ABSTRACT

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A064. MONITORING ILLUMINATION LEVEL USING LIGHT Q SYSTEM

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Abstract: Illumination level of lighting system is needed to comply and achieve the minimum recommendations of Malaysia Standard. The objective of this project is producing the LightQ system. The LightQ is developed to provide instant and easy monitoring tools of lighting illumination level. The scope areas of the measurement of illumination level were at various places in UiTM Pulau Pinang. The illumination levels for the selected places were obtained and the result was analyzed by using the LightQ in order to comply with Malaysian Recommendation Standard. The illumination level of poor, moderate and good are shown in LightQ. As the result, there are places complying with the standard and some places failed to follow the minimum recommendation level. From this project, there are several places need to give attention and do fast correction action and maintenance especially for walkways and sport centre. The level of illumination for these places was below the minimum requirement of the standard.

***Keywords*:** Lighting, Illumination Level, Monitoring, Maintenance,System

A100. COLD-FORMED OIL PALM OSB STEEL SECTION

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Abstract: Cold-formed steel (CFS) is a steel based material and always be used as a structural or non structural component in building. CFS is produced in a variety of grade of steel and shape either open or closed section. CFS with a lot of advantages such as lightweight and thin surface is tending to fail in buckling on a slender section especially in web element. The CFS channel section with 100 mm of the web, 50 mm of the flange, 12 mm of the lip and 1.55 mm of the thickness is chosen. With the intention that, CFS is fabricated with oil palm oriented strand board (OSB) with filling the gap of the channel section. The cold-formed oil palm OSB steel channel section is proposed a symmetrical in both axis to establish a stable and stiffen section under flexural and compression condition. Besides, the local buckling of the section is avoided and the distortional buckling of the section is minimised. In addition, the OSB is able to protect the critical inside area of steel section from fire or other material failure. The cold-formed oil palm OSB steel channel section is lead to save the production cost, reduces the material usage and influenced to be an innovative section with supporting the sustainable development programme.

Keywords: Cold-formed steel, buckling, oriented strand board, oil palm.

A134. USE OF EGG SHELLS AND CHITOSAN FILLERS TO IMPROVE CORN STARCH BASED BIO-PLASTIC

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Abstract: Plastic or polymer is light and durable but hard to degrade, which causes hazard to the environments. Hence, the existing plastic needs to be replaced with bio-plastic, which can be produced from renewable biomass such as corn. Corn contains a high amount of starch, a suitable raw materials to produce bio-plastic. Hence, this research attempted to produce bio-plastics using corn starch. Three ingredients were used, which were corn starch based bio-plastic (a control), corn starch with egg shells and the third was corn starch with chitosan from shrimp shells. Then their mechanical properties, water absorption and biodegradability were tested. The result showed that the corn starch based bio-plastic with chitosan from shrimp shells as fillers was the best bio-plastic among the three. It produced 0.003 N/mm^2 tensile strength and 0.014 N/mm^2 of Young's Modulus. İts water absorption was 20%. While the corn starch with egg shells and the corn starch-based bio-plastic showed water absorbtions of 22% and 26%, respectively. The corn starch based bio-plastic with chitosan filler's weight decreased 63% when buried in the compost soil after 20 days. While the corn starch with egg shells and the only corn starch-based decreased only 57% and 69%, respectively. İt can be concluded that the egg shells, which contained high amount of calcium carbonate and chitosan from shrimp shells, had improved the properties of corn starch based bio-plastic.

***Keywords*:** egg shells, chitosan from shrimp shells, corn starch, bio-plastic

A143. UNCERTAIN VISCOELASTIC MODELS WITH FRACTIONAL ORDER: STUDY THE NUMERICAL SIMULATIONS OF THE SOLUTION

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Abstract: The analysis of the behaviors of physical phenomena is important to discover significant features of the character and the structure of mathematical models. Frequently the unknown parameters involve in the models are assumed to be unvarying over time. In reality, some of them are uncertain and implicitly depend on several factors. In this study, to consider such uncertainty in variables of the models, they are characterized based on the fuzzy notion. We propose here a new model based on fractional calculus to deal with the Kelvin–Voigt (KV) equation and non-Newtonian fluid behavior model with fuzzy parameters. A new and accurate numerical algorithm using a spectral tau technique based on the generalized fractional Legendre polynomials (GFLPs) is developed to solve those problems under uncertainty. Numerical simulations are carried out and the analysis of the results highlights the significant features of the new technique in comparison with the previous findings. A detailed error analysis is also carried out and discussed.

***Keywords*:** Fractional differential equations (FDEs), Spectral methods,Legendre polynomials, Viscoelastic models

A180. UREIT MORTAR

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Abstract: In recent years, a new concrete technology which integrated bacteria inside the concrete has caught an attention among researchers. This process is called microbial induced biomineralization, which is a metabolic process of formation of hard structures, surfaces, or scale, by combining with organic compounds of some specific microorganisms. The bacteria will precipitate mineral in the secondary hydration process to further increase the strength and durability of concrete. This paper focused on *Ureibacillus Thermophillus* in enhancing the strength and durability of mortar mix. The bacteria were prepared in different Optical Density (OD) and were incorporated into the mortar mix. Tests were performed for compressive strength at the age of 3, 7, 28 and 40 days of curing. The effect of different OD of *Ureibacillus Thermophillus* with regards to the strength and durability of concrete was studied. The result shows that the bacteria enhanced both compressive strength and reduce permeability significantly when compared with normal concrete. The optimum OD of *Ureibacillus Thermophillus* was found to be 0.3.

Keywords: Mortar, concrete technology, strength, microorganisms

A186. STATISTICAL-GEOVISUALISATION FUSION: FOR A HOLISTIC COCOA PRECISION MANAGEMENT

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Abstract: Geographical Information System (GIS) is a powerful tool and approaches in relation to agriculture-based applications. GIS products can be very functional in agriculture for various purposes such as predicting the area and production of commodities, determination central agriculture, mapping of land resource potential, development of agro-industry and the predicting the spread of pests and diseases (P&D) incidence. As the third most important commodities in Malaysia, cocoa (*Theobroma cacao*) yet offers multiple research disciplines to be observed, analyzed, and commercialized by both researchers and academicians. In recent years, studies have been integrated for cocoa's holistically site-specific precision farming, which closely concentrated to entomological aspects, pod morphological characteristics, P&D control as well as evaluating the efficiency of implementing approaches. The fusion methods of agriculture statistical and geospatial analysis had been studied in multi-disciplinary, involving 1) Spatial deterministic model for beneficial insects, Cocoa black ant (*Dolichoderus thoracicus*) population in cocoa-coconut ecosystem; 2) Spatial deterministic model using different food substrate for cocoa pollinator increment (*Forcipomyia* sp.); 3) Spectral profile characterization using digital image processing technique of different maturity stages of significant cocoa clones; 4) Site specific mapping based on global positioning system (GPS) involving cocoa bio control agent; 5) site specific chemical spraying for effective pest management; and 6) Evaluation the emergence of potential insect intruder for cocoa ecosystem. All findings successfully highlighted on important aspects such as detection of entomology temporal characteristic pattern, interactions between cocoa biocontrol agents with other ant intrusion species at different blocks, proposing the efficient insecticide management through different spraying methods and suggesting the best food substrate in determining the sustainability of the cocoa pollinating agent. Integration of fundamental and applied research with GIS may broaden advance scientific findings, furthermore, provide holistic precision management for cocoa in the future.

Keywords: cocoa plantation, entomology, precision farming, GIS, digital image processing.

A193. DIFFERENT TYPES OF CARBON NANOMATERIALS AS HIGHLY EFFICIENT SORBENTS FOR MICROEXTRACTION OF DIFFERENT TYPES OF POLLUTIONS FROM WATER SAMPLES

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Abstract: Carbon nanomaterials such as carbon nanosphere, carbon nanofiber, carbon nanotube and graphene were covalently modified with polymers or magnetic particles to give a new sorbent phases. They were applied as the extraction phases in microextraction techniques including sol-gel based solid phase microextraction, magnetic solid phase microextraction, liquid-liquid microextraction and headspace solid phase microextraction for different pollutions. These pollutions are involved BTEX (benzene, toluene, ethylbenzene and o-xylene), PAHs (polycyclic aromatic hydrocarbons) and phthalate esters in water samples. Due to the unique properties of the carbon nanomaterials as sorbent phases, their extraction capability is higher than that of commercial sorbents without carbon nanomaterials. In this research, we extract and analysis these kinds of pollutions with carbon nanomaterials as sorbent phases and compare with other kinds of sorbent phases. Based on the results, presents of carbon nanomaterials have better effects on the extraction and analysis of pollutions rather than commercial extraction phases due to their porous structures, high surface area and laso thermal and mechanical properties. For example, for the analysis of the BTEX quantified by GC with FID detection, the detection limits (at an S/N ratio of 3) range from 1 to 10 ng mL−1, and the limits of quantification (at an SNR of 10) are between 3 and 30 ng mL−1. The repeatability of a single fiber (for n = 5) is between 3.9 and 6.3%, and the fiber-to-fiber reproducibility (for n = 3) ranges from 5.3 to 8.2%, respectively. The relative recoveries in the real water samples ranged from 92.5% to 99.5%. The results demonstrate that the presence of carbon nanomaterial is highly effective for analyzing BTEX in water samples.

Keywords: Carbon nanomaterials, sorbent phases, microextraction techniques, pollutions, water samples

A196. SCALWHITE: NATURAL TOOTH PASTE FROM FISH SCALES

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Abstract: Most of the commercial tooth paste contains toxic ingridients such as triclosan, sodium lauryl sulfate (SLS), artificial sweeteners, fluoride and diethanolamine (DEA). Since mouth is one of the most absorbent places in entire body, thus this chemicals easily get into the bloodstream and promote a wide variety of health problems. In this invention natural tooth paste was developed from fish scales as an alternative to toxic toothpaste. Fish scales contains collagen and hydroxyapatite (FsHA) which can be extracted using hydrothermal method. The FsHA was sintered at 1200 oC to obtain highly crystalline powder whereas collagen powder was obtained using spray dried. Collagen solution was mixed with virgin coconut oil and stirred to obtain stable cream emulsion. The cream emulsion was added with FsHA and other natural active ingridients such as clay and activated carbon for natural antibacteria and whitening agent. The cream was stable after more than one year preprared and effectively whiten the teeth.

***Keywords*:** tooth whitening, fish scales, hydoxyapatite, collagen.

A197. RELIABLE FAULT TOLERANT BRIDGELESS BOOST RECTIFIER POWER SUPPLY (RFT)

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Abstract: Reliable Fault Tolerant Bridgeless Boost Rectifier Power Supply (RFT) is a new power supply topology that can continuously supply the power to the load even if two out of four active semiconductor switches are open-circuited while maintaining the power factor correction of the input supply. It can also continuously supply the power to the load as a full-wave uncontrolled rectifier even if all active semiconductor switches are open circuited. The RFT topology is based on H-Bridge rectifier configuration and it follows the power factor correction standard required by International Energy Commission (IEC). The RFT is targeted to be used in a critical area such as hospitals and military, where malfunction machine due to faulty power supply will cause fatality. The RFT also maintains the concept of bridgeless boost rectifier, where the current flows through two semiconductor devices at each half-cycle of the input supply. This concept can greatly reduce the conduction losses and increase the power supply efficiency.

A215. V.A. VITAL ASSISTANCE MULTI-FUNCTIONAL SPORT CASUAL GARMENT

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Abstract: The project is inspired by earthquake phenomena events predominantly causes catastrophic damages to humanity and environments. Earthquake is a global tragedy. Earthquake cause tsunami, flood, landslide and multiple scale of damages. The earthquake victims have to struggle for personal survival, before helps reach their shore. Due to this prominent concern, the design team has embarked on a creative production journey to produce the multi-functional sport garment. The design is to necessitate the prime needs of the task in both conceptually and functionally. The garments is facilitated and consisted of multiple functional creative produces such as sleeping bags, tent and detachable lamp, plus a compartment for water storage. The mission of the production is to provide vital assistance to the earthquake victims. This garment is also marketable for other target consumers such as outdoor enthusiasts and campers. This active wear product is produced in profound equivalences that balance in both, quality and functionality.

