are good trunk line services already, but poor first and last-mile services. Sample data of the study area was explored by maxLik package of RStudio. The study adopts willingness to pay approach in capturing the users' preference for the paratransit, which is known as mikrotrans feeder services. The study realizes that both price and accessibility are the issues in using paratransit for their first and last-mile trips. The study shows that the most influential variables to the choice of public transportation are fare, access time, and waiting time. It is revealed that male and female respondents are willing to pay for mikrotrans at a rate of IDR 7,700 and IDR 7,500 respectively to replace the ojek which costs IDR 13,000 after upgrading the mikrotrans fleet to a larger minibus, providing air-conditioner facilities, and scheduling the services with certainty. The considerable access time to reach the mikrotrans stop point from home for men and women are 11.25 minutes and 13.75 minutes respectively, or equal to 688.5 m and 684.75 m if we consider the walking speed of 1.02 m/s for men and 0.83 m/s for women. Price changes gives a more significant effect on female respondents. The male respondents desires the shorter access time for the mikrotrans.

Keywords: Feeder; mikrotrans; discrete choice model; willingness to pay; maximum log-likelihood

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I-CReST 2021:140-160 – Prototype of Greywater Treatment using Arduino

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ABSTRACT

Water is one of our most precious resources and as much as wanted it to be, it is not an infinite resource. Water not only supports human life and activities but also helps to maintain the ecological structure. Water was used for everyday household purposes, such as bathing, dishes, flushing toilets, and washing machine. These activities are producing greywater. This project aims to develop the prototype of greywater treatment to conserve water and convert contaminated water from the washing machine (grey water) into clean water. Arduino Uno, pH sensor, ultrasonic sensor, solenoid valve, servo motor, and potassium alum are components and materials used in this project. This project was achieved by chemical filtration of the greywater using Arduino Uno. The greywater will be collected and identify the pH level by using a pH sensor. The quantity of potassium alum inserted in greywater was based on the accumulated pH value. The potassium alum was inserted into the greywater to eliminate the detergent in that greywater. The pH sensor was used once again to ensure the greywater are eliminated. The treated water was stored in a tank so that it can be used for the irrigation system, while the ultrasonic sensor was used to determine the level of treated water in the tank.

Keywords: Greywater; Arduino Uno; pH sensor; ultrasonic sensor; potassium alum

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I-CReST 2021: 140-160

I-CReST 2021:145-139 – A Comparison Analysis Study to Analysis Requirements Elicitation for Arduino Development of IoT Application

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ABSTRACT

A rapid IoT application and its technology nowadays compels the need to analyse requirements elicitation to ensure the application product developed is consistent, correct and complete. However, improper elicit requirements lead to the failure of Arduino and IoT development. As a requirement engineers must know how to elicit the requirements before proceeding to software development. Therefore, this paper provides a gap of study for existing work requirements elicitation that exist in the market for commercial and for research purposes. We report our findings from review and analysis of different studies. The strengths and weaknesses of the features and utility are also presented to provide further understanding of the gaps and weaknesses of each research. We conclude that these researches are still immature and need further improvements.

Keywords: Requirement elicitation; arduino development; IoT application; software engineering

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I-CReST 2021:154-150 – Numerical Analysis for Prediction of Optimum Deformation of Long Tunnel Crown Stability with Respect to Excavation Depth

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ABSTRACT

Optimum stability of tunnel structures and ground movements are influenced by excavation, and these are issues of greater concerns as far as the stability of any underground structure is concern. The critical area of concerns is the stability of the tunnel crown which requires a special attention to ensure the stability of the tunnel structures and the safety of both man powers and the equipment's used. Before the advent of powerful design aids tools such as numerical analysis softwares, the tunnels design was primarily based on the experience. The use of numerical analysis softwares has made it possible to model and to predicts the actual site conditions to achieve a safer and economical designs. This study aims to understand and to predict the stability of the tunnel crown with respect to excavation depth by using Plaxis 2D v8 finite element analysis software and East Coast Railway, Malaysia tunnel project as a case study. The site condition was modelled and excavated at various tunnel depths of 0.5D,1.0D,1.5D,2.0D,2.5D to 3.0D which are around 7 m to 42 m depths, where D is the tunnel diameter. Based on the output results, both vertical and horizontal displacements show appreciable increases as the tunnel depths get deeper due to overburden. The result confirmed that, there is a clear relationship between the tunnel excavation depth and the stability of the tunnel crown.

Keywords: Underground Structure; Tunnel Crown Stability; Excavation; East Coast Railway

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I-CReST 2021:158-154 – The Effects of 10 User Interface (UI) Elements on Game Design Process

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ABSTRACT

This paper aims to seek and identify the relationships between 10 user interface (UI) elements in game design. To study the relationships, 50 games of varying designs and genres were selected and analyzed. The 10 elements in focus are connectivity, simplicity, directional, informative, interactivity, user-friendliness, comprehensiveness, continuity, personalization, and internal use. At the same time, it discusses how the game interface should follow the rules of the user interface to experience optimal gameplay and to derive valuable outcomes and user acceptance of the technology. To that end, the results showed how important it is to incorporate the 10 UI in the game designing process and facilitating higher learning outcomes through understanding and engagement.

Keywords: User interface; human computer interaction; user experiences; game experience

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I-CReST 2021:172-172 – Microcontroller-based Fertigation Farming Automation System

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ABSTRACT

Fertigation is a technique that combines plant fertigation and irrigation that becomes most used by the commercial farmers as well as home growers. However, fertigation systems required a constant water supply and the exact amount of nutrient that plant needed as it changes depending on their growth. The paper aims to research, create, built, test and implement an automatic mixing fertilizer by implementing Total Dissolved Solids (TDS) monitoring system according to the plant's nutrient level needed. It is also exploring the potential of optimum water usage by constructing an automatic timer for watering the plants according to the routine schedule. The system used an Arduino UNO R3 as a microcontroller. TDS sensor sense and measure the dissolved solids in a nutrient solution which gives information on the number of nutrients or impurities in TDS value. In an automatic watering system, the pump is running according to the timer set by a microcontroller. The frequency of distribution and the concentration of the solution depends on the weather conditions and the level of the crop. Hot weather requires more amount and frequency of fertilizer but in dilute solution. As such, this system has demonstrated a cost-effective, sustainable, eco-friendly, and safe environment as a result it will produce fresh and healthy plants that can give benefits to living things.

Keywords: Fertigation System; Arduino Microcontroller; Automation

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I-CReST 2021:174-175 – Development of Multipurpose In-House Tracking Device

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ABSTRACT

In-house tracking device is a crucially needed system in every household. The most important feature of in-house tracking device is the ability to ensure the safety of people inside the house by tracing any possible danger for example gas leakage, intrusion, fire, etc. In this project, our aim is to develop a simple in-house tracking device that can detect and notify the resident in the event of gas leakage. Not only that, but this device also has some additional features where it can track the commonly misplaced items around the house. In this project, the idea is simply by combining the RF module receiver, Bluetooth module, RF module transmitter and MQ-2 (gas sensor) by using Arduino Uno. This project use Atmega328P-PU to install all coding program that will give instructions to conduct this system properly. The receiver can also be connected with mobile phone via Bluetooth in case the transmitter does not function. Thus, by having this project, detection of gas leakage and misplaced items within the house area is made possible and hence the risk of losing important personal stuff can be avoided while at the same time ensuring the safety of everyone within the house.

Keywords: Atmega328p-pu, RF module, item tracing, MQ-2, gas sensor

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I-CReST 2021:178-179 – Engaging Students in Online Data Analytics Learning: Meaningful Learning in Higher Education

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ABSTRACT

The implementation of full online teaching learning in Higher Educational institutions invites tangible challenges to sustain students interest and engagement in the course, throughout the semester. Meaningful learning encourges students to develop concepts constructively in active learning that promote the integration of knowledge in daily life and potential career applications. Meaningful learning also applies a richer application capabilities in synchronous or asynchronous learning system. Visualization is a technic to support concept description and imagination and provide an additional affective layer for learning towards increased motivation. In this paper, a discussion of active involvement of students using visualization in online data analytics courses at tertiary level is presented. Based on functional context principles of visualised course content, recommendations to practitioners are discussed.

Keywords: online learning; meaningful learning; engagement

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I-CReST 2021:178-180 – Harnessing Students' Conceptual Understanding for Authentic Data Analytics Skills: Envisioning Malaysian Supply and Demand

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ABSTRACT

The dynamic environment in the Fourth Industrial Revolution led to the proliferation of information that data now has unattainable scale, speed of access and diversity. The emergence of Data Science driven by the need to deal with data systematically and intelligently puts modern statistical practice as an important weapon. In line with the development of Data Science, the rebranding of statistics education took place in institutions of higher learning that used new labels such as data analytics courses to replace the old name of statistics courses. The objective of this paper is to highlight the implementation of teaching and learning of data analytics on three issues namely the development of the field of data analytics in the country, the challenges of implementing data analytics teaching and learning at the tertiary level and the direction of data analytics teaching and learning. Based on the shift in the paradigm of data analytics pedagogy to practical and interactive integration of conceptual understandings, recommendations for the teaching and learning of data analytics are discussed.

Keywords: Authentic learning; conceptual understanding; data analytics

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I-CReST 2021:180-182– Development of LPG Gas Leakage Detection using ESP 32

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ABSTRACT

Liquefied Petroleum Gas (LPG) is a flammable gas commonly used in residential and industrial area. To ensure safety and health of our life, the utilization for gas detection's analysis is very important to improve healthy living environments. It will become a serious problem if not overcome with suitable possible solution. Gas leakage in household and industrial area causes many health issues, therefore LPG gas leakage detection using ESP 32 is developed. The LPG gas leakage detection using ESP 32 utilizes a gas sensor to detect gas leakages and the buzzer will make warning tones, when found a leakage and show "Gas Detected" on the Liquid Crystal Display (LCD). MQ2 gas sensor, ESP32 microcontroller, LCD and buzzer are the main hardware components use in this development. The main objectives of LPG gas leakage detection using ESP32 are to detect gas leakage by using MQ2, to alert people about the leakage with warning tones by using buzzer and to display the word "Gas Detected" on the screen of the LCD. Development of LPG gas leakage detection using ESP 32 will help society in residential and industrial area to minimize a risk from unintended leak. It is rare to happen but once it happened, it will take thousands of innocent lives.

