UNIVERSITI TEKNOLOGI MARA

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CREATIONS de UiTM

INTERNATIONAL MEGA INNOVATION CARNIVAL 2022

For Humanity: Empowering Neoteric Knowledge

ABSTRACT BOOK

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CENTRE OF FOUNDATION STUDIES UiTM
CAWANGAN SELANGOR KAMPUS DENGKIL
MALAYSIA

CREATIONS de UiTM: INTERNATIONAL MEGA INNOVATION CARNIVAL 2022

ABSTRACT BOOK

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ABSTRACT BOOK/
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PROGRAM OVERVIEW

CREATIONS de UiTM: INTERNATIONAL MEGA INNOVATION CARNIVAL 2022 is a program by Pusat Asasi, UiTM Dengkil that provides the golden opportunity for innovators from all walks of life to showcase their creativity skills and the spirit of innovation. This program is open to both international and Malaysian innovators with the aim of providing exposure and experience with various academic content on innovation that are not only interesting but also useful.

CREATIONS de UiTM: INTERNATIONAL MEGA INNOVATION CARNIVAL 2022 is particularly unique in that it offers a wide selection of educational and fun innovation-inspired content for all ages. This virtual presentation box will include not only competitions for innovation, but also exhibitions of innovative ideas/products/inventions from around the globe. Around 150 innovation projects will be showcased to compete virtually, with participation from school students, university students, and innovators from all over Malaysia and around the world.

A variety of innovation-themed academic and entertainment content has been prepared to enliven and provide exposure to visitors who participate online to further energize this virtual program.

CATEGORY A
Professional

NARTsPLAATe: A Biomimicry Study of Nature Pattern and Colour of Pahang's National Park Kitchenware

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ABSTRACT

Nature plants are often used in indoor environments as part of design to support sustainable and green architecture and to improve the health and wellbeing of occupants. Nowadays, a sustainable design is becoming more foreseeable perspective of viewing products. Besides, a biomimicry is a science work that studies nature's ways (nature as a model, nature as a measure, and nature as a mentor) and then imitates designs for human problem-solving. Concerning numbers of nature plants, many studies were conducted by focusing on scientific review rather than arts view. Besides, patterns in nature plants from arts sight are visible in form of colours. Hence, this study is carried out through A Qualitative Colour Pattern Analysis (QCPA) Frameworks focuses on ascertaining how nature's masterpieces pattern and colour visually and biologically could be effectively used for product design that further illuminating a destination brand identity. This practice-based research study revealed the set of patterns, colours and form that accumulated from plants, fish, and flora which visibly significant defines the relationship of nature and can be applied to practical design to enhance and support visual communication.

Keywords: Arts; biomimicry; nature; sustainable design

Preservation Through Innovation: A Virtual ESL Learning Package

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ABSTRACT

The Semai people are the largest indigenous group in Malaysia, and they are famous for their unique folktales. Folktales serve as a source for creative inspiration that leads to the emergence of several works in modern literature. However, despite these sterling qualities of folktales, it is endangered with extinction. The project aims to preserve the cultural and heritage of the indigenous Semai through the teaching and learning of Semai folktale in fun, interactive and creative ways. The ESL virtual learning package consists of a virtual puppet show with an E book entitled The Legend of Cen Cemana accompanied with English language activities for the highflyers, intermediate and beginner level. The innovation was developed to preserve the cultural heritage of the Semai and most importantly to integrate the interesting folktale into ESL teaching and learning during the pandemic phenomena. Legend of Cen Cemana was chosen because the folktale explains about the Semai beliefs and the universal values the elderly Semai used to pass down to the younger generation through oral tradition. The product is commercialized through collaboration projects with schools and ESL teachers. Thus, preservation of Indigenous folktales through the innovation initiatives is the best way to preserve the Semai cultural heritage and the effort should be well received and supported by the government and the Ministry of Education.

Keywords: Preservation; innovation; Semai Folktales; Cen Cemana; cultural heritage

Safety Testing of Level 3 Autonomous Vehicle with Human-In-The-Loop Interface

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ABSTRACT

The testing of autonomous vehicle in Malaysia is a field-based testing which brings high cost and safety risks. To provide a solution, this project focuses on interfacing human-in-the-loop system with the vehicle dynamic and environment model, developing the advanced driving assistance system (ADAS) as plug-in model in vehicle driving simulator as well as investigating the human-in-the-loop performance using vehicle driving simulator based on various driving scenarios. The software used in this project are IPG CarMaker and MATLAB. Two Malaysia-based vehicle models and five environment models based on five different locations in Malaysia were developed. Three Advanced driver-assistance systems (ADAS) controller was used as plug-ins into the simulation testing. Then, twelve different test cases focusing on ADAS such as Automated Emergency Braking (AEB), Adaptive Cruise Control and Lane Keeping Assisted System were developed, and test case automation was also part of the research for this project. In order to accommodate the automated driving scenarios, a driving platform was then built and integrated into IPG CarMaker, the driving platform consists of a test rig with total weight of 35kg, with dimension such 100cm length, width of 53cm and height of 50cm. The driving platform is integrated with Logitech gear shifter, pedals and steering kit. The special features of this for this project is the system integration of the hardware components from Logitech with IPG CarMaker driving simulation software by establishing Application Programming Interface (API) using Phyton as the interface medium. Through this interface, the human responses can be recorded and applied in the driving simulator during critical driving conditions. Other special features for this project are the virtual test case development based on the actual driving scenario happens in Klang Valley area, which is highly congested with traffic conditions.

Keywords: Human-in-the-loop; virtual safety testing; autonomous vehicle; urban environment; Malaysian road and traffic environment

DUAL-ANTIBAX (Organo-Metal-Clay) Antibacterial Cream

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ABSTRACT

The issue increases when germs or bacteria infiltrate the skin, resulting in an infected skin problem. The cost structure of treatment is like that of an iceberg, with material expenses accounting for 20% of the total and nursing and hospitalisation costs accounting for the remaining (bottom of the iceberg). As a result, it's vital to keep the skin problem from getting worse, particularly in Malaysia, where the tropical temperature favours bacterial growth. The most common treatment for skin disorders is antibiotic or hormone cream, which may be bought from clinics and pharmacies. Bacterial resistance, on the other hand, is caused by antibiotics. As a result, you can use the Dual-Antibax cream instead of these creams. There are two (dual) antibacterial agents in the Dual-Antibax cream: silver ions and a surfactant in a kaolinite carrier system. The kaolinite is employed as a carrier system for these two antibacterial agents, allowing them to be used in smaller doses while maintaining excellent efficacy. Dual-Antibax cream is a carrier system that comprises Dual-Antibax powder, which contains two antibacterial agents. The cream can be used to treat or prevent bacterial growth in certain skin disorders. Utility invention (UI2013700023) has been granted to the Dual-Antibax manufacturing process, which is now in the market-ready prototype stage. The claim in the intellectual property right (IPR) that there are two processes for Dual-Antibax manufacturing: (1) silver-kaolinite manufacture, and subsequently (2) surfactant attachment, establishes the uniqueness. The immediate effect for skin problem treatment with high efficacy and low cost, safe for humans, and based on a strong scientific approach is the product's value proposition. The cream's concept is akin to that of a cosmetic rather than a traditional therapeutic product to establish a bigger market size. The product will soon be available in a variety of market areas, including infant, health and beauty, and pet care goods.

Keywords: Antibacterial cream; kaolinite; silver; surfactant

SEZANNE: Green-Silver Nanoparticles-Zeolite Nanocomposite as Antibacterial Talcum Powder

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ABSTRACT

Malaysia, a tropical country with high humidity and temperatures, is a favourable environment for the growth of microorganisms. When harmful germs or bacteria infect the skin, the odour and quality of the skin can quickly deteriorate. These disorders can lead to unpleasant secondary complications, such as major skin problems that may require hospitalisation. The cost of hospitalisation is prohibitively high, putting a hardship on low-income families. As a result, controlling bacterial development on our bodies is important to treating the problem. It is possible to accomplish so by applying Sezanne to certain parts of our bodies, with silver nanoparticles (AgNP) deposited on zeolites performing the antibacterial function. Immobilizing AgNP on zeolite may also minimise the amount of AgNP used, resulting in less silver being discharged into the environment. The environmentally safe approach of making AgNP from plant extract could eventually replace the dangerous chemical process. Body odour and skin problems have an impact on our lifestyle and productivity, which can be alleviated by removing bad germs or bacteria from our skin. This can be accomplished with Sezanne, a green antibacterial chemical created after extensive research. A patent application (PI2020006064) has been filed for the process of creating a zeolite loaded with biosynthesized AgNP using plant extract, proving the composite's uniqueness. The plant extract is employed as a bioreducing agent in the synthesis of AgNP on zeolite surfaces. Based on in vitro human cell studies, this compound has considerable antibacterial action against common bacteria and is safe for humans. TRL4 (Technology Readiness Level 4) has been achieved, and some expenditure will be required. Because everyone is looking for an effective and ecologically friendly antimicrobial agent to help us maintain a healthy and clean lifestyle, which has also been impacted by the COVID-19 pandemic, the market is large.

Keywords: Silver nanoparticles; zeolite; biosynthesis; antibacterial

SILVERN: Kesum-Silver Nanoparticles as Antibacterial Wound Healing Agent

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ABSTRACT

When a wound becomes infected with germs, the treatment costs skyrocket, especially in terms of nursing and hospitalisation, which can be prohibitively expensive for low-income populations. As a result, silver nanoparticles can be utilised at the wound site to either kill or suppress bacterial growth. Silver nanoparticles are a frequently used antibacterial agent that is safe for humans at low concentrations. Physical and chemical synthesis approaches, on the other hand, had limitations, including hazardous waste creation and excessive energy consumption. As a result, biosynthesis of silver nanoparticles with kesum leaf extract could be a sustainable and safe process. Kesum leaf is also abundant, easy to grow in Malaysia, and rich in antioxidant activity. SILVERN applied to the wound site can assist to inhibit the spread of dangerous bacteria while also lowering treatment expenses, which benefits the community. According to in vitro skin cell and in vivo animal testing assays, SILVERN exhibits significant antibacterial activity against diverse bacteria, is safe for humans, and acts as an antibacterial wound healing agent. Copyrights for the biosynthesis process and its use as an antibacterial wound healing agent have been filed (LY2020004347 & LY2021E05078). Silver nanoparticles, antimicrobials, and wound healing have a big market, hence SILVERN's commercialization potential is enormous. A few local companies have been identified as potential industrial partners for our commercialization approach. SILVERN has the advantage of being able to generate silver nanoparticles in a sustainable manner without generating toxic waste, contributing to the circular economy manufacturing inventiveness.

Keywords: Silver nanoparticles; kesum; antibacterial; wound healing

C.A.K.A.P (Communication Kickstart Pro.) for MUET

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ABSTRACT

Due to the limitation of Open and Distance Learning (ODL), students encountered difficulties to practice English language, especially speaking skills as they would require ample number of speaking practices outside of the classroom. Moreover, students find that the speaking component in MUET is the most difficult component and the number of practices in class is not sufficient for them to prepare themselves for MUET. C.A.K.A.P. (Communication Kickstart Pro.) is an innovation created to help foundation students in UiTM to practice the English language with other students virtually as well as receive curated help from experienced lecturers for tips and tricks to improve on their speaking skills. This innovation's main objective is to create a platform for the students in foundation studies in UiTM to interact with one another in a MUET setting. As students in foundation studies are not widely exposed to the setting of MUET, this platform will act as a platform to help students practice individually as well as in groups. C.A.K.A.P. is looking forward to expanding as a go-to platform and helping students across Malaysia in improving their speaking skills in preparation for the MUET speaking test.

Keywords: MUET; speaking skills; e-learning

SOOTHE: Silica Incorporated Hydroxyapatite as Bioactive Material

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ABSTRACT

Hydroxyapatite, a popular and well-known bioactive substance with a composition like human bone and also used as a skin care product, has several disadvantages. Hydroxyapatite is fragile and has a low tolerance to fatigue. Because of its limited reactivity with damaged bone, it cannot be directly implanted in a fracture bone. Incorporating it into silica aerogel networks is the greatest technique to improve its quality. Aside from that, silica-based substance is a well-known bioactive material for skin rejuvenation and repair. As a result of the synergistic effects of hydroxyapatite in silica aerogel networks, cell growth can be boosted. It's difficult to incorporate hydroxyapatite into silica networks, and the ratio of these materials needs to be tuned before it can be used for human purposes. Our researcher, on the other hand, has perfected the preparation technique and element ratio of hydroxyapatite and silica aerogel for use as a bioactive material. The invention relates to a method of generating hydroxyapatite-incorporated silica aerogels (SOOTHE), in which the material is prepared utilising an aqueous colloidal sol-gel approach with rice husk ash as a low-cost silicon source. The addition of hydroxyapatite (Bone mineral) to a silica aerogel was discovered to improve the silica's bioactivity. SOOTHE can be utilised for a variety of health and medical applications, including wound healing, tissue regeneration, skin rejuvenation, and bone implants, among others. Our invention's findings are based on substantial scientific evidence that SOOTHE enhanced human cells (skin and bone cells) in vitro while remaining non-cytotoxic and improving biomineralization (bioactivity). SOOTHE can be used as an alternative to existing rejuvenating silica-based skin-soothing products such as Dermatix.

Keywords: Silica aerogels; hydroxyapatite; skin rejuvenation; bioactive material

ATOM: Click & Mathsup

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ABSTRACT

ATOM is an acronym for A Team of Mathematicians which has created the innovation "Module: Click and Mathsup". This innovation is a combination of continuous training, self -learning and leveraging technology. Mathematics learning requires constant drills and specialized guidance from the instructor. Yet the new learning norm has changed teaching strategies to digital and virtual. This has sparked the idea for researchers to create a "Module: Click and Mathsup". The objective of this innovation is to improve students' mastery in answering UPS and PSPM questions, which the main tests and examinations in matriculation. Next is to create self -learning resources for students. This innovation was planned early from the construction of the module to the video of the solution one by one which is linked in the interactive module. Students would value self -directed learning more and this has increased students' motivation towards learning even in digital learning. ATOM: Click and Mathsup has been widely used at the Kelantan Matriculation College and received good responses and has become a main digital reference source among students and lecturers. In conclusion, the innovations of ATOM: Click and MathsUp have had a tremendous impact on Mathematics teaching and learning strategies and changed the quality of students' self-learning. ATOM is planning to be commercialized, but the Movement Control Order (MCO) limits the process. However, the researchers continue to update and refine the Module: Click and Mathsup to be continued in the future and shared to all Matriculation Colleges in Malaysia

Keywords: ATOM; click and mathsup; self-learning; digital; interactive

Visual Planning Tool for Postgraduate Students Towards Graduate on Time (GOT)

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ABSTRACT

Generally, most postgraduate students failed to conceptualise their research topic visually. Majority of the postgraduate students have difficulties to visualise the whole research process which they need to engage to complete their studies. Nevertheless, the postgraduate students might have their research proposal as reference, however there was nothing available that brought the information into a coherent, easy to manage whole where they can visualise in one image. As a result, visual tools such as the swim lane flowchart could be use by the postgraduate students as strategic research and writing tool for them towards achieving GOT. This is a visual tool with iconographic. This will enhance the students' understanding of their research overall. Postgraduate students can use this kind of mind map as a planning tool for their research project. Using the visual tool like this the postgraduate students become more aware of the components in their study e.g., Research approach (quantitative/qualitative/mix-method), methods involve etc. The students could also plan on the number of papers that could be generated from their project and the titles for each paper even before they start their research. Will be easier for supervisors to monitor their students' progress based on this kind of mind map. This type of visual tool can be used as research planning tool for the postgraduate supervision towards GOT (Graduate on Time). By using visual tools postgraduate students also can visualise each of the study involves in their project in terms of method to be used, sample size, tools to conduct the study and even the number of papers with title that could be generated from each study from their research project. This is important, because the students would not be able to lose track of their research project. Visual tools like this could also be used for supervisory meetings and a monitoring tool by the supervisors. This visual tool or the flowchart was copyrighted (LY2019000696).

Keywords: Postgraduate; graduate on time (GOT); Swimlane flowchart; visual tools.

NanofoodAtoZ: Website for Consumers' Awareness on Nanofood

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ABSTRACT

Food and food packaging containing engineered nanomaterials (ENMs) have entered the domestic market. Despite the rapid growth of nanofood, consumers' awareness of nanofood is still lacking due to the credence nature of nanofood, inability to identify the tiny particles using taste or naked eyes, and the labelling of nanofood is not yet a legal mandate. Consumers are unable to distinguish between nanofood with conventional food. They are being exposed to the potential safety and health risks posed by the oral exposure of ENMs. NanofoodAtoZ is a website created to raise awareness among consumers about nanofood, educate them on the integration of nanotechnology into the food and agriculture industries, and disclose the potential nanofood products that are currently available on the market. It is to help consumers make an informed choice and take the necessary precautions against the risks. NanofoodAtoZ is the only website in Malaysia that provides consumers with essential information on nanofood and nanofood inventory. Nanofood's manufacturers or suppliers can have their products listed in the inventory by paying a registration fee. The inventory helps manufacturers to promote the benefits of nanotechnology incorporated into their products. This website also advocates responsible nanotechnology development and is aligned with the United Nations' Sustainable Development Goals (SDGs) on strengthening global food security.

Keywords: Consumers' awareness; nanofood; safety and health risks; inventory

The Batik Perfect-10 Travel Kit

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ABSTRACT

The Batik Perfect-10 Travel Kit was developed as a significant product that impacts public health and safety by emphasising self-assurance and feelings of comfort during post-pandemic travel. The Batik Perfect-10 Travel Kit has three major components. First, it includes three COVID-19 self-test kits (fingertip pulse oximeter, COVID-19 antigen rapid test and thermometer strips). Second, it provides three protective kits (disposable face mask, hand sanitiser, and disposable gloves), and the last component is the hygiene kit for travel (anti-bacterial wipes, toothbrush and toothpaste, shampoo, and body wash). The objective of this product is to give travellers greater peace of mind because many people are not willing to travel yet. Therefore, before travelling, they may want to be prepared by taking personal and proactive actions to limit their chances of becoming infected with the COVID-19 virus. Additionally, the kit is crafted from an exclusive Terengganu traditional batik fabric suited for various circumstances and environments. This product has multiple compartments for storage convenience and is designed as a sling bag for carrying and hanging convenience. Convenience sampling was used to distribute a total of 209 self-administered market survey questionnaires. According to the results, 82 per cent or 173 of the respondents are eager to buy, and 49 per cent believe the product is very innovative. Through the collaboration with Pertubuhan Pemulihan Dalam Komuniti (PPDK), Wakaf Tapai, and UNI Pharmacy, this project is aligned with the Sustainable Development Goals (SDGs), as it supports the commercial viability of this product as an impulse product for travelling. It is likely to result in the sustainable growth of local batik heritage, and social and economic relationships with the community.

Keywords: Travel kit; batik; post pandemic; travel and sustainable

Discussion Kit

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ABSTRACT

Speaking skills contribute 25% of the overall mark in the new SPM English Language format starting in 2021. However, one of the common problems faced by form four and form five students in SMK Binjai was that they scored poorly in part 3 of the speaking test which requires them to discuss a topic with their partner. They felt that the question was too difficult. Many of them were not confident, lacked ideas, and did not use the language needed in a discussion. Therefore, a Discussion Kit was introduced to assist students to improve speaking skills and to help them ace the SPM speaking test. This product consists of question cards ranging from different topics, QR codes (connecting to songs, mind maps, websites, and videos), discussion starters, a detailed manual, and a listener's checklist. These elements cater to students' individual learning styles and multiple intelligences and are based on second language learning theories such as Krashen Comprehensible Input Theory, Zone of Proximal Development, and corrective feedback. The result of the pre-test showed that the average mark of students was 31%. After using it for two weeks, the average result of the post-test showed that the mark had increased to 80%. From the interview with the participants, this innovation gives them a lot of ideas to deliver content, helps them structure the discussion, and eventually make them confident in speaking English. Based on the feedback from teachers at other schools, they also found that it is an effective teaching aid to help students improve their speaking skills. This innovation is a must-have for every teacher due to its complete set without any prep and easy-to-follow manual. It can also be used as a game during relief or at home. This innovation has commercial potential; as it is multifunction, edutainment, low-cost, and mobile. Therefore, it is the researchers' inspiration that this innovation could serve as a teaching aid for teaching speaking.