***Keywords*:** fashion, garment, multi-functional

SATELLITE
EVENT B

NOVICE INVENTORS

B010. AUTOMATED MALAISE TRAP MONITORING SYSTEM

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Abstract: Wireless sensor networks technology has enable completely new opportunities in creating a low power and control applications wirelessly. Precision agriculture is one of the most promising application domains where wireless sensor networks may deliver a nearly optimal solution for their issues. This project will propose a pest monitoring system with WSN-Based insect trapping device embedded to malaise trap that has the ability to record the quantity and time-stamps of insects collected using IR10A motion sensor. Live temperature and humidity within the wireless sensor network device area was also recorded using DHT22 sensor attached. All the collected data will be transferred to the database connected through the wireless hosted network connection. The system will generate a graph that will show the time-stamps of when the insects are detected includes with the current temperature and humidity reading. It is hoped that this study will help in improving the accuracy of information gathering for entomologist and farmers in their effort to increase the agriculture productivity.

***Keywords*:** Pest Monitoring System, Malaise Trap, Wireless Sensor Network, Precision Agriculture.

B012. SIS OIL – SACHA INCHI OIL-BASED SERUM FOR SKIN CARE

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Abstract: SIS Oil is a new natural multifunctional product in the form of oil-based serum specially formulated for skin care. The main objective is to introduce a natural skin care product without harmful synthetic chemicals. This product consists of beneficial natural bioactive compounds mainly from sacha inchi oil, propolis oil, and other ingredients. Propolis oil has been used for a long time for its medicinal properties. In addition, *Plukenetia volubilis* (sacha inchi) oil has been added as a booster for the product in providing fatty acids which are very beneficial for health and beauty treatment. The presence of these compounds has been analysed by using Gas Chromatography Mass Spectrophotometry (GC-MS). Furthermore, the antibacterial activity of the oils were evaluated by MIC and MBC analyses, and propolis oil showed a great potential as antibacterial inhibitor and bactericidal on three skin infection bacteria. SIS Oil or Sacha Inchi Oil-Based Serum is a multifunctional serum that helps to moisturize the skin, reduce black heads, act as a scar fader, reduce pimples, reduce pore opening, lighten and soften the skin. This product is safe to use as it is from natural sources and does not contain harmful, synthetic chemicals. SIS Oil has also been introduced to close friends and relatives with good recommendations and testimonies for its effectiveness. This project has led to many other commercialized products such as moisturizer, mask, soap and scar fader.

***Keywords*:** Oil-based serum, propolis, *Plukenetia volubilis*, GC-MS Analysis, Antibacterial activity

B021. OUTCOME BASED EDUCATION (OBE) MEASUREMENT AND PERFORMANCE ANALYSIS TOOLS DEVELOPMENT (OMASD)

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Abstract: Since 2008, Outcome Based Education (OBE) was developed and implemented in Malaysia at all Higher Learning Institutions as part of an approach improvement process of teaching and learning. The purpose of OBE is to measure the academic performance based on specified outcomes that was designed in programme syllabus. The difficulties of data collecting and monitoring OBE performance more challenging and its require a tool or system that should be capable of measuring whether intended outcomes have been achieved or not. Continues Quality Improvement (CQI) is main element to implement the OBE system. The importance of CQI report of the courses is to make sure the outcomes are accessible and any unsatisfactory action can be overcome. To overcome the problems, OMASD was developed and divided to OMASD Course Level *(OMASD-CLs)* , OMASD Programme Level *(OMASD-PLs)* and OMASD Programme Educational Objective *(OMASD-PEOs)*. OMASD was implemented in Faculty of Electrical Engineering UiTM Pulau Pinang and Institut Kemahiran Tinggi Belia Negara Temerloh. The results obtained have shown that these tools is good enough to deal with various parameters such as different cohort of students and various courses. In conclusion, OBE performance could be easier to monitor if we have more systematic tool or system.

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***Keywords*:** Outcome Based Education, OMASD, Continues Quality Improvement

B029. GP RICE

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Abstract: The "GP RICE" is a green coloured-raw rice for preparation of *Nasi Kerabu*, a kind of Malay traditional food. After cooked, the green coloured-raw rice will turned into a dark purple, which similar as prepared by traditional method. Thus, this innovation is minimizing a time for preparation of *Nasi Kerabu*. This green coloured-raw rice was made by incorporating a raw rice with a non-toxic extract derived from wild edible plant leaves. The purple colour of cooked rice is due to a presence anthocyanins which also contribute antioxidant activity to a rice.

B037. INDUSTRIALISED BUILDING SYSTEM (IBS): ORGANIC BAMBOO TILE

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Abstract: Tiles in present scenario are a primary element in bringing building interior as well as exterior finishing and beauty. There are many types of tiles which are made up of different kind of materials such as marble tile, ceramic tile, granite tile and limestone tile. Tiles should be in high mechanical strength, light and less production of carbon dioxide gas. This research's goal is to create a new alternative organic tile to overcome some rising issues on existing tiles such as environmental issues because of the high percentage of carbon dioxide gas released to the atmosphere, health problem such as asthma , low durability of tile and also to produce cheaper tiles compare to the existing tiles in the market. The main organic material is bamboo and clay. Each tile is made in different proportions to choose the tile with best mechanical strength. Compression test is used to choose the best proportion of tiles that can withstand compressive load. Flexural test is used to determine the flex or bending properties of the tiles. The result showed that the new organic bamboo tile which are made from highest percent bamboo, a little percent cement, clay and water has the highest mechanical strength among all the tiles. This can be an alternative IBS organic tile with green and sustainable development concept to the construction industry.

***Keywords*:** Industrialised Building System (IBS), Tiles, Green Development, Sustainable Development, Construction.

B042. OTEL2GO

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Abstract: A cloud-based PMS offers a way to centralize the property management system without the bulk and technical requirements of a traditional PMS, which allow hotels to be more efficient and get ahead of the game. Thus, Otel2Go represents a new democratic integration concept for small and budget hotels for their property management system (PMS). Our focus is on delivering an accessible and simpler concept of hotel PMS based on cloud. Our primary areas of development are on cloud solutions offering to simplify the PMS as a business aggregator platform to the hoteliers**,** in order to connect everyone in a simple online booking concept. These novel ventures aim to help the growth of the small and budget hotels' (SMDGET) market segments and to strive and win competitors within the hospitality industry.

***Keywords*:** Cloud-based PMS, small and budget hotels (SMDGET), online booking, business aggregator and tourism industry.

B044. STUDY USAHAWANRIA BOARD GAME AS EFFECTIVENESS TOOL IN ENTERPRENEURSHIP COURSE

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Abstract: Nowadays, games have become one of the useful tools in training. Many instructors choose to use games to enhance the way of delivering the subject. This study will focus on the effectiveness of board game as effectiveness tool in enterpreneurship course. Two methods are used in this study, pilot test, and post-test. These methods are chosen to analyze the effectiveness of using UsahawanRia Board Game as a teaching tool and the improvement of student's knowledge in entrepreneurship course. The result indicated that the use of UsahawanRia board game as a effectiveness tool for entrepreneurship course has a positive impact on students. It helps students to experience the situation of managing business. It is one of the easiest ways for improving time management, human resources and communication skill.

***Keywords*:** Board Games, Teaching Tool, Effectiveness

B045. BREAK & PROTECT 2 (A DEVICE FOR TRAPPING MARINE LEECH PARASITE *ZEYLANİCOBDELLA ARUGAMENSİS* IN CULTURED FISH)

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Abstract: The innovation BP2 was based on the problem created by the parasite marine leech *Z. arugamensis* in farm marine fish particularly in cage system. Break & Protect 2 or BP2 is a product that can remove marine leech parasite *Zeylanicobdella arugamensis* by disruption its life cycle during fish culture cycle. Mortality due to the infestation by *Z. arugamensis* in marine fish has been reported in Philippines, Singapore and Malaysia. Beside mortality, heavy infestation of this parasite can cause serious injury and secondary infection. If preventive measures were not taken timely, the infestations would spread and cause mortality leading to economic loss to the farmer. Advantages of the BP2 innovation over existing method are that no chemical is used, less labour and it is user-friendly. It is unique because it can trap the pathogen (marine leech) from infesting the host (farm marine fish) by using the combination information of marine leech life cycle and the nature behavior of the marine fish. This innovative fish health management tool will minimize the secondary infection or disease occurrence and assist in the expansion of the marine fish aquaculture industry in the country.

***Keywords*:** Marine leech parasite, BP2, Mortality, Life cycle, Farmed fish

B047. MODIFIED BITUMINOUS MIXTURE FOR ROAD PAVEMENT USING POLYETHYLENE

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Abstract: Modified bituminous mixture helps to enhance the properties of mixture to improve the road performance. The purpose of this study is to determine and to evaluate the properties in comparison to conventional bituminous mix using JKR specification. Low Density Polyethylene (LDPE) and High Density Polyethylene (HDPE) were mix together as additives. Marshall Mix design was used to determine the optimum bitumen content (OBC) and further to test the modified bituminous mixture properties. In total, 60 samples were prepared where 15 samples was used for control sample. The optimum bitumen content for conventional sample is 5.19%. The percentage of polyethylene added are 1.0%, 1.5% and 2.0% where half contribution of LDPE and HDPE for each percent added by weight of aggregate. Both polyethylene used were in granular shape. The tests include the determination of penetration index, Marshall Stability and Flow. The results indicated that the modified bituminous mixture provide better engineering properties which improve the strength, flow, air void and resulted in longer road service performance. In addition, modified bituminous mixture has lower OBC compared to conventional sample and this may reduce the amount of bitumen content in road construction.

***Keywords*:** Modified Bituminous Mixture; Polyethylene; Optimum Bitumen Content; Marshall Test.

B050. DEADLINE: THE HORROR OF DESIGN STUDENTS

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Abstract: The objective of this study is to design an educational board game using Game Based Learning (GBL) methodology for the teaching of the design process to Design students at both Diploma and Degree levels. The development of **Deadline: The Horror Case of Design Students** board game aims to provide the know-how knowledge and procedures in Design Process through its game-play. The main framework of **Deadline** has been influenced significantly by Gagne's Nine Events of Instruction as well as Bandura's Social Learning Theories, Lave and Wenger's Situational Learning Theory, and Kolb's Experiential Learning Theory which complements the fundamental principles of the game-play. This game was developed because the traditional modes of teaching have become less effective in engaging and motivating the millennial learners. According to Price (2009), millennial learners prefer informal interaction between teachers and learners, less formal classroom and peer-to-peer collaboration. Thus, the **Deadline** board game incorporates the informal fun and game elements into the learning of the design process while allowing the players to obtain more instant feedback and results as well as instant gratification which complement the millennial learners' identified traits. A group of Diploma in Graphic Design students participated in a pilot study that found that, at the end of the game 70% of the students were able to articulate the process involved in the design process. Therefore, **Deadline** is designed to provide a fun learning method of acquiring knowledge while also instilling a level of confidence among Design students through planned opportunities for making decisions, solving problems and through social interaction which are all part of its game-play.