Keywords: ESP32, MQ2 gas sensor, LCD, Buzzer, LPG

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I-CReST 2021:001-055 – Peranan Undang-undang Jenayah Syariah dalam Menangani Isu Gejala Sosial dalam Kalangan Masyarakat Islam di Malaysia

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ABSTRAK

Gejala sosial dalam kalangan masyarakat Islam di Malaysia sentiasa menjadi isu dan perhatian. Pelbagai perbuatan yang merujuk kepada gejala sosial antaranya membabitkan aktiviti seksual seperti persetubuhan luar nikah, melahirkan anak luar nikah, LGBT, pengambilan bahan memabukkan seperti dadah dan arak, berjudi, dan sebagainya. Sebagai sebuah negara yang mengamalkan sistem perundangan syariah dan sivil, maka umat Islam di Malaysia diwajibkan mematuhi kedua-dua perundangan tersebut. Perlembagaan Persekutuan telah memberikan kuasa kepada setiap negeri untuk mewujudkan undang-undang syariah bagi kegunaan masyarakat Islam di negeri tersebut. Peruntukan undang-undang jenayah syariah di Malaysia adalah berbeza bagi setiap negeri namun masih dalam lingkungan sumber utama yang sama iaitu al-Quran dan al-Sunnah. Walaupun telah terdapat pelbagai peruntukan undang-undang samada syariah dan sivil yang mengandungi peruntukan bagi menjaga perilaku dan tatasusila masyarakat khususnya orang Islam, namun isu melibatkan gejala sosial masyarakat Islam masih serius dan perlu diambil perhatian. Oleh yang demikian, penulisan ini akan membincangkan peranan peruntukan undang-undang jenayah syariah yang terdapat di setiap negeri di Malaysia dalam menyelesaikan isu gejala sosial yang berlaku dalam kalangan masyarakat Islam. Kajian ini akan menggunapakai metod kajian kualitatif dengan merujuk kepada bahan bercetak seperti artikel jurnal, thesis, buku akademik, Akta Kesalahan Jenayah Syariah (Wilayah Persekutuan) 1997, enakmen dan ordinan yang telah diwartakan serta beberapa kes terpilih yang telah diputuskan oleh mahkamah. Hasil daripada penulisan ini akan memberikan gambaran yang lebih jelas tentang kedudukan dan peranan peruntukan undang-undang jenayah syariah sedia ada, serta bagaimana ia sepatutnya mampu menyelesaikan isu gejala sosial yang berlaku. Beberapa cadangan penambahbaikan juga akan dikemukakan sebagai dapatan kepada penulisan.

Kata kunci: Gejala sosial; undang-undang jenayah syariah; Malaysia

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I-CReST 2021:003-151 – Comparison of Covid-19 Crisis Responses Between the United States and South Korea

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ABSTRACT

COVID-19 pandemic spreads through direct contact with an infected person, usually when they cough and sneeze. It also spreads through surfaces where the infected has touched as the virus has transferred. All social and business operations have come to a halt as countries urge citizens to stay inside to flatten the curve. During these troubling times, the government needs to step up to minimise the impact of the pandemic towards its economy and overall wellbeing of the citizens. This paper will compare the pandemic response between two countries: United States and South Korea. This paper will be discussing the actions taken by both countries as well as the comparisons between the approaches based on Coomb's crisis responses model. United States and South Korea provides a contrast in how countries are handling this situation. Although these countries have received their first cases of COVID-19 on the same day, South Korea has been more successful in containing and mitigating the effects of the outbreak. South Korea was able to minimize the spread of the COVID-19 virus outbreak by practicing transparency, providing maximum services to sufferers, providing adequate health equipment, and most importantly having a mass tests to stop the spread of the virus quickly. All in all, both the United States and South Korea has implemented various policies to mitigate the coronavirus outbreak. Similar approaches have been executed by both countries with different degrees of success. One of the lessons that can be taken from this comparison is that, for a containment plan or policy to be successful, it needs to be fully understood by the public. Transparency is the best strategy that can be implemented by governments in achieving their policy goals.

Keywords: COVID-19; health crisis; crisis responses; United States; South Korea

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I-CReST 2021:004-007 – Relationship Between Smartphone Addiction, Depression, and Level of Physical Activity among Undergraduate Students

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ABSTRACT

Broadly, smartphone addiction is one form of behavioral addiction, that may impact the mental and behavioral status especially among students and become one of the significant public health concerns. Physically, the overuse of smartphones was linked to higher risks of musculoskeletal pain, headache, blurred vision, and hearing impairment. Regretfully, lack of association between the mental health issues such as depression and physical activity among this population. Thus, this present study aims to determine the association between smartphone addiction, depression, and physical activity among undergraduate students. Cross-sectional, online survey-based research design used in this study at Faculty of Health Sciences, Universiti Teknologi Mara, Malaysia. A total of 151 undergraduate students have completed the questionnaires. Participants who met the selection criteria were invited to participate in the study by filling the questionnaire, attached with a consent form. Five tools for data collection: personal data sheet, Center for Epidemiological Studies Depression (CESD), the Smartphone Addiction Inventory-Short Form (SPAI-SF), and International Physical Activity Questionnaire - Short Form (IPAQ-SF). Data were analyzed using Statistical Package for Social Sciences (SPSS) version 27. There was a strong, positive correlation between smartphone addiction and depression ($r=0.313$, $p<0.01$). It is also found that smartphone addiction is significantly associated with a low level of physical activity ($r=-0.167$, $p<0.05$). In contrast, there is no significant association between depression and level of physical activity among university students in UiTM ($r=-0.06$, $p>0.05$). This can be concluded that being addicted to the smartphone leads the students to depression and reduced physical activity. Even though it is to be expected that depression can affect the level of physical activity, however, this study showed no significant correlation between depression and level of physical activity.

Keywords: Depression; physical activity; smartphone addiction; undergraduates

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I-CReST 2021:008-003 – The Effect of Compromising Factors on Career Choice Tendency: A Case of Malaysia Community College Graduates

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ABSTRACT

Compromise process in choosing careers that is not in line with the field of study is widely happening not only in Malaysia, but throughout the globe. This is because the reality of career selection is a very complicated challenges to be addressed especially by those who have just graduated. This study was conducted to gaze at predictive factors that influence community college graduates in compromising aspect during the job search processes. A total of 223 community college graduates involved in this study as respondents and data was analyzed using SPSS 23.0. Multiple Regression analysis was conducted to answer the research questions and normality test was also conducted to prove that the data obtained was normally distributed. Normality test analysis using skewness & kurtosis showed that both were valued between 1.96 and +1.96. Hence, this data has a normal distribution as the value of skewness = -0.894 and the value of kurtosis = 1.794. Further Multiple Regression analysis has shown that there is a significant involvement of predictive factors in compromising factors among community college graduates. Four (4) factors namely Lack of Prospects ($\beta = 0.134$, $p = 0.03$), Personality Imbalance ($\beta = 0.182$; $p = 0.03$), Low Return ($\beta = 0.297$; $p = 0.00$) and Interest Changing ($\beta = 0.264$; $p = 0.00$) are significant predictors that play the roles in influencing career compromising. Another factor that is Obstacle ($\beta = 0.02$; $p = 0.95$) is proven not to be a significant predictor in influencing the tendency to compromise among community college graduates. The results of this study could be used by community colleges' management and lecturers to strategically plan and review their curriculum and the result could also serve as a guide to their graduates for future career decisions. It is also recommended that the top management of community colleges add subjects of relevant soft skills to equip the students with multiple skills to face the reality of working world.

Keywords: Compromise; career; community college

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I-CReST 2021: 008-003

I-CReST 2021:011-105 – Bakery Products: Knowledge Transfer to Improve the Economic Status of Selected Disabled from Community Rehabilitation Organizations (PPDK)

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ABSTRACT

The physical and mental health deficiencies of the disabled cause them to be limited in acquiring knowledge compared to normal people. Many of them cannot afford to be self-sufficient without the concern and help of the community in shaping their capabilities. This project aims to build the knowledge and skills of people with disabilities (PWD) through training programs related to bakery products and measure the effectiveness of such training. First of all, health screening was conducted to select only participants who are healthy to follow the training workshops. Three series of workshops were conducted on 10 selected PWD to gain knowledge, preparation skills and product quality skills related to four bakery products, namely pizza bread, red bean bun, "paung" bread (plain bun) and sausage bread. After undergoing three cycles of the workshops, the knowledge level of the trainees increased significantly from 74% (workshop 1) to 96% (workshop 3). Level of preparation skill on bakery production also significantly increased ($p<0.05$) from able to prepare the product with some help to able to prepare the bakery product almost by themselves. While for product quality skills their level increased significantly ($p<0.05$) from able to produce the final product with an average quality to able to produce the final product with the very good quality after the workshop. This project shows that PWD are able to acquire skills but require a kind of careful planning and implementation that should be specifically designed according to their level of learning abilities.

Keywords: Bakery products; PWD; training program; Community Rehabilitation Organization; module development

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I-CReST 2021:012-004 – The Influence of Gender Factors on Cyber Bullying Behavior in Social Media

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ABSTRACT

Malaysia is the 9th country to record the most active use of social media in the world, which is almost 80 % of its total population. The explosion of information and communication technology (ICT) has greatly facilitated the life of society. However, there are a handful of parties who misuse cyber platforms for criminal purposes such as cyber bullying. Cyber bullying is increasingly becoming a culture among netizens by making an individual as a source of jokes aimed at gaining attention and pleasure on social media. On that basis, the government has introduced the Communications and Multimedia Act 1998 to monitor offenses that exist on social media, especially involving digital communications. Thus, this study aims to analyze the influence of gender factors on cyber bullying behavior in social media. The study was conducted quantitatively using a survey design. A set of questionnaires was distributed to 436 respondents in Melaka via Google Form, and then analyzed through SPSS software. The T-Test concluded significant differences in the mean scores of cyberbullying behaviors based on gender among the respondents. The mean value for males is 2.08 while the mean value for females is 1.64. ($F = 4,628$); ($p < 0.05$). Thus, all parties need to work together to create a safe and harmonious digital ecosystem, while having self -control in social interaction, especially in cyber platforms.

Keywords: Gender; internet; cyber bullying; digital media; communication

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I-CReST 2021:014-005 – Local Community Engagement in Planning for Urban Park

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ABSTRACT

Urban community are facing numerous pressures due to the long working hours, expected heavy traffics and high living cost. In order to improve people quality of life, urban park believed to play a critical role in providing a place for urban community to meet recreational needs and demands among local community. A successful urban park should be able to meet people needs and demands to deliver health, recreational and social benefits towards local community. Therefore, the voice of local community should be included in the urban park planning and management strategies. Managers and planners may have their own goal in developing urban park but the process may in vain if the voice of local community not were considered. This study aimed to assess the viewpoints among local community towards the role of urban park in improving quality of life. World Health Organization (WHO) developed WHOQOL (World Health Organization Quality of Life) tool to measure individual's perception towards physical, environmental, psychological and social relationship in life. WHOQOL dimensions used to cross tab with the usage pattern of urban park among respondents and analyse on how urban park usage pattern influence people quality of life. Survey questionnaires consisting questions on WHOQOL dimensions in assessing the perception of respondents were distributed to the 385 respondents. Data were analysed using SPPSS software and cross tabulation were generated to achieve the best result. Spending quality time with family members and recreational needs are two major factors that motivate respondents to go to urban park. The frequency of visits to urban park believed to influence the people quality of life. This study provides real data on the viewpoints of local community and information for urban park planner and managers in initiating the urban park development to maximise the benefits of urban park towards the local community.