Keywords: Speaking skills; discussion; motivation; second language learners

Micro-Credential Functions for Learning Elementary Mathematics Using Online Platform

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ABSTRACT

The pandemic that occurs in the twenty first century has created a big impact in education system. A lot of drastic changes have been done due to the needs of the current situation especially in higher education. Online distance learning has been widely used to make sure that students can still upgrade their knowledge and skills. Thus, Micro-Credential has been developed to encounter this problem and further, upgrade one's knowledge and skills. This Micro-Credential module focuses for learning elementary level in mathematics. The topic of functions has been chosen due to difficulty of the topic in algebra syllabus. There are seven modules developed which consist of teaching materials using Ufuture online platform such as YouTube video, notes, quizzes, test, course information and other additional material for teaching and learning. At the end of this Micro-Credential, students will be assessed on their knowledge and understanding about the topics through final assessment. A certificate will be given to those students attend and pass in this Micro-Credentials. The Micro-Credential modules can be learned in a flexible time and the duration for this course is also shorter. A set of questionnaires have been distributed to students to investigate the feedback on the Micro-Credential's learner's satisfaction. The result shows that majority of students satisfied using the Micro-Credential modules. Therefore, this Micro-Credential's module is suitable to be used as part of lifelong learning using online platform and help students to upgrade their knowledge and skills especially for learning elementary mathematics.

Keywords: Micro-credential; module; online distance learning; functions

Arabiyatuna Board Game

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ABSTRACT

This research focuses on a novel approach to learning Arabic through the Arabiyatuna board game. The board game includes 50 comprehension and grammar problems in Arabic. According to earlier studies, pupils' comprehension of language learning improves when they play games. The research's goals are to assess students' understanding of the Arabic language at the basic level and to link such knowledge to an interactive learning method. This board game is currently undergoing testing and will be released as an app in the future. This initiative will have a big impact on future Arabic language acquisition. This study will improve students' grasp of Arabic and their attitudes about the language.

Keywords: Arabiyatuna; Arabic language; board game

Innovation of Smart Hiking Stick for Tourists and Visitors to Promote Green Tourism during endemic COVID-19

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ABSTRACT

The recreation activities are demanding after the Malaysia government waived the movement control order (MCO) due to the spreading of COVID-19. The public need more outdoor activities for mind therapy due too many indoor or stay at home during MCO. The opportunity of waived MCO is making every individual choose for recreation activities especially hiking at parks or forests. For safety, comfort & ease problems during hiking our team planned smart hiking stick for visitors and tourists. The smart hiking stick is built up to help for those individuals who are hiking at day or night. A smart hiking stick based on various functions that may help hikers to perform recreation activities easily. The smart hiking stick is a reliable option for outdoor activities for example mountain hiking, brisk walking, trail running or climbing. The smart hiking stick have 7 different tools, iron tip, screwdriver, spork, serrated knife, a survival whistle, led torch light and fire starter. And it is lightweight and durable, the smart hiking stick perfect equipment for beginner and advance hikers for any outdoor adventure, even the toughest ones. The iron tip for gripping rough, slippery surfaces, two extension poles, a screwdriver for assembly or repairs, a serrated knife for cutting, a spork for eating and a survival whistle to alert others to your location if you're lost. It also has a built-in compass for navigational purposes and the pole itself serves as a self-defence tool against wild animals or thieves. This makes the smart hiking stick a handy tool during rough outdoor adventures.

Keywords: Smart hiking stick; green tourism; multiple tools; self-defence and safety accessories

Insan Sejahtera Modules as Foundation for Comprehensive Excellence

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ABSTRACT

The International Islamic University Malaysia have formulated a comprehensive framework for education called Sejahtera Academic Framework (SAF) in its effort to humanise education. Insan Sejahtera, as the ultimate end of the framework, is a manifestation of a well-balanced individuals integrated with good faith, knowledge, and good character for sustainable development of Malaysia, Muslim ummah and global population. At the Centre for Foundation Studies, the concept of Insan Sejahtera is formally introduced to the students during their orientation programme. The Insan Sejahtera modules, which focus on the concepts of KhAIR, are set to expose the students on the Sejahtera Academic Framework (SAF) of the university and serve as an alignment tool to shift their paradigm to a comprehensive framework of IIUM. Arguably the first integrated modules for orientation, the modules are tailored to the aspiration of IIUM, making the modules as a part of the continuous processes in nurturing an Insan Sejahtera. Being adaptable and universal, the modules can be developed further as a model for implementation in all institutions. By that, a mutual understanding between the students and institution can be established earlier on and eventually will serve as a common platform for the humanising education processes.

Keywords: Integration; humanising education; orientation; comprehensive excellence

KhAIR as a Model for "Learning to Become": Implementation Model for AED0644 Introduction to Build Environment at the Centre for Foundation Studies, IIUM

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ABSTRACT

Learning to become is an initiative by UNESCO to address the issue from an educational perspective. In line with the above initiative, IIUM has come out with SAF (Sejahtera Academic Framework) that aims to produce balanced and becoming students. One of its components is KhAIR; Khalifah (Vicegerent), Amanah (Trust), Iqra' (Knowledge), and Rahmatan lil 'Alamin (Mercy to the Universe). The manifestation of KhAIR is represented in the AED0644 Introduction to Built Environment course. In conducting the study, the KhAIR model is integrated into the four components of the curriculum like aims and objectives, subject matters/contents, learning activities, and evaluation. This innovation offers an integrated implementation model for Learning to Become in the context of preparing professionals for built environment practices. It also presents the integration process of KhAIR model undertaken by AED0644 Introduction to Built Environment in trying to achieve the level of Learning to Become. The result of the implementation can be vividly seen in the students' works for the studied course, the AED0644 Introduction to Built Environment as well as in other courses offered by the department such as AED0626 Introduction to Design, AED0654 Presentation Skills.

Keywords: KhAIR; learning to become; integration

Jurisophy: An Educational Card Game for Legal Theories

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ABSTRACT

Legal theories and legal concepts are essential subjects for law students to learn and understand the legal system. Due to its contents, it is perceived to be a dry and heavy subject. The student must understand and apply the theories to various legal problems to thoroughly comprehend them. They are often taught to examine and analyse using the ILAC format (Issue, Law, Application, and Conclusion), one of the universal formats used by all law students worldwide. However, due to how ILAC is taught in a class, students still find it challenging to comprehend the legal concepts. The students become bored and lose interest due to the lack of engagement, making it difficult to grasp the idea. Consequently, the card game 'Jurisophy' was innovated by fusing five concepts or legal theories with legal problems creatively and engagingly. One set of Jurisophy consists of 83 cards, including two instructions and guide cards, ten legal problems cards, and 71 element cards consisting of issues, definitions, jurist opinions, legislation, case law, and concepts that must be gathered to solve one legal question. The uniqueness of this card game lies in the way it is designed to assist students in understanding the concept of legal theories in legal situations in a more effective, simple, and enjoyable manner. Therefore, this kind of card game will stimulate students' interest and minds to understand better and make memorising experiences more straightforward and exciting.

Keywords: Legal theories; legal concepts; problem solving; card games; ILAC format

JURISDICTIO: Learning Court Jurisdiction in Malaysia Through Fun Card Games

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ABSTRACT

Learning about the courts' jurisdiction enables one to know about the functions, types, and various jurisdictions of the Malaysian courts. However, court jurisdiction is not an easy subject for students to learn because it involves various levels of courts with different jurisdictions. Thus, an alternative approach of teaching can be adapted through game-based learning. Through this card games known as Jurisdictio, it can increase not only students' interest in the topic of court jurisdiction in a fun way, but also enhance their soft skills. Jurisdictio is the first card game activity of its kind on Malaysian court jurisdiction. In this newly invented card game, the court's jurisdiction is explained in infographic handbook. The gameplay is explained in the manual. Students play the game by answering the questions on the attractive cards which later will be verified by a judge based on the answer list. Being the first card game on Malaysian court jurisdiction making Jurisdictio unique. Hence, it has the potential to be sold commercially to those interested in law subject especially court jurisdiction. Overall, through this game, active learning is motivated through competition, fun, and excitement. Importantly, research show that card games increase students' performance in the learning process.

Keywords: Court jurisdiction; Jurisdictio; game-based learning; card games; active learning

Digital Health Education on "Mati Pucuk" e-Risalah Mati Pucuk

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ABSTRACT

Erectile dysfunction (ED) is a sexual dysfunction disorder where the inability to acquire and maintain an erection long enough to achieve sexual satisfaction. It has a significant prevalence and causes negative impacts on men and their partners. However, the disease is still underdiagnosed, and a low number of men sought treatment from a medical professional. One of the factors is health literacy among men. The traditional education method via printed brochures to disseminate information has received less popularity among the public. This is because of the increasing usage of digital platforms. Thus, the objective of this innovation is to develop an interactive erectile dysfunction digital education material in the Malay language. Literature review on ED was performed. The education tool was developed using the online software "Canva". The tool can be accessed online and shared widely, at less cost, and the engagement can be evaluated. It can disseminate widely information on health education and promotion to target male audiences concurrent with the advancement of technology and digitalization of health. The use of digital education material for health promotion may encourage treatment-seeking and promote the health services available for ED.

Keywords: Erectile dysfunction; digital; health education; Malay; interactive

A MEMS Capacitive Microphone for Ultrasonic Frequency Detection

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ABSTRACT

The problem to detect sound at ultrasonic range is a major challenge nowadays. Ultrasonic range requires special designed sensors because this frequency range is higher than the human hearing range. The human hearing range is between 20 Hz to 20 kHz, while the ultrasonic frequency range is more than 20 kHz. This project proposes silicon carbide (3C-SiC) as a membrane's material because this material shows good mechanical strength i.e high Young's Modulus which is higher than silicon. The membrane is the most important part of a MEMS capacitive microphone as it senses induced pressure from the sound waves. If membrane is not included as a part of MEMS capacitive microphone, this sensor cannot detect any pressure and totally not function. The modification of the shape and dimension can be done against membrane. The shape can be in circular or square, flat, or corrugated. The dimension (side length or radius) of the membrane can be change depends on the application purpose and suitability. Silicon carbide as a membrane's material is our novelty. Due to its mechanical properties, this material can operate at high frequency and temperature. The conventional silicon-based microphone not suitable for high frequency applications because of the limitation its mechanical and electrical properties that can degrade below temperature of 500oC. There is no finding on silicon carbide as a membrane for MEMS capacitive microphone. This silicon carbide-based membrane manages to give good frequency performance for MEMS capacitive microphone because this sensor can detect the frequency up to 30 kHz. The device can be used to detect gas leaking (ultrasonic frequency) at harsh environment (high pressure) such as oil and gas platform and petrol station.

Keywords: Silicon carbide; MEMS capacitive microphone; ultrasonic frequency

e - INVEST

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ABSTRACT

The e-INVEST application is a database program that is designed specifically for investors. Normally investors will do some evaluation and analysis on the company before making their investment decision. The widely used strategies are fundamental analysis and technical analysis. However, it is rather tedious for the investors to manually evaluate and analyse the financial performance of potential companies that they intend to invest in as there are many criteria or financial ratios that need to be taken into consideration. Fortunately, the evaluation can be simplified by using an automated system called e-INVEST that is able to rank companies based on their financial performances. The e-INVEST application which is developed using the technique for order performance by similarity to ideal solution (TOPSIS) approach is proven in assisting investors in many ways. This system helps the investors in making their investment decisions in a short period of time and exploits great opportunities of making a huge profit.

Keywords: e-INVEST; financial performance; investment decision; TOPSIS

Cash Transfer-Based Entrepreneurship Model for B40

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ABSTRACT

Due to COVID-19, many Malaysians in the M40 group have fallen into the B40 group thus contributing to the increased number of vulnerable groups in the country. Hence, the government have allocated and distributed financial aids like household living aid (also known as Bantuan Keluarga Malaysia), Bantuan Prihatin Nasional, Bantuan Khas COVID and many more. These one-off financial aids give a short-term financial relief to the recipients but with some intervention it can be turn into an entrepreneurship model. Thus, this model illustrate how cash transfer-based entrepreneurship can be practiced in Malaysia and other emerging economies. Based on the extensive document reviews, we have conceptualized the model using zakat and waqf-based entrepreneurship as the framework. The cash transfer-based entrepreneurship model serves as an initial model for B40 and the household living aid recipients to involve in the entrepreneurial activities. Eventually, the policy maker such as the government can implement this model so that the financial aids given could have a long term impact to the recipients. In the long run, the B40 household will be able to escape the poverty and improves their quality of life.

Keywords: Business capital; B40; cash transfers; entrepreneurship; poverty

EZWORKOUT: The Mobile App to Workout Easy and Safely in Post-Pandemic Era

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ABSTRACT

On 18th September 2021, the Malaysia government has allowed the gyms and fitness centres to resume their operation under National Recovery Plan (PPN). The Standard Operating Procedure (SOP) has been introduced utterly for the safety measures; to circumvent the spread of COVID-19 among the users while workout in the gyms and fitness centres. Therefore, EZWORKOUT mobile app is designed as an intermediary application (iapps) to assist the gyms and fitness operators and users to adhere with the SOP. Several mobile app features are designed for SOP necessities such as advance online booking and health declaration. Besides, the added features such as selecting gyms and fitness centre's location, online payment and workout tips would offer a new business model for fitness industry in Malaysia to endure the post-pandemic era.

Keywords: COVID-19; SOP; mobile app; gyms; workout

Treatment of Wastewater by Plant-Based Coagulant

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ABSTRACT

The effluent will discharge to the water bodies without tertiary treatment in conventional wastewater treatment plants. Due to that, this effluent needs to be upgraded to enhance the quality of the water. It can be denoted that coagulation is one of the methods to improve the water standard. Moreover, coagulants have been used to purify raw water for safe drinking. Typically, aluminium sulphate has been used as chemical coagulants for the coagulation process in water treatment. However, these chemical coagulants have some drawbacks as the residue from this substance is toxic and harmful to the environment and creates severe health issues. Thus, a sustainable green product from the natural plant-based coagulant can be a substitute to replace the conventional methods—this emerging product of plant-based materials using Moringa oleifera seed and maize seed. Based on the research study, this plant-based coagulant can reduce the turbidity by 92% removal rate (mixed of Moringa Oleifera seed and maize seed), the chemical oxygen demand (COD) of 95% reduction rate using Moringa Oleifera seed, biochemical oxygen demand (BOD) for 88% removal (Moringa Oleifera seed), the ammonia-nitrogen removal rate of 12% (Moringa Oleifera seed) and total suspended solids (TSS) of 100% reduction rate using mixed of Moringa Oleifera seed and maize seed in the effluent water sample. From the results obtained, Moringa oleifera and maize seed have a significant potential to be recognized as alternative solutions to chemical coagulants for long-term sustainable treatment. This plant-based coagulant is safe to be consumed for drinking water purposes and can be considered a green product.

Keywords: Coagulation; *Moringa oleifera*; maize; natural coagulant

Concept Map: Blaming Game, Fix the Audit Misconception

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ABSTRACT

Auditor plays a crucial role in the financial system of any country in promoting confidence on the reliability and quality of audited financial statements (FS). Auditing Standards in any jurisdiction, for instance, the International Standard of Auditing (ISA) and Malaysian Companies Act 2016 (CA 2016) describe the fundamental roles of an auditor regarding FS audit. However, users' perception of the auditor's roles has always been misperceived. Users expect auditors to be perfect and make them liable for corporate collapse and financial scandal. This misconception eventually has caused auditors to be brought to the court like in the case of 1Malaysian Development Berhad (1MDB), Serba Dinamik and Silver Bird Group. To mitigate this expectation gap and correct the misconception, users understanding of auditor's roles must be unlocked and perhaps the best way is through education. However, educating people on standards always be challenging. That is why the issue of audit misconception that has been discovered since 1974 by Liggio has still been debated even until now. Most probably because of the jargon of auditing standards which may cause users, particularly people from non-accounting backgrounds to misinterpret and form their own assumptions on auditors' responsibilities. This issue must be fixed immediately. Hence, we are proposing this project titled "Concept Map: Blaming Game, Fix the Audit Misconception" in providing a clear understanding about the auditor's statutory roles and responsibilities. This project would be beneficial to accounting students, accounting practitioners, management of audit clients and the public at large. It is hoped that a way forward the misconception can be corrected as an effort to create harmony and a healthy financial system in the country.

Keywords: Audit; audit misconception; auditor; auditor role; financial System

O' basil: Miles of Smiles

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ABSTRACT

Tissue conditioner (TC) is a short-term soft liner used to improve the fit and function of an ill-fitting denture by rehabilitating the traumatized tissue of the mucosal underlying the dentures or obturators in patients respectively. It provides an even distribution of masticatory force, moulding itself to the changes which occur during the healing of lesions intraorally. However, an increase in surface roughness of aging TC will promote colonization by *Candida albicans* (*C.albicans*). Objective: To provide a natural, easily applied, and compatible antifungal combined with the tissue conditioners for treatment of candida infection on a denture. O'basil is a modified version of *Ocimum basillicum* essential oil which is invented as an alternative antifungal for infection among denture wearers. To the best of our knowledge, this project is the first to display the anticandidal efficacy of O'basil as additives in tissue conditioner with antimicrobial and antibiofilm activities that significantly inhibit the *C.albicans.* Commercialization potential: The ability of these products to penetrate the Malaysian market is expected to be very high due to their efficacy. Moreover, O'basil could offer more opportunities in the development of SMEs and enhance the growth of the Malaysian made products. Conclusion: Therefore, O' basil, an alternative antifungal in preventing and managing, additionally improving the material is in need for fungal infection in denture.

Keywords: Antifungal; denture; essential oil; O'basil; tissue conditioner

Crescent Lying-Down Nursing Pillow

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ABSTRACT

Breastfeeding is a challenging activity which requires full dedication from the mothers. Incessantly, mothers must commit to this activity depending on the demand of the babies. The most crucial period for breastfeeding is at night where the baby has more intensity to spend as frequent as once for every two hours to breastfeed. One of the obstacles is maternal discomfort which has been experienced by the mothers due to the common breastfeeding position like sitting down. This position requires the mothers to wake up at night and disturbs the quality of sleep, thus causing sleep deprivation especially among working mothers who have another routine the next day. Recently, lying down position for breastfeeding has been promoted as nursing goals to ensure successful and continuation of breastfeeding practice. This position is introduced to help mothers to get enough rest while breastfeeding. Inspired by crescent shape of the moon, 3D drawing using Solidwork 2021 software has been used to design the prototype of this pillow. The difference between Crescent Lying-down Nursing Pillow compared to other nursing and maternity pillows is in its design. The shape is specifically designed to support the backbone and side lying-down nursing posture to avoid backpain, shoulder and neck impingement. This pillow will give an ultimate comfort to mothers all night while breastfeeding. As public community awareness towards successful breastfeeding practice keeps increasing, this innovation product is believed to solve one of the mothers' hurdle and obstacle along breastfeeding journey.

Keywords: Breastfeeding; nursing pillow; side-lying; crescent

Al Jumal's Cube

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ABSTRACT

This research focuses on a novel approach to learning Arabic through the al Jumal's Cube. This cube evolved from the standard cube in market with additional words on each side on the surface. Based on literature, the game can boost up students' comprehension towards learning language. The research's goals are to engage the students with leaning Arabic language while implementing the concept of gamification and to assess students' understanding of constructing sentences using the al Jumal's Cube in addition to demonstrate upon them the differentiate between nominal and verbal sentences in the Arabic language. This innovation is developed based on ADDIE Model and will have a big impact on future Arabic language acquisition. It is hoped that this current innovation will improve students' grasp of Arabic and their attitudes about the language.

Keywords: Al Jumal cube; Arabic language; sentence construct

Adjustable 2D-3D Vector Learning Kit

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ABSTRACT

Geometry is a core component of secondary school mathematics. Plane geometry is the common thread running across all secondary school geometry. One of the most difficult concepts for students to understand in geometry is the concept of vectors. Vectors were first studied in school as mathematical symbols to depict physical processes. It is hard to understand the concept and nature of vectors without the aid of teachers. Simple vector operations such as addition and subtraction might be difficult if students are not properly prepared. It is advantageous to begin studying vectors with a simple two-dimensional scenario based on geometrical constructions, then progress to three-dimensional space. Hence, formal lectures should be supplemented by instructional aids. This involves the development of a learning kit that allows students to visualise topics based on mathematical symbol connections. The Adjustable 2D-3D Vector Learning Kit was developed to fulfil this need where students can clearly see the interpretation of vector operations geometrically either in 2D or 3D vector space. Educators and students will get the benefit from this learning kit as the hands-on activities involved will not only improve students' understanding of the topics but also create an active and practical way of learning vectors and geometry.

Keywords: 2D-3D vector; vector addition; learning kit

DOCO: Polynomial Challenge for Alpha Explorer

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ABSTRACT

In this project, we have produced an educational game so-called DOCO. The idea in creating this game was considered a student-centered approach in which pre-university and undergraduate students learn about a subject by working in groups to solve open-ended math problems. The purpose of this project is to encourage students to use higher order thinking skills as well as math skills when math concepts are formally introduced. This DOCO game will be in series for solving math problems. Moreover, we name this series starting by an Alpha explorer where some problems have been sorted out regarding the polynomial equations.