***Keywords*:** Board Game, Educational Game, Game-Based Learning, Gamification, Tabletop Game

B051. IMPROVEMENT IN ENGINE CHARACTERISTICS USING ALCOHOL FUELS ADDITIVE IN GASOLINE FUELLED ENGINE

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Abstract: The application of alcohol fuels on spark ignition (SI) engine has recently become an alternative to current existing gasoline fuel. Alcohol fuel is indeed an attractive alternative fuel as it had been found to improve octane number, enhance oxygen content, and reduce carbon monoxide emissions. One of the well-known alcohol fuels is methanol fuel that can be blended with gasoline to produce better engine operation in spark ignition engine. Blended methanol-gasoline fuels can be improved further by adding iso-butanol, as they have higher energy content and they are able to displace more gasoline fuels than methanol-gasoline fuels. Therefore, this research looked into the feasibility of the iso-butanol additive (5, 10, 15%) into a lower ratio of 5% methanol-gasoline blended fuel (M5) on unmodified spark ignition engine. The performances of iso-butanol additive in methanol-gasoline blend were compared with base gasoline fuel. The results showed that for engine performance, M5B15 displayed improvement in BTE, and EGT compared to other blended fuels. Nevertheless, higher fuel consumption was recorded for all methanol-gasoline blended fuels with iso-butanol additive compared to base gasoline fuel. In terms of engine emissions, M5B15 exhibited the lowest CO and HC emissions compared to base gasoline fuel. However, the increasing trend projected by NO_x had been recorded in all iso-butanol additive in methanol-gasoline fuels with M5B15 exerting the highest emission. Thus, it can be concluded that iso-butanol additives are indeed a viable option to be blended with the existing lower ratio methanol-gasoline as an alternative fuel for the operation of spark ignition engine.

***Keywords*:** Alcohol fuel, methanol, iso-butanol, engine performance, exhaust emissions

B052. LOW PERMEABILITY AND HIGH STRENGTH OF N-BPW LINER AS ALTERNATIVE LANDFILL LINER MATERIAL

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Abstract: Plastic waste can be divided into two types namely biodegradable plastic waste (BPW) and non-biodegrable plastic waste (N-BPW). Over the year, N-BPW have become a major problem in solid waste management due to its inability to degrade when they are disposed at landfill site. Instead of ended at the landfill site, N-BPW can be an alternative to the conventional geomembrane. In this study, the chosen type of N-BPW is food packaging plastic (FPP). FPP types used are snack packaging plastic (SPP) and bread packaging plastic (BPP). The samples were prepared in terms of single sheet and engineered sheet. The single sheet contain of single layer of SPP and BPP while engineered sheet is the combination of several layers of SPP and BPP (6 layers of BPP & 10 layers of SPP). The hot pressing technique was applied in order to combine the several layers of SPP and BPP into the engineered sheet. Then the prepared single and engineered sheet (SPP and BPP) were tested for its chemical and physical properties through Fourier Transforms Infrared Spectroscopy (FTIR) and Ultimate Tensile Strength Test (UTS). The tested samples were compared with conventional geomembrane. Obtained results from FTIR showed that the proposed engineered SPP and BPP sheets had 95% similar characteristics to geomembrane. Engineered SPP sheet and engineered BPP sheet are able to withstand maximum force up to 1033.69 N and 129.48 N, respectively as compared to conventional geomembrane based on UTS. Based on this study, the N-BPW Liner offer an option to the landfill operators in choosing a good reusable materials at a lower cost and solved N-BPW landfilling problems.

Keywords: Low Permeability, High Strength, Landfill, Non-Biodegradable Plastic, Sustainable Liner

B053. *THINGKING HATS*: MEMBANTU MURID TAHUN TIGA MENGENALI EMOSI MELALUI KAUNSELING KELOMPOK

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Abstrak: Penyelidikan tindakan ini bertujuan membantu murid Tahun Tiga untuk mengenali emosi dengan penggunaan modul *Thinking Hats* melalui kaunseling kelompok. Objektif kajian ini adalah untuk membantu murid mengenal pasti kepentingan mengenali emosi serta membantu murid untuk mengenali emosi. Modul *Thinking Hats* ini dihasilkan berteraskan Teori Pemusatan Perorangan. Modul ini merangkumi tiga aktiviti, iaitu "*Importance of Knowing Your Emotion*", "*Do You Know Your Emotion?*" dan "*Thinking Hats*". Penyelidikan tindakan ini berfokus kepada empat orang peserta kajian di sebuah sekolah rendah X dalam daerah Kubang Pasu, Kedah. Tiga sesi yang mewakili lima fasa telah dijalankan melalui proses kaunseling kelompok dalam tempoh tiga minggu. Data telah dikumpul melalui instrumen pemerhatian, temu bual dan analisis dokumen dalam pendekatan kualitatif. Data dianalisis melalui senarai semak pemerhatian, transkrip temu bual dan penerangan dokumen dalam bentuk deskriptif. Dapatan kajian ini telah menunjukkan bahawa modul *Thinking Hats* yang berteraskan Teori Pemusatan Perorangan secara langsung mendatangkan impak yang positif untuk membantu peserta kajian mengenali emosi diri sendiri. Cadangan untuk penyelidikan seterusnya adalah dari segi memberi fokus kepada aspek pemikiran peserta kajian melalui *Thinking Hats*.

Kata Kunci: *Thinking Hats*, emosi, kaunseling kelompok, Teori Pemusatan Perorangan

B057. GRAPHICAL USER INTERFACE (GUI) FOR ELECTRICAL MACHINES SUBJECT FOR EXPERIENTIAL LEARNING

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Abstract: Electrical Machine is a compulsory subject for any electrical engineering students regardless of their majoring field. The subject consists of theory and fundamentals of power transformers, induction machines, synchronous machine and DC motor. This subject is known for its difficulties in calculation due to the properties of electrical machines is derived from electric circuit theory and mathematical derivations. Results from verbal communications with previous and past students, the subject is not in favor due to difficulties upon understanding the concept of electrical machines itself. Furthermore, students have difficulties in validating answers they obtained after they have solved questions from tutorials and past year's examination questions. Thus, this work is intended to help students validating the results they obtained after answering tutorials and past year's examination questions through guided user interface tool. The tool is being designed with all electrical machines circuit and formulas. The tool is being designed to suits tutorials and past year's examination questions. Students only need to insert the parameters of the electrical machines and the tool will solve the problems. As a result, students are able to validate their answers easily with the manual calculations that they have did. In addition, circuits and waveforms of output parameters based on the input parameters are also displayed to show the electrical behavior of the machines to improve students' understanding on the fundamental. From this work, it is aimed that students' interest on this subject is increased and indirectly the fundamental concept and calculation of electrical machine can be strengthen in order to reduce the stigma and paranoid perceptions towards the subject itself.

***Keywords*:** GUI, learning-tool, matlab gui, electrical macines, experiential learning

B068. SMART DIGITAL BRIEFCASE

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Abstract: In 21st century, the world has witnessed a rapid increase in technological innovations. The educator of today realizes the need for presenting different learning environment to suit individual differences among students and attempts to use the modern and latest devices and methods. Unfortunately, most of the educational technology devices only suitable for use in the classroom and not portable. Therefore, an effort has made to design and develop an innovative educational device, Smart Digital Briefcase (SDiB). Smart Digital Briefcase (SDiB) is a multifunctional portable device that can used as a screen, printer, scanner, speaker and smart attendance. SDiB also can connect to wireless networking, Wifi. Aim of this study is to observe the impact of Smart Digital Briefcase (SDiB). The research design is a survey study using questionnaires. The questionnaire conducted at Kedah Matriculation College. A total of 5 chemistry lecturers and 250 students consisting of 64 male students and 186 female students selected as samples. These students were from 20 tutorial classes. During tutorial classes, lecturers involved have been using SDiB during teaching and learning process. Through the questionair survey, student motivation increased by mean value of 4.92. The mean value of SDiB's use of improved interactive learning among students is 4.84. While the mean value to facilitate information sharing using SDiB is 4.89. The results of the study revealed that all five lecturers have favourable opinion towards SDiB device with respect to content presentation, utility for the students and utility for the teachers. The analysis disclosed the fact that the SDiB is highly useful for teachers as well as students. In conclusion, Smart Digital Briefcase (SDiB) has a great significance to the whole teaching and learning process.

***Keywords*:** Smart classroom, 21st century learning, Infomation dan communication technology, educational technology.

B075. AURA-CHEMBOARD KIT

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Abstract: Mobile learning devices had facilitated innovations by providing easier access of digital technologies to everyone. Aurasma is a mobile app developed for educators to apply augmented reality by integrating objects into contextual molecular shapes using graphic images, animations, videos, audios and 3D contents. Most of the students encounter difficulties when it comes to the content knowledge that requires abstracts ideas or theories. As students nowadays tend to pick machines over books, it is of paramount importance to turn traditional learning into fashionable and effective one. Aura-Chemboard Kit optimizes the concept of mixed realities, in which virtual and physical world comes together, hence learning will become more interactive despite of the fact that learning only happened in a small classroom. Students will be able to construct their own ideas and concepts guided by the teacher as a facilitator. Furthermore, Aura-Chemboard Kit can be assimilated as an assessment tool that does not require any paper to be graded or marks to be submitted using traditional approach thus lessens a teacher's burden. 100 students were assessed by using Goggle form upon Aura-Chemboard activities in classroom. Students' perceptions, motivations to learn, learning environment, and suggestions for improvement were evaluated based on the survey question provided in the form. The findings show that Aura-Chemboard Kit is an effective and classroom-friendly learning material as it promotes independent learning and critical thinking among students. Evidently, as abstract concept comes to life then students' learning will become valuable through application of technology.

Keywords: Mobile learning, Aurasma, Aura-Chemboard Kit, teaching and learning, assessment

B077. MY-ELECTROLEARN

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Abstract: This project is about facilitating and enhancing student learning regarding the Chemistry subject in subtopic electrochemistry. Our target is to help students understand about selective discharge of species at electrode for electrolysis cell. According to our observation, previous quiz and interview with the students, majority of the students have problem; 1) to identify product formed at electrode anode and cathode 2) to write half equation for oxidation and reduction reaction. Thus, we create My-ElectroLearn, the SRP Chart and RedoxEqGame to overcome the problems. The students explore the model and method by themselves with our guidance. We implement this method to a tutorial class consist of 18 students. The lecturer guides students throughout the learning process and assess them at the end of class by giving a quiz. The outcome is impressive as there is increase in students' performance in the quiz and the students involve actively during the learning session.

***Keywords*:** electrolysis, My-ElectroLearn, SRP Chart, RedoxEqGame.

B079. SISTEM PERPARITAN DI KAWASAN KELANG LAMA KURANG EFISYEN DI DAERAH KULIM, KEDAH

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Abstrak: Tujuan penciptaan ini direalisasikan bagi mengatasi masalah banjir kilat yang sering terjadi adalah disebabkan sistem perparitan yang kurang efisyen di kawasan perumahan yang berkepadatan tinggi. Punca-punca banjir kilat adalah disebabkan oleh beberapa faktor yang dikenalpasti iaitu sampah sarap, longkang yang telah rosak, saiz longkang yang tidak mengikut spesifikasi yang ditetapkan, taburan hujan yang tinggi di kawasan tersebut, dan juga pembangunan baru yang pesat bersebelahan kawasan pembangunan sediada. Selain itu, longkang yang sedia ada di kawasan tersebut tidak lagi mampu menampung kapasiti air larian permukaan dan masalah penggunaan tanah dikawasan bandar yang pesat oleh era pembangunan yang moden. Manual Saliran Mesra Alam (MSMA) yang telah disediakan oleh Jabatan Pengairan & Saliran (JPS) tidak dipatuhi disebabkan pembangunan dikawasan tersebut adalah mengikut garis panduan yang lama, oleh hal yang demikian air larian permukaan di salir terus ke sungai berdekatan.Bagi mengatasi masalah banjir kilat di kawasan perbandaran dan berkepadatan penduduk dan pertumbuhan pembangunan yang pesat kumpulan MCRC, Majlis Perbandaran Kulim Kedah telah berjaya merekabentuk 'Dwi Sistem Perparitan' dimana fungsinya dapat mengalirkan saliran air dan pada masa yang sama juga dapat menyimpan air serta mengawal kadar aliran air dengan mengambil kira dan mematuhi konsep *OSD (On Site Storm Water Ditention)* serta mesra alam dengan mengurangkan kadar keluasan penyediaan kolam tadahan dan penjimatan guna tanah.Dengan adanya inovasi baharu sistem perparitan dwi sistem yang dinamakan ***'smart drain'*** telah dapat membantu menyelesaikan masalah banjir kilat tanpa melibatkan tambahan kos terhadap guna tanah.