Keywords: Urban park planning; community engagement; quality of life

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I-CReST 2021:015-006 – The Relationship between Student Involvement in Club Society and Student Performance

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ABSTRACT

The purpose of this study was to analyse the effect of participating in club societies on students' performance of undergraduate students in Universiti Teknologi MARA (UiTM) Seremban 3 Campus. Prior research on this topic has yielded contradictory results and the authors seek to provide a more rounded understanding of these mixed findings. The objective of this study is to investigate the relationships between student involvement in club society (i.e., type of club society, degree of student involvement & frequency of student involvement in club society) and university student performance. This study has adopted a stratified random sampling and a cross-sectional online-based survey design. The final and valid data of 310 students were analysed using Chi-Square Independence Test. The results revealed that both degree of student involvement and frequency of student involvement in club society were significantly influence student performance. On other hand, the type of club society was not significantly influence student performance. The overall results from this research are expected to contribute to the current literature on student performance. While many studies were represented by student leader's evaluation, this study contributes to the current literature by considering both student leaders and general members of club society. This research presents imperative insights for the university management to continuously promoting club society activities on the campus.

Keywords: Club society; type of club society; degree of student involvement; frequency of student involvement; student performance

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I-CReST 2021:019-009 – Differences in Health-related Quality of Life between Students and Staff during a COVID-19 Pandemic Quarantine in Faculty of Sport Science and Recreation

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ABSTRACT

The COVID-19 pandemic has placed students and staff in stressful circumstances with the new norm that applied in the University. Potentially, health-related quality of life (HRQOL) among students and staff was affected. Therefore, this study aims to know about the impact of the COVID-19 pandemic on HRQOL among students and staff of the Faculty of Sport Science and Recreation. This study was a non-experimental causal comparative design which involves full time undergraduate students and staff. Subjects (n=280) for students and (n= 52) for staff was recruited. An online- based survey was developed using SF-36 questionnaires were blasted through google form via WhatsApp application. A t-test was used to analyse the difference of HRQOL between students and staff. The student's mean score for SF-36 was 108 ± 15.58 and staff was 58.08 ± 7.27. The finding showed there is a significant difference on HRQOL between students and staff p = .000. Finding demonstrated that student's HRQOL is not affected while staff HRQOL was highly affected during the COVID-19 pandemic. There is an urgent need to improve HRQOL among staff in the Faculty of Sport Science and Recreation.

Keywords: Covid-19; students; staff; health-related quality of life; Faculty of Sport Science and Recreation

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I-CReST 2021:020-072 – The Impact on COVID-19 on the Mental Health of Students in Private Education Sectors in Malaysia

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ABSTRACT

The purpose of this paper is to determine the impact of Corona virus diseases (COVID-19) towards the students' mental health-and how it has been affecting the students' performance especially students in private education sector. The ongoing COVID-19 pandemic has caused major disruptions in several field such as economy, labour, health and business industry. In educational field, teaching and learning, continuous assessment, examination are largely affected as it have been postpone and delayed and some of the final examination marks were graded based on previous continuous assessment. These problems have caused several issues that affect the mental health of the students especially private education (IPTS) since most of the students paid an expensive tuition fees to their respective colleges. This study was conducted through online survey by recruiting 100 students from four private education colleges and universities in Malaysia. Based on the study, the most affected student due to COVID-19 is highest for private student in Selangor followed by Johor, Melaka and Kedah. Through regression and correlation methods, the respondents from Selangor showed highest level of stress while the respondent from Negeri Sembilan showed the lowest level of stress. These findings indicate that the mental health of students are varies across different regions. Therefore, it is suggested that all the higher education provider (HEP) through student support and student representative council to continue the surveillance on the students' mental health and to give full support for those in need. The college taskforce should be continuously provided especially for those students from B40 group.

Keywords: Corona virus (covid-19); education; students; economy

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I-CReST 2021:021-026 – Perception, Knowledge and Awareness towards the Attitude on Organ Donation among Staffs in Public University

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ABSTRACT

Organ donation is an act of people give or transplant their organs sincerely and not based on monetary value. However, the previous studies show that Malaysia is one of the countries which has a lower rate of organ and tissue donation compared to other countries in the world. Based on previous studies, negative perception, poor knowledge and lack of awareness are the reasons for the problem occurred. Hence, this study focuses on identifying the significant and direct effect of perception, knowledge and awareness towards the attitude on organ donation. This study applied a cross-sectional study on 249 staffs consisting academic and non- academic staffs in one public university in Kota Bharu and the sample were chosen by using Simple Random Sampling. In order to collect the data, self-administered questionnaire was used. The statistical analysis that have been applied to achieve the objectives were Structural Equation Modelling (SEM) which is AMOS version 23. In conclusion, only perception has a significant and direct effect towards the attitude on organ donation. However, knowledge and awareness showed no significant and direct effect towards the attitude on organ donation. This study suggested several ways to build positive perception thus increase positive attitude by doing campaign, teach and encourage children about organ donation and give talk on the importance of donating organ.

Keywords: Attitude; knowledge; organ donation; perception; structural equation modelling

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I-CReST 2021:023-012 – Design Process Criteria's for The Effective Museum Exhibition Design in Malaysia

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ABSTRACT

Nowadays, museums are struggling to create and present their contents by focusing on the interactive relationship with museum visitors. Therefore, in order to meet the needs of museum visitors, a workable design process is a primary part in the development of high-quality museum exhibitions. Towards these, it would be valuable for museum itself to generate a workable design method and process which allows designers and also curators to undertake the design work in the context of museum exhibition project. This paper moreover is concerned with the systematic design criteria for effective museum exhibition. With this in mind and based on an empirical analysis on museum exhibitions in Malaysia, the study was conducted to address the main objectives which identifying the characteristics of museum exhibition design and further establishing the design criteria by understanding the design process. This paper finally suggests a systematic design process with specific aspects of detailed design criteria that can carry out for effective museum exhibition design.

Keywords: Museum visitors; museum exhibitions; design process

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I-CReST 2021:028-077 – Volatile Organic Key Indicators of Porcine Tissue and Diesel in Forensic Fire Analysis

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ABSTRACT

Burned human remains are difficult to identify, particularly when identifiable structures such as the skull and femur are missing. Therefore, the identification of volatile organic key indicators released from the burning of porcine tissue (in extension, human tissue) will be immensely helpful in identifying burnt human remains when it is not physically visible. This study aims to identify volatile key indicators released from the combined burning of porcine bone with diesel in an outdoor setting. Porcine bone was burned with diesel for different durations (3 minutes to 13 minutes) in an outdoor setting. After the burning proses, an activated carbon tablet was fixed to the tin which was then incubated in the oven for 16 hours at 80˚C for passive headspace adsorption to occur. After incubation, the tablet was desorped and analysed using the GC-MS. Unburnt diesel samples and burnt porcine bone samples were also analysed individually. Results revealed that the number of volatiles detected decreased as the burning duration increased. It was also found that the volatile organic key indicators of porcine bone were not distinguishable and could not be isolated from those of diesel in the combined burning. However, 21 distinctive volatiles were detected in the combined burning which were not detected in both unburnt diesel and burnt porcine bones. This work was able to highlight the influence of burning duration on the detection of volatiles as well the different volatiles generated in the combined burning of porcine bone and diesel.

Keywords: Diesel; porcine bones; GC-MS; activated carbon tablet; key volatile indicators

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I-CReST 2021:032-017 – The Integration of Digital Storytelling with Information Visualisation on Exhibition Design in Museums: A Primary Inquiry

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ABSTRACT

Various research have recognised that the museum plays a vital role in opening the path for broader learning experience while expanding knowledge to the general public. Recent technological advances have influenced many museum administrations developed strong interests in integrating cutting-edge technologies in progressing along with the leisure industries. Nevertheless, there are contrasting views between the Malaysian and Western perspectives on the exhibition approaches and for visitors' learning experience. Therefore, it is essential to identify emerging issues on museum exhibition design to integrate digital storytelling with information visualisation. Through adopting a qualitative method and descriptive-exploratory approach, this study revealed a knowledge gap based on literature review over a five-year period. The major contrasting view between the Malaysian and Western perspective is on the effective and meaningful ideas in creating extensive and highly developed future exhibition. Findings from this study can be used to formulate a digital storytelling approach with information visualisation in museum exhibition design.

Keywords: Digital storytelling; information visualisation; museum exhibition

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I-CReST 2021:037-018 – Conceptual of Gamification Module in learning Braille Quran Code with engaging of 3D Printed reel-to-reel Cassette for Visually Impaired Children

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ABSTRACT

Al-Quran is the holy book for Muslims and inasmuch as its prestige, it is learned and memorized by millions of Muslims worldwide in the same form as it was revealed. However, there is a challenge facing those who are visually impaired to learn and memorize al-Quran. Imprint paper of braille Quran embrace of tremendous characters and code resulting a thick book and printed in several volumes. Meanwhile, word board game is a three-dimensional scoring boardgames that involves extraordinary word recognition experience. This gamification approach manages to empower visually impaired into learning braille Quran letter (Hijaiyyah) in a fun way. Therefore, this study aims to implement the concept of word board game via imprinted Hijaiyyah tiles through a designated module containing braille class, structuring word, game activity and assessment for learning Quran. Consequently, word game for vocabulary improvement was integrated with the construction of 3D printed reel-to-reel cassette. The braille code was manually printed on a roll of kraft paper and used it during recitation. This cassette for braille Quran can be used as teaching aids for visually impaired children. Ultimately this engaging word board game is perfect for blind and sighted players to enjoy together while develop vocabulary and Quran recitation with the addition of 3D printed reel-to-reel cassette for Braille Quran for bringing users interest in learning al-Quran which was produced for easy touch and memorize at low cost.

Keywords: 3D printing; blind; Braille code; Integration Naqli and Aqli (INAQ); word game

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I-CReST 2021:040-020 – Biomedical Students' Awareness and Preparedness on the Challenges of Industry 4.0 Challenges

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ABSTRACT

The Fourth Industrial Revolution (4IR) started in early 2000s and its exponential technologies propelled the social and education sectors forward and creates transformation in higher education curriculum. The substantial changes allow students to rapidly develop in emerging disciplines. Adaptability in learning and learning are premium assets and the present-day academic skillsets days are numbered. This study was carried out to establish the level of awareness of Year 1 (Y1) and Year 4 (Y4) students and to compare their IR4.0 readiness. Simple random sampling was used in selecting 65 Y1 students and 35 Y4 students as subjects. The study found that only 22% of Y1 and 34% of Y4 students were aware of 4IR but were not clear of how it would impact on their expected graduate skills or graduate work readiness when they graduated. The Y4 students were found to comparatively possessed more skills in technology applications the Y1 students. The Biomedical Science Program needs to continue embedding the 'demanded skills' by todays employers in order to better prepare graduates with marketability quality, hence ensuring the program's graduate work readiness in the near future.