Keywords: Educational game; polynomial equation; math problems

Mahsuri-The Legend Continues

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ABSTRACT

Mahsuri, the Legend Continues is a package that consists of a folk tale book that was inspired by the legend in Langkawi. Langkawi is one of the popular tourist attractions because of its legend. Mahsuri is the main character in this Malay folk tale. It is about a woman who was wrongly accused and was sentenced to death for something she did not do. Folk tale is one of the genres that functions as a way to preserve our cultural identity from fading. The objectives of this project are to document the creative process of the book, the process of the illustrations and the process of promotion of the 'Legenda Mahsuri' package. The folk tale was retold, illustrated and translated into Tamil Language and was launched in India in 2020. Besides the book, a set of 'Legenda Mahsuri merchandise that consist of a tote bag, a pouch bag and a pencil case with the image of the book cover can be purchased online. In 2021, the book won 4 categories of awards, received bulk purchase orders and were distributed to primary schools in selected locations. This book was written in Malay language with Tamil translation and in the process if translating to other languages. The book is suitable for children and aims to promote traditional and cultural values besides spreading the national heritage worldwide.

Keywords: Malay folk tale; legend; Mahsuri; cultural values; children literature

GoBiD: Testing Readiness of Big Data Adoption in Higher Education Institution

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ABSTRACT

Compared to other sectors, Big Data (BD) adoption in higher education is still at initial stage. Due to the lack of studies on the BD adoption, higher education does not realize the benefits of BD. Previous studies of BD cover more of the technical part and the development of the system, which leads to fewer studies to propose the right theoretical framework for BD adoption in higher education. Therefore, the introduction of GoBiD is expected to provide information on the current situation concerning the level of readiness for BD adoption as well as feedback that people can use for improvement by looking at the description for each percentage acquired. In the context of commercialization, this project will propose a new theoretical framework for BD adoption in higher education institutions and help other organization that have not yet tested big data adoption. GoBiD also aids an organization in cost-saving related to BD adoption by observing the result of readiness among the people before proceeding with the implementation stage. In a nutshell, the GoBiD will assist an organization in analysing the readiness level for big data adoption and providing the necessary action that needs to be taken based on the result obtained.

Keywords: Big data; higher education institutions; big data readiness; big data adoption

Benzylamine Derivatives as Corrosion Inhibitors on Carbon Steel

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ABSTRACT

Acidic solutions applied in oil and gas pipelines as well as shafts are the main source for corrosion of carbon steel. Methods aimed at preventing corrosion comprise of exposing carbon steel with corrosive media fully immersed in an aqueous acidic solution containing synthesized series of azomethine ligands derived from 2,4-dihydroxybenzaldehyde and benzylamine derivatives as corrosion inhibitors. The methods have extensive usage in numerous categories of processes includes in the manufacture or transference of oil and gas, especially for acid stimulation in a borehole or counteractive intervention in a pipeline made out of carbon steel.

Keywords: Corrosion; inhibition; acid solution

Yippie Organo Tiles – An Interactive Game for Pre-University Organic Chemistry

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ABSTRACT

The amount and complexity of information learned in organic chemistry frequently overwhelm STEM students. Having said that, Yippie Organo Tiles was invented as a unique teaching and learning tool that will aid students to learn better and understand organic chemistry in a fun and engaging way. This domino-like tile-based game is a simple and attractive board game, that requires students to notify and build the sets of organic chemistry reactions involving reactants and products. The game is played with magnetic tiles that are small, flat and rectangular in shape. Each tile contains an organic chemical reaction as well as the result of that reaction. Then, the product will act as a reactant in the organic reaction that follows. The game is ideally played by 3-6 players and the first person to finish his or her tiles and shout "YIPPIE!" will be the winner for the game. The ability to assess students' cognitive and psychomotor abilities, this game has the potential to be commercialized and utilised in pre-university teaching and learning. Yippie Organo Tiles is an ingenious tile-based game designed to boost the attention of STEM students in organic chemistry and to promote STEM to others.

Keywords: Organic reaction; tiles-based game; STEM

Ohsem Organoboard: Interactive Game for Pre-University Organic Chemistry

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ABSTRACT

Majority students consider organic chemistry to be difficult and boring because it requires memorization. Ohsem OrganoBoard game is designed to help STEM students learn and understand organic chemistry in a fun and interesting way. This board game is suitable to be played by 2-4 players. It consists of a board, 2 dices, and 4 types of cards named Wild Card, Starting Material (green), Reactant (blue), and Condition (red). The board contains lots for Starting Material (organic compound), Reactant, Condition and Wild Card slot. Players may choose to buy the cards based on the respective values. Players are required to collect a set of Starting Material card, Reactant card and Condition card to complete a chemical reaction and receive a token (product). Players receives credit when another player landed on their slot. Wild Cards may contain reward or punishment. The winner is the person with the most token and credit within the time allocated. Ohsem Organo Board introduces new paradigms in education for an alternative methodology in the higher education classroom. It is an innovative teaching and learning tool to raise student interest in organic chemistry. This game can be commercialized to be used by educators and students at pre-university level.

Keywords: Organic chemistry; gamification; interactive

TRAPP: An Interactive Dashboard for Tracking Students Academic Performance and Personality Traits

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ABSTRACT

Monitoring and tracking each student's academic progress during open and distance learning (ODL) can be challenging for courses with different types of continuous assessments. This study will therefore propose a dashboard model for monitoring and tracking students' academic performance. A pilot study, data collection and preparation, analysis, development, and implementation of data stories in the dashboard are the phases involved in this study. The evaluation comprises data stories of a student including academic performance and their personality traits - behavior, cognitive skills, and discipline. It helps facilitate lecturers to identify students who need guidance and support, considering their background and traits. Its digital traces, enable viewing and detecting students' ongoing assignments. Students can also see their progress for self-evaluation. The novelty of this model is that it uses visual analytics to monitor and benchmark each student against their group and personalise milestones as academic progress. The main outcome is the learning analytics progressive responsive dashboard with a compelling narrative of data stories with features for personalization and generic representation. Potentially, it can be marketed throughout the education sector at a minimum cost of RM30K.

Keywords: Visual analytics; learning analytics; personality traits; academic performance; progressive dashboard

Ohsem Biodiversity Board Game – An Interactive Game for Pre-University Biology

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ABSTRACT

Biodiversity and creature taxonomy are typically seen as broad topic in biology and often challenging to study. Recently, an emerging teaching technique using scientific board games and gamification of scientific concepts for teaching and learning is making headway. Ohsem Biodiversity Board Game is intended to do just that; to assist students learn biodiversity in a fun and engaging way. This game encourages students to nurture their memorization and critical thinking skills that will improve their understanding towards the concepts of biodiversity. This board game is suitable to be played by 3-6 players. The board consist of designated slots, namely Kingdom (Archaea, Bacteria, Protist, Fungi, Plantae and Animalia), Phylum, Characteristics and Wild Card slot. When players land on the relevant slots, they can opt to buy them depending on the respective values listed on the board. Players must gather a set of cards consisting of Kingdom, Phylum, and Characteristic cards in order to acquire a trophy (species of the kingdom). The player will be credited when another player lands on their slot and the values vary depending on whether the player has a complete or incomplete set. After the time limit has expired, the player with the most credits and assets will be declared as winner. This game aims to explore new educational paradigms to provide an alternative methodology for teaching and has the potential to be a beneficial pedagogical tool for accelerating learning in a fun and engaging way. This board game has the potential to be used by secondary school students and educators as well as foundation level institutions as an innovative teaching and learning aid.

Keywords: Biodiversity; board game; teaching; learning

Development of Emergency Response Plan Recorded Video to Enhance Laboratory Safety Awareness Among Pre-University Students

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ABSTRACT

Science and technology are known as important mediums that lead Malaysia in becoming a developed country. In this field, hands-on skills are much required in addition to the theory given in the class. However, one of the concerns commonly addressed related to the laboratory activities among university students is the safety issues during the learning activities in the laboratory. The emergency response plan (ERP) is among the vital components in case of an emergency. Although this concern has been emphasized by the Ministry of Health Malaysia in Guidelines 2015, Malaysia Laboratory Biosafety and Biosecurity Policy, the level of awareness on laboratory safety among the pre-university students is not clearly known due to lack of reports on the matter. Thus, the objective of this innovation is to enhance awareness of the emergency response plan (ERP) for Biology laboratory safety during teaching and learning for Pre-University students. ERP QR Code is a video-recorded laboratory safety guide that was developed to enhance safety awareness among Pre-University students. This is aligned with the Sustainable Development Goal (SDG) 4 on Quality Education which is to build education facilities that are safe and inclusive with effective learning environments through the cultivation of sustainable well-being programs.

Keywords: Laboratory safety; awareness, emergency response plan (ERP); pre-university student; sustainable education

In-Situ Water Quality Device using Cloud Information Floating Water Quality Device (i-FLOWD)

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ABSTRACT

Contamination of water is a major issue across the world and one of the major contaminants in stormwater runoff comes from urban areas, highways, and roads. Water is an important necessity for survival and should be monitored regularly. As a result, water monitoring is a crucial procedure for monitoring water quality. Numerous old water quality measurement techniques are still in use today which are laboratory-based, requiring the delivery and evaluation of the sample which is time-consuming and expensive. The monitoring device's high cost has limited the authority owner's (properties developer's) ability to own it. This project was initiated with the integration and enhancement of individual sensors into a floating system powered by solar energy and transmitting live GSM data to a cloud processing base that can monitor and analyse water quality parameters such as temperature, total dissolve solid (TDS), and turbidity in real-time. The development of a low-cost in-situ measurement instrument for authority owners (property developers) or a new development area favours the market. Therefore, this device demonstrates its ability to produce more efficient and reliable results, allowing authorities to conduct environmental assessments more quickly and efficiently.

Keywords: Floating; real-time; water quality

Tadabbur-Storytelling Approach in Dealing with Mental Health Issues at the Centre for Foundation Studies, IIUM

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ABSTRACT

The National Health and Morbidity Survey (NHMS) conducted by the Ministry of Health (MoH) in 2015 revealed that the prevalence of mental health problems among those 16 years and above was 29.2%. 1 in 3 Malaysians have mental health issues, with highest prevalence among those aged 16-19 years as well as those from low-income families. Hence, the study suggests an integrated and supplementary approach in dealing with mental health issues at the Centre for Foundation Studies, IIUM. The proposed approach integrates the practice of tadabbur (in-depth reflection) on selected exemplary figures and stories from the Al-Quran with the conventional methods in dealing with the mental health issues. The selected figures and stories are analysed in the context of mental health intervention and supports. As an alternative approach, the methods of implementation of the approach rely on the tadabbur (in-depth reflection) of Quranic verses and effective storytelling. The novelty of using the tadabbur-storytelling method in tackling the mental health issues is the core foundation of this approach. The responses collected from the participants i.e., students and staff, have been very encouraging towards the new approach and can be seen from the results of the survey conducted.

Keywords: Mental health; tadabbur; storytelling

Fabrication of Proton Conducting Polymer Electrolytes Based on PVC-$NH_4CF_3SO_3$-BU_3MENTF_2N for Proton Battery

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ABSTRACT

Searching a new material for the development of proton conducting polymer electrolytes that can be used in protonic electrochemical cells is the focus of this research study. In this study, the proton conducting polymer electrolytes were prepared by solution cast technique. Poly (vinyl chloride) PVC is used as the polymer host, ammonium triflate ($NH_4CF_3SO_3$) as the doping salt and ionic liquid-butyltrimethyl ammonium bis trifluoromethyl sulfonyl imide (Bu_3MeNTf_2N) is used as the plasticizers. Characterization techniques of Electrochemical Impedance Spectroscopy (EIS) was used to study the electrical properties of the PVC based proton conducting polymer electrolytes. The highest ionic conductivity achieved was 1.56×10^{-4} S cm^{-1} for 15 wt. % Bu_3MeNTf_2N polymer electrolyte. Electrochemical cells were fabricated using PVC-$NH_4CF_3SO_3$ - 15 wt.% Bu_3MeNTf_2N electrolytes. The cells were discharged at different loads of 1.5 kΩ, 62 kΩ and 95 kΩ. The open circuit voltage (OCV) of a cell based on the highest conducting electrolyte with configuration: Zn+ $ZnSO_4.7H_2O$+PTFE | 85 wt. % (PVC-$NH_4CF_3SO_3$) +15 wt. % Bu_3MeNTf_2N | MnO_2+PTFE is ~ 1.52 V while its discharge capacity is 0.55 mA h with maximum power density of 5.048×10^{-3} W kg^{-1} and maximum energy density of 0.560 Wh kg^{-1}. The discharge performance of the cells showed that the protonic polymer electrolyte film proposed in this work has potential for application in protonic electrochemical cells for proton battery.

Keywords: Electrochemical cells; ammonium triflate; ionic liquid; proton battery

External Review Information System (ERIS)

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ABSTRACT

External Review (ER) poses the importance of internal audit to ensure and maintain the quality culture in UiTM. ER has been conducted and set up by the Institute of Quality and Knowledge Advancement (InQKA), including the auditors and officers that will cater to the ER planned for the respective years. The most crucial issues with the ER practices were the late ER report preparation due to the time constraints. There was no proper internal system to record the ER findings, which contributed to the delay in delivering the ER reports to the respective departments. With the capabilities of cloud technology, we had invented a template platform in Cloud, also known as External Review Information System (ERIS), that will be able to cater to the issues raised and improvements needed by the ER processes. ERIS has been developed using the Google Sheet as the Googles applications available. ERIS can be accessed 24/7 by the auditors, provide the real-time findings and deliver the statistical analysis on a real-time basis. ERIS has been used since 2020 to cater to almost 18 ER audits in 2020 while 28 ER audit activities in 2021 and able to reduce the delay problem in preparing the ER report and delivery into less than five days, compared the previous process with more than 30 days, 83% of the achievement. ERIS can be commercialized to the government and audit organizations to adopt the ERIS concept and implementation. In addition, ERIS also supports the Sustainable Development Goals (SDG) that will help the achievement of SDG8, Decent Work, and Economic Growth that will benefit the InQKA and UiTM in achieving the objectives of Global Renown Universities in 2025.

Keywords: Cloud technology; external review information system; improvements

Corrosion Resistant Mesoporous Carbon-Based Nanocomposite Conductive Coating

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ABSTRACT

Mesoporous carbon nanomaterials are characterized with tuneable porous structure in the range of 2 to 50 nm, high surface area (> 1000 $m^2 g^{-1}$), hydrophobic (contact angle >130°), electrically conductive and good gas permeability. The unique features of mesoporous carbon nanomaterials may provide wide potential applications in gas sensor, electrode materials, catalysis, hydrogen storage, adsorption and other fields. The peculiar mesoporous structural system facilitates ion transport and provides energy characteristics. Therefore, mesoporous carbon nanocoating materials are desirable in new surface modification technology for polymer and composite-based industries. This coating technology can be extensively use for anti-fog application and it is environmentally friendly.

Keywords: Carbon; nanocomposite; corrosion resistant; conductive coating

CATEGORY B
Postgraduate/Undergraduate

'AReal-Vocab': An Augmented Reality Mobile Application for English Vocabulary Learning of Children with Mild Autism Spectrum Disorder

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ABSTRACT

American Psychiatric Association defined autism spectrum disorder as a neurological disorder due to which diagnosed child may face difficulty in social communication or have a repeated or restricted set of behaviours. Learners with autism are mostly visual strategy learners and they tend to learn better through pictures and images. Due to their cognitive disabilities, most learners with autism struggle to acquire new vocabulary and with the existence of fourth industrial revolution, the use of technology is no longer a stranger to the education field. Hence, the use of augmented reality technology is considered in this study as past literature has proven that augmented reality technology could help to provide autism learners with a more meaningful learning session. In conjunction to that, this study is aimed at designing, developing and evaluating a mobile augmented reality application named 'AReal-Vocab' to help learners with autism in their English vocabulary learning process. It is believed that the designed and developed AReal-Vocab application can give a significant impact on autism learners' language learning process. AReal-Vocab is believed to be able to help autism children to learn English vocabulary in a more interesting yet meaningful manner and at the same time sparks their interest in their English vocabulary language learning process.

Keywords: Autism spectrum disorder; Augmented reality; ESL learning; English vocabulary; mobile learning

Cinemagraph; New Media Enhancement in Health Campaign

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ABSTRACT

Cinemagraph is one of the new techniques available in photography, specially made to show the interactive element available throughout the movement content. It is known as a moving image that has been replicated from the GIF file with additional aspects to make it more interesting. This study is mainly focused on the technique enhancement that will be used in public health campaigns, replacing the current poster and video medium. Current health campaign only available in poster and mainly been located in public main attractions such as clinic, hospital and library. Meanwhile, the rate of health problems in Malaysia is still high, and less awareness on the health among the patients make it even worse. With the exploration of the technique in depth, it can help in spreading the awareness with interactive content, and this time can be published on social media with the use of nowadays technology like Instagram, Facebook and Twitter through smartphones. Current development of this technique is based on the familiarity of the theory to develop effective content, to make sure every level of target audience gets used with this concept. Once the technique of cinemagraph has been developed to the final stage, with the help of data collected from the questionnaire and interview, hopefully this technique can be used widely and officially run under the watch and help from the Ministry of Health (MOH) Malaysia. As a conclusion, this study is still under development and far from perfect to be complete, because there have been some limitations that need to be considered and need other parties' attention to go even deeper.

Keywords: Cinemagraph; interactive; public service announcement; health campaign; moving image

Semi-Auto Face Mask Disposal Bin

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ABSTRACT

There are various reasons why the increase of COVID-19 cases is continuously happening in the world. One of the many reasons might be because of the improper disposal of used face masks that has become a new norm in our daily life. This product is an invention of a waste bin that can help reduce the transmission of COVID-19 from one person to another, especially between waste collectors. The used masks that are thrown into this face mask disposal bin will be shredded and disinfected automatically. This will ensure the safety of waste collectors and the public in general as the bacteria and viruses from the used masks will break apart after it is sanitized. Therefore, there will be less risk for users to be infected by the virus. This product can be used at offices, home, and places indoors. The design of this product has been successfully created and it has also been analysed to ensure the functionality of the product. The outcome after the fabrication process has been successfully achieved according to its initial design. The shredder and the automatic disinfectant are able to work after putting a face mask into the bin.

Keywords: Face mask; disposal; mechanical

The Application of Braille Code for Visual Impairment People Towards Clothing Design

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ABSTRACT

Visual impairment people have challenges in their lives that can cause them to feel less independent compared to people who can see. Those who are visually impaired cannot see details on the clothes such as the color and size of the clothing they want to buy. It causes visual impairment people to ask for help from others or have to choose to use the same color for all their clothes. Moreover, the surface of the Braille dots that appear on the garment will allow visually impaired people to read important data on the garment. This study included samples for visual impairment facilities of people from Jalan Masjid India, Kuala Lumpur, and the Development Organization for Blind Malaysia. Visual Impairment people face challenges when shopping for clothes, especially in identifying the size and color of clothing. This study complements the sustainable development goals (SDG) 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. Surveys found that people with visual impairments have problems while shopping. Sellers say they have trouble identifying the type of clothing to choose. Ideas developed through Braille code towards clothing design that has functionality for visual impairment can use the Braille to identify size and color on clothing. All of the designs were created based on a Braille code system that easy visual impairment people to identify size on clothing. Furthermore, it can attract retailers to increase the success of the fashion industry. The availability of a Braille code system on clothing can be a more efficient alternative for the fashion industry to accommodate the visual impairment of people in shopping and clothing selection.

Keywords: Visual impairment people; braille; fashion

Direct Sew Garment Pieces D.I.Y Project Initiative for B40 Empowering Skills at Once Generate Extra Income

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ABSTRACT

The B40 population, most of them were already struggle before the pandemic. The B40 group is who have been the hardest effected by the COVID-19 pandemic, especially for women, many of them doesn't get the opportunity to earn a living because lack of skills. With help by the government to B40 groups such as helping them in increasing their household's income by giving them an opportunity to learn skills by providing them free classes can decrease their burden. The researchers recommend to the B40 population in mastering and empowering their skills that can be used as a source of their income in order to continue surviving in this current COVID-19 crisis. Also, learn an extra skill that helps them gain new experiences, train their brains for a variety of challenges, and keep their neural pathways active. Nowadays, due to all communities are required to be indoors or stay at home in order to prevent the COVID-19 infection and prohibited from holding a seminars or classes with the face-to-face method, it's hard for them to attends any skills classes. The researchers recommend new learning methods of sewing skills using DIY product that can be practiced at home to facilitate the B40 group to be more active and productive to strengthen their skills and at the same time, they can generate extra income. To understand the problem faced by B40 population and to identify improvement that can be made in the design that can adapt to their behaviour and style, the survey questionnaire and observation captured in photographs were done. The preliminary data, pilot test has been done before proceeded to be implicated into design development and final products. Through post-test and interview, the research found that the new feature added in the design are very suitable with customer behaviour and lifestyle, with minimalist design, suitable material and creative instruction method enables them to easily and enjoy the process of making their own product, learning and practice skills.