Kata Kunci*:** Dwi sistem perparitan, *OSD* ***'SMART DRAIN'

B082. VEHICLE INTELLIGENT PARKING SYSTEM

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Abstract: Vehicle Intelligent Parking system (VIPs) is an ultimate solution to common problems in daily parking system. VIPs offers solution for both parking user and enforcer/authority. Conventional parking system which is authorized by local municipal or parking provider require the user to be obliged a physical valid parking ticket. Thus, the non-local/one-time user might have an issue regarding the possession of parking ticket. The availability of vacant parking space is become inconvenient in high populated area which cause time wasting and greater cost indirectly. VIPs is developed by cost efficient Arduino as a centre micro processing unit and Wi-Fi module as connecting link to Internet of Things (IoT) system through android application. VIPs monitors the current availability status of parking space in real-time visually, tracks the duration of occupied parking space for equitable metering purpose and avoid the parking's abuse. The VIPs require user to have an access to the system and pay only the occupied time. The VIPs parking lot is equipped with lockable mechanism which allow only authorized parking and unlocked with validated payment automatically. This features would consequentially impart a significant refinement to existing parking management in term of security and flexibility.

***Keywords*:** Intelligent Parking, Arduino, Internet of Thing (IoT), real-time.

B086. RASCA CALCULATOR FOR RAIL INFRASTRUCTURE PROJECT IN MALAYSIA

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Abstract: The Klang Valley Mass Rapid Transit (KVMRT) System is set to be one the most important and largest transport infrastructure projects in Malaysia. The other rail infrastructure project which is currently in construction progress is Light Rail Transit (LRT) Bandar Utama to Klang line or known as LRT 3. These projects as an Entry Point Project (EPP) under the Economic Transformation Programme's Greater Kuala Lumpur/Klang Valley National Key Economic Areas (NKEA) and will provide a major boost in the efficiency of urban public transport. On 15 December 2016, Malaysia and Singapore signed a consensual agreement to jointly develop the 350km HSR project between Kuala Lumpur and Singapore. Then in the 2017 Budget, the Malaysia Prime Minister announced the intention of the government to build the East Coast Rail Project (ECRL). With the vigorous development of the rail infrastructure project, fatalities, serious injuries and damage to properties at recent of this project sites occurred every year. Work injuries create significant economic and humanitarian consequences to our society especially to this project where they involve billion of Malaysian Ringgit (RM). The awareness of accident cost especially the payment cost is absent because the contractors, clients and the consultants leave the matters to the insurance company. They always ignorance on the cost of an accident without realizing the greatness of its impacts to the industry and the country. Therefore, a correctly developed Rail Safety Costs Allocation (RaSCA) Calculator is an essential part to come out the specific costs and calculations for each cost component. This calculator allows contractors to estimate, during the design phase and the safety costs that might occur in the execution phase of a construction project at the work site. The most logic amount of safety costs allocation can be achieved in the future project, as efficiency cost of doing this *infra-rakyat* project can be improved and creating the awareness of safety costs allocation to the client and contractors.

Keywords: Safety, Safety Cost, Design Phase, Construction Phase, Rail Infrastructure Project.

B087. NA BATTERY FOR FUTURE (IONIC LIQUID POLYMER ELECTROLYTE)

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Abstract:The objective of this project is to produce a low cost batteries with excellent performance and high safety. We have successfully produced the first ionic liquid polymer electrolyte (ILPE) based on Na^+ ion batteries which acts as a separator and electrolyte. The specialty of the ILPE are low cost, energy efficiency, meet the safety requirements, flexible, high-rate and long-life batteries. The impacts of this battery are fully-utilizing local sources in which will grow the economic and using eco-friendly materials for batter world. This battery is potentially use in wide range of application such as in electronic devices and daily use (watch, remote and etc).

B089. IPOMOEA CRUNCHY CRUNCH CEREAL

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Abstract: Expanding admission of leafy foods, while diminishing the measure of trans fat and sugar utilization is individuals' primary objective. Sweet potatoes give a fantastic sustenance that contains here are many antioxidants, vitamins, and minerals. Preliminary tests were conducted with different levels of sugar within the permitted range to acquire better taste advancement and cereal quality attributes indicated. Cereal was subjected to sensory assessment on color, crumb color,, taste, smell, general appearance, mouth feel and general adequacy utilizing five point hedonic scales. For the experiment, there is list of procedures that are done to guarantee the validity of information collected.The greater part of specialist (65%) demonstrates that they like somewhat of proto-sort result of Ipomoea Crunchy Crunch. For examination procedure, the proto-type item is being tried to 23 specialists who are chosen from postgraduate students, Faculty Hotel and Tourism, UiTM Shah Alam and being situated in tester room and the questionnaire regarding on the product are being provided together with the food sample. As a novice product Ipomea Crunchy Crunch has been selected as one of innovation product in Research Carnival in Universiti Malaysia Kelantan for further research and commercialization.

Keywords: ipomoea, sweet potatoes, low carb, healthy diet

B091. INTEC1.0

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Abstract: The demand for increasing the number of students who are interested in mathematics, especially on the topic of integration needs a boost, thus the conceptualisation of active and motivating learning tools need to be considered. To rouse, the interest of students, various programs and series of lectures was conducted for FSKM students at UiTM Negeri Sembilan. However, none of the activities is in the form of games. *InTec1.0* is a game that has been modified from the original *Snakes and Ladders* and repurposed into an instructional lesson as part of learning exercises to support students learning activities in an informal educational setting. *Snakes and Ladders* is used because it is a familiar game played by the youths. Most of the students are having difficulties in learning integration due to the lack of basic knowledge; this game will help them learn and improve their basic technique and understanding of integration. This game aims to allow players to get to know integration in a way that is not intimidating. *InTec1.0* would be the first game conceptualised in introducing integration for students in higher level of education. Learners can play this game outside the confines of the classroom, and the board game has a global commercial value in the mathematics learning field.

B093. ARDUINO TRAINER HARDWARE (ARTWARE)

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Abstract: Nowadays, the technology evolution is very fast. For instance, students in secondary school has been used the electronic board that being used by Higher Institution as well. In fact, student must be very careful in handling the components so that they are not misplacing them. These are the problem when many students doing the hands-on work together. The missing parts of their component always happen. So, to make things easier, we have developed a trainer board to meet this requirement for students especially in secondary and higher institution. As we know, Arduino is one of the latest and basic embedded board used in technical classes both in secondary and higher institution. By using this board, we have developed a trainer board named as **ArtWare** that consist of Arduino board, Bluetooth, Wi-Fi, LCD, Keypad, Buzzer, LED, DC Motor and a few sensors. Therefore, hands-on learning process will become more convenient and practical as they, students don't have to bring the whole electronic circuit for testing their certain application or function. In facts, the component parts and module have been installed on the single PCB board all together. Then, student will be thought on how to make a connection between each circuit by referring to the module book provided. This **ArtWare** trainer not only helps student on easy handling but it can be very helpful on making the student understand the basic connection of an electronic circuit.

***Keywords*:** trainer, arduino, wifi, bluetooth, electronic.

B094. 3D INTERACTIVE MAP USING DEM EXTRACTION FROM UAV IMAGERY OF UITM PERLIS

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Abstract: The process of production of 3D interactive map using Unmanned Aerial Vehicle is one of method that is modern and time efficient in terms of acquiring data of 3D model building. The UAV photogrammetry gives various application including replace conventional aerial photogrammetry as well as controlled aircraft without pilot. 3D modelling reconstruction can be produced after measurement is made on the dimension of the object, the captured image of the object on the ground or the captured image from aerial photogrammetry of any object such as building. The two techniques to produce 3D model generation which are terrestrial close range (aerial photogrammetry) and close range photogrammetry whereas the three method to construct 3D model which are sketching method where no achieve engineering requirement, procedural method only for expert and CRP method at small area. Three dimensional simulation and virtual reality are combination required to established 3D model. The objective of this paper are to produce 3D interactive map of UITM Perlis. The software used as for flight mission planning are DJI GS Pro and for processing to produce 3D model are using Agisoft Photoscan and Google Earth Pro. This study consists of four phases which are preliminary research, data acquisition, data processing and result and analysis. The combined of two vertical and oblique picture will produced very good result of 3D model. DSM, DTM, contour line are example of 3D result that produced automatically using software. It found that create maps on the fly could let a drone use a technique called simultaneous localization and mapping, or SLAM, which ground-based robots often use to orient themselves in unfamiliar environments.

***Keywords*:** Unmanned Aerial Vehicle, 3D model building, close range photogrammetry, aerial photogrammetry, Digital Terrain Modelling.

B103. MYHSTB MANUAL FOR HEALTH SYSTEM APPRAISAL OF TUBERCULOSIS MANAGEMENT

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Abstract: *MyHSTB* Manual is a tool for appraising tuberculosis (TB) management of a health system. *MyHSTB* Manual aimed to address TB health system challenges and provide recommendations for improvement on TB health system delivery, financial, and governance arrangements. It is the first TB appraisal guide that enlists a comprehensive and structured reporting of TB management in a health system customized to the Malaysian environment and population. It was developed collaboratively via exploratory two-step process. MyHSTB Manual was finalized with favourable consensus and inputs from all major stakeholders involved in TB management i.e. policymakers, programme managers, academics and clinicians from public and private sectors. It consists of eleven main scopes mainly: 1) structure and organization 2) treatment scopes i.e. diagnosis, notification, referral and initiation of treatmens, 3) case holding, 4) other DOTS programmatic monitoring activities, 5) drug supply, 6) contacts, 7) current TB management and 8) readiness to work together. In line with Malaysia aspiration towards a developed nation, strengthening health systems is essential for optimizing improvements in population health outcomes. MyHSTB Manual is the tool to provide a comprehensive situational analysis report that objectively describes the TB management of Malaysian health system and provide recommendations for improvement. Commercialization potential at its best is to customize *MyHSTB* Manual for utilization in other countries both at state and national levels.

***Keywords*:** manual, appraisal, tuberculosis, health system, MyHSTB

B110. HIGH PERFORMANCE SPORE INDUCTION LIQUID SPAWN OF GREY OYSTER MUSHROOM

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Abstract: In mushroom industry, grey oyster mushroom (*Pleurotus pulmonarius*) is commonly cultivated by using solid spawn. In the present study, liquid spawn is proposed as an alternative to replace solid spawn because solid spawn takes longer time for mycelium run in the bag and the final yield is low. Liquid spawn was prepared by culturing spawn in Potato Dextrose Broth while solid spawn was prepared by culturing spawn in grains. This study aims to investigate the growth kinetics and morphology of *P. pulmonarius* on sawdust substrate by liquid spawn and comparison was made with solid spawn which act as control. Screening of parameters variables was performed using OFAT to determine the effect of the parameters on the mycelial growth rate and morphology. The parameters studied were seed culture storage condition, seed culture storage period and liquid spawn inoculum volume. The storage condition was set at cold 4°C and ambient 25°C±2°C, while the storage period used was 1, 2 and 3 months. As for the inoculum volume used was 3ml, 5ml and 7ml. From these parameters, they were arranged into 18 combinations. From the findings, it was discovered that the seed culture stored at 4°C for 1 month with 7ml of liquid spawn inoculum volume demonstrated the highest mycelial growth rate (0.3946 cm/day) and highest average weight of fruiting bodies (123.0 g). Also, the average diameter of caps (12.6 cm) yield from this spawn is the highest. Besides, liquid spawn took only 48 days for complete spawn run while solid spawn took 57 days for complete spawn run. Hence, liquid spawn has the potential to be commercialized for the advantages it has over solid spawn, for instance, shorter spawn run period and higher yield.