Keywords: Graduate work readiness; fourth Industrial Revolution; biomedical science

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I-CReST 2021:043-023 – Current Trends in Malaysian's Green Purchasing Behaviour in Supporting Green Economy Movement

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ABSTRACT

The Malaysian 2021 Budget reflects the government's commitment to spurring the green economy with the emphasis to drive public awareness towards environmental conservation agenda despite the Covid-19 pandemic. However, it was recognized that contradictions exist between attitude and customer behavior balancing between lifestyle and environmental issues. Thus, the inconsistencies had created gaps between the two consumer interaction styles which would not be beneficial for market institutions and their customers. Hence, it is important to investigate how consumers interact with the representatives of marketing institutions with the customers' environmental attitude lifestyle to understand and narrow the green purchasing behavior gap for the survival of the business organizations and the satisfaction of the consumers. Therefore, for this study, a newly developed measurement tool, Environmental Quality Awareness (EQA) was utilized to test the assumptions and to recommend appropriate solutions to narrow the attitude-behavior gap. The research collected 321 Malaysian respondents who are aware of and used household technology products related to the green economy. The data was analyzed using Partial Least Square - Structural Equation Modelling (PLS-SEM) method. The result indicated that 70% of the EQA framework integrated constructs are supported by the relationship of environmental quality awareness and environmental attitude towards green purchasing. The remainder of 30% of the framework shows a non-supportive hypothesis on the relationship of environmental quality awareness towards green purchasing. Hence, the study indicates that when people are aware of environmental quality and possess an environmental attitude towards sustainable performance, they will eventually lead to trust and purchase green products, thus hence supporting the green economy drive.

Keywords: Environmental quality awareness; environmental attitude green economy; green purchasing

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I-CReST 2021:050-029 – Graduate Employability Skills: Applying Delphi Technique in Exploring Future Learning Skills

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ABSTRACT

This article explains the development of checklist which is related with future of vocational learning skills by using the Delphi techniques. The Delphi technique provides the opportunity for researchers to gather input from participants without requiring them to work face-to-face. The process is used to find consensus among experts who have different views and perspectives. The Delphi technique enables group problem-solving using an iterative process of problem definition, discussion, feedback, and revisions. This paper will discuss the basics of the Delphi techniques, its application potential, the selection of expert panels and the means on how consensus can be reached among the participants using examples of our past research using the technique. This article also provides Rasch analysis to find reliability of checklist. The value of realibility must achieve 0.71 – 0.99 in good fit. The findings that the researcher found for the future of vocational learning skills was the Pluralism Skill, Work Based Learning, Professional Competencies, Entrepreneurship Education, Teaching and Leaning – based Streaming Video, Visualization Skill, Technology Skill Augmented Reality, Technology Skill Virtual Reality, Technology Skill Microcontroller, Information Technology Skill and Collaboration between Researcher and Education Service Provider. The researcher expected that this study will encourage undergraduates to develop their future learning skills concerning with demand by the industries and also adapt these skills through the curriculum structure by educational institutions which is that will be benefit to students for their future career.

Keywords: *Delphi technique; graduates' employability; TVET; future learning skills; Rasch analysis*

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I-CReST 2021:052-040 – Empirical Appraisal on Logo as a Symbolism of Product Brand Identity Through Element, Meaning and Function: A Conceptual Framework

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ABSTRACT

Brand identity is the collection of all elements that a company should create to portray the right image to its consumer. Therefore, the definition of brand identity is different from "brand image" and "branding," even though these terms are sometimes treated as interchangeable. Meanwhile, a brand identity describes how these foundational elements are communicated that usually include a brand name, a logo, a tagline or a slogan, colours and graphic styles. And these elements can be explained by the context of art and design in which a brand identity is being discussed from the perspective of design expert. Therefore, in Malaysia, there was a lack of proficiency in branding and marketing across many Malaysian brands. Consequently, based on this consequence it shown the requirement of study on the logo design by looking on the elements, principles and characteristics, and how it been designed and further should play as a symbolism of brand identity for any product performances.

Keywords: Brand identity; logo; symbolism; local brand

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I-CReST 2021: 052-040

I-CReST 2021:056-042 – Emotional and academic stress due to sextortion via social media bullying in educational sector in Ghana: A systematic Review

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ABSTRACT

Previous studies demonstrate the long-term effects of sextortion against female students in educational sectors. With a few exceptions from Asia, however, the literature on sextortion and cyberbullying among students and lecturers is largely limited to North America and Europe. To date, contributions from sub-Saharan Africa remain scant. Sexual harassment and emotional abuse via sextortion against women is a global problem; it is therefore not unique to Ghana. This study provides a systematic review of sextortion (sexual corruption) and emotional abuse via social media bullying in the educational sectors of Ghana. Domestic and family violence against women are endemic in Ghana. Evidence suggests there is a growing trend of Ghanaian female students experiencing physical, sexual, emotional, or economic intimate partner violence. The review methods are focused on the results of available literature and social media reports (newspapers, blogs) to address fundamental issues such as sexual corruption in the education sector, legal action, and challenges that the victims of sextortion face in the legal system. Literature dated from January 1999 until January 2020 were identified by searching the appropriate keywords in international databases such as MEDLINE Web of Science, PubMed, Scopus, Cochrane, and Google Scholar. The interesting findings of this research shows that the use of Social Media (via WhatsApp, Facebook, Instagram) as a tool is the cause of manipulating female student's feelings and emotions by bullying them in an emotional way that eventually affects their well-being. Evidence suggests that social media is among the most important factors that contribute to cyberbullying of vulnerable female students in Ghana. This review shows that the wrong portray of social media and emotional abuse via any form of platform on social media is very deadly and many victims have lost their lives because they did not speak out.

Keywords: Emotional abuse; education; sextortion; social media; Ghana

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I-CReST 2021: 056-042

I-CReST 2021:058-036 – Exploring the Status of Indigenous Knowledge of Minangkabau Community in Agam District, Indonesia: Traditional Leaders' Perspective

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ABSTRACT

Indigenous knowledge is the knowledge found in local communities that consists of a set of experiences that have been accumulated and provide information that shows the local community or local culture's behavioral characteristics. As a result of a variety of factors, such information is at risk of being obliterated, including lack of interest from younger generations and low life expectancy, where knowledgeable individuals die before passing it to the next generation. Therefore, this paper aims to look at the perspective of traditional leaders in the status of indigenous knowledge. The data collection method used in this research is the interview. The results of this study indicate that the Minangkabau community in Agam Regency, Indonesia knows of their customs, cultures, and habits that are different from the general public. The investigation was carried out by involving traditional leaders related to the dimensions of indigenous knowledge: (1) The environmental dimension of local knowledge through *Lubuak Larangan* is a type of community custom and culture that involves the preservation of river and lake areas within specific territorial borders and rules; (2) dimensions of local values, *Adat Basandi Syarak, Syarak Basandi Kitabullah* is the Minangkabau people's philosophy; (3) dimensions of local abilities are employed to ensure survival by farming, livestock or industry; (4) dimensions of local resources: utilization of natural resources. The Minangkabau community divided its forest into two categories prohibited forest and forest that is cultivated or used for economic interests and family needs; (5) the local decision-making mechanism's dimensions. The democratic system is used in *Bodi Caniago*, while the authoritarian system is used in *Koto Piliang* and; (6) local group solidarity dimensions: religious rituals (*balimau, khatam Al-Quran*, etc.), traditional ceremonies (traditional wedding ceremony, etc.), arts (*randai, saluang*, etc.), and cooperation.

Keywords: Indigenous knowledge; status of indigenous knowledge; Minangkabau community; traditional leaders

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I-CReST 2021: 058-036

I-CReST 2021:059-038 – Students' Readiness, Performance, and Intention to Continue Online Learning during Covid-19 Pandemic

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ABSTRACT

The covid-19 pandemic has affected teaching and learning in various ways. One of the most challenging transformations is the shift from traditional in-class learning to online learning. Without early preparation, students and academicians are forced to teach and learn in front of the screen instead of facing each other in class. This has affected education process in many ways including the pedagogical content, instructional materials, and grading method. Thus, this study investigates students' readiness, performance and intention to continue learning through online platform during this covid-19 pandemic. 305 usable questionnaires were collected among undergraduate and postgraduate students at the Universiti Kebangsaan Malaysia. Data was analysed using descriptive statistics. The findings in general suggest that students are somewhat ready to study using online platform. Students' performance are moderate, while the intention to continue online learning is also moderate. The study in general provides understanding on the challenges faced by students in online learning especially in the situation of covid-19 pandemic.

Keywords: Online learning; readiness; performance; intention; covid-19

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I-CReST 2021:061-041 – Penghayatan Sejarah dalam kalangan Generasi Muda: Kajian ke atas Mahasiswa Sarjana Muda

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ABSTRAK

Ibnu Khaldun dalam karangan terkemuka beliau, Mukadimah menegaskan bahawa keruntuhan sesebuah tamadun oleh generasi keempat berpunca daripada kepudaran semangat kekitaan akibat daripada jarak masa yang telah terlalu jauh dengan sejarah kedaulatan bangsanya. Justeru, makalah ini membincangkan sejauh mana tahap penghayatan sejarah dalam kalangan generasi muda pelbagai etnik terutamanya mahasiswa universiti yang bakal mewarisi kepimpinan negara. Oleh yang demikian, satu kajian telah dijalankan ke atas 407 mahasiswa Ijazah Sarjana Muda dari Universiti Malaya (UM), Universiti Putra Malaysia (UPM), Universiti Selangor (UNISEL) dan Universiti Multimedia (MMU) dengan menggunakan kaedah Pensampelan Rawak Berstrata. Hasil dapatan menunjukkan bahawa tahap penghayatan sejarah mahasiswa sarjana muda pelbagai etnik adalah sederhana. Implikasinya, penghayatan sejarah dalam kalangan generasi muda semakin terhakis dan ini memberi petunjuk bahawa kekuatan semangat kekitaan sebagai satu bangsa Malaysia mudah tercalar terutamanya dalam era globalisasi kini.