Keywords: B40 group; COVID-19 pandemic; empowering skills; generate extra income; new learning method

Orcycle

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ABSTRACT

Such problems must be resolved as soon as possible because allowing such problems to occur will have a negative impact on our country's economy. This motivates to develop products that will benefit farmers in our country as well as encourage people to start farming at home. Orcycle is a product developed to address this issue. Orcycle was invented because there still no organic medium for hydroponics and aquaponic use. Orcycle is a new medium for seed germination that contains 90% recycle materials and known as compost product because it is contains its own nutrients that plant needed. This orcycle can meet the needs of people who wants a simple and lightweight plant medium and can carried everywhere. It can say as consumer-friendly product as it does not contain harmful chemicals. The production cost invested to make orcycle is very cheap because most of the ingredients used are recycle materials, so it does not have to spend a lot of money to produce it. The main objective that wants to achieve is to save money and save the environment from pollution. The materials used is dried leaves which have a high value in the manufacture of compost. Next is recycle paper can decomposed when it joined to the soil because originally it made from woods. Furthermore, cocopeat which is a good cultivation medium because of its pH value, electrical conductivity, and other chemicals properties suitable as cultivation medium. Moreover, starch water which serves as a glue to combine all ingredients. The aim is to raise public awareness of the importance of recycling reusable waste. For future expectation, this orcycle well known in the world and there are other choices other than rockwool and germination sponge for hydroponic and aquaponic cultivation.

Keywords: Orcyle; seed germination; recycle materials

Design, Analysis and Fabrication of Full-Body Sanitizing Machine

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ABSTRACT

A full-Body Sanitizing machine is a machine that has equal length walls made with the welded metal frame as its entrance and exit are both wide enough. This is to permit a person to step into the machine and passes through while being sprayed with a sanitization or disinfection liquid from above by pumping liquid sanitiser through a reticulation pipe system and through a nozzle. Then a ventilation fan will blow air into the machine to introduce fresh air into the system. This will decrease suffocation in the machine as it pushes liquid particles into the floor. The objective of this product is to promote a high-level of hygiene into the public to reduce microbial infections. The machine is mostly suitable to be used in areas that require high-level sanitization such as hospitals, food manufacturing companies, factories and so on. The usefulness of the machine is not only limited to the current pandemic. There are a lot of ways the machine could be modified to suit different applications. In conclusion, hopefully through the use of my product we could yield positive results in order to prevent fomite transmission therefore finally break free from this chain of cases and eventually curb the COVID-19 spike.

Keywords: Sanitization; disinfection; COVID-19

The Gum Diary: The Improvisation

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ABSTRACT

Periodontitis is one of the common gum diseases among Malaysian populations. Patients' awareness of their gum condition and adherence to a continuous home plaque control regime is very important for successful gum treatment. Unfortunately, the level of patient's motivation is not normally constant due to lack of understanding and lack of reminder on their gum condition. Thus, the Gum Diary has been developed and improvised to increase patients' understanding of their gum condition so that it will increase patients' adherence to self-plaque control, especially on the interdental cleaning. The diary provides a medium for written communication between the dental practitioner and the patient. It has been improvised by including a bigger space for the written update on the patient's gum condition and detailed instructions on interdental cleaning. The result of our surveys showed that 77% of the operators and 100% of the patients find that the diary is useful in delivering information and increasing patients' adherence to plaque control regime. It also has commercialization potential as it was designed to be used by most dental practitioners, such as dental students, dentists, and periodontists for their patients. Thus, the usage of the Gum Diary will be a useful innovation to ensure successful gum treatment.

Keywords: Compliance; gum diary; maintenance; patient's adherence; gum treatment

Design, Analysis, and Fabrication of Dustbin Plastic Bag Dispenser

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ABSTRACT

Solid waste disposal is a serious environmental issue that urban authorities face. The collection and disposal of solid waste are becoming a growing difficulty for most cities and counties. Some of it may be thrown around the garbage can instead of being inside the dustbin, and does not only happen in public garbage cans; it also happens in our homes, and it must be solved. The goal of this project is to design a dustbin plastic bag dispenser and to be able to build it. To make this idea a reality, the following methodologies are being used: concept design sketches, engineering calculations, engineering analysis, cost calculations, and production details as these will help the process run smoothly in order to stay on track throughout the creative process. The presence of this dustbin plastic bag dispenser should aid the consumer in keeping their home clean.

Keywords: Solid waste disposal; plastic bag dispenser; engineering design

Halal Slaughtering 3D Printed Model

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ABSTRACT

Halal meat industry is one of the biggest market sectors in Malaysia. Halal meat is also considered as the butter and bread for local food supply chain since Muslim consumers relies heavily for daily consumption. Recent COVID-19 pandemic and flash floods has changed many aspects of food industry. Worker's health and safety as well as the continuous supply chain of raw materials are paramount and become the top priority of concern. These circumstances create food supply chain disruption can further trigger alarming state. Recently, meat product both ruminant and poultry supply has been affected. Despite all of these challenges halal aspect, in terms of halal integrity and the need for competency is also vital in order to thrive during and after the pandemic and endemic phase. To enhance the competency during COVID-19 era, this study presents alternative solution in halal slaughtering practical or training especially when the live animal supply is limited and during online learning condition. The innovation that presented in this paper is 3D printed model of animal both ruminant and poultry for halal slaughtering practical. Combined with further simulator platform, this product can be packaged as 'kit' and can be used by prospective students during open distant learning.

Keywords: 3D printed technology; halal slaughtering; halal practical; online learning; simulation.

Tocilizumab, A Choice of Treatment for Cytokine Storm in COVID-19 Patients: A Systematic Review

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ABSTRACT

Tocilizumab (TCZ) is a competitive interleukin-6 inhibitor agent that has been proposed to combat the COVID-19-related cytokine storm. There are many studies have been conducted on the benefit of TCZ individually. Therefore, we conducted a systematic review to study the treatment of cytokine storm by TCZ in COVID-19. After conducting the search strategy using specific search strategy, we identified five articles that were included in the analysis. These studies reported the involvement of 649 patients (48% received TCZ) among moderate to severe COVID-19 patients. Findings show that there were variabilities in the TCZ dosage given with some combination with other medication. TCZ lower hospital mortality and improves respiratory function and inflammation and immune cell function, reducing the incidence of respiratory syndrome and less-invasive mechanical ventilation usage. The level of inflammatory markers such as C-reactive protein, ferritin and lactate dehydrogenase were significantly higher in the TCZ group. We created the step-by-step on how to conduct a systematic review. It can be a template for the researcher on how to conduct and write a manuscript on systematic review. We concluded that TCZ given at the doses of 400 – 800mg may increase survival and improve the favourable clinical course in cytokine storm induced by COVID-19. Therefore, with this review, a guideline for managing severe COVID-19 cases can be developed for usage in medical institutions.

Keywords: Tocilizumab; cytokine storm; IL-6; systematic review; COVID-19

NiShop Web System for NIS TD.Co

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ABSTRACT

The NiShop online system was intended to help the NIS TD Co. The first issue was that the numerous platforms used to market and connect with customers jumbled the order information and client details. The second issue was that consumers regularly delayed payments for over 24 hours, necessitating admin to hold purchases until payment was received. Third, client payment receipts were not appropriately recorded and sometimes duplicated. Based on the observed issues, it recommends creating a NiShop online system to assist admin handle client orders in the future. Customers may also track their transactions online by receiving email notifications. This project's technique followed the Waterfall Model. The Waterfall model included three stages; 1) gathering requirements, 2) system design and 3) system implementation. This project is a working prototype of the Nishop online system, a web-based online shopping solution that may effectively replace an existing business procedure.

Keywords: Web-based system; transactions online; online shopping system

Motorized Bench Vise

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ABSTRACT

A bench vice is an essential tool used in most manufacturing operations. However, it is usually heavy and the user must exert considerable effort to move the vise's jaw in order to clamp the workpiece. Therefore, this research developed a user-friendly motorised vise that required minimal human effort to operate. The development of the vise consists of several phase which can be summarized as fabrication of body frames from mild steel, the assembly of a scissor jack to the body frame to operate as a movable jaw and lastly, the mounting of the motor on the vise. As a result, a user friendly, simple to operate vise with a dimension of 554 (l) x 110 (w) x 250 (h) mm and a weight of 9.5 kg has been successfully developed. This device is a motor operated vise that can clamp and hold the workpiece securely by simply pressing a switch and it can clamp larger and heavier workpieces. Hence, as compared to a typical bench vise, this device is meant to reduce human effort and labour time for a better work experience.

Keywords: Vise; motor; mild steel; user friendly

HEROme: The Role of Heroic Costume to Empower Children with Autism Spectrum Disorder in Their Facial Expression during Classroom Learning

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ABSTRACT

Children with Autism Spectrum Disorder (ASD) across the globe always prefer their own learning environment because they are special and unique in their own ways. They also have different learning preferences. There has been a lot of debate that discussed the issues and challenges common learners face in their own learning environment. Children with Autism cannot portray accurate facial expressions during classroom learning. They too have little motivation in learning which made them less excitement during learning. However, heroic costume can have a good effect on the learning and motivation of children, yet little is known regarding the type and impact of Autism Spectrum Disorder on children. In combination with a greater understanding of children's type of learning preferences with ASD, heroic costume can be further used in classroom learning in order to elevate learners with ASD in their classroom learning. They are able to choose their favourite costume in order to improve their social skills and motivation in learning. This innovation could be seen as a potential commercialization as learners with ASD are still new in research especially in Malaysia. This heroic costume can be one of the ways to help children with ASD in their learning environment, not only it could save costs but user friendly to the children. Furthermore, teachers are seen as an important role in ensuring the suitable type of learning environment and in learners with ASD, which is why this innovation will look into the how heroic costume can empower children with Autism in their facial expression while learning.

Keywords: Autism Spectrum Disorder; facial expression; learning environment; heroic costume; interaction; and social skills

M3KBAT+Digital Literacy

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ABSTRACT

M3KBAT + Digital Literacy is developed to improve the HOTS mastery and digital literacy of Mathematics subject in secondary school. However, it is difficult to see any children from different age stage without using technology in their daily life. Although Generation Z students use technology more often than traditional learning methods. But when in come to solving mathematics questions, they rely solely on scientific calculator as their main technology device. Therefore, this innovation product will focus on solving mathematical problems by applying these mathematics software's such as Desmos, ClassPad II Series V2, Microsoft Excel, Google Spreadsheet and GeoGebra. Beside using software's, hands-on mobile applications such as Socratic Google, Symbolab, Microsoft Math Solver and PhotoMath are also utilized in this module to assist students in problem solving. The product was designed based on the nine main elements in the Morrison, Ross, Kalman and Kemp (MRKK) instructional design model. The product also has been validated by ten experts and gone through a pilot study. The target market is as wide as the teaching staff and students in public and private educational institutions that focus on the field of application of technology and software in learning Mathematics. Currently, this product can be commercialized because there already has a joint venture with secondary school around Malaysia. The main aim of this innovation is to make sure our children are not only evaluated based on how well they can solve mathematical problems on paper, but also will be assessed on how well they can master the mathematics digital literacy skills for instance, technical skills of using software's and digital devices to solve mathematical problems. For example, in addition to using the manual method, students can also obtain the value of x in a quadratic equation question using Desmos or Microsoft Excel software.

Keywords: M3KBAT; digital literacy; mathematics; HOTS

Mosque Event Web-Based System with Email Notification

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ABSTRACT

Mosque Event Web-based System is developed to assist committee members of Kampung Sri Kendong in managing the mosque's event. There are few problems faced in the current business process. The first problem encountered is the current process is quite tedious and may lead to overlap of booking or Imam forget the booking. The second problem is, there are no reminders available when the event held and the final problem statement is that there is no proper platform to record people's details who attend the mosque's event. Mosque Event Web-based System provides a platform for the Kampung Kariah Sri Kendong to book online and the committee can handle the event smoothly. The system allows them to approve or decline the event, and an email notification will be sent to the user regarding the event's held application status. The methodology used in this project is the waterfall model which included three stages, 1) gathering requirements, 2) system design and 3) system implementation. The e-mail notification is deemed as the novelty of the project while the web-based system is a suitable platform to substitute the current business process which having the potential to be commercialize to other mosques or other religious institutions.

Keywords: Web-based system; online system; mosque system; event management

E-Appointment Dental Clinic System for Klinik Pergigian Norazleen (E-Dent)

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ABSTRACT

Appointment systems are becoming increasingly popular because they allow people who live a long distance away to make a reservation before visiting the location. Klinik Pergigian Norazleen is a dental clinic located in Perak which have three branches and is offering a wide range of services and treatments. Currently, the clinic is managing patient's appointments via WhatsApp messenger and phone calls. In addition, staff will manually check for availability date and log the appointment in the logbook. E-Appointment Dental Clinic System for Klinik Pergigian Norazleen (e-DENT) were created to make it easier for clinic staff and managers to manage appointments while also allowing patients to easily access their needs without having to call the clinic to schedule an appointment. The methodology used in this project is the waterfall model which included three stages, 1) gathering requirements, 2) system design and 3) system implementation. The web-based system of e-DENT is deemed as a novelty project because currently, not many dental clinics has implemented an appointment management system. Therefore, it has a big potential to be commercialize to other dental clinic or any industry that having appointment as one of their business processes.

Keywords: Web-based system; online system; appointment management system

Kahfi Shield: Hygienic Touch Tool

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ABSTRACT

Harmful pathogens can survive on frequently-touched surfaces for days, still posing a threat to all who interact with these contaminated surfaces and promote transmission. Copper is antimicrobial, the only material registered by the United States Environmental Protection Agency (EPA) to continuously kill more than 99.9 % of the bacteria and viruses that cause infections. It kills bacteria and viruses, sometimes within minutes. It is highlighted that the coronavirus is destroyed on copper surfaces within four hours compared to other surfaces. This highlights that copper could help prevent the spread of infections. The Kahfi Shield was fabricated by electrodeposition process with excellent surface properties, environmentally friendly with non-toxic and minimal waste during production. The antibacterial activity showed Kahfi Shield was active against S. aureus and E. coli bacteria within the designated contact time under ambient room temperature and normal humidity conditions. The small size of Kahfi Shield, and easy to carry are suitable to be used as travel accessory whilst the design and features offer users friendly and easily gripped to open door handles, flush toilet and press any buttons to prevent avoidable contact. It is also convenient, for those who want to avoid harsh and possibly toxic alcohol-based sanitizers, or who have dry hands or eczema. Beside good hygiene practice, Kahfi Shield can be used as one of the protection strategies to combat spread of transmission. The introduction of Kahfi Shield will help to break the chain of infection by acting as a barrier between our hands and contaminated touch surfaces. Kahfi Shield will be highly beneficial, ideal and economic resources especially in the development of antimicrobial touch surfaces.

Keywords: Antimicrobial copper; copper; electrodeposition; infections; touch surfaces

Rocket Biomass Cookstove Electrical Power Generation Using Thermoelectric Generators

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ABSTRACT

A cookstove is a combustion device which liberates lot of heat energy during cooking. In India, Africa and other rural communities of developing countries still use a traditional biomass cookstove in daily life. This will lead to indoor air pollution (IAP) and health risks. The excessive smoke increase the air pollution and it is danger to the user especially women. Generally, emissions are seen to increase with increasing power levels. Similarly, higher emissions are observed with smaller stoves. This is due to the lower residence time of fuel in the combustion chamber of the stove resulting in incomplete combustion and hence higher emissions. In this study, the biomass cookstove is improve based on implementation of thermoelectric generator. Thermoelectric generator will collect heat and convert it to electricity. It will provide the user to power a fan, LED light and charging a mobile phone from the generator stoves. This is an approach for electric power generation and pollution reduction can be achieved using stove-based thermoelectric generator. The focus of this research is to design a module using SolidWorks software. There are three modules with different length will be compared on certain aspect such as length, velocity, and temperature. Based on the data, it is found that the module with 400mm length contribute higher efficiency and follow by 800mm and 1200mm length. The TEG module is attached on wall solid temperature. Then, numerical simulation is needed while doing the comparison between previous studies and theoretical evaluation. Rocket stove has been chosen in this research with same material. In this research, the existing of fan will contribute a huge different to rising greenhouse gas emission and environmental degradation.

Keywords: Thermoelectric generator (TEG); Biomass Cookstove; energy conversion; design; thermal efficiency

Easy Parental Monitoring App

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ABSTRACT

"New norm" as referred to our present pandemic condition COVID-19 where people develop new way of life, working accessibility, and dealing with others. This situation does not reduce the online bullying. Online bullying occurs among the young and old generations. The young generation especially children can easily expose to this threat from the internet. Children nowadays can access the internet easily, spend most of their time on devices and download countless applications on their devices. Even though parents manage to install monitoring applications on their children's devices, the children can uninstall most of the applications. Some features in the monitoring applications are inflexible due to complex functions. Furthermore, it is costly to pay the subscription for multiple devices connectivity. In this work, the concept Easy Parental Monitoring App is designed to reduce the issue for children with online classes activities as well as monitoring online activities out of class session. The design, the layout and the features were developed using a web-based designing tool Uizard.io. As for the control features, Application Programming Interface (API) with JAVA was utilized to request the process from the application and the databases on the application react based on the JAVA programming. The application was tested for each feature in the application to ensure its functions properly.

Keywords: New norm; COVID-19; Easy Parental Monitoring App; children; cyber bullying

RFID Turbo Scanner for Shopping System

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ABSTRACT

"Digital Society" is referred as how modern society adopted and integrated information and communication technology at home, work, school, and recreation. Among the transformation that requires digital breakthroughs is line congestion during queuing at the payment counter. The queuing is affecting people's time and emotion especially at supermarket. In this work, Radio Frequency Identification (RFID) item scanner is designed and the concept included the circuit design using Arduino Mega as controller of the system and Bluetooth Module as data communication to the server, RFID system for scanning items, LED bulbs as indicators, LCD display to display items bought by customers. The RFID scanner will scan all the items and then the item list as well as the price will be displayed. By using this solution, it helps in speeding up payment process and thus, helps people save time by reducing long queue. Based on the system, RFID can scan multiple items simultaneously which is better compared to barcode scanner that are being implemented nowadays.

Keywords: Digital society; RFID; Arduino simulation

EZ Dumpster

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ABSTRACT

The Malaysia government has conducted various programs and campaigns about environmental cleanliness and recycling. Unfortunately, it is found that about 19 million Malaysians choose to throw rubbish everywhere. This mentality and habit of communities who are throwing rubbish have become a serious issue as it will affect Malaysia initiative to become the cleanest and most environmentally friendly country. This project aims to enhance the community's interest to preserve the environment in an eco-friendly way for a better future life. Also, to attract communities to dispose of rubbish in the right place and being rewarded. The EZ Dumpster is introduced to improve existing garbage bins and plastic bags into a digital concept. With the easy, eco-friendly, and rewarding features, the eco plastic bag can be obtained at collaborated convenient stores at affordable prices and users can get a reward after throwing the trash into the digital dustbin. The EZ Dumpster is integrated with the user's E-wallet account. This product innovation has the potential to be marketable since the digital dustbin will be placed in many attraction places. In a nutshell, the EZ Dumpster portrays our self-identity and self-fulfilment by creating a trendy phenomenon and upholds Malaysia's agenda to become green technology, environmental sustainability, and social inclusion.

Keywords: Innovation; environmental; cleanliness; eco-friendly; digital dustbin

The Invention of KidCadTech STEM Module Solution

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ABSTRACT

According to the Minister of Science, Technology & Innovation, Datuk Seri Dr. Adham Baba, the percentage of STEM student must increase to 60% to ensure the country has an adequate supply of talent pool in the country. Citing the Education Ministry's 2020 Annual Report, the Science, Technology and Innovation Minister said the percentage of students in STEM was 47.18%, with 20.51% involving Pure Science, while the remaining 26.67% was for Technical and Vocational Education and Training (TVET). KIDCADTECH is a series of hand's-on teaching and learning kits for stem subjects. The kits are to solve the problem among teachers and students. The negative reactions in High School Stem Subject, Reka Bentuk Teknologi (RBT), are pretty common, particularly for Form 1 and 2. The failing grades among the RBT students yearly is a factual statistic. The teachers and students have stated that they do not have suitable teaching aids for many topics in the RBT subjects. This issue is monumental. If we don't address these complaints, we will see further downgrades of our GDP in the coming years since research has concluded that 70% of GDP has been primarily attributed to the STEM workforce. KIDCADTECH is a STEM (Science, Technology Engineering and Mathematics) based product in education. KIDCADTECH is to assist teachers by making teaching easier in designing technology subjects. Students also can use these teaching aid materials on their own. KIDCADTECH series of products is a kit in a box with a unique self-assembly/construction to aid in teaching specific subjects. Subjects such as robotics, electronic aquaponic, mechanical, and others. KIDCADTECH also uses Augmented Reality to engage and assist with understanding the topics.