Keywords: Grey Oyster Mushroom, Liquid Spawn, Solid Spawn

B116. SMART DISABLE PARKING SYSTEM USING WELCOMING AND REMINDING ALERT VOICE

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Abstract: We have often seen sharing images of abuse of disabled vehicles parking that are shared in social media such as facebook, twitter and instagram. Community criticized the unethical actions. Many actions was done as a warning and reminding but unethical people still do the behavior. Misuse of the facilities for persons with disabilities (PWDs/OKU) by non-disabled people is something crucial and need to be overcome. This is because the attitude not only make the inconveniences to the disabled but also reflects the culture of the community. For example those of non-disabled people who use disabled parking spaces reflect the attitude of the community who are not concerned. Therefore, efforts to stop the attitude of those who are not concerned about this should be improved. "One drop of color can spoil the whole barrel of milk." In the meantime, we also need to encourage people with disabilities to get out and enjoy the progress of the services provided. They need to be encouraged. We need to welcome their presence in public life so that they are empowered. Thus, they will not feel excluded and isolated. This project is a two-pronged effort, which we welcome people with disabilities, at the same time warned those who abuse the disabled parking lot.

***Keywords*:** Persons with disabilities (PWDs), smart disable parking system, unethical actions, disable parking lot, community.

B120. SPEEDAR: ARITHMETIC DRILL VIA RACING GAME

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Abstract: Arithmetic is the oldest branch of Mathematics which consists the study of numbers, specifically the properties of the basic traditional operations. According to the previous study, most of the users agree that Mathematics subject is a hard subject and there is lack of enjoyment in practicing arithmetic drills. Therefore, we develop enjoyable arithmetic drills via racing games and we named as a Need for Speed Arithmetic (SpeedAr). The SpeedAr game was implemented Rapid Application Development (RAD) approach as it provides stable and faster design and development process which is appropriate in developing the game. We evaluate the user's enjoyment while playing SpeedAr game using adapted EGameFlow Model. The findings suggest the combination of gaming element with arithmetic drills in the Mathematics subject produced the enjoyment experience in learning process.

***Keywords*:** arithmetic drill, racing game, enjoyment, EGameFlow Model

B121. REAL-TIME FLOOD MONITORING SYSTEM USING WSN AND IOT

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Abstract: Floods caused a lot of damage, loss of property and the most tragic part is the loss of family members. This disaster had brought huge effects to our country because the public was not aware of the flood forecasting and did not know the exact water level. Besides that, the information regarding this flood situation is not up-to-date even though this is the most important aspect for users. Previous monitoring flood warning system is using Global system for Mobile Communications (GSM) and expensive implementation compare to WSN. Nowadays, with Internet of Things (IoT) it able to give real-time data using wireless sensor networks (WSNs). Therefore, this project aims to develop a prototype of real-time flood monitoring system using WSN and IoT. The result of this prototype can be significantly used to provide flood forecasting.

Keywords: Flood monitoring, WSN, IoT

B122. ASSETS INFORMATION SYSTEM (AIS)

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Abstract: AIS is a system that helps anyone to identify the status of assets that are in front of them. AIS uses a QR code approach and internet access to display the asset information so that they can place it in the original place. This AIS can be used by anyone who has a smartphone with a QR Scanner app, where the application is available for free

Keywords: Aset, QR Code, Application.

B124. SWARAKEWAN

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Abstract: The Indonesian Government in their effort to boost the country's dairy production have purchased dairy cows originating from Europe. Known to produce good quality dairy with higher quantity per cow when compared to Native Indonesian Dairy Cows, but the differences in the country's climate puts stress in the cows which causes them to eat less and in turn produce less milk. A cow's stress level is mostly determined by a temperature-humidity index (THI) which is a function derived from the interaction of temperature and humidity that dictates how comfortable the climate is. A higher THI causes higher stress on the cows, this is commonly combated by the animal caretakers by spraying the cows with a cold shower intermittently which works to a certain extent but does not guarantee lowering the THI. There is currently no devices available for farmers to help indicate THI as needed and scalable for a dairy production farm, which is a problem Swarakewan sought to solve. A device that can be utilized individually or as a network of multiple devices to monitor the THI of a dairy production house and help farmers control the climate manually or even automatically with easy integration capabilities with other systems. Swarakewan have been tested in a small scale farm and have shown to improve productivity up to 150% as compared to 50% simply relying on the caretaker's instinct.

***Keywords*:** Temperature, Humidity, stress, Cows, Productivity

B131. SOLAR CHARGING HUB

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Abstract: Since 2005, advancement in solar technology has gradually increased in Malaysia, mainly focusing on photovoltaics (PV) applications for commercial buildings and housing sectors. However, this technology has slower development for smaller systems, for example a solar charging hub. A solar charging hub is designed to allow electronic gadgets or devices (for example, mobile phones and smart tablets) to be easily charged outdoor. This system has huge potential in many buildings in Malaysia, especially academic institutions and universities. It is widely known that students and lecturers used these devices 24-hours a day and a full-powered device is essential for telecommunication, online notes and assessments. Due to this new era of telecommunication, electricity consumption in campuses increased due to this "power-charging" lifestyle. A solar charging hub can help to harness the power from the sun for the use of charging these electronic devices. The benefit of the system is to reduce fiscal budget on campuses' electricity bills for a long term period.

Keywords: Solar technology, photovoltaics (PV), charging hub

B135. A METHODOLOGICAL GUIDE IN SETTING UP AN AIRPORT RETAIL BUSINESS

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Abstract: The purpose of this project is to produce a methodological approach as a guide when setting up airport retail businesses. Retailing represents one of the commercial activities contributing to non-aeronautical source of revenue to most airport management holdings. However, conducting any research work on airport retailing can be challenging to researchers as there are key factors that need to be incorporated into the framework of data requirements and information accumulation. These include understanding the nature of business, conducting environmental scanning, accessing and approaching information providers and also addressing the peculiarities of airport management. In producing the methodological guide, an integration of key strategic tools and analyses of factors motivating passengers to shop at the Kuala Lumpur International Airport 2 (Klia2) Terminal outlets is used as the focus of study. With the 'mall in the airport' concept, Klia2 is a suitable research premise on which the methodological guide can be based upon. After the problem statement and objectives of the research are identified, relevant literature on airport retail mix elements will be accumulated to develop the conceptual framework. Key strategic tools including SWOT and TOWS analyses together with the Four Corners approach and value chain analysis are used as analytical means. In addition, a survey instrument is developed to gather responses from departing passengers of the international and domestic sectors of the airport and the findings are integrated with the strategic tool analytical process. Ultimately, a protocol incorporating the research requirements and data gathering process is developed to be the guide for potential analysts and strategists wishing to execute similar projects. This is envisaged to be useful also for students in the MBA program who are tasked with an applied business research project. It is helpful to students when justifying their methodological stance in executing application projects.

***Keywords*:** Airport retail, methodology, strategic tools, applied business research

B136. POPEEL LOOSE POWDER

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Abstract: There are abundant of cosmetics product that contains harmful substances such as paraben, synthetic colours and carcinogenic ingredients. Therefore it is an urge to look into alternative natural based cosmetics. PoPeel loose powder is a natural-based beauty loose powder that has the goodness of plant-based ingredients. This product is created as make-up tools for people with sensitive skin and has a skin problem. It also meant for people who are concern of healthy skin care product and looking for alternative cosmetic that derived from natural sources and have no harmful chemicals. PoPeel loose powder is created by using natural substances with plant based ingredient without adding any harmful preservative and chemicals. The main ingredients of this miracle powder consist of pomegranate peel powder. It has been tested for their antibacterial and antioxidant activity. Allergic patch test was conducted to test for allergic response in a person. Stability test on the product were tested to assure its physical, chemical and microbiological stability. From the finding, the ingredients that made up the PoPeel loose powder have shown to possess high antioxidant and antibacterial properties. This product has given no allergic skin reaction and at the same time, it is estimated to be stable at room temperature for long term storage. PoPeel loose powder is also able to absorb excess oil that produced by skin. It is believed that this miracle face powder can be a potential marketable cosmetic product in purpose of able to treat skin problem such as sensitive, oily and acne prone skin. It is also might be able to fade off acne scars in a natural way. Overall, this product free from any harmful substances and promoting healthier skin.

***Keywords*:** natural, poegranate peel, loose powder, cosmetic, sensitive skin

B137. DECISION AID FOR LEAN TOOLS AND TECHNIQUES SELECTION (DEALS)

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Abstract: Decision Aid for lean tools and techniques (DEALS) was developed in order to help Malaysian manufacturing industries to select the right lean tools and techniques based on their context. There are more than 50 lean tools and techniques that can be used by the organisations to improve their quality, productivity and sustainability. The right tools and techniques to be used may vary depending on several factors, for instance, the current maturity level of the organisation, areas in which the tools and techniques are implemented, organisation type and size, and the capabilities and responsibilities of the workforce. To keep away from unnecessary waste and dissatisfaction, it would be better for individuals to choose the right lean tools and techniques that will fit with organization's situation and give benefits to the organization. In order to help organisations to select suitable lean production tools and techniques according to the contexts, therefore, a decision aid for lean tools and techniques selection (DEALS) was developed.

***Keywords*:** Lean, tools and techniques, decision aid, manufactruing, productivity

B140. DEVELOPING CONCEPTS IN PHYSICS THROUGH MICRO COMPUTER & VIRTUAL LAB EXPERIMENT

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Abstract: For physics learning, labs plays very active and significant role as it is essential to develop concepts and principles because students are continuously required to identify the hidden concepts, define and explain underlying laws and theories using high level reasoning skills. It is time and again observed that traditional real time physics laboratory has some limitations and problems in developing these concepts etc. In present given scenario of ICT, doing experiment by using software from open source and virtual lab through computer simulation based method of teaching physics is emerging as one of the most powerful method of experimentation in lab. The present study was conducted to see the effectiveness of experiment using Arduino and virtual lab for developing concepts in physics. The main purpose of this study was to investigate the effectiveness of applying microcomputer and virtual lab for students' understanding of concepts of physics. The findings of the present study clearly revealed that student learned concepts of time constant of a capacitor through e virtual lab in a better way as compared to real lab. The study also suggested the use of virtual labs in physics teaching, especially for teaching of concepts.

Keywords: micro-computer physics laboratory, virtual lab, physics laboratory teaching, Arduino

B141. E-NAII RED: ANTIBACTERIAL AND ANTIFUNGAL HENNA

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Abstract: Women and beauty is two words that have a very close interaction and can't be separated. Most women especially Muslims have waited for a long time for a beauty product that complies religious requirements. In Islam, praying with nail polish is not permissible because it prevents water to reach the nails when they perform *wudu*'. Moreover, there are abundant of nail products in the market that contains harmful substances such as paraben, synthetic colours and carcinogenic ingredients. These substances are toxic, therefore it is an urge for us to look into an alternative natural based product. E-naii Red is develop to promote the halal nail dye with extra benefit because it possess antibacterial and antifungal properties. This natural dye was naturally extracted from *Lawsonia inermis* that is widely used to color fingernails. It is safe to be used by all people in different range of ages. Innovation of nail polish with hennas as the main ingredient is created to meet syariah compliance because it is not waterproof and have attractive and long lasting color. With the additional medicinal values such as antibacterial, antifungal and antioxidant properties make this product are highly marketable. The main ingredients in this product has been tested for their antibacterial, antifungal and antioxidant activity. Allergic patch test was conducted to assure no allergic response towards skin. Stability test also conducted to assure its physical and chemical stability upon storage. From the findings, the bioactive compounds which is the main ingredient that made up the E-naii Red have shown positive results on antibacterial, antifungal and antioxidant properties. E-naii Red also showed no allergic skin reaction and stable at room temperature for long term storage. It is believed that, this E-naii Red product is one of highly potential marketable cosmetic nail product because it is *wudhu*' friendly and at the same time provide health benefit to treat nail problems with natural ingredients.