Keywords: Penghayatan sejarah; semangat kekitaan; ketamadunan; Institusi Pengajian Tinggi; Ibnu Khaldun

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I-CReST 2021: 061-041

I-CReST 2021:062-043 – Penerimaan pelajar USIM terhadap Pembelajaran dalam Talian Impak Covid-19

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ABSTRAK

Pandemik Covid-19 yang melanda seluruh dunia termasuk Malaysia telah memberi impak yang besar dalam kehidupan manusia termasuk pelajar Universiti. Pelaksanaan Perintah Kawalan Pergerakan (PKP) telah menyebabkan pengajaran dan pembelajaran perlu dilakukan secara atas talian. Maka, tujuan kajian ini adalah untuk mengkaji penerimaan pelajar Universiti Sains Islam Malaysia terhadap pembelajaran atas talian kesan dari pandemik covid-19. Kajian ini menggunakan pendekatan kuantitatif secara keratan rentas terhadap 460 orang pelajar USIM tahun pertama pengajian. Instrumen kajian menggunakan soal selidik Mariia Rizun (2020) yang diambil dari instrumen General Extended Technology Acceptance Model for E-Learning (GETAMEL). Hasil kajian menunjukkan pelajar mempunyai akses internet, namun penerimaan tehadap pembelajaran atas talian adalah sederhana. Dapatan ini menunjukkan pelajar Universiti tidak terlalu menerima dan tidak juga menolak pembelajaran atas talian ketika pandemik covid-19. Ternyata hakikatnya, penerimaan pelajar terhadap pembelajaran atas talian tidak seperti yang dibayangkan ketika sebelum pandemik covid-19 melanda masyarakat.

Kata kunci: PdPR; atas talian; penerimaan pelajar universiti; covid-19

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I-CReST 2021:063-047 – A Systematic Review Analysis on Module Development: Systematic Review Analysis of Module Development in Technical Teaching and Learning in Technical and Vocational Education Systems

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ABSTRACT

The issue of module development in teaching and learning needs to be emphasized in ensuring the continuity of achievement of the education system in Malaysia in accordance with the current situation of the country and the world, namely the Covid-19 pandemic situation which has forced educators to diversify teaching and learning methods. The development of modules in teaching and learning is important to ensure student achievement in the course or field being pursued. The systematic development of specific modules is also important for the teaching staff in ensuring that the teaching and learning process takes place at the best level. Therefore, this research article aims to analyze the relevant literature on issues related to the importance of module development in teaching and learning systems. Thus, the search effort produced a total of 15 articles that will be systematically analyzed. This study successfully summarizes the importance of module development in ensuring the continuity of the teaching and learning process which in turn will affect student achievement. Finally, some suggestions and views are presented at the end of this research for the reference of future scholars.

Keywords: Module development; teaching and learning; teaching staff; student achievement

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I-CReST 2021: 063-047

I-CReST 2021:070-054 – The Effectiveness of Hijrah Selangor Programme in Kuala Selangor District

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ABSTRACT

This study examines on how respondents' perception and achievement contribute to the effectiveness of Hijrah Selangor programme in Kuala Selangor district. To examine this, a sampling consisting of 140 respondents, who reside and operate their businesses in Kuala Selangor district were given a set of questionnaires to gather the information. The focus group discussion which involve 6 respondents from various business sector in Hijrah Selangor micro-credit scheme also carried out for strengthening the data by using open-ended interview method. Several different statistical analyses are conducted with the main analysis being a descriptive analysis. The results indicate that all studied variables; personal asset, social mobility and business have a positive relationship with the effectiveness of Hijrah Selangor. The increase of household monthly income has the most significant relationship and the highest effect on the effectiveness of Hijrah Selangor which help the recipients improve their lifestyle. They are able to expand their business, operating cost and capital. This study proves that Hijrah Selangor programmes is effective in expanding the B40 group in Kuala Selangor district. Thus, Hijrah Selangor programme should be given a main agenda in the State Government's as Selangor known as the most progressive country in Malaysia.

Keywords: Economy; B40 group; effectiveness; micro-credit scheme; Hijrah Selangor programme

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I-CReST 2021:073-057 – Digital Literacy Skill among Special Need Students in Digital Age: Teachers' Perspectives

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ABSTRACT

21st century learning requires students to be equipped with learning skills, knowledge, media literacy and also life skills. In order to achieve these skills, the school curricular embedded the use of technology tools and strategies to provide teaching and learning strategies for learners including Special Needs Students (SNS). Studies found that students struggle to cope with their studies in the digital learning environment due to their limited digital literacy skills. Digital Literacy skills (DLS) are essential to develop as independent learners in the digital age and have shown that DLS have demonstrated a positive influence on student performance. However, limited studies have been conducted on SNS. This paper aims to discuss the concept of DLS to support teaching and learning strategies for SNS in Malaysia from teachers' perspectives. The digital literacy skills model consists of cognitive, technology and ethical as the basic guideline to explore the digital literacy skills for SNS. The study was conducted in one selected Special Education Secondary school in Malaysia and used qualitative research method approach for data collection by interviewed five teachers who taught a Desktop Publishing Classes. From the findings, teachers highlighted that SNS aware of ethical domain and apply it in their learning process, however still the guidance for technology and cognitive domain to support their learning in digital age. It is hoped that policy makers and the Ministry of Education will focus on learning strategies embedded with DLS among SNS as they needed to be equipped with cognitive, technology and ethical skills for the 21st century learning.

Keywords: Digital literacy skills; special education; special needs students; learning strategies

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I-CReST 2021:075-060 – Innovation During Teaching Practicum: Building a Rubric for Assessment

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ABSTRACT

Given that the landscape of education has undergone a tremendous shift within the past decade due to the advent of technology and world economy, it is of utmost importance that the practicum experience provides the platform for future teachers to be ready for the challenges of the education transformation. Among the fundamental aspects during practicum training is the inclusion of innovation in the classroom, however the guideline as to how innovation during practicum should be assessed has not been clearly stated. In this paper, the authors describe an assessment rubric proposed to be used for assessing innovation during teaching practicum. The rubric consisted of constructs gathered from documents review and analysis, which aligned learning and innovation into the classroom. The documents include the Malaysia Education Blueprint 2013-2025 (Pre-school to post-secondary schools) (2013)), the Curriculum and Assessment Standard Document (2017), and Ying's (2013) 'pedagogical innovations in higher education'. The analysis looked at the alignment between learning and innovation constructs. The outcome of the document analysis is a proposed rubric for assessing innovation. An inter-rater reliability process was completed after the rubric was proposed. They involved two experts in the field of teaching and assessment who reviewed the proposed rubric. Feedback received by the experts were taken into consideration for improvement to the rubric. Through this document analysis and design of a rubric to assess innovation, it is hoped that it could provide an assessment guide for teachers to understand 'innovation'. This would hopefully guide teacher-trainees and teacher-trainers to understand the criteria for assessing 'innovation'. The rubric brings contribution to the practicum experience in assessing innovative pedagogy so that it aligns with the learning objectives, as well as the national content standard and learning standard, and assessment, as outlined by the Ministry of Education, Malaysia.

Keywords: Teaching practicum; innovation; assessment, education, teaching and learning

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I-CReST 2021:077-065 – Measuring Customer-based Brand Equity of Sabah SME Food Brands: The Moderating Role of Brand Credibility

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ABSTRACT

In Malaysia, the primary problem facing small and medium-sized enterprises (SMEs) is the lack of knowledge of marketing technology, branding, customer loyalty. Leading packaged food companies are putting good strategies to draw consumers' attention by innovating new or premium packaging and leveraging brand image leaving SMEs behind, making them harder to gain market share and customer interest. Hence, this study seeks to examine the effect of customer-based brand equity (CBBE) model on Sabah SMEs food brands in Sabah. Also, this study investigates the moderating role of brand credibility on CBBE model. For the purpose of this study, the author distributed an online survey to 250 Sabahan residents to evaluate different Sabah SMEs food brands. The collected data is further analysed in Smart PLS 3.2.8. The findings of this paper suggest that brand awareness, brand association and perceived quality do not influence Sabahan residents on Sabah SMEs food brands. The results indicate that Sabahan customer brand loyalty relates to perceived brand equity of Sabah SMEs food brands. The Sabahan SMEs food brands need to concentrate on creating strong brand image to uplift and attract more Sabahan consumers. The novelty of this study lies in contribution to the practitioners specifically SME and the proposed moderating role of brand credibility.

Keywords: SME; Customer-based Brand Equity; Sabah; brand loyalty; brand credibility

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I-CReST 2021: 077-065

I-CReST 2021:078-063 – Learning During Pandemic Covid-19; Right to Education Fulfilled?

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ABSTRACT

The purpose of this paper is to discuss the students' rights to education during the pandemic and study whether there are sufficient laws and efforts to protect the rights of children and adolescents at a national and international level. The aim of this paper is to compare different approaches from several countries in responding to the pandemic pertaining to the education sector to prepare for future emergencies that will eventually affect the education field. Qualitative method will be used in studying the matter.

Keywords: Rights to education; children and adolescents; pandemic Covid-19; legal framework; online learning

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I-CReST 2021:078-064 – Right to Education: Don't Refugee Children Deserve it too?

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ABSTRACT

The purpose of this study is to look at the level of education given to refugee children by comparing a few jurisdictions. A brief analysis of challenges and factors that prevent the refugees from getting access to their right for education in some countries, as well as related issues and case law will be listed down. The paper will also investigate Malaysian issues concerning refugee children. United Nations conventions relating to education are yardsticks to be used in evaluating the extent of education opportunities afforded to refugee children. Qualitative approach will be used in studying this method.

Keywords: Refugees; right to education; United Nations convention; policy and legal framework

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I-CReST 2021:085-074 – The Understanding of Deficit, Dominance, Difference, and Diversity Approaches to Genderlect among Part 8 TESL Students

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ABSTRACT

The lack of understanding of gendered language is becoming a growing concern. This research aims to study the understanding level of genderlect among UiTM part 8 TESL students based on deficit, dominance, difference, and diversity approaches. Many studies have been conducted on genderlect (Sunderland, 2011). However, these studies do not specifically cover the understanding of gendered language among people. This research is based on data obtained from a survey questionnaire that polled the students' level of gender language understanding via Google Forms. The findings show that the students have a high level of understanding on genderlect. The results of the study reported that 20 (37.7%) students have high level of gendered-language understanding while 33 (62.3%) students have very high level of gendered-language understanding. Despite the high level of gendered-language understanding among the students, a holistic strategic approach is still needed to strategically make people understand gendered language better. It is hoped that the study can contribute to the improvement of people's understanding on genderlect.

Keywords: Genderlect; language; approach; TESL; students

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I-CReST 2021:090-081 – A Preliminary Analysis in the Therapeutic Landscape of Malaysian Public Libraries

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ABSTRACT

Both techniques of product and service assessment are aimed at improving high results. In the sense of a library, the aim is to make sure that the consistency of the library's goods and services meets the users' expectations. If it is typical for an organization's surroundings to affect customers'/users' therapeutic satisfaction, research on the therapeutic landscape quality in a library setting are still lacking. As a result, this report considers users' preferences and interpretations of the therapeutic landscape of Malaysian public libraries. This encompasses the natural and built environment, social environment, and spiritual environment, which are the three primary elements of the original therapeutic landscape principle. The preliminary results of a research project to determine the therapeutic landscape standard of Malaysian public libraries are discussed in this article. This paper presents the findings of a preliminary analysis undertaken as part of a research project to assess the therapeutic landscape standard in Malaysian public libraries. The preliminary research for this thesis consisted of the first of two stages, which included a detailed literature search and analysis of the library review landscape and service quality. Interviews and focus groups were used to gather practitioners' and experts' perspectives on library review satisfaction throughout that process as well. Its aim is to investigate and identify appropriate constructs for a conceptual analysis context in which quantitative data collection may be used to assess the results. Interviews and focus groups were also used during this process to collect practitioners' and analysts' insights on library satisfaction. Its aim is to investigate and evaluate the appropriate constructs for a conceptual analysis process in which quantitative data will be collected to assess the consistency of the library therapeutic landscape.