Keywords: STEM (Science, Technology Engineering and Mathematics); learning kits; augmented reality

HEYNEIBAC: Plant-Based Multipurpose Disinfectant

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ABSTRACT

Heyneibac is a plant-based disinfectant product derived from Malaysian Macaranga heynei. Research on antibacterial agents relating to Macaranga heynei is still scarce. This plant is known as a plant-rich in bioactive compounds with broad data in medicinal values. The phytochemical data results in prenylated dihydrostilbenes, demonstrating a significant antibacterial property. A previous study from our research group revealed the isolation of three bioactive compounds, namely laevifolins A and B and macarubiginosin C against several bacterial strains. Laevifolins A and B exhibited IC50 values of 11.65 and 20.71 μM against Staphylococcus cohnii subsp. Urealyticum. Meanwhile, potent inhibition on Staphylococcus aureus ATCC 25923 was observed from Laevifolins B and A with the IC50 values of 1.64 and 27.13 μM, respectively. The structure-activity relationship of the dihydrostibenes plays a significant role in the antibacterial inhibition, which is affected by the number of hydroxyls (OH) groups, the 3D structure of the compounds, and the cyclization prenyl group. We realised that many brands were using ingredients that were reportedly hazardous yet called themselves eco-friendly. So, with the noble idea of saving the world and removing toxic chemicals from our homes, we combined our expertise from the field of natural products and microbiology to get insight into the possibility of producing a safe, eco-friendly product. Thus, we benefit from producing a non-toxic product to the environment.

Keywords: Macaranga heynei; dihydrostibenes; antibacterial; disinfectant

Stable and Reliable Synthesis of High Yield Graphene Oxide (GO) Nanostructures via the Modified Hummers Method

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ABSTRACT

Graphene oxide (GO) has certain unique properties for different applications. In the chemical sense, GO is the oxidation form of graphene. It is produced chemically by oxidizing graphite. GO is structured differently with graphite and graphene, where the GO's plane is attached to oxygen functional groups. Currently, the modified Hummers method was the most widely used approach for preparing GO. This study aims to optimize the GO synthesis using a modified Hummers' method. Scanning electron microscopy (SEM), UV-visible (UV-Vis), energy-dispersive X-ray (EDX) and X-ray diffraction spectroscopy (XRD), are used to characterize the synthesized GO samples. A high yield of GO was synthesized with simple and safe protocols (not releasing toxic gases), quick reaction time, and low production cost. This GO sample can be employed as a fundamental material for future applications, such as gas sensors.

Keywords: graphene oxide; modified Hummers method; oxidation; yield

Calmiva

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ABSTRACT

A person who has a mental illness is more prone to get panic attacks compared to a normal person and will tend to commit self-harming without their intention. To curb this problem, researchers found out that ice could help with panic attacks as it provides instant relief from high cortisol levels. Ice will divert all the attention and focus on the ice. Calmiva helps people who are having a panic attack focus on two things: their touch and smell senses, which they can use anywhere. This instant cold pack comes with scent, and it is nowhere to be found in the market. Therefore, the main objective is to provide instant relief for panic attacks. Calmiva consists of ammonium nitrate and water. When the pack is squeezed, water is mixed with the reactor and an endothermic reaction occurs and causes the pack to cool down rapidly. The pack has scented gel that can be accessed by peeling a sticker. Other than helping with panic attacks, it can also be used for minor injuries such as cramps. This product will contribute to the reduction of self-harm and suicide cases in our country.

Keywords: Panic attacks; mental illness; cortisol level; self-harming; aromatherapy scent

Saving Salon

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ABSTRACT

The widespread of COVID-19 pandemic has had a negative impact on the national economy particularly in beauty services. In Malaysia, the customer needs and wants could not be fulfilled throughout the COVID-19 pandemic while the Movement Control Command (PKP) is enforced. It had affected the industrial sector of the economy especially for the provision of salon services as well as affected the economy of marketers as a result of insufficient income to support daily living. The customers are increasingly concerned about health and the teenagers are interested in beauty, cosmetics and medicine. The main purpose for creations this innovation is to produce an innovation of 'Saving Salon' which it is an innovation of beauty salon services that are carried out at the customer's home through online booking on the application provided. The main objectives of this innovation are to innovate from existing salon services to home salon services and identify consumer perceptions of this 'Saving Salon'. Innovation development involves the service quality (reliability, assurance, tangibles, empathy and responsiveness) and the design of the services (logo, application and vehicles). This project innovation surely can be a commercial potential to the beauty industry based on the study research that showed customer perceptions was positive and accepting the existence of 'Saving Salon'. This innovative project for the 'Saving Salon' provides many benefits to customers, future researchers, marketers and also the national economy.

Keywords: SERVQUAL; customer needs; COVID-19

Disabled Person Drive Thru Application

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ABSTRACT

People with disabilities are a group known to many for their limited lives. Each year an increase in the number of disabled people registered under JKM is recorded. In Malaysia, the services applied to people with disabilities are still not in line with the development of the country which is increasingly developed. Facilities for the disabled were also not upgraded. because of such barriers, the lives of the disabled are increasingly limited. The unfriendly use of OKU -friendly drivers causes the desire of the disabled to use the service to also be an obstacle. Different communications also make it difficult for PWDs to communicate with customer service. The main purpose of the 'Disabled drive thru application' innovation is to facilitate the handling of the disabled while using the drive thru. The main objective of this innovation is to identify public perceptions of drive -thru services. The development of innovation involves the quality of service, namely responsiveness, assurance and empathy. This innovation has the potential to be done because the service uses a drive -by -pass application and is disabled -friendly.

Keywords: Disabled person; service quality; drive thru

Highly Blue-Fluorescence Emission of Graphene Quantum Dots Nanoparticles (GQDs): A New Generation of Advanced Materials

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ABSTRACT

Graphene quantum dots (GQDs) is known as a new generation of graphene-based materials that exhibit excellent photoluminescence property, electro-optical properties, low toxicity and good biocompatibility, hence having numerous potential applications in biomedical and electronic fields. In this study, we have demonstrated a new formulation to synthesise stable and excellent photoluminescence behaviour of GQDs via the chemical reduction method. A novelty of this method includes its simple set-up, short reaction time (within 5 hours) and the possibility of large-scale production with low cost using graphene oxide (GO) as the precursor. GO was prior synthesised using the modified Hummers method from raw graphite flakes. Interestingly in our approach, unstable synthesised GDQs which strongly exhibit photodegradation effect was further corrected using neutralisation via evaporation and redispersed with ultra-pure water. The final pH was found at 4 with highly soluble in water. Our synthesised GQDs possess a high quantum yield of 77% showing highly luminescent blue emission under ultraviolet irradiation conditions (at λ = 325 nm) which maintain its photostability against photobleaching up to 90 days. The average particle size of GQDs has been confirmed at nanodots size of ~3 nm. The result obtained showed that this newly synthesised blue-emitting GQDs can be possibly utilised in biomedical applications biosensors, drug delivery, labelling agent and other bioengineering fields as rich with carboxyl (-COOH) functional group needed in conjugation with biomolecules; for example, in the immobilisation of cancer markers on the surface of GQDs. It has a significant economic value due to no local supply found. Moreover, its excellent photoluminescence behaviour is expected to open up enormous potentials in the optoelectronic applications of solar cells, light-emitting diodes, lasers and other advanced applications, which are significantly parallel to the era of Industrial Revolution IR 4.0.

Keywords: Graphene quantum dots; carbon nanomaterials; photoluminescence; biomedical; optoelectronic

AquapHR V1: An Autonomous pH Regulator for Aquaponic Water System

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ABSTRACT

In planting plants using an aquaponic system, plants are very dependent on nutrients found in water and pH value. The pH value becomes one of the parameters that determine the yield. The pH value for aquaponic must be maintained in the range between 5.5 to 6.8. To maintain the pH of the environment, the water is treated with an acidic solution and the pH needs to be measured hourly. An automation system named AquapHR V1 is designed to keep the pH always at a predetermined range and has been set as the objective of this innovation. The product uses an Arduino wired up at a pH meter to detect the pH level of the hard water in the aquaponic system. When the pH meter reading is in the undesirable range, the product will trigger the motor to turn on the pump to add either the acid or base solution in the required amount into the water system so that the water pH reading will return to normal levels. The buzzer in AquapHR V1 will emit a loud and short beep sound if the water content is deficient in acid solution while it will sound loud and long beep if the base solution is deficient. It is believed that the presence of this automation system would be beneficial to the farmers in managing the water conditions in the aquaponic plant system in a simple and fastest way. In turn, they would produce quality and better yield, increasing productivity and revenue.

Keywords: Aquaponic; pH range; Arduino; AquapHR V1; pH regulator

An Overview of Educational Games in Promoting Clean Water Awareness

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ABSTRACT

The platform that has raised exposure and insight on a particular issue such as the global water crisis has always been in the form of monotonous text such as articles, journals, and studies. Reading is an enjoyable and rewarding activity, yet it could also prove to be disengaging, especially when it lacks the visual aid. Therefore, a method to raise awareness on the global water crisis and the awareness of clean water issues correlating to it is by making gaming a versatile platform to do so. Thus, this project is conducted to promote issues regarding the global water crisis in the form of an engaging yet simple story game for adolescents between the ages of 12 and 15. There has always been a multitude of plot-driven games circulating around severe problems the world is dealing with and this project's game plot focuses on raising the significance of water sources and how it affects our daily lives. Incorporating a serious issue as the plot of a game could instil good character values within adolescents. Based on the findings, games leave more educational impact on the players due to their stimulating traits as engaging gameplay, compared to monotonous reading increases the motivation to learn and gain knowledge.

Keywords: Global water crisis; 2D games; educational gaming; clean water awareness; water sustainability

CATEGORY C
Foundation/Matriculation

A'per; The Two Life Paper

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ABSTRACT

A'Per: The Two Life Paper. This project is to introduce our recycled growing paper that may change the fate of our beloved green Earth. A'Per is created specially to serve the earthlings in order to nurture our beloved planet. This product is a paper which contains carrot skin, potato skin, egg shells and seedlings. It will reduce the amount of waste produced by humans as it had the paper recycled and planted the moment it is no longer used or better known as post-consumer waste. Our invention is one of a kind because we don't only turn papers into plants, but also make full use of carrot and potato skins and even more surprising; egg shells which have the worst management as people just throw it away after a single use. Realizing that these components hide mass advantages for growing plants, we decided to mix them together into our paper. As a result, our invention provides the 2 in 1 organic compost in order to nurture the freshness of the plant. The tree with organic compost usually produces better products than chemical compost. Besides, the yield from the plants has a better smell and taste compared to the plants which use chemical compost that bring numerous harmful effects. In addition, planting trees in a large quantity can change the microclimate in a place which means it can save the environment that is worsening day by day. As far as we all are concerned, recycling papers conserves natural resources, saves energy, reduces greenhouse gas emissions, and keeps landfill space free for other types of trash that can't be recycled. From our study, we proudly announce that recycling a ton of paper can save up to 17 trees, 7000 gallons of water, 380 gallons of oil, 3.3 cubic yards of landfill space and 4000 kilowatts of energy – enough to empower the average U.S. home for six months and reduce greenhouse gas emissions by a metric ton of carbon equivalent (MTCE) which bring countless benefits to human ourselves, environment, and animals. We only need to test up papers into small pieces and it will be ready to be planted. Animals will also serve by our invention when the fruits from the tree are produced as they can survive from the plants as they get adequate basic requirements. We will guarantee that for every tree sacrificed for paper manufacture, other plants will come to life.

Keywords: A'per; egg shells; carrot and potato skins; organic compost; reduces greenhouse gas emissions

Buttermilk Gel

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ABSTRACT

Cockroaches are pest vectors that can spread diseases such as skin diseases, diarrhoea, and many other diseases. This is due to the habitat's location in an area with extremely poor hygiene standards. Bacteria can easily attach to its fine hairy legs, contaminating the surrounding area and food exposed to the Penang Matriculation College cafeteria environment. As a result, college students have experienced discomfort due to this issue. The goal of this innovation is to find a suitable method to solve the cockroach problem and design a Buttermilk Gel cockroach trap prototype for use at Penang Matriculation College. This method of implementing innovation employs the PDCA model, which consists of four phases: Plan, Do, Check, and Action. Buttermilk Gel is an effective alternative for cockroach controlling tool that also results in a cleaner, higher-quality college environment. After being replicated with the Penang Matriculation College, Buttermilk Gel has the potential to be marketed and can be indirectly expanded for use in educational institutions or for domestic use.

Keywords: Cockroaches; hygiene; prototype; innovation

Flood Alert System

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ABSTRACT

Floods are defined as the most frequent type of natural disaster and occur when an overflow of water submerges land that is usually dry. Floods are often caused by heavy rainfall, rapid snowmelt or a storm surge from a tropical cyclone or tsunami in coastal areas (World Health Organization website). Floods can impact people's properties and lives resulting in the need for an alert system. Flood Alert System is a personal built system that can send warnings via SMS to the users. Otherwise, flood alert system consists of cheap hardware components that can be sold at reasonable price. Flood Alert System is developed using Arduino Uno as the microcontroller motherboard, HC-SR04 ultrasonic sensor, light-emitting diode (LED) and GSM SIM900A module. Ultrasonic sensor plays an important function as an input to detect water level in this project while LCD, LEDs and GSM module are the output to inform users about the flood. Flood alert system also have many benefits like easy to handle, use less consumption electricity energy and very efficient to send the flood alert for personal usage

Keywords: Flood alert system; floods; Arduino; GSM SIM900A Module; ultrasonic sensor

Magnetic Doorknob

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ABSTRACT

Children are purely innocent, naive and unaware of the dangers of playing near the door. They accidentally push the door stopper and cause fingers trapped. Normally, door stopper is used to prevent the door from closing and it was made by rubber which not lasting. Many fingers trapped case reported involved children happened at home, day care and kindergarten. The injury leaves long term effect on the children such as lifelong disfigurement and some of them undergo a surgery. Thus, magnetic doorknob is the innovation of door stopper. It is low cost, user friendly, easy to install and efficient. It consists of two magnets (magnet A and magnet B) with same magnetic poles which prevent the door from closing. Magnet A is placed at doorknob and magnet B at wall just beside the door is adjustable. If this magnets at same level, it will prevent the door from closing if a child accidentally pushes the door or the door is pushed by the wind. As a conclusion, magnetic doorknob is suitable for home, day care and kindergarten which will keep the children from fingers trapped on door.

Torchlowscope

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ABSTRACT

'Torchlowscope' is an innovation which is related to Physics in the concept of total internal reflection and have three functions: as a bright flashlight, a long-range telescope as well as a glowstick. It was designed using recycled materials and apparatus with minimal used. Most of the current flashlight that available on the market have less brightness, short light range and low efficiency of ordinary magnifying lenses, blurred and unclear vision. Furthermore, the glow sticks are made of plastic, which is not an eco-friendly choice and also a one-time use item. Our objectives are to produce a versatile innovation that uses recycled materials and apparatus with minimal use to help lessen pollution towards the environment, to produce a homemade flashlight that can illuminate brightly at a distance with an affordable price which can be considered as high value item. 'Torchlowscope' is a multipurpose item that can be used numerous times at high efficiency. Other than that, it is a homemade magnifying glass that can work more efficiently than ordinary telescopes. This innovative product is versatile and works according to its needs. We hope this product can go further for commercialization and collaborate with other faculties especially the Faculty of Electrical Engineering.

Keywords: Homemade; eco-friendly; torchlight; telescope; glowstick

(ax+b) +1BB: Pengamiran Melibatkan Fungsi $(ax+b)^n$

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ABSTRACT

This physical innovation $(ax + b) + 1BB$ was made to explain the concept of basic integration involving linear function $(ax + b)^n$ which has power n. Innovation $(ax + b) + 1BB$ consists of 4 simple steps:1) $(ax + b)$: we must copy function $(ax + b)$, 2) +1: power n need to be added 1, 3) B: divide with $(n + 1)$ and 4) B: divide with the differential results of $(ax + b)$. This innovation was introduced as a scaffolding to support students in understanding the concept of basic integration and when they mastered the concept, the scaffolding lessons would be removed. Although this research is limited to students from account streams only but innovation $(ax + b) + 1BB$has encouraged students in the account stream for the 2021/2022 session to answer questions related to basic integration.

Keywords: Integration; divide; scaffolding; differential

Padankan Rumus: SSKDLB

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ABSTRACT

An innovation "Padankan Rumus: SSKDLB" is produced to drive accounting students to solve questions involving integration special functions. During PSPM 2, this special functional summary formulae is supplied to students, but most students still do not master this simple method and they are more likely to use the substitution method. With the creation of the innovation "Padankan Rumus: SSKDLB" is expected to provide a step-by-step solution to the question using the supplied formulae. This innovation was introduced as a scaffolding to support students in understanding the concept of integration involving special functions and when they mastered the concept, the scaffolding lessons would be removed. Although this research is limited to students from account streams only but innovation “Padankan Rumus: SSKDLB” has encouraged students in the account stream for the 2021/2022 session to answer questions related to basic integration.

Keywords: Integration; scaffolding; substitution

Al-Wisadat Dhakia: The Alarm Pillow

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ABSTRACT

The main problems faced by insomnia people is lack of sleep at night end up very hard to wake up and get out from bed for every morning. Other than that, a problem that faced by hard of hearing and deaf people are they need assistance from light or Sun to wake up in the morning. Ordinary people such as heavy sleepers find difficulty to wake up on time and getting late for prayer, to class or workplace. Therefore, we create an innovation called Al-Wisadat Dhakia that acts as an alarm pillow to solve their problems. The objective of this innovation product is to wake up hard of hearing people, insomnia or heavy sleeper people from sleep. This product consists of arduino technology that can be attached together with the pillow. A vibrator is connected together with a buzzer that gently vibrates the pillow when the alarm sounds. This alarm pillow will remain vibrating until the user get up rather than alarm clock which can be snoozed every five minutes but the user still lying on the bed. It is expected to become high demand product as it becomes one important assistance device for these kinds of people. Although smart phone is a popular device that has been used as alarm clock, however, this alarm pillow is more effective, less radiation and less hazardous compared to smart phone itself. With this aid, hard of hearing people, insomnia or heavy sleeper people can live independent able to wake up on time without helping from others.

Keywords: Alarm; pillow; arduino; vibrate

GOLA

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ABSTRACT

An innovation GOLA was produced to guide students in accounting to solve questions of inequality involving absolute value. During PSPM 1, this question is often tested but based on the Candidate Work Report (LKC) it is found that many students still do not master this topic. With the creation of GOLA's innovation, it is hoped that it will provide a step-by-step solution to the question of absolute inequality. This innovation was introduced as a scaffolding to support students in understanding the concept and when they mastered the concept, the scaffolding lessons would be removed. Although this research is limited to students from account streams only but innovation GOLA has encouraged students in the account stream for the 2021/2022 session to answer questions related to absolute inequalities.

Keywords: Inequality; absolute; work report

Corfee Paper

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ABSTRACT

Corn husks are waste that always leads to a problem in order to create free polluted surroundings. Therefore, this Corfee Paper project was invented to benefit from the existing waste. This innovation mainly uses corn husks to produce eco-friendly paper. The objectives of this innovation are to reduce the pollution that is made from these corn husks, to reduce the usage of trees that were used to make industrial paper, and to add the sentimental value of paper. To make this paper, the corn husks need to undergo some process until they can become a layer of paper with the presence of sodium hydroxide and polyvinyl acetate. The process continued by drying the moulds under the sunlight and after it dried, the paper is ready to be used. Additionally, coffee powder is added to give the paper sentimental value and vintage texture. All in all, Corfee Paper is inspired by the corn and coffee itself.

Scented Banana Bioplastic Bag

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ABSTRACT

Nowadays, the earth has been polluted by various chemicals danger. At the same time, the amount of plastic litter increased (i). So, the idea of bioplastic popped up to create a scented bag bioplastic product that would be easily decomposed in a short period of time and reduce the petroleum usage as it is a non-renewable source. (ii). Ingredients needed to make this plastic is banana skin, glycerol, gelatine, essential oil, and food colouring. So, the plastic bag is eco-friendly as there is made from food waste which is banana skin and no chemical used. Our market potential is to attract people to use the safest plastic that are organic which are eco-friendly, fragrance and pretty that can contribute to a better environment for our next generation. Our invention is improvised from Mary Lempres Video Clip. We improvised the idea by adding the banana peel which is a food waste and fragrance to make it nicer (iii). The plastic bag is sold at RM 0.70, so, the profit that we gain is RM 0.25 and the profit margin is 35.7% (iv). In the conclusion, the bioplastic produced is eco-friendly and can reduce the amount of plastic litter (v).