Keywords: henna, antibacterial, antifungal, wudhu' friendly

B142. MICROSCALE CHEMISTRY KIT

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Abstract: Microscale Chemistry introduces the concept of learning and teaching chemistry using miniaturized glassware and chemicals in small amount. The essential part of chemistry learning is to carry out experiments and to gain scientific proficiency and skill through investigations and hands-on activities. However, the existing problems related to laboratory practices such as lack of facilities, expensive chemicals and safety issues inhibit the effective learning and teaching of chemistry. These problems can be solved by a microscale chemistry approach whereby the lesser amount of chemicals will be used and lesser waste will be generated. Furthermore, the experiments can be carried out individually and in a shorter time. Our proposed microscale chemistry kit was developed based on the Malaysian Standard Curriculum syllabus for the secondary school of Form 4 and Form 5, outlined by the Ministry of Education Malaysia. To date, we have conducted a series of Microscale Chemistry workshops participated by teachers and students from secondary schools in Penang, Kedah, Perak and Perlis. Teachers and students found the approach to be very interesting, fun and useful in demonstrating the chemistry concepts. It is believed that the microscale chemistry kit developed by our Microscale Chemistry team is able to contribute positively towards the improvement in the learning and teaching of chemistry especially.

***Keywords*:** microscale chemistry kit

B144. GREEN CONCRETE CONTAINING RICE HUSK ASH AND SEWAGE SLUDGE ASH

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Abstract: This research had been studied the effect of partial replacement of cement by sewage sludge ash and rice husk ash. The effects on the nature of concrete exhibited mechanical properties of concrete such as compressive strength, water absorption, from a combination of sewage sludge ash and rice husk ash at different proportions. There were 108 samples had been prepared at different percentages of replacement of cement by using sewage sludge ash and rice husk ash. Sewage sludge ash (SSA) and rice husk ash (RHA) are used as partial replacement of cement for 10%, 20%, 30%, 40% and 50% in the concrete. The samples had been tested with compressive test. From the results, initially, there was an increment compressive strength of concrete at 10% amount replacement SSA and RHA, but the compressive strength declined when the amount replacement SSA and RHA are developing more than 10%. In addition, the concrete also showed increasing of compressive strength within the additional curing period, which was 7 days, 14 days and 28 days. Therefore, there is potential to reuse this waste material as part of construction materials and hence, its plays an important role for future researches in minimization of waste.

***Keywords*:** Rice Husk Ash, Sewage Sludge Ash, Recycle, Compressive Strength, Concrete

B145. SEASONAL OCEAN SURFACE CIRCULATION IN STRAITS OF MALACCA USING SATELLITE ALTIMETER AND LOW COST GPS-TRACKED DRIFTING BUOYS

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Abstract: In this study, the seasonal ocean surface circulation in Straits of Malacca were revealed through the use of data from eight satellite altimeter mission which is TOPEX, ERS-1, ERS-2, JASON-1, ENVISAT, JASON-2, CryoSAT-2 and SARAL for the period of twenty-three years (1993 to 2015). The geostrophic current anomaly was derived from climatology of monthly sea level anomaly. The sea level anomaly was determined by using radar altimeter database software. The averaged sea level anomaly and surface current during northeast monsoon, first inter-monsoon, southwest monsoon and second inter-monsoon have been mapped. The major current flow is northward during each season except during southwest monsoon. The surface current pattern during SW monsoon was rather complex than NE monsoon. For SW monsoon, the surface current flowed northward at the southern region of the strait along the east coast of Sumatra before converging with southward current from Andaman Sea at around 6°N. The convergence caused an anti-cyclonic eddy form at the central region of strait centered at (6°N 99.5°E). The satellite altimeter not only can determine ocean circulation but also capable to detect eddy. To ensure the capability of satellite altimeter in determination of ocean current, the low cost GPS-tracked drifting buoys were developed in this study for validation purpose. The drifter was launched during first inter-monsoon and second inter-monsoon. According to the trajectories of the drifter, the drifters have confirmed the current pattern around studied region. For first inter-monsoon, the drifter was move northward and during second inter-monsoon, the drifter was move southward.

Keywords: Straits of Malacca; Satellite Altimeter; Geostrophic Current Anomaly; Low Cost GPS-tracked Drifting Buoys .

B148. ODORATA BODY SCRUB (SKRUB BADAN DAUN KAPAL TERBANG)

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Abstract: *Chromolaena odorata* is a tropical and subtropical species of flowering shrub in the sunflower family. *Chromolaena odorata* leaves was previously used by our ancestors for healing wounds. Fresh juice squeezed out from the leaves of *Chromolaena odorata* is used to stop bleeding. The decoction of the leaves and stems are reported to be effective against the treatment of skin Disease like Propionibacterium acnes (Chakraborty et al., 2010). Objective of this study is produce a new product as known as Odorata Body Scrub. The main ingredients of the scrub are Chromolaena odorata leaves, coconut grated, glutinous rice, salt and pandan leaves. Odorata Scrub is in the powder form compare to the existing scrub normally in gel form. The advantages of gel form scrub is to make it easier for customers to carry anywhere without the need to worry about the scrub to spilled or sticky. Odorata Scrub can cleanse the skin and remove old scars. Besides, the product also can eliminate itching and rash on the body. It is suitable for all ages except for kids 12 years and below. Grated coconut in this product is suitable for reducing the excess oil in the body and smoothing the skin. While salt is use as a natural preservative and to reduce acne. Pandan leaves are used as a natural fragrance and glutinous rice to brighten and soften the skin. This product was carry out using natural ingredients without chemical mixtures. It should be safe for everyone and it comes in small size and easy to carry everywhere.

Keywords: *Chromolaena odorata* leaves, Odorata Body Scrub, powder form, natural ingredients, small size

B149. MALAYSIAPEDIA

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Abstract: Malaysiapedia, is a mobile game application designed to improve the basic knowledge and understanding of people about Malaysia. With the objective to enlighten people about the the history, background, political system of Malaysia and many others. This game offers various information on Malaysia. The reason of the creation of this game application is because not all people have full understanding and information about Malaysia. To make it interesting, questions will be provided in order to test the knowledge of the person. This application is very significant to the people and malaysia as it can promote sense of belonging and love towards our beloverd country, Malaysia. The creation of this game is expected to increase the numbers of people that understand about Malaysia.

Keywords: Malaysia

B152. POLYESTER-GRAPHENE PRIMER COATINGS FOR STRUCTURAL AND CORROSION PROTECTION

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Abstract: Polyester reinforced graphene coatings had been successfully developed to investigate its corrosion and mechanical properties on steel substrate by modifying graphene loadings. The Tafel polarization measurement and immersion test were done to determine the corrosion properties of the coatings. Corrosion rate was declined with addition of graphene loadings (1-5%) due to corrosion inhibitor of graphene. The optimum results were found at 4% of graphene loadings at 0.77735 mmpy and lowest corrosion for immersion test. Whilst, mechanical properties which are hardness and adhesion strength were measured and it followed the same trend as the corrosive properties at 5H and 0% area removed respectively. The incorporation of various graphene loadings in polyester primer system successfully improved the mechanical properties and inhibit the corrosion of metal substrate due to less crack propagation for corrosion to occur.

***Keywords*:** polyester, graphene, primer coatings, corrosion rate, tafel polarization

B156. THE DEVELOPMENT OF MOBILE APPLICATION FOR UNDERGRADUATE DISSERTATION: `MYDISSERTPLANNER'

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Abstract: The research interest among undergraduate students are vital for their academic achievements. Research dissertation is important and leads towards development of knowledge. Undergraduate students are lacking structured application to assist them in planning their research journey and poor time management. Hence, contributes towards poor preparation for future task that lead to delay in submission of dissertation. This research aim is to establish mobile application for undergraduate students and supervisors in managing their research activities. In line with this aim, three research objectives had been established i) to explore the existing mobile application relating to research planner and dissertation (ii) to identify the key problem faced by the students during the dissertation process and (iii) to develop a mobile application that integrates planning and dissertation guideline. The data is gathered by analysing the existing mobile application used by university students. In addition, a pilot survey was also conducted among undergraduate students in UiTM Perak. The data were analysed using descriptive analysis. The finding reveals that majority students have difficulty in managing the research process and contribute to delay in submission of their dissertation. Therefore, there is a significant need in developing `myDISSERTplanner' as a mobile application to ease undergraduate students in planning their research activities.

***Keywords*:** myDİSSERTplanner, mobile application, undergraduate students, research

B157. OH! MY HAND: GAME-BASED CLINICAL ASSESSMENT TO ASSES MOTOR-IMPAIRED USERS (WRIST/HAND)

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Abstract: Motor impairment is known as, where a person will experience symptoms of the inability of the body part or all of his limbs. This can lead to weakness of muscle, stamina, muscle control and paralysis. Patient-Rated Wrist/Hand Evaluation (PRWHE) is intended to quantify wrist disability and pain in daily activities. The PRWHE allows patients to evaluate their levels for wrist disability and pain starting from zero to ten. The findings from preliminary study showed that most of the users lack of enjoyable experience while doing clinical assessment. Therefore, the purpose of this present innovation was to design and develop a game-based clinical assessment for wrist/hand evaluation. The User Centered Design (UCD) was implemented to design and development of this innovation which is comprised of; understand and specify context of use, specify the user requirements, design and constraints, produce design solutions and evaluate designs against requirements. In addition, there is an initial activity, identify needs for human-centered design, which is about learning how to perform UCD. This includes aspects like understanding the users, reserving time and resources, and to plan when and where users should be involved during the development process. The findings suggest the implementation of game-based clinical assessment can produce enjoyable experience while doing wrist/hand evaluation.

***Keywords*:** game-based assessment, clinical assessment, motor impaired user, wrist/hand disabilities

B165. ECO PERFORMANCE ENHANCER

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Abstract: This project presents the findings of a study on eco performance enhancer for a building. The data from the study of the influences of metaphysics on functional performance of commercial building design is used as a guide in order to develope this eco performance enhancer. The aim of this project is to improve building performance towards a better prosperity and design for the well being. The idea came from the concept of the 'tiang seri' as one of the component in Malay-Islamic Architecture which is function as a magnetic bar inside a building. The uniqueness of the project is it maximizing and accumulates the subtle energy towards center of built spatial. The production of negative and positive ion energy inside the building using the natural process of the 'right hand rules' concept with less use of energy usage. This project is helpful for human spiritual and psychological.

***Keywords*:** Metaphysics, environology, functionality, enhancement, well-being

B171. SMART WATCH AL –QURAN READING FOR SOLAH (SWARS)

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Abstract:Smart Watch Al-Quran Reading For Solah (SWARS) is an electronic device used by the *imam* (the solah leader) during the congregation solah using wireless technology. Conventionally, the *imam* will need to turn the book of Al-quran pages manually, and this could only be done after he had completely perform the solah. SWARS is designed to overcome the problem where the *imam* were able to turn the Quran pages by a touch of his finger.

***Keywords*:** Al-quran, Solah, Imam, Reading, Watch

B173. REFRIGERATION CYCLE TRAINING KIT

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Abstract: Basic refrigeration cycle is a fundamental part of learning about air conditioning and refrigeration systems. Nowadays, most of the basic refrigeration cycle theory explained in a conversation and diagrams. Based on the experience and observation, it is found that students have difficulty in understanding the basic cycle of cooling system. Therefore, training kit called "Refrigeration Cycle Training Kit" is designed to assist learners in understanding the concept. This learning tool is used to assist in the theoretical and practical description of the basic cycle of cooling system. This is to enable students to understand and see for themselves on the idea of the coolant prevailing in air conditioning and refrigeration systems.