Keywords: *Library therapeutic landscape; library quality; library therapeutic satisfaction; public libraries; library's environments*

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I-CReST 2021:092-082 – Addressing Unemployment and Poverty in Malaysia: Survival During Covid-19 Pandemic

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ABSTRACT

Coronavirus disease (COVID-19) has been a major issue especially when the World Health Organisation has declared it as a global pandemic in 2020. More than a year has passed but COVID-19 still gives negative impacts on the whole world not only on health but also on the economic situation. COVID-19 has slowed down economic activity which leads to an increase in the unemployment rate. Malaysia is not an exception to the effects of COVID-19. As global pandemic continues, the unemployment rate in Malaysia in March 2021 is 4.7% compared to 3.9% in March 2020. Unemployment leads to poverty because people will lose their income when they lose their jobs. This also applies during the COVID-19 pandemic, in which unemployment leads to pandemic poverty. Those who are poor due to unemployment will be referred to as pandemic poor, as the pandemic causes them to lose their jobs as. This paper will discuss the unemployment and poverty situation in Malaysia as the COVID-19 pandemic continues and is expected to take years to recover.

Keywords: Unemployment; poverty; pandemic poor; COVID-19

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I-CReST 2021:094-083 – Heightened IR 4.0 Awareness, Perception and Attitude: A Study on Engineering Technologist Students

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ABSTRACT

Industrial Revolution 4.0 (IR 4.0) tremendously changed the previous revolution in terms of physical, digital, and biological domain, referring as a new revolution that comprises nine pillars. Currently, students are facing sudden changes in the education system to fit in the revolution, however, the universities should revise the curriculum structures to produce well-rounded graduates to match the IR 4.0 industries. As a preliminary study, the level of awareness, understanding and readiness of technologist students at a public university in Malaysia to face the challenge in the IR 4.0 were investigated. The study aims to highlight the possibility of missing IR 4.0 elements in current curriculum structures, and the degree of exposure towards the new industry revolution. Quantitative data from a Likert scales of 1 to 5 was employed in scaling the survey answer, focusing on their awareness and understanding of the pillars of IR 4.0. The data collection was described as descriptive statistics and analyses using the Statistical Package for the Social Sciences (SPSS) software. The analysis revealed that 45% out of 9 Pillars is well known by the students, namely the internet of thing (IoT), cybersecurity, and adaptive manufacturing (3D printing). However, the rest of the pillar could be considered as rare terms to students in the technology programme, which indicates lack of exposure on this new revolution among students. Even though small elements of IR 4.0 have been embedded in the current curriculum, it is important to highlight its significance and contribution in matching the new industries.

Keywords: Industry Revolution 4.0; TVET education; technologist

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I-CReST 2021:095-084 – Learning Grammar Using a Card Game

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ABSTRACT

Grammar is a basic aspect that students need to master to be fluent in English. With sets of grammar rules to remember, students may find grammar as a challenging and difficult aspect to grasp. Therefore, many innovations in language games have been created to aid students in learning. This study involves a language card game titled 'Jester', which is inspired and adapted from Donkey and Joker games. This paper presents university students' attitude towards Jester and how Jester helps them in learning Adjectives. The methodology comprises a mixed method using a questionnaire and interview and the data are analyzed. The results of the survey demonstrate interesting implications on the use of language games in the ESL classroom.

Keywords: ESL; grammar; language game; learning

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I-CReST 2021:100-089 – Digital Technology for a Better Future & Food Security in Africa & Gulf Region

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ABSTRACT

The agricultural sector and its food diversification are among the most important sectors that depend on innovation and the use of modern technology and mechanisms. To highlight the available investment opportunities, and to ensure the sustainability of work in this sector by providing and supporting innovation and modern technologies capable of adapting to the agricultural sector with climate change challenges and ensuring their sustainability, achieving food security, and seeking technological solutions that support the sustainability of the agricultural sector and its contribution to achieving food security, and moving towards Climate-smart agriculture by focusing on the production of indoor agricultural crops that depend on advanced technology that works on the lowest consumption of water and the minimum level of fertilizers, in line with international standards, by using less water, in addition to promoting the adoption of greenhouses that rely on the mechanism of use of networks, solar energy systems and sensors, thus reducing energy use and costs for cooling purposes, and contributing to maximizing production in terms of quantity, quality and value. This article aims to determine the benefits and needs of the Gulf countries and Africa to adapt modern technology in the agricultural sector to provide food security.

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I-CReST 2021:101-092 – Rights of Education: Review of the Conditions of Students in Learning amid the Covid-19 Pandemic

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ABSTRACT

The Covid-19 pandemic is wreaking havoc on Malaysians' lives in numerous different ways. Since the World Health Organization (WHO) declared that this virus was a Public Health Emergency of International Concern back on the 30th of January 2020, citizens across the country had suffered tremendously. The virus has impacted society horrendously, nearly every sector has gone downhill since the declaration by WHO. Predominantly, it left a gargantuan impact on the education sector. It has resulted in the closure of nearly every educational institution and suspended formal classroom learning for millions of students ranging from pre-, primary, secondary and tertiary education. Consequently, a new method of learning is adopted in order to adapt to this new norm. The method of online learning or more commonly known as "Open Distance Learning (ODL)" has transformed the way we observe our entire educational system. Nevertheless, it remains a flawed method as students' conditions are often neglected and overlooked. Thus, the purpose of this paper is to study and discover the conditions of students in learning amid the Covid-19 pandemic in Malaysia. It further seeks to provide solutions and initiatives to improve and enhance their condition in order to fulfil their rights of education. This research is based on a doctrinal basis. It is qualitative in nature and uses published data, reports, researches, articles and case studies as its sources. This paper concludes that ODL had many detrimental effects on the students' and the authors further provided measures to curb those effects.

Keywords: Covid-19; education; Open Distance Learning; students; Malaysia

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I-CReST 2021:102-098 – Right of Education: Difficulties to Earn Education for Children from Minimum Wage Families

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ABSTRACT

In reference to the National Minimum Wage (NMW) studies, Malaysia ranks as one of the lowest paying countries in the world with the minimum wage of RM1,200 ($291.47 USD) of which the significant contrast can be seen as countries across the globe such as Finland are earning a minimum wage of €1,190 ($1,433.99 USD). On average, living expenses for a single family to live in Kuala Lumpur is RM7,310 which proves how parents earning a minimum wage would still be unable to afford a comfortable life [Wise, 2017]. Subsequently, this has inflicted a difficulty for parents to sustain their children's educational needs as they are required to spend an average of RM107,920 from primary school to undergraduate institutions [New Straits Times, 2017]. Moreover, such an amount is only for one child's worth of education whereas the same number may multiply drastically depending on how many children the parents may have. Nonetheless, this study aims to analyse the difficulties of children to earn education while living in a minimum wage family and to further emphasize the impacts of illiteracy should they be deprived of their rights to education. The methodology implied in completing this study is through critical analysis of statistics, causes, effects and comparisons made between Malaysia and foreign countries that have successfully provided proper earnings and education mechanisms for their citizens. Some of the major findings include, children who are from minimum wage families are prone to earn minimum wage themselves and how the absence of education shall only perpetuate their poor living status. In summary, the magnitude of difficulties for children from minimum wage families to receive education is far too grave to be overlooked. Therefore, this critical analysis is made to understand the core of the issue so that it can be better overcome.

Keywords: Children; education; minimum wage; analysis; Malaysia

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I-CReST 2021:104-096 – Gender Inequality: A Review of Gender Discrimination that People Face at Their Workplace

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ABSTRACT

Gender discrimination in the workplace can take many forms, but it most generally means that an individual or a professional employee is treated differently or less favourably because of their sex or gender, or that the worker is a member of an organization or class that is associated with a certain sex or gender. Women are the ones that are most impacted by occupational gender inequality. Despite legislative measures to combat racial inequality, gender differences persist at work. In real society, the phenomenon of sex and gender inequality has become nearly ubiquitous. Gender inequality in organizations is a dynamic phenomenon found in organisational structures, procedures, and policies. Corresponding to different styles of gender inequality today, the workplace has often been referred to as an inhospitable environment for women (Abrams, 1991). Gender inequality is a critical threat and there is a great deal of work to be done to keep it from continuing. Gender inequality also turns workers into paranoid and cynical, afraid and angry people who are mentally fragile, ordinary peace-loving staff. Thus, eliminating gender inequality is vital for workers' productivity, motivation, loyalty and less tension. The purpose of this paper is to raise awareness of the issue of discrimination that many employees experience in the workplace and to build a culture where women and men have equal opportunities and rights at work. The methodology in this paper is doctrinal basis. The authors used analytical analysis through different literature on the subject of gender inequality at work to meet these objectives. The data for this research were collected via case laws and journals. This research is expected to have the best approach and suggestion for promoting gender equality in the workplace.

Keywords: Gender discrimination; gender inequality; workers; employees; lack of legal protection

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I-CReST 2021:105-095 – Gamification in Computer Programming Course: Effects on Learning and Engagement

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ABSTRACT

This paper describes a quasi-experimental research design of non-equivalent groups in which the teaching technique for gamification teaching was used to enhance the delivery of a Computer Programming course among non-major students of Computer Science. The game elements included in the gamification strategy are scoring, leader boards, challenges, and badges. We equate the gamified course (Section 02) to its non-gamified course (Section 01) to determine how gamification affected the learning engagement and performance. The experiment set up during the second half of the first semester of the academic year 2019-2020 among first-year students from one Pre-Service Teacher programs in one public university. Results on engagement were promising with positive feedback from students despite no significant difference in academic performance among the experimental and control group.

Keywords: Gamification; learn programming; engagement

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I-CReST 2021:118-106 – Objective Knowledge, Attitude and Practice of Gum Arabic Among Malaysian Users

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ABSTRACT

Dietary supplement has been a long-debated topic with a diverse range of opinions and viewpoints. Various terms were used to refer to Gum Arabic (GA) and numerous product information have led to confusion and impacts on the users' practice. Past studies on GA have been focusing on clinical testing and functional properties, thereby causing inadequate investigations on users' practice of GA. This study aims to investigate the relationship between objective knowledge and attitude toward the practice of GA among Malaysian users. This study employed a quantitative approach and data analysis was done by using Smart PLS 3.0. Data were collected purposively through 301 users using an online survey. Findings showed that objective knowledge influenced attitude, but not practice. Attitude was strongly associated with the practice of GA consumption. The finding also reveals that attitude mediates the relationship between objective knowledge and practice. These findings make a noteworthy contribution to the body of knowledge, especially in explaining the behavior of GA users. Information and promotion campaigns could focus on providing the correct and justified information as a guidance for the users so as to reduce the unforeseen risk.