Keywords: Amount of plastic litter increased; bioplastic; eco-friendly

Med-DT: Median Data Terkumpul

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ABSTRACT

It has always been a question why students are unable to master the topic on statistics. Though the formulae to solve the questions on median (grouped data) is given during the examination, students still fail to satisfactorily tackle the questions. According to the students, the main reason is, they do not like the topic, and some are hesitant to read the data values from the frequency table given in the question. The objective of this Med-DT is to enable students to master statistical questions which involve the calculation of median for the collected data. Additionally, Med-DT can instill the students' interest in mastering the field of statistics by using Med-DT teaching aids, thus, scoring high marks for UPS 2 Mathematics at the Matriculation level. The Med-DT is unique as it is created based on cartoon characters that have similar physical attributes as the median formulae. The cartoon characters and storyline are arranged adjacent to the data value to ensure that they can easily be read one-way. The Med-DT teaching aid can also guide the students in completing drills provided by the lecturers, and eventually the students will become conditioned to use it. The Med-DT can further overcome the problems faced by the Matriculation students in understanding the topic on statistics.

Keywords: Median; mode; statistics

Mod-DT: Mod Data Terkumpul

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ABSTRACT

It has always been a question why students are unable to master the topic on statistics. Though the formulae to solve the questions on mode (grouped data) is given during the examination, students still fail to satisfactorily tackle the questions. According to the students, the main reason is, they do not like the topic, and some are hesitant to read the data values from the frequency table given in the question. The objective of this Mod-DT is to enable students to master statistical questions which involve the calculation of mode for the collected data. Additionally, Mod-DT can instil the students' interest in mastering the field of statistics by using Mod-DT teaching aids, thus, scoring high marks for UPS 2 Mathematics at the Matriculation level. The Mod-DT is unique as it is created based on cartoon characters that have similar physical attributes as the mode formulae. The cartoon characters and storyline are arranged adjacent to the data value to ensure that they can easily be read one-way. The Mod-DT teaching aid can also guide the students in completing drills provided by the lecturers, and eventually the students will become conditioned to use it. The Mod-DT can further overcome the problems faced by the Matriculation students in understanding the topic on statistics.

Keywords: Grouped data; mode; statistics

Solar Cooker

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ABSTRACT

As we know, the earth's temperature increases surprisingly each year as the consumption of electricity is mainly generated by primary energy sources. This will emit a lot of carbon dioxide gas which contributes to global warming thus leading to some natural disasters. Hence, we think about the use of solar energy to reduce combustion of fossil fuels as it does not cause any pollution. In order to encourage people to use solar products, we decided to make an innovation on solar cookers. We use a hydraulic concept so that the height of the stage can be adjusted to receive more sunlight. Besides, we made use of the fresnel lens instead of the convex lens as fresnel lenses converge more light efficiently. The position of the lens can be adjusted to adapt to different positions of the sun and the light intensity. It can be used in underdeveloped regions as it still can be used to heat the food thus killing the harmful microorganisms on it, so the food can be consumed safely.

Keywords: Combustion of fossil fuels; carbon dioxide; solar energy; solar cooker.

Delta City: Flood Management System

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ABSTRACT

Floods in Malaysia are one of the most regular natural disasters affecting the country, the most recent flood on December 17, 2021, had caused heavy downpour in Klang Valley which had never been affected before. From the research, the 'Delta City' concept was inspired by Low Impact Development (LID). This city contributes two solutions for the flood crisis: permeable pavement systems (PPS) and water harvesting system (WHS) which consists of Permeable pavement, Water Harvesting System or water catchment system, a technology that collects and stores water for human use and Water Harvesting System range from simple rain barrels to more elaborate structures like pumps and tanks; but instead of implementing that concept, a simple long continuous layers can be constructed and the most important impact that it can provide protection to all the lives of affected people equally. This 'Delta City' is mainly able to reduce the percentage of items damaged by ensuring there is a low possibility of water overflowing into houses and buildings. Newly modified road infrastructure will slow down the runoff, spreading it out over the road space, and slowly soaking it into the ground. Then, the absorbed water will be used for domestic uses, and in our cases, it can be used in areas with cut down water supply when dealing with overflow dam water and it allows the affected people more time to gather their belongings and evacuate safely.

Keywords: Flood; low impact development; permeable pavement systems; water harvesting system

GrOrgOma Repellent Pouch: Green Organic Aroma Repellent Pouch

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ABSTRACT

GrOrgOma (Green Organic Aroma) Repellent Pouch is an Environmentally Friendly Product which is made from used cooking oil and natural vegetable oil, functions to repel insects and to produce pleasant odour. This innovative product is designed to overcome the pollution that is caused by uncontrolled oil disposal. Waste cooking oil can cause serious damage to local water supply and can be a problem for wildlife especially to marine life if it is not disposed of properly. Clogging pipes can also happen due to waste oil disposal. This will lead to natural disasters such as flash floods. Insect repellents normally contain hazardous chemicals like carbon monoxide which can destroy the ozone layer and cause global warming. The objective of this innovation is to produce a good beneficial product of insect repellent which is way better than any insect repellents sold in the market thus meeting the requirements of SDG 6 (clean safe water & sanitation) and SDG 9 (industry, innovation & infrastructure). Other objectives are to maximize the use of wasted materials, to reduce negative impacts on the environment and to promote love towards nature in the community. This product was made by using used oil, maltodextrin, oil hardener, vegetable oil, food colouring, ginger, pandan leaf, citronella, and clove. To minimise the amount of waste, used cooking oil is chosen. This can be a better product since it can reduce pollution and secure a better future. The preparation step of this product is by mixing all the ingredients, then stir the mixture before adding the heated used cooking oil, food colouring, pandan extract or citronella and clove extract together as for fragrance and repellent elements in this product. Place the mixture into the mould before putting it in the pouch bag. When the pouch bag is placed somewhere, for example in the car, the fragrance of pandan will reduce the bad odour in the car and produce pleasant odour. Meanwhile, the fragrance of citronella and clove will repel the insect. It is believed that GrOrgOma repellent pouch has high potential to commercialize as it is safer and environmentally friendly compared to the other repellent and fragrance products because this product is non-toxic. Thus, it can reduce pollution significantly. In addition, GrOrgOma repellent pouch are more efficient compared to the other repellent spray because the other repellent spray only last for a day, but the GrOrgOma repellent pouch can last longer around 3-4 month, but the price is much cheaper than other brand of insect repellent product exists in the market. In turn, the use of GrOrgOma Repellent Pouch is very efficient, durable, safe, and economical.

Keywords: GrOrgOma; nature; reusable; repellents; fragrance.

Portable Charging Mat (E-Mat)

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ABSTRACT

How might we make it possible for people these days to charge multiple devices without the need of wires and extensions so that it can provide the utmost convenience to the users? In this paper, we will discuss about the innovation known as E-Mat, a portable charging mat which comes in place to overcome the needs of bringing several power banks or chargers around. E-Mat outcompetes power banks and chargers in the sense that users are able to charge up multiple appliances simultaneously by just placing several devices onto the charging mat. This innovation fully utilises the concept of electromagnetic induction by alternating current. By creating a constantly changing magnetic flux in the inductor coils, the copper coil receivers inside the electronic devices will pick up the alternating magnetic field and induces a current flow which is then passed on to the battery of the electronic devices. By using predictive and prescriptive analytics, we could confidently predict the upsurge in demand for digital appliances and many innovative products like E-Mat in the future. In essence, E-Mat is worth to invest in on account of its competency in the market as well as a multitude of benefits it offers.

Keywords: Charging mat; electromagnetic induction; wireless charging

Plascanemas Board: An Organic Board that Saves Environment

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ABSTRACT

PLASCANEMAS BOARD is an innovation of new product from the wastes such as bagasse (from sugar cane), discarded plastic bottles and used face mask. The inventors notice that we can overcome and adapt to the problems caused by the accumulation of these products by turning them into a new useful resource. The flow of idea to produce Plascanemas Board come from the problem of excess bagasse produced by street drink stall. Even though bagasse is biodegradable substances but excessive bagasse still needs a long period of time to make sure that it is completely decomposed. Most seller take easy way to dispose the bagasse by burning it. This leads to air pollution and global warming. Without proper management, the accumulation of bagasse may cause uneasy smell and encourage the growth of bacteria. Besides, most people directly throw the plastic bottles after use as they think that it is just a small matter regarding their action. Some people throw the plastic bottles everywhere and it's become spot for mosquitoes to breed as water stagnant in it. This usually leads to the spread of dengue fever in a neighbourhood. Us inventors also want to remind the public that plastic bottles are threatening the marine life. Face mask has been a part of our daily needs throughout pandemic COVID-19. Disposal face mask is non-biodegradable and it produces harmful methane gas when burnt. Nowadays, used face mask is found almost everywhere in our country as it is very light and easily blown away by the wind to other places. Thus, it is clear that Plascanemas Board is an environmentally friendly product which should be explored and worth to be studied.

Project T: Innovation in Traffic Safety Protection Plan

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ABSTRACT

The number of traffic accidents recorded in Malaysia has gradually increased in recent years. In order to address this, we have developed an innovation known as Traffic Safety Protection Plan, Project-T which could manage traffic safety without supervision. This project comes with a roadblock barrier made up of polycarbonate and tungsten which is the strongest metal on Earth. It can help to protect pedestrians from being attacked when cars accidentally bump into barrier. This innovation uses the concept of electromagnetic waves which have a certain frequency. Based on how much the frequency changes, a speed sensor detector can calculate how quickly a car is moving toward the barrier. If the speed of the car is over a certain threshold, several speed bumps will raise up to slow down the car. Since this project could greatly reduce the maintenance cost, we could predict that this project will receive a high globalization demand. Project-T is worth the investment because of its humanized and advanced technology in the context of traffic protection.

Keywords: Roadblock barrier; speed sensor detector; humanized and advanced technology

Eco Friendly Portable Desk

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ABSTRACT

The districts which consist of rural areas are commonly disregarded due to being populated by small communities. The funding provided to these districts especially in terms of education concerning students are limited compared to students from urban areas in larger districts. The funding that's lacking in the educational centres in rural areas are basic amenities, mainly desks. The students will face discomfort of sitting on the floor to carry out their work and take notes. Some students also do not have access and do not possess a reasonable bag to carry their books and stationaries to school. Based on the basic principle of our body mechanics, sitting on the floor while writing can have detrimental effect on the students posture and eyesight as they grow older. In order to tackle this problem, we have come up with a portable desk that can be converted into a handbag. These devises are not only beneficial for student as they are also economically functional and affordable. The desk is made up of hard cardboard cartons that usually found disposed in excess. This innovation enables students to avoid hunching back while sitting crossed legged. The spine is kept in a neutral position as weight is kept on hips rather than other positions of the body. Innovation of the portable desk enables waste materials that are able to be recycled to be made into an advantageous product for the use of students. The desk is designed to maintain a natural curvature of the back. Students are able to sit upright and will stance improvements. Muscular and core activation brought by better learning positions improves flexibility and mobility. In addition to that, students are promoted to have mental relaxation. Switching from sitting barely on the floor to having a desk to support is aided by the factors where the set-up is low in cost, consumes less space, simple to move from one place to another and it is easy to customise and one can use floor desk for multiple purposes. The foldability and light-weight property of the desk makes it more ideal for students. Besides, this product also has high commercial potential. The materials required to manufacture the product are readily available. Next, the desk fabricates with minimize the manufacturing cost. This desk design is more compact, user friendly due to we can adjust the height, portable and multipurpose. Also, introduce and fabricate new concept of desk as existing desk in the market only has limited function. In conclusion, this eco-friendly portable desk aspires to be a school bag that encourages students to attend school on a regular basis in order to shape a bright future for students.

Keywords: Education; user-friendly; multipurpose; bright future

Song&Lyrics: A Stress Reliever Musics -Themed Website for Students

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ABSTRACT

Pandemic of COVID-19 has undeniably affected students' mental health. Based on research, the level of stress, anxiety, and depressive thoughts were significantly increased due to the pandemic COVID-19. With the objective to address this mental health issue, the Song & Lyrics Club members decided to create a website as a platform to unite everyone through singing, lyrics and music. In research conducted in 2018, it is found that the participants reported improvements in their mental health, mood, sense of well-being, and feeling of belonging as a result of singing. The website would be a perfect positive coping mechanism for the students to cope with stress and anxiety. This idea is because, on the website, students are able to share their talent in singing by posting videos of themselves singing. They can also express themselves by posting meaningful lyrics. With this posting, the students can share their personal thought and how they view life from their perspective. This feature adds value to the website because it shows the versatility of the website, not only for those who are good at singing but also for everyone who loves music. The unique feature of this website would be the forum page where everyone could take part in the discussion to discuss any topics related to music. The website is one of the small efforts of the club members to provide a one-stop centre on music as a stress-reliever for students all over the world.

Keywords: Mental health; stress reliever website; singing; lyrics

Survival Light

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ABSTRACT

Survival Light is one of the products that allows its user to use it without any help of electric current. It is well known by the whole world that some countries are struggling with electricity while some of us enjoy being in light and airconds. Some wouldn't even have light to accompany them during the night. Top three countries that are struggling with electricity are South Sudan, Chad, and Burundi- with only 5.1%, 6.4% and 6.5% of its population having access to electricity respectively. With these countries along with some other relevant countries on mind, we had come out with a creation in order to give them the source of light they needed during the night while also cooperating scientific values in it – in which we chose chemistry. We will be applying the concept of electrolysis in making this work. The salt water that we will us to sink the bulb will act as an electrolyte in which would connect the two electrodes and will end up making the bulb light up. Our main target is people who wants to go green and also those who were impacted. Hopefully, with this creation, it will somehow help those are in need of it.

Keywords: Electricity; electrolysis; impacted

Multipurpose Swipe Glove

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ABSTRACT

Multipurpose Swipe Glove Set is being formed to fulfil several purposes. The first one is to facilitate and help the task of washing to be more efficient. Secondly, it helps to protect the skin from scratches and cuts. Thirdly, it also to help protects sensitive skin and allergies to detergents. The last one is to make people who use this kit apply less energy and time to wash difficult part. First main set is swipe glove made by rubber, attached with Velcro tape for a stronger grip while in action. The glove is thicker enough to protect hands away from sensitive skin, avoid wet hands, sharp objects and prevent injuries while working with house chores. In addition, second main set is available with various type of sponge and brush that also attached with Velcro tape. Effective cleaning process is a matter of daily duty so that people can choose any suitable sponge or brush in this set to do certain task such as washing dishes, washing cars and cleaning dirt which is required less energy for washing process using hands. This set has the potential to be commercialized specifically to housewife, people with sensitive skin, car washer, cleaning worker and dishwasher. Therefore, this 'Multipurpose Swipe Glove Set' is very appropriate to everyone in any residence.

Keywords: Multipurpose swipe glove set; cleaning activities; house chore; Velcro tape; sponge and brush

Legasi - A Gamification of Malay-Cultured Pencak Silat and Empu's Blacksmithing

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ABSTRACT

Gamification has become an effective way to promote interactive learning by playing video games in the era of globalization. However, this method can be utilized in reintroducing Malay culture that is overwhelmed by the modern era. Introducing Legasi, a third-person action video game with the theme of Malay cultured martial art, Pencak Silat as the base game design. Exploring the culture of the Malay martial art along with the art of blacksmithing of Empu. The objectives of the innovation are to introduce and promote the culture of Southeast Asian especially Pencak Silat and Empu's Blacksmithing on par with current technological developments as well as fostering the spirit of love for culture among young people. By using Unity 3D as a game engine, the prototype was developed with 6 Pencak Silat movements. The commercial potential is enormous as the global gaming market is expected to generate billions of incomes yearly; examples of well-known platforms such as Steam and Epic Games. In conclusion, the implementation of gamification in introducing culture is desirable in line with technological advances.

Keywords: Gamification; video game; culture; pencak silat; empu

Kids Torqulibrium Learning Kits

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ABSTRACT

Most of people didn't realized about any physics theory occurred to surroundings. Therefore, Kids Torquilibrium Learning Kits is being formed to introduce on basic physics application which is about Torque and equilibrium of a system, together with gravitational force. It is also to reduce gadget addiction among children, promote critical thinking and help in development of social skills. It is made especially to kindergarten and primary school children to learn how to balance things and play at the same time. This kit completes with beam balance set together with moulded clay which has different kind of animal shape such as ladybugs, ducks, monkeys, elephants and rabbits. Each animal has a different size which causes the weight to differ in mass. A balance is built out of plywood because it is durable materials. Thus, it will not break easily. Fulcrum being set as adjustable. Hence it can move along the balance either to shorten or lengthen the length between the fulcrum and the weightage. Children will be tested on how much time needed to balance both side at different centre of mass (pivot point) using stopwatch. If balancing cannot achieve, the result of rotation either clockwise or anticlockwise learned. In addition, children also will learn on another physics theory about gravitational force shown always toward downward direction. Likewise, manual book will be provided, equipped with multiple of difficulty levels as a guide for children to try out. This set has the potential to be commercialized specifically to all teachers, students and children from kindergarten and primary schools. At the end, they will learn how to achieve stability of a system at different pivot point and about gravitational force that always act towards downward direction.

Keywords: Kids Torquilibrium learning kits; beam balance; moulded clay; pivot point; gravitational force

Attack on Physics

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ABSTRACT

At first glance most of students consider physics subject to be a hard one to learn and not much interest. Therefore, to make learning physics fun, 'Attack on Physics' is being formed as a game product to attract students to learn basic physics introduction using a game card and they can play at the same time. The squared board is prepared of questions parts and surprise platform consist of 2 in 1 combination of monopoly and scrabble basis. To play the whole game, players were provided cards consist of questions on basic physics topics, privilege cards and false cards. Initially, the game conducted by a dealer and maximum five players required to play from the beginning which is for monopoly part. The player will throw a dice and will move to the question platform according to the number which the dice shown. In order to move to scrabble part, each player needs to obtain 6 privilege cards as a weapon for players to win the whole game. Just like any other scrabble game, the first player must put one of their letter tiles at the centre of the board. The arrangement of letter tiles allowed is in vertical and horizontal only. Marks from each player will be displayed during the game if they can answer correctly. To win this game, the player with the highest point will be the winner. This set has the potential to be commercialized specifically to secondary school and foundation level students, teachers and lecturers. In the end, players are able to memorize and retain physics knowledge longer as it is an interactive way of learning.

Keywords: Attack on Physics; Physics introduction; game card; privilege card; letter tiles

Python Based Machine Learning Application in Agriculture for Crop Recommendation, Yield Prediction and Disease Detection

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ABSTRACT

Agriculture sector accounts for 7.1% of Malaysia's gross domestic product per capita (GDP) as the third-largest contributor with 26.09% of landmass allocated specifically for agriculture. Globally – a RM 10.3 trillion industry. However, the lack of food provisions for the global population remains significant and everlasting, especially in underdeveloped and developing nations. This be in essence of improper crop management, wrong choice of crop, and/or the variation of monsoon season patterns. A viable approach to address this issue is through the implementation of a web application that utilizes python machine learning modules to analyse weather patterns, soil pH, temperature, rainfall, type of soil as well as the land size of a particular location to predict and recommend the most suitable type(s) of crops for plantation that would produce an increased yield. The algorithm could be trained to cater for different countries and parameters; whilst maintaining the accuracy in the prediction model. The system also provides information on the ideal amount of fertilizers that are required to cultivate the recommended crop. Consequently, this minimizes the losses faced by farmers due to unforeseen atmospheric circumstances and maintaining the profit margins year-long for the farmers. With the integration of AI disease detection algorithm; Farmers would also be able to detect diseases in plant based on the coloration of the leaves. Thus, a step in the direction towards ending global food shortage and expanding the economic potential for agriculture-dependent nations could be achieved.

Keywords: Crop prediction; python; neural network; machine learning

Area Marking by Backward Bent Duct Buoy

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ABSTRACT

Malaysia has a lot of coastlines that is near with other country such as China, Philippines, and Indonesia. Thus, marking the shorelines or any water bodies within our country is important. This technology called Backward Bent Duct Buoy (BBDB) will help our country to maintain certain interest such as to improve capabilities of our country to mark a certain area or to warn seafaring vessel about shore at night by using the energy from the wave to power the signal lamp (electrical energy) on the buoy. This technology can be useful, in sectors such as tourism, and defence in which the technology can be used to mark area for divers or swimmers that is safe for them or help us determine or mark a certain area within our coastline. Basically, this particular device applies the Principle of Conservation of Energy which states that energy can't be created nor be destroyed by converting wave energy to electrical energy with the concept of BBDB. On a larger scale, this BBDB can be used to power up Forward Operating Bases (FOB) at sea instead of fossil fuel generator.