***Keywords*:** Refrigeration, Training, System, Cooling, Conditioning

B177. ICE SKATING TRAINING KIT

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Abstract: Air Conditioning and Refrigeration is one of the courses offered by IKM Sik at the diploma level where students are exposed with refrigeration technology system. Mini Ice Skating Training Kit is developed to educate audiences about cooling system. By using this training kit, students are able to identify parts and components involved in cooling system process and indirectly assisting lecturers in teaching and learning process. Previous ice skating training kit was developed in a big size and need more spacing besides high cost for the development. The main usage of mini ice skating training kit is for learning and teaching process. By using this training kit, students are able to understand the whole process of refrigeration and score rating for the subject is increased in every semester.

***Keywords*:** Conditioning, Refrigeration, Cooling, Ice, Skating

B179. FULLY AUTOMATED SECURE EXAM PAPER MANAGEMENT ONLINE SYSTEM

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Abstract: Exam management is one of the major performance keys to determine the quality of academic institution. Exam paper preparation and evaluation are tedious and time consuming job. Further, managing the examination process in a secure environment is an onerous task. Exam paper preparation consists of various processes ranging from question-answer paper creation, hierarchical evaluation and printing. Further, evaluation process requires both verification and validation of questions' quality and format setting. Traditional approach is inefficient due to requirement of time consuming and laborious work. Thus, it is inefficient and ineffective for modern day fast-paced working environment. We propose a fully automated secure (FAS) exam paper management online system. Our solution comprises of multi-users like admin like dean and HOD, lecturer and verifier. Lecture can create any type of questions-answers comprises from texts, images, graphs, charts and formulas. Further, questions can be classified by their own criteria as well as standard criteria. Our unique value proposition is consideration of question as an encrypted primary key in the database. The main component of our proposed solution is question bank which saves all questions with relevant answer schema. The next is test generator then allows you to create tests with the criteria that admin set. The answer schema produced automatically when the question paper is generated. Admin manages the nomination of supervisor and paper format. Supervisor can evaluate the question and can add the comments through online itself. The supervisor's comments can be viewed by lecturer to rectify or improve their questions. The tests can be exported to pdf file with institute's question paper format. Our solution out performs various question paper generation and setter applications. Moreover, tracking the evaluation status of question paper and notification of the repeated questions are the key features. Further, system can be customized to automatically generate question papers out of existing question bank in the database. The proposed system automates whole process, eliminate risk to confidentiality and prepare question papers in any format. This is useful for any scale institutes. The software will empower the institution with a powerful tool to generate question papers in a short span.

Keywords: muti-tier exam management, paper setting

B183. FABRICATION OF NH_2-MIL-53(AL)/CELLULOSE ACETATE (CA) MIXED MATRIX MEMBRANES IN CO_2 SEPARATION FROM N_2 AND CH_4.

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Abstract: Mixed matrix membranes (MMMs) are promising candidate for industrial gas separation, but their application is limited by micro-voids present at the interfacial region of the MMMs. The incorporation of metal–organic frameworks (MOFs) has been extensively investigated as a potential solution to this problem. However, the major challenges are to control the micro-voids in the interfacial region and to improve the effective MOF loading within the MMMs in order to achieve the higher separation performance. Therefore, in the present work, MMMs have been fabricated by incorporating NH_2-MIL-53(Al) filler into cellulose acetate (CA) polymer using solution blending method. The results showed that the presence of NH_2-MIL-53(Al) in CA matrix has enhanced the CO_2/N_2 and CO_2/CH_4 separation performance compared to that of pristine CA membrane. In addition, this work also revealed that the resultant MMM showed CO_2 plasticization resistance up to 30 bar, which has increased up to 200% compared to the pristine CA membrane of only 10 bar. Overall, the NH_2-MIL-53(Al)/CA MMM fabricated in the present work is a potential candidate to commercialize for industrial gas separation. In addition, fabrication of MMM could be substantial in saving energy and cost.

***Keywords*:** NH_2-MIL-53(Al), cellulose acetate, mixed matrix membranes, gases separation, plasticization resistance.

B184. INNOHOME

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Abstract: A home is a place where we shelter ourselves from any dangers and weather. Yet, owning a house is not easy for many Malaysians these days thought for those who own lands. Building a house on our own land means one is given freedom to design that can satisfy oneself. However the increasing price of this property, the land owner has too keep their dreams. As the answer to the problem, INNOHOME has been designed to make the dream of medium income group comes true. INNOHOME is flexible, affordable and seen as a real home though it is constructed using a cabin framework which is mobile from manufacturers. The framework has meet the requirement of JKR, PBT and sustainable in characteristics. The objectives is to provide an alternative of owning a house that is more economical, flexible, easy to build to overcome the problem faced in a residential place. It is also to prepare, support and empower the Malay youth to be equipped with systematic construction skills and produce more young entrepreneurs in construction field which is less risk and economical. Referring to the case study which is currently in the market related to the high cost of material and time frame, the methodology that being using is the knockdown structure which is ready to assemble (RTA) construction system as a selection for this house project. This house is enable to bring with a treller to the construction site which is decided by the owner. As a findings, by using a knockdown structure system/ready to assemble construction method can reduce 20% of the construction cost supported with the eco friendly material that makes the home are very sustainable, affordable, economical, fast and a very good quality.

***Keywords*:** affordable, mobility, flexible, sustainable, systematic

B185. INNOKIOSK4

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Abstract: This is an innovational project that has been idealised to the solution of problems faced by mobile hawkers. Normally, these mobile hawkers will take a period time to disposition of their stalls. This has attracted our attention to invent something to help them to minimize their time in dispositioning their stalls. The idea is to construct the flexible, creative, retractable and mobile stalls for time saving. To make use of the available kiosks to overcome problems faced by these small hawkers. This research has been used as a fundamental process to create new way of storing their goods as well as helping them to enhanced and upgrade their business by the implementation of knockdown structure construction system for local and international market used. Marketing via module of the product which can be fitted or mounted in a car, portable, easy installation and reinstallation before and after use. The objectives is to provide an alternative of owning a commercial space which economical, fast, and good quality compared to other INNOKIOSK. It is also to prepare, support and empower the Malaysian youth to be equipped with simple systematic construction skills and to produce more young entrepreneur in construction field which is less risk and economical. In terms of the market potential is divide to 3 phase which is to introduce the INNOKIOSK brand, to advertise in decoration magazines and other related medium and to participate in expos, carnivals and other medium of promotions and to spread message that innokiosk as an alternative of basic commercial framework structure. As a findings, INNOKIOSK4 is a kiosk that is specialized made for a small hawkers to save time, fast, simple, quality, and energy with it mobility traits as well as assisting the hawkers to soar their business in future.

***Keywords*:** simple, quality, mobility, flexible, systematic

B189. 3D VISUAL MODEL FOR BUILDING QUANTITIES TAKE-OFF (3D-VIMO)

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Abstract: Quantifying building construction are normally based on two dimensional drawings (plan and section) and written specification. Based on students' feedback and lecturers experiences, students are having difficulties in visualizing the building elements that need to be quantified. Thus, the students are struggling in taking-off building quantities. Therefore, additional teaching aid are required to facilitate teaching and learning of the taking-off building quantities. The innovation of additional teaching aid will help the students in visualising the building elements and assist them in taking-off building quantities. The concept of this innovation involve multi-media tool which is 3D visual model and cooperative learning. The 3D visual model will be prepared for each buiding elements taught. During the learning session, students will be divided into small groups (3-5 students per group) and will learn the taking-off with close supervision and guidance from the lecturer. Students will be provided with this 3D visual model in addition to the two dimensional drawings and specification. The 3D visual model will assist the students in visualising the building elements that need to be quantified. Thus, understanding the taking-off process will be easier and faster. The combination of 3D visual model and the coorperative learning in groups is expected to enhance students interest in this subject. Thus increase their understanding in taking-off building quantities.

***Keywords*:** Building Construction, Taking-off, Quantities, 3D Visual Model

B190. DEVELOPMENT OF AN INTEGRATIVE GOVERNANCE FRAMEWORK FOR STAKEHOLDER MANAGEMENT IN MARINE SPACE ADMINISTRATION

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Abstract: In Malaysia, marine spaces are not managed by a single public institution but they are managed by several stakeholders. As a result, this creates complex, uncertain, conflicting, and overlapping scope of work. This paper aims to develop a marine space stakeholder governance (MSSG) framework. The study employs qualitative approach using fuzzy Delphi. The study included 23 expert panels from various fields related to marine space governance to evaluate the framework using fuzzy Delphi technique. Fuzzy Delphi results showed consensual agreement (d = 77.17%) among the experts in terms of the selected nine elements of the framework. Each item reached an agreement with the value (Amax) exceeding 0.60. Only one item from the custodian element (The Prime Minister's Department should be the lead agency) where (Amax = 0.32) is not acceptable. These findings can be a foundation for establishment of National Marine Planning Council. The results of this study will contribute to the development of marine space stakeholders' governance framework, taking into account the Malaysian marine space issues (MSSI).

***Keywords*:** Marine space stakeholders governance, Fuzzy Delphi Methodology and Marine space issues.

B201. THE INSTRUCTIONAL DESIGN OF *LE SWING* BEGINNER

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Abstract: *Le SWinG* (Learning Sight Words in Games) is an early literacy research based digital educational game to make literacy milestone fun. The game is developed towards mastery of sight words in English Language in order to teach young learners age between 6-12 years old to read and write. Child cognitive development begins with recognizing words and learning what the words mean. Thus, *Le SWinG* Beginner provides young learners the tool to quickly decode words and unlock meaning. *Le SWinG* Beginner is designed based on the principles of teaching sight words and Taxonomy Alignment for Gaming. *Le SWinG* Beginner is a product of Design and Development Research (DDR) based on the five phases of the ADDIE model. This paper documents the first cycle of *Le Swing* Beginner instructional design process that incorporates the methods and approaches of DDR. Evaluation of *Le SWinG* Beginner was conducted through product testing and focus group interview with content and instructional design experts and potential users to inform improvements. Findings from the experts' evaluation reveal that *Le SWinG* Beginner scores highest in terms of its functionality and navigation as well as graphics and user interface design. Potential users provide some recommendations in terms of usability of the product.

***Keywords*:** educational game, vocabulary acquisition, early literacy, instructional design, fun learning

B203. 3D ANIMATION WORKSHOP: THE IMPLEMENTATION OF 3D PRINTING IN EDUCATION

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Abstract: A 3D animation workshop will be organized by the Animation Department from Faculty of Film Theater and Animation. The target participants will be primary and secondary school students between the ages of 10 to 17 years old. The participants of this workshop will work closely with the experts in 3D Animation industry to link the participants' imagination and creativity into tangible forms. The contents throughout the workshop will cover the basic knowledge of 3D animation software at the beginner level. The end result of this workshop will be physically manifested into a 3D model by using the provided 3D printing facilities. This workshop would offer the first-hand exposure on interactive experience by bringing creative imagination into reality. This approach will; in gist, expose the participants to the current technology in the animation industry. Thus, it will motivate them to be an active learner among their peers. This workshop aims to prepare the school students to enter the workforce since 3D industry is becoming a demand from various sectors.

Keywords: 3D Animation Workshop, 3D Printing, Education

B205. SEJAHTERA LESTARI: A MOBILE HEALTH APPLICATION FOR VISUAL IMPAIRED INDIVIDUAL

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Abstract: This project explores the development of a mobile health application which was designed to disseminate information regarding major chronic illness in Malaysia; diabetes, high blood pressure, heart disease and kidney disease. As reported by Statistics of Malaysia Social Welfare Department, majority of persons with visual impaired are adults which are more prone towards the main chronic illnesses in Malaysia. Support ought to be provided to disseminate health information to this group through various platforms, and one of the potential medium is through mobile application or specifically known as mobile assistive technology. 2 respondents are chosen in this preliminary study. 1 respondent who is totally blind and 1 respondent with low vision were interviewed. Interview schedule was adopted and adapted based on the checklist as highlighted in Hoehle and Venkantesh (2015) in exploring the usability of mobile application. Both respondents showed positive responds to the variables explored; i) Application design, ii) Application utility, iii) User interface output, iv) User interface structure, v) Continued intention to use, and vi) Mobile application loyalty. Overall, this study contributes toward the body of knowledge in mobile assistive technology, persuasive technology and mobile health application in Malaysia. The study does not only develop a mobile health application to support visual impaired individual but also adds value in understanding the situation regarding the use of mobile health application to support this group. As the conclusion, this study has established that the use of this mobile health application, Sejahtera Lestari can be used as a medium of information which is suitable for the visual impaired individual. In the future, the study will be continued in adding more information about other illnesses as well as exploring the possibility of the mobile health application in raising awareness of the visual impaired people about the main illness in Malaysia.