Keywords: Gum Arabic; consumer behavior; structural equation modelling

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I-CReST 2021:121-108 – The Admissibility of Eyewitness Identification Evidence in Malaysian Courts: An Analysis on R v Turnbull guidelines and Scientific Approach to Eyewitness Identification

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ABSTRACT

Identification by an eyewitness arises when a witness who has seen the offender committing the crime is given an opportunity to identify a person. In Malaysian criminal justice system, eyewitnesses have long played a significant role in criminal investigations and prosecutions. For cases where the case wholly or substantially depends on the correctness of the identification of accused by the eyewitness, the courts ought to follow guidelines enunciated in the case of *R v Turnbull [1977] QB 224* in evaluating the credibility of identification evidence testified by the eyewitness. The guidelines directed the trial judge to consider factors surrounding the case as the standard to measure the quality of the identification evidence. In order to identify the list of factors considered by the trial judge, this paper critically analyses criminal cases that have followed the Turnbull guidelines. Furthermore, this paper highlights how the scientific human behaviour studies validate such factors to be the factors that may affect the veracity of the eyewitness identification evidence. Drawing conclusion based on the analysis made, this paper advocates the need for the trial court to imperatively follow the Turnbull guidelines in cases which depend wholly or substantially on eyewitness identification evidence.

Keywords: Eyewitness identification; admissibility of evidence; R v Turnbull guidelines; criminal justice system

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I-CReST 2021:122-111 – Extended Monologue: Enriching English Language Learning Through Drama via Open Distance Learning

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ABSTRACT

The use of drama in English language classrooms is deemed important for students to arouse their interest and creative imagination and at the same time to enrich the four core skills of a language student. As every corner of the world is facing a new norm of living in a pandemic, the method of learning language and drama has been greatly affected. With zero amount of physical contact between students and educators, it has been difficult for students to be exposed to drama and its language use. Extended monologue was introduced to assist the students in learning language through drama via open distance learning (ODL). Extended monologue is a revised concept of monologue whereby, multiple characters will perform their own monologue, which is tied to the same storyline. The students were divided into groups of five and each student recorded their own monologue, and the videos were compiled together as one production. This exploratory qualitative method study examined the students' feedback on the new assessment in terms of improving their confidence, specifically in enhancing their creative thinking skills, and the use of language. Three group interviews were conducted. Thematic analysis was employed and it shows that the assessment has encouraged them to be more confident despite learning via online, and it challenges their creative thinking skills to complete the assignment. Furthermore, the results also showed that the assessment has affected their confidence in language use beyond the assessment itself. Based on the findings, the students perceived that the extended monologue is as an effective method to teach language and drama via open distance learning.

Keywords: Extended monologue; language and drama; open distance learning

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I-CReST 2021:126-114 – Potential Element of Resources and Capabilities on Retail Mall Business Performance during Covid-19 Pandemics

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ABSTRACT

Malaysia's retail and wholesale business appears to show an important role in the economy. However, due to pandemic Covid-19, shopping trends and consumer sales tend to have rapid changes with the effect of social distancing, reduced dining-out activities, and shorter operating hours that are expected to impact retail malls' business performance. The mitigation measures by the government to slowing the Covid-19 spread have directly affected the supply, demand, and daily operations of the retail sector. Thus, with the new-norm constraints, the retails mall recovering effort needs to face growing competition in intensity and complexity as the customer demand changes and varies simultaneously. Many shopping malls suffered from a lack of strategic capabilities of resources in the management, which may impact the shopping mall business performance. Thus, adapting the new-norm mall business performance with capabilities of resources have a good potential in recovering the sales, rents, occupancies, and yields. In turn, the retail mall players must take action to develop new capabilities against these issues. Consequently, every organization needs to adopt well-planned strategic capabilities of resources in its management to survive and compete in the market regardless of its size and scale. This research explores the potential element of resources and capabilities that contribute to retail mall business performance. Content analysis will be employed to review the resources and capabilities' element in literature sources as the initial process to explore the potential in contributing to business performance. Then, a theoretical framework of potential resources and capabilities will be constructed to be validated by expert panels in the next phase. This will help the retailer's organization adapt to the new norm of business and enhance the resilience strategies to meet the market changes, new competitors, technology, social, financial, political, and economic environment.

Keywords: Capabilities of resources; retail mall; business performance; Covid-19

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I-CReST 2021:131-119 – Innovative Ways to Activate the Teaching of Arabic Linguistics and Its Effects in Non-Arabic Speakers in the Local and International Universities by Applying "Al-Tahwiliah"“ATaHM&MGG

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ABSTRACT

This study was to examine the teaching of Arabic linguistics “syntaxes, morphology, phonology, lexicology, semantics, etymology” skills to apply the method of ATaHM&Tf *Method* to students who are not speaking Arabic as a first language at four universities in Malaysia. This method is the main pedagogical principles to ensure that teaching and learning of Arabic linguistics place effectively. Researchers to build 319 items for the questionnaire uses five sub-scales based on the method of ATaHM&Tf *Method* to build using positive statements. Respondent to respond according to the five Liker scale. Sub-scale questionnaire comprises lectures, methods of studying the Arabic linguistic (ATaHM&TfALM), speaking in Arabic (ATaHM&TfASS), Arabic listening skills (ATaHM&TfALS), reading in Arabic (ATaHM&TfARS), and Arabic writing skills (ATaHM*&Tf* AWS). The research sample consisted of 200 persons from the five public universities in Malaysia (USIM, IIUM, UKM and UPM) chosen at random. The results obtained are highly reliable instrument with Cronbach ALPA value of .99. The value of Cronbach for each subscale ALPA also is high in the .96 to .99. The findings of this study showed a positive correlation between the methods of studying the Arabic linguistics with each sub-scale between the values of Pearson (r =. 57 to r =. 64, p <0.01). While the results of the five null hypotheses to test the differences in the study was rejected because there was a significant relationship between the Universities for each Sub-scale. Similarly, five null hypotheses to test the differences in the learning process less as a test t-test showed significant correlation between genders for each sub-scale. This method has been applying in the Malaysian Universities locally and internationally universities and has been getting the intellectual property (IP) by USIM this method also has been recognized by the government of Saudi Arabia, UAE and university Beirut, Universities in Morocco.

Keywords: Innovative; Quranic linguistics miracle; methodology of Al-Tahwiliah

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I-CReST 2021:136-128 – A Study on a Conceptual Modelling of Food Security Issues and Factors in Time of Pandemic COVID-19 in Sabah

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ABSTRACT

Food security is an important issue to be addressed in light of the recent COVID-19 pandemic as one of basic human needs to food apart from shelter. Food security is a situation whereby people have sufficient access to food that always meets their dietary needs and food preferences for a healthy lifestyle. This study employed the doctrinal method by applying content analysis which is accomplished through reviewing the various literatures in identifying the main issues and factors affecting those issues then enabling proposal of a conceptual modelling that is applicable in time of pandemic in Sabah. The study is on Sabah food security due to the uniqueness of this East Malaysia state, as is largely comprises of jungle and vast remote areas thus food security problem is anticipated. The main purpose of this paper is to analyse food security issues during the COVID-19 pandemic in Sabah which are identified as availability, accessibility, utilisation, stability and the impact of its insecurity. Then, a conceptual model is developed which consists of dimensions which affect food security, including factors that affect said dimensions and how food security causes crises from multiple perspectives. The conceptual model can then be used to highlight the main issues of food security in Sabah, which can be focused on rather than dividing their attention on minor issues of the problem. This study then suggests a further improvement on food security especially in time of pandemic, enabling every member of the community to enjoy one of the basic of human right.

Keywords: Food security; pandemic; conceptual modelling

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I-CReST 2021:142-133 – Trainee Teachers' Views of Online Teaching During the Practicum

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ABSTRACT

This study focused on TESL trainee teachers' level of knowledge, attitude and readiness towards online teaching during their practicum. A questionnaire was administered to a sample of 80 TESL trainee teachers from Universiti Selangor who had to undergo an online-based practicum in August 2020. There were 30 statements in the questionnaire which had to be answered using a 5-point Likert scale. The questionnaires were distributed through the Whatsapp application and the trainees were given one week to respond. Based on the questionnaire responses from the trainees' Whatsapp and the findings of the study, it was found that the trainees had mainly positive views of online teaching.

Keywords: Online teaching; teacher training; e-learning; TESL

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I-CReST 2021:143-173 – Factor Affecting Chilli Market Supplied among the Local Farmer in Perak

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ABSTRACT

Chilli (*Capsicum Sp*) is a tropical and economic crop commodity with encouraging market potential in the domestic market. It consists of various species and variety. In Malaysia, there are two types of chili namely red chili / large and small chili or known as grown fertigation chilly. Red chili varieties that are popular among farmer are Kulai 469, Kulai 461, Kulai 151, Kulai 223 and Kulai 568. However, Malaysian chilli's contribution to the domestic market in the recent time has been experiencing downward trend, resulting to a set-back in its competitiveness between exported chilli. This study aimed to determine factors that influencing local grown chilli supply to domestic market. Data were collected using a well-structured close ended questionnaire via face to face and also distributed through google form link to 102 chilli farmers. The obtained data were analysed using descriptive analysis, exploratory factor analysis and regression analysis. Three factors identified by exploratory factor analysis as the factor affecting chilli market supplied are extension service, knowledge and credit access. The result of regression analysis revealed that farm size and income per season show positive relationship and significant (<0.05) to factor affecting chilli market supplied. The study recommends the need for designing appropriate intervention mechanism focusing on the aforementioned factor to improve the local chilli production in the domestic market and uplift the status of smallholder chilli farmer.