Keywords: Backward Bent Duct Buoy (BBDB); Forward Operating Bases (FOB); energy

COVID-19 Hygiene Kit

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ABSTRACT

COVID-19 with its variants and recently the Omicron variant continue to spread globally and in Malaysia, the number of new cases reported daily is alarming with the cumulative coronavirus infections has reached 3.5 million cases. It has become a major cause of concern for everyone and reopening of schools during this pandemonium making parents concerned about their children's safety towards COVID-19 infections. The awareness of maintaining good hygiene among the public as well as children need to be practiced and parents play an important role in keeping them in check. Good practice in sanitization among the school children will lower the risk of them getting infected. To help spread the awareness of COVID-19 including maintaining good hygiene habits, a COVID-19 hygiene kit is introduced. The purpose of the hygiene kit is to ensure the public and children especially always to keep themselves cleaned and sanitized as to prevent the virus transmissions from indoors & outdoors. This kit is designed with a combination of refillable masks, hand sanitizer and antibacterial wet wipes compartment in a sleek and easy carry-on bag. The design of this hygiene kit is very practical and convenient as one can easily reach for all the items you need in one place without having to recall the whereabouts of each item. Such practicability of this hygiene kit will bring good impact to ensure the preparedness of COVID-19 among the public and school children. Additionally, this kit is also environmentally friendly by reducing the single-use plastics especially in packaging the masks and wet wipes. It's also a green effort towards helping the earth from plastic pollution as the practice of reuse and reduce is adept even during pandemic.

Keywords: Hygiene kit; sanitization; awareness; single-use plastic; COVID-19

EBook: Understanding Islam II

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ABSTRACT

In the present challenging pandemic world, it is inevitable for learning institutions to evolve as a digitalised vocation to accommodate its students and teachers. A textbook in eBook form is usually culpable as an underestimated value for teaching and learning. Nevertheless, it is no doubt paves the way to effective teaching and learning processes. The eBook aims to help students understand the course, i.e., Understanding Islam II (a course in CFS IIUM Gambang) better. It also guides them to utilise it as a core reference before pursuing other sources that might be unsuitable for the course. The eBook is readily available for purchase and downloaded through the corresponding Google Site. Students are encouraged to read it before classes together with pre-recorded lectures. The eBook helps students to improve their understanding since they can easily access it anytime, anywhere, and anyhow. Simultaneously, it may create a firm foundation for Islamic Studies to extend the discipline to others regardless of faith, race, social standings, etc. The contents can be shared as educational videos or notes for some topics via social media. Thus, an eBook is definitely a worthwhile effort in teaching and learning.

Keywords: EBook; digital; value; Islam; CFS IIUM

Dispensable Sajdah

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ABSTRACT

Dispensable means can be used once. The word was also created by us from two other words, which are "dispenser" and "disposable," which mean the container that dispenses and one-use, respectively. The objective of this product is to make it easier for Muslims to pray at mosques without having to bring their own Sajdah. Our target market are Muslims, the owner of the mosque, or RnR. This product's unique among other products is that it is created from biodegradable materials. This product is suitable for everyone because it is very easy to handle.

Keywords: Dispense; one-use; biodegradable

Chokuma

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ABSTRACT

Obesity, underweight, malnutrition and stunting are part of the health problems that are often experienced by children due to unhealthy and unbalanced eating habits. Consuming healthy and nutritious food are able to maintain body health and it is very encouraged in Islam as stated in hadith of the Prophet SAW narrated in Al- Bukhori, "Indeed you have an obligation to fulfil the rights of your body". Hence, the innovation of CHOKUMA is an initiative innovated by the researchers to assist the children practicing healthy eating lifestyle which are important for their physical and mental development while exposing the children with prophetic dietary habits. The innovation of CHOKUMA is inspired by dates- chocolate based products that are available in market nowadays. The uniqueness of this product found in this innovation are in terms of ingredients used, the texture, shapes and patterns that are favourable by children. CHOKUMA is a nutritious chocolate produced through combination of the main ingredient; dates and other ingredients such as dark chocolate, honey and almonds. The combination of this sunnah food is rich in vitamins and minerals are needed for the children's growth. The various shapes such as in animals and flowers shapes shall attract the children to consume it. The delicious taste and its unique combination of softy and crunchy texture makes CHOKUMA is favourable among the children. Apart from that, this product is an alternative source for the parents to get nutritious food to ensure the children enjoying healthy food and help them to grow up healthily physically and mentally.

Keywords: Innovation; prophetic food; chocolate; nutritious; children

MisTic: New Pen Generation with Dual Usage

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ABSTRACT

The importance of pen as a writing instrument has been widely known over decades. It is used during writing and drawing tasks in daily routine. The coronavirus diseases-2019 (COVID-19) shock has affected everyday life in many ways. World Health Organization (WHO) emphasizes the use of hand sanitizer to minimize the spread of the virus. Studies reported that workload causes stress. MisTic dual function eco-friendly pen with wellness applicator is an innovation aimed to improve the writing and drawing activities while maintaining proper hygiene and reducing stress in addition to soothing the tired-looking skin. MisTic is a writing instrument comprises refillable pen with pen cap on one end and wellness applicator on the other. The wellness applicator includes the roll-on aromatherapy oil and spray hand sanitizer and spray face mist. This innovation reduces the use of plastic as the pen barrel is made of used papers. It has a high potential to enter the stationery market focusing on Educational Services Sector and Administrative and Support Services. A report stated that the sales value of manufactured stationery in Malaysia was approximately RM 1.23 billion in 2020. Both pen and wellness applicator can be easily carried in a single equipment.

Keywords: Innovation; eco-friendly pen; dual function; hand sanitizer; aromatherapy

Bitaqat Jamila: 3D Ring Book for Kids

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ABSTRACT

Bitaqat Jamila is an alternative to attract children in teaching and learning activities. The idea comes when we see how difficult to maintain children's focus on teaching and learning activities, especially teaching language to children. So, to solve this problem, we come out with this idea to help children stay focused and enjoy the teaching and learning activities. The word 'Bitaqat Jamila' comes from an Arabic word; 'bitaqat' means card and 'jamila' means beautiful or attractive. The main objective of this product is to give an appropriate method for teaching language to children. Bitaqat Jamila is 3D visual dictionary with DIY-designed glasses. This attractive card is focused on three main languages; Malay, English and Arabic. It comes with a simple and interesting pattern to make it easier for everyone to use and access. The specialty of this card is, it comes with 3D DIY-designed glasses that will make teaching and learning more enjoyable and interactive. This 3D visual dictionary is suitable and well suited to children at three to twelve years old, because at this age, the children are more active and need something enjoyable to attract them in the teaching and learning process. Besides, the price for this card is cheaper than other dictionaries, making it affordable for all layers of society. Target customers for this product are parents and educators. We believe this product will give an enjoyable and attractive learning experience to children and help them to master a language well.

Keywords: Card; attractive; children; language; 3D visual dictionary

Hololo.o

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ABSTRACT

Hologram is a technology that has the potential to be expanded in most fields such as education, medicine, and art. However, the application of this technology is not widely used and known in several industries. For instance, in education system hologram helps students in understanding complex mechanism by demonstrating through 3-Dimensions. To date, students find it difficult to understand complex mechanisms in 2-Dimensions in certain subjects such as studies of biology, hence lack of understanding of the concepts taught by their teachers. Therefore, the innovation of hologram technology, Hololo.o has the potential to prove the effectiveness of hologram technology in aspect of education, medicine and healthcare, arts and culture. This innovation is intended to fix the weaknesses of existing hologram technologies. Hololo.o has its own uniqueness that differ from the existing ones. Hololo.o can play variety types of videos and accessible for various languages which cannot be found in existing hologram technologies. Besides, it is lighter in weight, portable, and the price is affordable. We believe that Hololo.o can contribute to the advancement of science and technology and ease the affairs of all levels of society. Therefore, Hololo.o can be targeted to educators, healthcare providers and players in film industry.

Keywords: Hologram; 3-Dimensions; education; healthcare; film industries

Hey, Rhythm !

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ABSTRACT

Our modern digital era forces us to use devices that emit blue light, also known as high-energy visible light (HEV light), 24 hours a day, which results in the symptoms of addiction, causing us to be undisciplined, reducing direct family time and lack of interest in reading [1]. Instead of using a phone to set a time, which is still a technology that produces hazardous light, we invented Hey Rhythm to manage our time so that we can be more disciplined and minimize addictions to electronic devices. At the same time, direct family time still occurs in our everyday life. Hey Rhythm has three buttons that are made from squishy substances to help people divide their time between reading, going outdoors and spending time with family while releasing their stress. It is also portable because it comes with a keychain that makes it easy to handle. It has a digital timer to set a specific period of time and even comes with an alarm to alert you about the timing. It also comes with the colour of black and white which looks more elegant and stylish, made from stainless steel and there is a seal as a cover. This product aims to enhance teenagers' skill in managing time wisely by having a digital timer to set a specific period of time for specific activity. It is also helping teenagers from having too much stress in everyday life activities or academic activity for university or school students [10] by using the three buttons to do other enjoyable activities while giving the effects of ASMR when clicking the buttons, and it reduces the gadget addiction by setting the choices of mode of time given. Hey Rhythm will be easily commercialized especially to the teenagers, parents and educators. As a conclusion, this product will be really helpful to humans so that they can enjoy their life meaningful to the fullest.

Keywords: Time management; teenagers; addiction to electronic devices; discipline; family time

Smart Ergonomic Pen

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ABSTRACT

The pen has become a very well-known writing tool up until now. The evolution of the pen over time demonstrates how vital this writing instrument is in everyday life. However, modern commercial pens appear to have problems as well. The problems that are caused by the pen include developing writer's callus, smearing of ink across the side of the palm, and contributing to plastic waste. Hence, the objective of this innovation is to create an ergonomic pen with erasable ink that has a non-slip and comfortable grip, a good weight balance, quick-drying ink and is durable. As this innovation is based on ergonomics, aspects such as shape, weight, grip, and ink flow are all taken into account to enhance effective handwriting. The ergonomic pen is long and thick, light, comfortable to hold, and has a ballpoint tip with low-viscosity ink. New features have also been introduced to this innovation to boost the novelty of this product. Erasable and refillable ink, a laser pointer, and an audio recorder are among the features. This product is targeted at office workers, people suffering from arthritis or finger joint discomfort, high school students, and university students. Therefore, it is expected that this innovation would make it easier for individuals to do their daily activities, particularly for students and office professionals who are used to writing with a pen almost all of the time.

Keywords: Smart ergonomic pen; erasable ink; audio recorder pen; writer's callus

Vector's Scavenger Hunt

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ABSTRACT

This is the compilation of the introduction and innovation of Vector Scavenger Hunter. This will contribute to the understanding of an easier way to better understand vector topics. Concisely, this project occurred when the problems faced by students, lecturers, and their grading clearly could be seen through the phase of the pandemic. There is no other way to describe that the topic of vectors is quite confusing for students, especially for those who have lost interest in studying this syllabus. Perhaps the development of graphics, simple notes, a variety of answers, and different levels could pique the target group's interest. There are so many ideas we must emphasise in our prototype before we can succeed in declaring it as an app that can be used worldwide. Before we finalised the idea of this prototype, we already analysed and discussed the commercial potential for this innovation. We used the target of students and educators to thrive in this project, and certainly, we had to use some costly methods to succeed in this project. At the end of the discussion, we took this matter seriously in the hope of attracting the attention of others and organisations that could help us develop our project more.

Keywords: Vector; Vector Scavenger Hunt, students; prototype; development

Improvement of Mulberry Yields with the Aid of Bacillus Salmalaya Strain 139SI

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ABSTRACT

When considering the benefits and drawbacks of inorganic fertilizer, the impact on the environment is a major consideration. The production of inorganic nitrogen fertilizer necessitates great heat and pressure. Inorganic fertilizer has a direct impact on the environment in the area where it is applied. Inorganic nitrogen fertilizer is only used by around half of the plants in the region where it is utilized. Interested in Bacillus salmalaya strain 139SI, a new found research bacteria as the potential biofertilizer to increase the crop yield of mulberry saplings, the goal of this study is to assess the impact of Bacillus salmalaya strain 139SI inoculant on the height of the mulberry saplings, the number of leaves and eventually the yield. The results demonstrate that the inoculation of 10ml diluted B. salmalaya strain 139SI provides the most enhancement in terms of the quality and the condition of the plant in comparison with the control and inoculated 50ml diluted biofertilizer mulberry sapling. This product holds a great potential to be commercialized in a wide range of consumers, specifically those keen on agricultural activities, considering the advantages it holds. Overall, the results suggest that the application of B. salmalaya strain 139SI inoculant is effective for improving yield of mulberries.

Keywords: Bacillus salmalaya, Biofertilizer, Mulberry saplings

Aqua-Pine-Nics

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ABSTRACT

For ages, farmers used to burn agricultural wastes as the easiest way to discard the waste which one of the major causes for air pollution. The same concept has been adapted by pineapple plantation to dispose their wastes. The innovation of Aqua-pine-nics is to minimise waste and pollution produced from pineapple agriculture. Apart from that, Aqua-pine-nics can also be used as education medium and can minimise land use. Aqua-pine-nics is a combination of aquaponics and fishery. In order to reduce the waste of pineapple leaves, it will be further processed into dried pineapple leaf fibre (PALF) and pineapple charcoal. They can act as planting medium and water filter in the Aqua-pine-nics system, respectively. This innovation is targeted to be commercialised to school garden, people with limited land space, businessman and entrepreneur and teenagers, kids and elders. With the collaboration from Ministry of Agriculture and Food Industry of Malaysia, it is expected to make Aqua-pine-nics as one of the ways to increase food supplies in Malaysia and can reduce consumers' monthly spending.

Keywords: Aqua-pine-nics; aquaponics; pineapple agriculture; Pineapple Leaf Fibre (PALF); pineapple charcoal

Ultraviolet Shoe Dryer Box

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ABSTRACT

An Ultraviolet Shoe Dryer Box will help people solving their shoe problems in daily lives. Good shoes can protect the feet against any infections. When shoes are wet, it takes time and optimal temperature conditions to dry. Hence, this makes the quality of the shoes deteriorate and emit a bad odor as well as a breeding ground for microorganisms. The main objective of this innovation is providing the suitable optimal temperature on the shoes. Besides that, ensuring the durability of the shoes and help killing bacteria on the shoes. Our product is unique because it is developed by using the ultraviolet (UV) lamps. This shoe dryer supplies a medium for wet shoes through trapping the heat generated by ultra-violet light which is capable of being a drying agent. This product can penetrate the market as Malaysia is a country that has only two climates which are rainy and erratic heat. Therefore, it can contribute interesting ideas and open a new path in the field of science and technology related to the shoes while offering convenience to the community. As a result, the consumers will be more aware of the importance of taking care of shoes in daily life.

Keywords: Shoe box; dryer; storage; ultraviolet; convenience

Water Sprinkler

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ABSTRACT

Plants need water to grow. Plants are about 80-95% water and need water for multiple reasons as they grow including for photosynthesis, for cooling, and to transport minerals and nutrients from the soil and into the plant. We can't grow plants, including fruits, vegetables and grains, without water. Agriculture is the world's greatest consumer of our Water resources. Globally about 70% of human water use is for irrigation of crops. Therefore, the watering plant is a must since water is an essential input into the photosynthesis reaction. However, relying on a human to water plants is not efficient since humans are busy due to several factors such as work and so on. Thus, automatic water sprinklers have been developed to help to save time watering their plants without using any human interaction.

Keywords: Photosynthesis; agriculture; human interaction

Visitor Counter

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ABSTRACT

With the current COVID-19 pandemic, since the merchant wants to limit their visitors in a time, they will be given a card representing their number. By this way, there are many problems that merchants will face such as the tendency of losing the card's number. First, PIR sensor will detect motion. Then, the green LED will light up and the buzzer will ring if there is a visitor. For exitance, the red LED will light up. Commercial Potential: restaurants that have to keep their SOP by allocating a certain amount of customers, Malls that must limit the number of customers allowed inside a shop in accordance with the government's current SOP. Schools that want to keep track of their students' attendance. As a conclusion, our prototype is environmentally beneficial since it emits no waste. We mainly use electrical energy, which is a renewable resource.

Smart Thermobox

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ABSTRACT

Smart Thermo Box is a normal portable delivery box that has two compartments, one for hot food and another one for cold food. Customers who order food via online delivery always complain that their food turns out bad when it arrives at them, be it hot noodle soup or ice cream. They demand improvement on the delivery services to satisfy their needs. Smart ThermoBox ensures that hot food stays hot and cold food stays cold. Besides, it maintains the edibility, quality and flavour of the food and the beverages. The function is to store hot food such as rice, soup and fries. It also functions as cold food storage to prevent ice cream from melting and a cake's shape from drooping. Smart ThermoBox has many benefits which are multifunction user, tear-resistant, waterproof and easy to carry as a backpack. The Smart ThermoBox is designed exclusively for storing food and keeping it hot or cool, preserving the flavour and preventing spoilage. This product is commercialised as a local brand for many useful peoples such as students' life, housewives, workers and restaurant that provide delivery services. Because of its convenience for customers, the fast-food sector has been steadily expanding.

Keywords: ThermoBox; smart; backpack; multifunction; waterproof

PenShield

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ABSTRACT

Even if our nation is a superpower and has developed economically, there are still many prevalent crimes that continue to occur against teenagers and students in our society and are especially destructive. With the assistance of our device "PenShield," crimes against teenagers and students may be put a stop. This gadget is a safety precaution, intended specifically for teenagers and students in distress. This self-defence safety protection tool shaped is designed in the form of a two-sided marker pen and is meant for use during an assault. It is incredibly lightweight and portable, but also extremely sturdy and resistant to breakage. This tool has an alarm, an electric shock, and a foldable knife. This PenShield is wirelessly enabled as the battery voltage is utilised to replace the current supply. PenShield may prove to be highly beneficial for teenagers and students who are in risk and want assistance in combating crimes. To conclude, the major purpose of this safety equipment is to shield teenagers and children, who are often targeted and assaulted by criminals.

Keywords: Safety; weapon; safeguard; security; harassment

Smart Rehal

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ABSTRACT

Rehal was created for Muslims to place the Al-Quran which is the holy book for Muslims. This rehal is often used by Muslims around the world, regardless of race, rank and skin color (Samad et al., 2018, p. 36). In general, these rehal are designed in the same size and from the same material. Based on our study, we have identified the problems that are often faced by these rehal users such as lighting problems and discomfort. Therefore, we have made some modifications to the common rehal to address the problem such as adjustable height, portable lamp and small storage slot to keep their items neatly. Our customised rehal has a number of unique advantages, including the ability to overcome users' clouded eyesight while reading any book or Quran in the dark, adjusting facilities are available on the rehal to comfort the users and any valuable thing may be managed by storing it in the available storage space. As a result, customers do not have to be concerned about the state of their items while utilising the service. Finally, the ease that this invention may provide to Muslims is remarkable, and it will undoubtedly improve the everyday lives of individuals who desire to recite the Quran throughout the day. Smart Rehal will not only make it simpler for students to study, but it will also make it even easier for people to study anywhere.

Keywords: Smart rehal; rehal; innovation

Smart Toilet

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ABSTRACT

Toilets are crucial for the health development of people, not to mention children. This is sanitation, where there are facilities and services for safe disposal of human urine and faeces including maintaining hygiene through services such as garbage collection and wash water disposal. The project is conducted so that people will be given access to comfortable, hygienic and safe toilet systems. Thus, a toilet system where hygiene and safety are prioritised could be built while also not compromising the overall comfortability of the toilet system itself. To achieve that, three main features were introduced. Firstly, to achieve a hygienic toilet, a No-hands needed system is introduced so that no physical interaction is conducted. Secondly, to make it more comfortable, auto-flushing is enabled so that the user will not have a hard time flushing the toilet. Lastly, to maintain safety, a fire hazard system is created to prevent any fire hazards from occurring. All of these features are created using Tinker CAD. The commercial potential of this product is due to the high demand in the market and fast development of infrastructure. In conclusion, this invention checks all the boxes required in gaining peoples' attraction which are safety, hygiene and comfort.

Keywords: Arduino; Internet of Things (IoTs); healthy development

Ease Your Study (EYSY) app

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ABSTRACT

EYSY is an app that has been working for, aiming to enhance the productivity of the users which includes students, teachers and can also be parents. EYSY is a short form of 'Ease Your Study'. In today's modern world, more people prefer to study through technology rather than traditional methods. As for this, we need to download a number of apps to help us with our studies, such as Canva, Camscanner, and Slidesgo. Our phone storage easily becomes insufficient after we install all of the apps. Furthermore, some people are unfamiliar with instructional software and applications. As a result, this EYSY that we have invented can help them with their education because it has all of the necessary study materials. Our initial goal in designing EYSY was to establish a platform that included everything we needed to study only in one application. We are aiming for three categories in this innovation: primary school, secondary school, and tertiary education. EYSY has four main parts which are Education, Study, English Tools and teaching. Each part has its own features. In conclusion, this app definitely can help the users throughout their studying process.