Keywords: Extension service; knowledge; credit access; farm size; income per season

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I-CReST 2021:144-138 – Konsep Manusia dalam Pemikiran dan Peradaban Barat

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ABSTRAK

Manusia atau insan merupakan tema yang seringkali diangkat dalam perbahasan pelbagai tradisi pemikiran manusia sepanjang sejarah peradaban manusia. Persoalan siapakah sebenarnya manusia masih lagi menjadi misteri dan tidak kurang juga mengundang pertelagahan khususnya dengan pemikir dari peradaban Islam. Dalam tradisi peradaban Barat khususnya, pelbagai pemikir terkemuka tampil dengan pandangan masing-masing dan cuba memberikan takrifan dan konsep tentang hakikat sebenar manusia. Rata-rata antara mereka melakukannya semata-mata berlandaskan kedangkalan akal dan kecetekan pemikiran manusia yang hanya diberikan sedikit keupayaan untuk berfikir dan meneroka tentang hakikat alam ini. Situasi demikian ini menimbulkan semakin banyak kekeliruan dalam kalangan mereka bahkan dengan sebab itu semakin banyak konsep dan takrifan baharu cuba dibuat oleh pemikir dari zaman ke zaman. Justeru itu, makalah ini bertujuan meninjau dan membawa semula beberapa perbahasan dan perdebatan pemikir Barat tentang konsep utama manusia. Antara persoalan utama yang akan dijawab dalam kajian ini ialah ialah siapakah manusia dan apakah dasar atau kerangka utama pemikiran yang mendasari pentakrifan manusia dalam kalangan pemikir Barat pelbagai zaman tersebut? Justeru bagi menjawab persoalan utama tersebut, kajian akan menggunakan pendekatan kualititatif dengan kaedah analisis dokumen serta kajian kepustakaan terhadap beberapa perbahasan konsep manusia menurut beberapa tokoh yang mewakili pelbagai aliran daripada tiga zaman iaitu Yunani, Abad Pertengahan dan Zaman Moden sehingga melewati pasca moden. Sebagai rumusan, kajian mendapati takrifan manusia di Barat adalah pelbagai, tidak tetap dan berkembang serta didasari oleh satu pandangan alam yang berubah mengikut aliran, tokoh dan masa serta zaman. Pendek kata, konsep manusia berteraskan metafizik dan ketuhanan atau kepercayaan agama beralih pentakrifannya kepada faham sekularisme yang mendominasi majoriti pemikir Barat moden sejak dari zaman renaissance sehingga kini. Kajian juga mendapati bahawa takrifan manusia dalam pandangan Barat adalah bersifat nisbi (relatif) kerana bersumberkan akal manusia semata-mata dan gagal mencapai tahap pentakrifan yang hakiki sepertimana halnya dalam tradisi pemikiran dan peradaban Islam.

Kata kunci: Manusia; peradaban barat; moden; insan; Islam

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I-CReST 2021:148-142 – Perkaitan Antara Tahap Pengetahuan dan Penghayatan Pelajar Sekolah Menengah Agama Swasta Terhadap Pendidikan Islam

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ABSTRAK

Penghayatan pelajar terhadap proses pembelajaran Pendidikan Islam sangat penting dalam membentuk peribadi pelajar. Bukan sekadar pengetahuan yang diharapkan malah penghayatan mereka terhadap apa yang dipelajari dari mata pelajaran Pendidikan Islam itu lebih penting agar dapat diterjemahkan dalam bentuk tingkah laku dan sahsiah mereka. Namun begitu, masih terdapat pelajar yang terlibat dengan kesalahan dan jenayah walau pun mereka berada di sekolah yang terbaik didikannya. Justeru itu, kajian ini melihat apakah terdapat perkaitan antara tahap pengetahuan dan penghayatan pelajar terhadap mata pelajaran Pendidikan Islam ini. Kajian ini telah dijalankan secara kuantitatif ke atas 247 orang pelajar sekolah menengah agama swasta di Selangor menggunakan boring soal selidik. Hasil kajian ini menunjukkan nila r 0.263 yang mana ia menunjukkan tahap pengetahuan dan penghayatan pelajar ada perkaitan walau pun berada di skor yang lemah.

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I-CReST 2021:149-143 – Work-Family Conflict among Working Women in Dual-Earner Family During COVID-19 Pandemic: Is Communication a Remedy to the Conflict?

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ABSTRACT

Unprecedented COVID-19 pandemic outbreak has forced the change of life among working women in dual earner family. Family demand increases as domestic workload has been intensified during lockdown or Movement Control Order (MCO) period due to the restrictions of child minders' and carers' and other domestic services, and tuition services, and the government policy on online learning and working from home. Working women need to involve intensively in child care and helping children with their online study homework and performing house chores while working from home which led to work-family conflict as cross-border between work and family lives and life integration are unavoidable which both domains life roles have to be performed at the same space. Job demand is also increased as the process of work has been changed and the complexity of work existed when work from home which intensifies the workload. Owing to the aforementioned circumstances, this conceptual paper is embarked to research on how working women in dual-earner family could manage their work and family life borders to ensure that they are still able to perform their work without any interruption while performing their family role responsibilities to achieve family satisfaction and better work performance with the optimal work-family life integration during COVID-19 pandemic outbreak period. Quantitative approach is embedded in this research which uses secondary data by reviewing the literature on work-family conflict. This paper is to propose communication with spouse as a potential vital moderating factor to alleviate the influence of job and family demand on work-family conflict among working women in dual-earner family during COVID-19 pandemic.

Keywords: Job and family demand; work-family conflict; communication; working women; dual-earner family

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I-CReST 2021:151-147 – Al-Quran and Environmental Preservation: A Specific Study on Water Conservation

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ABSTRACT

There are many verses of the Quran that explain the importance of the environment to all living creatures in this world. Among the important elements of environmental preservation is water conservation. The objective of this study is to examine the Quran's emphasis on the importance of water and its conservation. Water is not only used in various forms of human daily activities such as drinking, bathing and washing, but water is also important in economic activities such as industry, manufacturing and transportation. The importance of water can be seen in the fact that 60 percent of the human body is water and most of the amount of water is found in human cells. In addition, about 71 percent of the earth's surface is water-covered. Even the water on the earth moves constantly from one place to another and from one form to another, and without this cycle, the earth will lose its balance. The method of this study is a qualitative study of the literature by analyzing information from the verses of the Quran and the debate of scholars related to them. The impact of this study proves that water is indeed essential for all life on earth and humans are responsible for constantly maintaining and preserving water quality as it is the lifeblood of all beings in this world.

Keywords: Conservation; environment; Quran; sustainable; water

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I-CReST 2021:161-165 – Perceptions and Views of Pre-University Students about Physics

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ABSTRACT

STEM is designed and introduced in the effort to educate students in four specific disciplines; Science, Technology, Engineering and Mathematics in an interdisciplinary and applied approach. Rather than teach the four disciplines as separate and discrete subjects, STEM integrates them into a cohesive learning paradigm based on real-world applications. However, the number of students enrolling in these areas are decreasing significantly every year. This trend is worrying despite the fact that STEM-related positions being among the top emerging jobs. This study investigates the perceptions and views of pre-tertiary university students at a local institution on physics subject. This study was conducted to discuss physics specifically because compared to Biology and Chemistry, Physics is the least favourite subject and it has been established that there are many challenges associated with physics teaching and learning. This paper presents the views of the students, and looks in more detail at how the students' family and educational background as well as their learning experience affect their perceptions of the physics subject. A comparison was also made between the responses of female and male students. This online survey was conducted among foundation students from 2019/2020 and 2020/2021 sessions. A total of 410 students responded to the survey. The questionnaire consists a vast spectrum of questions including 54 questions on factors influencing students' choice of physics-related courses at university and 12 questions on sociodemographic. Frequency and percentage were used to present categorical data. Pearson's chi-squared test was used to test statistically significant differences between two groups for categorical data. Mean and standard deviation were used to present the continuous data. T-test was used to compare the mean difference between the two groups. Association between the decision in choosing physics as their choice and other study variables was measured by using logistic regression analysis. The findings of this research can be used to improve the teaching and learning of physics and make the existing physics program more attractive and preferable for students.

Keywords: Physics; perceptions; interests; education

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I-CReST 2021:165-163 – Into a Topsy-Turvy Puzzle: Teachers' Challenges in E-Learning During Covid-19 Pandemic

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ABSTRACT

The denouement of the Covid-19 pandemic asserts the superiority of technology in the education arena. On this account, education has undergone a paradigm shift from chalk and talk to Google meet and greet. The purpose of this study is to explore the challenges faced by educators in conducting online classes during the pandemic. A survey-based questionnaire using google form is conducted among 35 primary school teachers in the Petaling district to amass data. Thematic analysis is used to test the validation of the study. The findings show that in online teaching, respondents encounter many challenges in which they described the rapid and forced transition as very stressful and complex. The contribution of this study is to gain insights into the challenges and dilemmas faced by educators while engaging in online learning. As for future studies, the research's emphasis can be directed towards the learners to address the mutual issues that arise from both parties. Thus, a great deal of synergy is expected of all the stakeholders, including the school and government, to rectify the pinpointed issues in administering online learning with the intent that educators can hold their heads high.

Keywords: Covid-19; e-learning; teacher's challenges

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I-CReST 2021:177-178 – Investigation of Premenstrual Syndrome and Premenstrual Dysphoric Disorder among Pre-University Students

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ABSTRACT

Premenstrual dysphoric disorder (PMDD) is a severe form of premenstrual syndrome (PMS), which typically occurs during the luteal phase, one week prior to menstruation. This study aims to identify pre-university students who have experienced no/mild PMS, and moderate to severe PMS and PMDD. A total of 100 pre-university students were randomly selected as a sample, and a survey design using a questionnaire was implemented as a data collection tool. The questionnaire consists of three sections, including demographic data, pattern of menstruation, and premenstrual syndrome scoring tool (PSST). Among the respondents, seven respondents were identified as having PMDD, while 46 and 47 respondents were categorized as having no/mild PMS and moderate to severe PMS, respectively. This classification is based on the Diagnostic and Statistical Manual IV (DSM-IV) criteria in PSST. Furthermore, the level of menstrual pain and premenstrual symptoms are prevalence of PMDD. For instance, the respondents with PMDD experienced a higher level of menstrual pain. In addition, they have faced premenstrual symptoms more frequently compared to the respondents with no/mild PMS and moderate to severe PMS. This indirectly interfered with their social life. The symptoms of PMS are likely to continue during the menopausal transition. In view of this, awareness on PMS and PMDD is vital for the general welfare of a woman.

Keywords: Premenstrual dysphoric disorder; premenstrual syndrome; pre-university students

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I-CReST 2021:179-181 – Preliminary Review of Public Service Announcement (PSA) Campaign on Mental Health Awareness

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ABSTRACT

A Public Service Announcement (PSA) is an advertisement that raises and spreads awareness of a particular social or health issue to the public to motivate behavioural changes. This paper provides a review of the literature on public service announcement (PSA) awareness campaigns and highlights issues about mental health. The review has been conducted based on keywords, such as definition, characteristics, developments, and evaluations of the PSA campaign on mental health awareness using electronic databases. Findings revealed that there was a lack of studies emphasizing the usage of PSA for mental health awareness in Malaysia, especially in developing an appropriate PSA for a specific demographic even though there were countless research studies in Malaysia concentrated on the development and evaluation of mental health level of awareness and mental health literacy programs among the aged group. Hence, this situation also explains there is very limited research concerning the application of PSA campaigns on mental health awareness in Malaysia and further exploration is needed to close the considerable research gap.

Keywords: Public Service Announcement; mental health; awareness campaign

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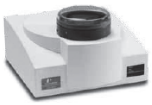

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