Keywords: productivity; application; education; technology; study

RIVER CLEANER SAVER

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ABSTRACT

Our main objectives in creating this product are to prevent and reduce water pollution, create a conducive and effective environment and make the community realise how important it is to maintain environmental sustainability. As we all realise, the quality of the water used is obviously worsening as it becomes heavily polluted. Every day, we observe a lot of waste being dumped into rivers, seas, and other water bodies. In Malaysia, we also can see that more than ten rivers are in critical condition. For instance, the Klang River, Sungai Tebrau, Kuantan River, Skudai river and Perak River. An inefficient waste management system that we usually see on the market today has a lot of deficiencies and may add to the community's environmental damage. Therefore, we would like to introduce our product RIVER CLEANER SAVER which is unlike any other product on the market. Our product is designed in a medium-size, portable and user-friendly. It also requires less time and energy. RIVER CLEANER SAVER can measure the water quality level. If the water quality worsens, our product will release a water treatment disinfectant solution to prevent algae blooming and to maintain a lower level of BOD in the water. Non-Governmental Organisations (NGOs) and Government Organisation (GO) are our targets that we would like to introduce our innovative designs. With the worldwide use of River Cleaner Saver, we can reduce and prevent the main problem, which is water pollution.

Keywords: RIVER CLEANER SAVER; rivers; water pollution; water quality

Malay Culture Distinctiveness

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ABSTRACT

In the 21st century, the rapid growth and mushrooming of technology development have been wiping away the original identity of several people. It is claimed to be because they prefer to practice urban, modern and contemporary lifestyles that are more relevant instead of practicing the antique one. Therefore, as new generations who are supposed to hold the responsibility to remain our Malay culture relevant, we feel the obligation to acknowledge societies about our culture's uniqueness. We believe that the identities' ignorance can lead us to the culture confusion which if we do not take it into consideration, will become worse. From the statement mentioned earlier, we have a very clear and strong objective for our project which is that we want to uphold the respectability value and grandeur of Malay Culture in the world view. To begin with, we will be kicking off our project with the introduction to the several aspects of Malay culture that we intend to highlight and discuss which are traditional clothing, games and foods. The first and the foremost, we will be discussing about the varieties of traditional foods in Malay Culture that are usually will be the excitement spark for those who love to enjoy foods. The foods that we include in this project are nasi lemak, kuih sagu, kuih cucur and currypuff. Next, we are focusing on a few types of Malay traditional games that are familiar and also are practiced by all people across the country. We choose congkak, batu seremban and gasing. Last but not least, we love to introduce our traditional clothes that have their own uniqueness in terms of designs and colors. As we all have been informed, Malay culture has a lot of traditional clothing types. Conversely, we only point out baju kurung, baju melayu and kebaya. We have our respective audience target for this project and we hope for it can be achieved. We are aiming for societies from different life backgrounds and age ranges to gain benefit from the project, hence gaining some knowledge that will increase their understanding about it and also the tendency of practicing it. Thousand miles begin with one step and we really hope that our project will be successful as we expect.

Canela Soap

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ABSTRACT

Soap is an alkaline substance that was created to eliminate bacteria while also assisting in the regulation of our skin's pH level. However, some soaps include artificial ingredients that are damaging to our skin, irritate it, and are especially hazardous to delicate skin. As a result, natural components should be the primary focus of the soap industry, rather than artificial items that are damaging to the skin. The main goal of this product is to utilize cinnamon as a natural component to aid with germs on the hands along with skin irritation. Canela soap has finally achieved the final product, which has also diminished the effects of allergies on the skin. It is important to focus on this minor factor because it can lead to big issues such as environmental pollution. Canela Soap also achieved a successful commercial debut by releasing its first product to consumers to test its alkaline level against various skin kinds, the majority of which were sensitive skin types without allergic symptoms. To summarize, Canela Soaps are a natural product that uses Cinnamon as one of the primary components to make a safe soap product that may serve as a starting point to the whole soap-making market.

Multipurpose Tasbih

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ABSTRACT

The purpose of the idea for us to create this project is because we found that many Muslims today are often careless with things related to the world and often give the reason that it is difficult to remember the number of prayers and remembrance recited and they are busy so always late to pray. In addition, Muslims at the end of this age also prefer to listen to songs rather than the holy verses of the Quran on the grounds that it is difficult to download surahs. We have decided to innovate 'Multipurpose Tasbih' which has various functions such as counting zikir recitations, tasbih and selawat, helping to find the direction of Qibla, a clock that reminds us of prayer times as well as an audio player that recites selected surahs. The objective of our innovation is to make it easier for Muslims to take our innovation tools everywhere as well as use them everywhere and help overcome problems such as late prayers, forgetting zikr count, difficult to download selected surahs and wrong Qibla direction. The innovation development process is by adding a digital compass, an audio player that has been downloaded with selected surahs as well as a digital clock that reminds of the prayer times on the 'Tasbih Counter'. Tools with one different function are combined into one tool that has multiple functions. We expect the commercial potential of our innovation project to be highly profitable and sold in stores as well as in online businesses as it is a very useful tool for all Muslims. We hope that our innovation project can help and facilitate Muslims to worship more sincerely and be able to fulfil all the commands of God.

Keywords: Careless; worship; functions

Vector Board Game

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ABSTRACT

By years our next generations seem to avoid pure subjects especially physics. This is due to the complexity and tedious working solution that might be difficult to understand. The main idea of this project is to strengthen the vector concept among the students from secondary school to pre-university students and attract them to learn physics in a more interesting and leisurely way. As we all know, understanding the fundamental topic of physics like forces, motion and kinematics quantities require the basic concept of vectors, especially when answering the problem-solving question. Therefore, students need to have a really good understanding of the concept so that they will be able to get good grades. Most of the students are actually have some difficulties in learning vector concepts. The ability to solve vector will assist the students to score more in most of the topics as half of the syllabus requires vector in solving the problems. As vector is very important and gives a huge impact on the students' performance, creating a simple and low-cost game will be able to attract students to learn physics in a more interesting way. They will not be ranked based on their achievement, but rather they will be guided to solve the problems. This innovation which is Vector Board Game that consists of vectors board, rubber line that comes along with question cards, chance cards and fates cards will guarantee the students to enjoy and understand vector more. Not only that, but they also can learn and play together with their friends as this game requires the students to play in a group of 3-4 members. Thus, it provides a platform for the students to improve their knowledge of physics. Other than that, this innovation could help change their perspective towards physics subject as they would enjoy the learning process independently which does not require assistance from the teachers or lecturers all the time. This innovation is a good step to attract more Science and Technology students, especially those who study physics and will guarantee a good commercial factor in the market as it can also be used for secondary school as well as foundation or matriculation level and STPM.

Keywords: Physics; vector; board game; students; innovation

CATEGORY D
School

LKiZY

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ABSTRACT

LKiZy is a drawing board and T ruler that is innovated so that it can be folded in half. LKiZy drawing boards provide storage space for T ruler, set square, compass, pencils and eraser. When opened, the board becomes a normal size to place on A3 size paper and pupils can draw on it as usual. This innovation is produced to overcome the issues faced by students when using conventional equipment, namely a set of heavy drawing boards, difficult to carry when riding a motorcycle, students have to carry two bags and no storage for LK bags makes the classroom look untidy. Objective for this study is to develop LKiZy for Engineering Drawing and Graphic Technical Communication subjects for form 4 and form 5 students, designed LKiZy using materials from PVC Foam Board and plywood and to evaluate the applicability of LKiZy based on students' perceptions. The design of this study used a quasi-experimental method of unequal control group using a questionnaire instrument by applying pre and post-tests in looking at the equivalence of the use of conventional board and LKiZy set. A total of 111 samples involved in this study consisted of students from Sekolah Menengah Teknik Tuanku Jaafar, Kolej Vokasional Ampangan, Sekolah Menengah Kebangsaan Senawang, and Sekolah Menengah Kebangsaan Mambau representing the subjects of Technical Communication Graphics and Engineering Drawing. The findings of the study show that LKiZy has a high usability based on the perceptions of students. The analysis shows that LKiZy is more organized, tidy, preserves set square and T ruler and it saves time. Through a joint venture with Meranti Marshall Furniture Sdn. Bhd., LKiZy will be produced with mass production and will be disseminated through the YouTube application and included in the STEP (School Transformation e-Platform) application as a medium for online sales.

Keywords: Lukisan Kejuruteraan; Grafik Komunikasi Teknikal; Asas Lukisan Kejuruteraan; LK; GKT

All in All Flip Book in Flip Classroom (AiA FB)

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ABSTRACT

There is a need to pay attention to reading skills to improve and encourage slow learners to engage and be responsible for their own learning. Many studies have shown that flip books are capable of helping students improve their reading skills. However, the existing flip books do not emphasize reading skills. In addition, the flip books have failed to sustain students' attention in learning because they are not empowered with powerful reading elements such as challenges, opportunities, stimulants, narrative and design. These issues indirectly have limited active participation of pupils. Thus, in this research, All in All Flip Book (AiA FB) were developed to improve slow learners reading skills, increase participation, and increase interest in reading literacy. The respondents in this study were selected based on purposeful sampling whereby 60 students with reading problems. were grouped as the control and experimental groups. Data were collected through pre-test and post-test, and observation and questionnaire were included for the experimental group. The results, showed that the mean value of the post test for experimental group was 57.37 whereas the control group had 25.47. In addition, the results of the validated observations found that the students from the experimental group were actively involved and enthusiastic during the process of learning to read. Findings from the questionnaire proved that the students were interested in reading literacy and showed that the AiA FB were effective in helping slow learners master reading skills. The findings have proven that this interactive game can be used as a main tool to learn reading literacy for slow learners who are experiencing complications in acquiring the reading skills.

Keywords: Reading literacy; slow learners; flip book; participation

Biodegradable Eco-Polybag (BE-P)

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ABSTRACT

"Wherever there is a packaged product, there is packaging waste". Packaging waste that is a synthetic foam has created an increasingly significant problem to the environment. Natural rubber which is latex and eggshell has been selected as the main ingredient in making biodegradable foam. Eggshells are crushed into powder using a blender. Eggshells are inserted into latex and poured into the desired mold. The bubbly foam is preserved in a hot air oven at a temperature of 105 °C for 2 hours. Foam has been removed from the mold and thoroughly washed with distilled water to remove the excess non-reacting material. Preserved foam was dried in the oven at 80 °C for 8 hours. Soil planting tests and natural weathering tests have been done to prove the biodegradability of our foam products and compare them with synthetic foam. After 6 months, we observed our samples using a scanning electron microscope (SEM). Natural weathering tests show there is a formation of cracks and reproduction. While testing planting in the soil, there are signs of fungal growth on the surface of foam products. However, there are no signs of the existence of microbes on synthetic foam.

Keywords: Foam; biodegradable; scanning electron microscope

InnoVent

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ABSTRACT

InnoVent is an innovation that exists in the form of an application. InnoVent can also be described as a social media platform but instead, it is focusing on innovation and invention as the main focus of the application. The purpose of the creation of this application is to create a platform where innovation can deliver its function to the community and be able to contribute towards a better future. In addition, giving a chance for the innovation to gain publicity and be upgraded before the innovation can begin to be presented in either competitions or conferences. Thus, being able to fight the problems where the innovation or idea evanesced after some competitions. Hence, making InnoVent, a great solution to fight these problems. Also, InnoVent will serve as a platform where it is connecting innovators and entrepreneurs to create new innovation and also creating networks among them. In the meantime, InnoVent can also act as a platform to spread awareness and ideas about innovation and invention among the community. Hence, encouraging more students, innovators and community to make new innovation and inventions. In conclusion, InnoVent is an innovation that is created to tackle these upcoming problems related to innovation and invention while giving the opportunity it deserved.

Keywords: InnoVent; application; innovation and invention platform

EZ-TABLE 2.0

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ABSTRACT

EZ-Table is specially designed to allow users to use the table in the most efficient ways. Several basic segments and components have been identified in order to enhance and improve the function of the existing common tables available in the market. The idea comes from the problems observed in students using the table, especially during Online Distance Learning (ODL) where electronic devices are heavily been used. Therefore, EZ-Table focuses on how to provide a table that offers multiple functions in one product. The objective of creating an EZ-Table is to introduce new innovative tables in the market. Its offers high-quality and multifunction tables to users. The second objective is to create a table that is convenient, lightweight, and realistic size for all users. They no longer need to have ample space to place their gadgets such as desk lamps, stationery compartments and etc. Based on the Berita Harian report dated January 26, 2021, Shopee has recorded an encouraging demand for learning and work from home technology gadgets with over 550,000 units sold. This supported our initiative to invent EZ-Table which is able to complement the compartments needed for the gadget. A survey of 50 respondents has been retrieved and 50% do not agree that the quality of the existing table provided in the market is satisfactory.

Keywords: Online distance learning; multifunction; demand

Seedling Cultivation System (SCS)

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ABSTRACT

Excessive and disproportionate use of chemical fertilizers and inconsistent watering of plants had been a common complication in agricultural cultivation. Chemical fertilisers boost crop yields, but their excessive usage has hardened the soil, reduced fertility, strengthened insecticides, contributed to environmental contamination, and produced greenhouse gases, posing health and environmental risks. Therefore, this paper aims to introduce (SCS) as an alternative in overcoming this issue. (SCS), or Seedling Cultivation System is an all-in-one innovation of an auto-watering system infused with a cultivating base which consists of organic fertilized soil. The soil is organically fertilized with the composition of effective microbes, dried leaves, and earthworms with the use of vermicomposting methods. The fertilized soil is fully natural and has a high saturation of nutrients that benefit early stages of seedling growth. For the cultivating base, it is constructed of a 4x3 planter, water tank, rechargeable battery, and piping system which will all be programmed to a timing-based execution. With the help of our innovation, both veteran gardeners and beginners alike will be at ease in the early steps of seedling cultivation knowing that there are neither harmful chemicals nor non-renewable energy used in the innovation.

Keywords: Seedling Cultivating System; auto-watering; organic fertilizer; battery powered

DBOX 2022

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ABSTRACT

D-Box helps individuals who work far from their homes to receive their goods safely. Recently, people are facing an issue where their parcel is missing because there is no one at the delivery address to pick up the parcel as it is not secured. Consumer goods delivery found that it was difficult for them to be at the delivery address itself due to a variety of factors. So, by using this product, users can unlock and lock the door of D-Box and check whether their item has been successfully placed into D- Box or not just at their fingertips. All these operations are controlled by Blynk, an IoT app that has a user-friendly interface. So, this app can be used by anyone regardless of age. D-Box is super affordable, and it gives a huge impact to the user. By using D-Box, users can focus on what they are doing and should not worry about their parcel anymore. Three out of the nine pillars of the Industrial Revolution 4.0 pillars are implemented in D-Box.

Keywords: Develiry Box; safety; consumer

Piezoelectric for Sound Waves as Energy Harvester on Train Railway

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ABSTRACT

Utilising ambient sources of vibration energy has become an emerging trend in the field of power generation with a high potential to be the solution to satisfy the demand for electricity that is increasing and will exceed the domestic supply capabilities within a few years. Our project focuses on using piezoelectric devices to harvest sound waves to produce energy by absorbing noise pollution produced by trains. Trains, a major part of public transport internationally, emit a lot of sound pollution in the form of vibrational energy. Our project focuses on using piezoelectric devices to harvest this vibrational energy or sounds and convert them into electrical energy that can help satisfy the demand for electricity that is increasing and will exceed the domestic supply capabilities within a few years. These piezoelectric devices will be placed under already made train tracks and the wires will also run under those train tracks. To maximise the supply of electrical energy, a voltage multiplier system will be used. To minimise the materials used, all electricity generated from the trains will be directed to one central spot containing said multipliers therefore every single piezoelectric device wouldn't require an individual multiplier. Only after all electrical energy has been processed in the central multiplier spot will it be sent out to be used. There are 3 major operators for rail transport in Malaysia such as Keretapi Tanah Melayu, Rapid Rail and Express Rail Link. Each of these operators has multiple types of trains. And this is just in Malaysia, looking at it from an international standpoint, subways and metro systems are the most common form of public transport in the world. Therefore, this innovation has a large scope in which it can be applied and that is what makes this idea have such a high commercial potential.

Keywords: Energy; piezoelectric; train system; noise pollution

Water Level & Water Flow Detection System

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ABSTRACT

Flood is a famous natural disaster in Malaysia as it is one of the most frequent natural disasters in this country and has had many adverse effects to the country and even the society. This natural disaster is usually caused by the heavy monsoonal, convectional rainfall, heavy siltation of rivers and human activities that are likely to lead to high flood risk. This research aims to provide an invention that will help to measure the rise of water level and water flow of rivers for the purpose of strengthening any disaster risk management specifically in rural areas. As we know, the major problem in rural areas is usually the lack of knowledge about new technology which makes it harder for the residents to be able to receive any warning about flood or any more dangerous disaster that will come. In order to calculate the water level accurately, a staff gauge combined with a laser range sensor will be used to calculate the height of the butyl tube buoy on the water. Meanwhile for the water flow a propeller inspired by the concept of anemometer will be used as a measuring instrument. The information from the sensor will then be sent to their own respective district offices as a warning sign to the community. As a result of the help from this invention, the information and warnings about any possible sudden rise in water levels can eventually reach the entire community in a place before it endangers the residents.

Keywords: Water level; water flow; sensor; detection system; rural areas

Automatic Aquaponics System

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ABSTRACT

Agricultural and aquaculture activities are some of the productivity sources produced in Malaysia due to the factors of climate suitability and topography. However, some issues arise in this sector from the aspect of time management, systems, and inefficient use of space. The implementation of agricultural and aquaculture activities separately also involves relatively high costs and is difficult to manage systematically. The encouragement of the Malaysian government towards the implementation of 'Smart Farming' has triggered the idea of this innovation called 'Automatic Aquaponics System'. Regarding this, a model prototype has been prepared to demonstrate the idea. This system combines agriculture and aquaculture simultaneously by using automatic devices to ensure the efficient flow of water systems for fish farming as well as controlling soil moisture on crops. The use of space is optimized and saves time and cost. This prototype Automatic Aquaponics System was created as a model that can be implemented on a large scale in the agricultural and aquaculture sectors. The potential for commercialization is estimated to be very large. It is applicable to be implemented in Malaysia by modern farmers to produce higher productivity with more systematic and efficient management.

Keywords: Automatic Aquaponic System; agriculture; aquaculture; Smart Farming; efficient

AnaSer III: A Food Grade Eco-Friendly Innovation in Mosquito Breeding Control Agents

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ABSTRACT

Previously, vector control strategies have focused on killing mosquitos with various chemicals. Chemicals used as synthetic insecticides, have unfavourable effects on health. Because traditional insecticide-based strategies have limitations, especially the development of insecticide resistance, significant efforts have been made to develop alternative eco-friendly methods. As a result, in this study, we develop our own recipe for food grade mosquito breeding control agents using local fruits and herbs. AnaSer III is a brilliant innovation that acts as an environmentally friendly larvicide in the prevention of mosquito larvae. This novel application of this secret fruit-herb formulation, which primarily contains Hibiscus sabdariffa (leaves), Cymbopogon nardus, Ananas comosus, and other ingredients, has never been reported in the study of larvicidal. Our findings suggest that Anaser III's formulation has larvicidal effects by speeding up the killing process, which is consistent with another larvicidal product on the market. Anaser was able to outperform other commercial agents in terms of killing efficiency. This product has the potential to aid in the prevention of mosquito growth and dengue fever outbreaks. The fact that it is food grade and simple to use adds to its value for commercialization and improving societal quality of life.

Keywords: Mosquito breeding; food grade; vector control; fruits; herbs

(MISS-T): Mechanized Integrated Super-Hygienic Smart Toilet

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ABSTRACT

Mechanized Integrated Super-Hygienic Smart Toilet (MISS-T) is a smart device developed in offering an innovative solution to the problem of public toilets being left by users without switching off the lights and the unhygienic condition of the toilets due to unpleasant smell and wetness. MISS-T is created with the intention in helping to promote the use of green energy while saving electricity and power consumption, leading to the reduction of gas emissions and unnecessary wastage of non-renewable energy sources. Constructed from affordable and easily available materials, MISS-T also helps to reduce the stress of paying high electrical bills and prevents electrical accidents. With the introduction of MISS-T at public toilets, healthier and sustainable lifestyle could be achieved by the Malaysian society through its hygienic feature and green technology.

Keywords: Hygienic; smart; innovative; green technology; device


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