***Keywords*:** Mobile application; mobile health application; assistive technology, visual impaired, Malaysia.

B206. FRONT OFFICE SIMULATION TASKS (FOSTS)

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Abstract: The front office department is the major department and the most important area of the organization. The front desk of a hotel requires many different skills in order to make sure guests have a pleasant experience at a hotel. Students unable to imagine the real situation that will be happen because students only doing or practicing one role play task. Front Office Simulation Tasks (FOSTs) has been created to offer a new experience for students to take as hotel employee through the many responsibilities of a hotel employee. Front Office Simulation Tasks (FOSTs) is a simulation activity that has been designed to create the real working environment for students to learn in the areas of front office operations. All tasks have been designed and created by lecturers. Each student will get the opportunity to rotate for any positions like Reservationist, Concierge, Bellman. All the tasks will be occurring at a particular instant in time. Students that perform as front office employees are challenged to solve problems related to guest satisfaction, safety, security, and business operations. This activity will be recorded, then lecturers will show to the students when lecturers do reflection with students. We will use the Front Office Simulation Tasks (FOSTs) as an activity to train students in order to adapt themselves in the real situation. Students are tested their confidence, knowledge and skills through making strategic decisions in regard to front office operations for example checking in and checking out (Receptionist), handling reservations (Reservationist), provides information about the City Events (Concierge), and carrying and bringing guests to guest rooms (Bellman). The cost of building this tasks card is zero as lecturers will design the tasks by using words as save as pictures and distribute through Whatsapp or any online platform. This idea can be used by any institutions that offered Front Office subject or for hotel industrial training purposes. This Front Office Simulation Tasks (FOSTs) is very useful to help students to understand the real situation job ability when students involved themselves in this activity.

Keywords: Simulation, Front Office, Tasks, Receptionists, Concierge, Bellman

B209. NATURAL COCONUT COIR FIBER AND EGG CARTONS AS A POTENTIAL NOISE REDUCER

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Abstract: Noise disturbance was a major problem to improve good quality life and environment. A common method to reduce noise is to use porous sound absorbers made out of mineral wools or glass fibres. However, these materials pose health risks and are non-recyclable. Alternative materials were developed in order to replace the limitations of mineral fibres. This project aimed to produce a noise reducer using a combination of coconut coir fiber and egg cartons. Natural fibres from coconut and paper from egg cartons owns high fibre porosity and they are biodegradable, cheaper, renewable, abundance, do not pose health risks and can be manufactured into different shapes easily. The sample was prepared by combining coconut coir and egg cartons with the portion of 50% each. Each materials were soaked and blended then mixed in the mould before compressed by using Uniaxial Compression Machine untill the sample size was approximately 25 mm thick and then dried in a oven at 105^0C for 12 hours. The sample was carried out in a testing box which will act as a room and can minimize the effect of background noise. The sample was placed between the source of sound and Sound Level Meter (SLM). The sound source released was 1KHz or 114dB. Based on the Equivalent Continuous Sound Level, L_{eq} results obtained, the sample of noise reducer shows a potential by reducing about 50% noise and indicate that the panel has an average noise reduction coefficient, (NRC) of 0.50, which qualifies it to be used as a sound absorbing material. Therefore, recycled materials, such as coconut coir fiber and egg cartons can be used and useful to mix up in order to obtain the desired performance.

Keywords: Coconut coir fibre, egg carton, noise reduction coefficient, natural noise absorber, natural fibre

B214. THE PROSPECT OF RAP AND SHELL WASTE AS SUBBASE MATERIAL

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Abstract: In order to promote sustainability of the environment, the utilization of waste and recycled materials especially in the construction industries are significant. The reuse of materials such as Reclaimed Asphalt Pavement (RAP) and Shell Waste (SW) as subbase materials for road construction eventually is an alternative solution to overcome the depletion of natural aggregates and reduce the stockpile of waste problems in future. The green environment in our country can be disregarded due to the increasing demand of quarry product that eventuate the depreciation of natural resources such as limestone and granite. To deal with this situation, a study on recycle construction and natural wastes as subbase material replacement was carried out. The mixture of 70 % RAP and 30% SW as subbase materials substitution showed satisfactory physical characteristics and can be classified as extremely high durable which resulted the slake durability index of 95%. Hence, this innovation provides better solution to the industrial key players in term of economic saving, high-quality, well-performing and sustainability.

***Keywords*:** Reclaimed Asphalt Pavement, Shell Waste, Subbase, Slake durability index, Sustainable.

B217. MULTIPLE EMBEDDED OF WARNING SYSTEM (MEOWS)

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Abstract: Nowadays electrical energy is a very important to operate machines and equipment in most systems specifically in industrial area. Electrical failure can occurred due to excessive current or high current loads. This failure can lead to manufacturing disruption that can cause major loss for the company. Early act from the technician to repair this failure can help to reduce further loss and hence, a warning system called Multiple Embedded of Warning System (MEOWS) was developed. MEOWS was developed using Global System for Mobile Communication (GSM) to notify the person in charge (PIC) of the system by sending short message services (SMS).. A current sensor use to detect tripped circuit breaker and send a signal to microcontroller. MEOWS was programmed to reduce troubleshooting time by notifying PIC information of which system has failed and the problems of the system such as open circuit. To verify the functionality and reliability of MEOWS, a test was conducted at one of electrical system at IKTBN Bukit Mertajam. The MEOWS system was installed in air conditioning distribution board and the result shows that MEOWS can notify the system failure more effectively and time to troubleshoot the system also reduced significantly.

Keywords: Electrical failure, Global System for Mobile Communication (GSM), Warning system

B218. PREDICTION OF *SITOPHILUSORYZAE ORIZAE* GENDER USING LOGISTIC REGRESSION MODEL

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Abstract: The changing density of male and female affect greatly the production of offspring for the next generation of *Sitophilus oryzae* that globally known as serious pest to many harvested stored grain including rice. Thus, the gender proportion in the population become crucial information to predict the rate of stored grain lost because the rate of stored grain lost are directly proportional to the population rate. Identification of *S. oryzae* gender is based on the rostrum size but required to be confirmed with internal reproductive organ. This technique is a destructive technique which requires dissection of the insect. Thus, the objective of this study is to develop a model to identify and predict the gender *S. oryzae* based on the numerical information of *S. oryzae* morphological features per se. Twelve (12) morphological features of 45 *S. oryzae* had been measured. From the total of the 45 *S. oryzae*, 10 had been used as validation set. Two types of Logistic Regression model had been used i.e. Classic Logistic Regression and Principal Component Regression (PCR) Logistic Regression to develop the model. However, only PCR Logistic Regression was successful in developing the model because Classic Logistic Regression required multi-collinear continuous covariates. This model, developed with all the twelve morphological features was able to differentiate the gender of *S. oryzae* with 100% correct classification. In order to simplify the identification and prediction process, one by one test of every morphological feature had been run. The results show that rostrum measurement (length and width) was adequate to be used in developing model for identification and prediction of *S. oryzae* gender. This model is more accurate and liable because the identification is based on the numerical data compared to previous identification which based on the size of rostrum and internal reproductive organ.

***Keywords*:** Classic Logistic Regression, PCR Logistic Regression, *Sitophilus oryzae*, Model, Gender identification

B222. BASIC TAX STARTER (BTS) MOBILE APPLICATION

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Abstract: Initially Basic Tax Starter (BTS) sheet is a hands on training to students on how to calculate taxes. The sheet will help the lecturer to teach effectively by using formative sheet and can attract student's interest and lead to awareness of self-assessment system (e-filing). BTS has the commercial potential as it can also be used by public as a trial sheet and create awareness on the importance of e-filing. The system is simple and public awareness on the system is important. Thus, BTS is being modified or expand further with mobile applications in order to educate the taxpayers and to assist them to calculate their tax in advance before e-filing being done. BTS mobile applications will make the income tax form easy to understand. Besides, it also provide taxation information directly to public in the most effective ways.

***Keywords*:** BTS Sheet, Personal Taxation, E-filing, Mobile Applications & Tax Relief

B223. INNOVATIVE MODEL FOR NEW B2F E-COMMERCE USING 3RD PARTY FORWARDER FOR ASIAN MARKETPLACE

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Abstract: BROKAA.com is the leading e-commerce model which introduced the concept of *Amazing Asia* which established the fourth layer of e-commerce operating system with introduction of 3rd Party Forwarder for new *B2F* trading. Despite of famous concept from conventional method of *B2B, B2C and C2C* e-commerce, this *B2F* e-commerce platform offers a tracking deeplink layer for customers to represents the suppliers as part of their business organization. The 3PF is freelance apprentice concept developed in this e-commerce platform aims to increase jobs opportunities, improve the socioeconomic and social wellbeing's by provide the opportunity to be the apprentice of real business. In addition, this *B2F* e-commerce platform has equipped with geolocation advance scripts to improve the acceptance of foreign product introduced by local apprentices in Asian countries. The agenda of 3PF concept in *B2C* e-commerce to improve market penetration of Malaysian products to Asian countries by offering the product commissions on fee based term for local apprentices to promote the products in their local area. The B2F platform is equipped with analytical product module, vendors' management, merchants' management and 3PF management for monitoring and product assessment of customers, suppliers and 3PF freelancers to serve about 0.71 billion of online consumers in Asian marketplace.

B224. NEW ACTION FRAMEWORK FOR VEHICULAR EMISSION PRICING ON INTELLIGENT TRANSPORT SYSTEM FOR LOW CARBON SOCIETY

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Abstract: There are serious predicaments for transportation in present trends in urban transport for cities and metropolitan areas. Many discussions have addressed about the environmental impacts from emission on Greenhouse Gases (GHG) caused particularly by road transport vehicles in many cities. Vehicular emission pricing has translated key principles from Iskandar Malaysia blueprints for road pricing towards achieving Low Carbon region for sustainable road transportation and living quality improvements in major cities. Several elements are considered in vehicular emission pricing including vehicle profiles, LOS, speed and peak hours' factors. Developing the application for carbon pricing is remarkable efforts to significantly proving this suggested carbon pricing framework produced in this competition is functioning and ready to be executed for any authorities and agencies towards reducing CO2 emission in the cities. The development of this application has been through several stages of discussions, model approval and application modifications. At the first stage, both frameworks are translated into manual calculator to evaluate and examine the functionality of the framework before it will be transformed into an application with more complex coding in programming language. The establishment of this innovative model in current road pricing system offers return benefits for both society and nature, the concept pay as you use is applied in vehicular emission pricing as users will be imposed fees based on their contribution to the pollutions and congestion factors during their journeys using private vehicles. This system applied both manual method and RFID device for data inputs in pricing calculation. This standalone system is designed with portable version, the result and information collected can be stored and exported in various data format for future reference in local computer.

B227. WO-OF BAG

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Abstract: It is quite annoying when you have to go to campus when it is raining heavily. Plus, if you have to bring your laptops and books in your backpack in a rainy day. Now, have no fear. Today, we have designed a bag which could protect your belongings (laptop, textbook, snacks) from water damaged due to the rainy weather. WO-OF bag can be transformed into backpack, and combined with the rain coat. It has six (6) great features which are water-resistant, anti-theft & anti-rape, anti-lost (gps tracker), built-in led light, night safety and attach with a raincoat. The great features not only protect belongings inside the bag from water damaged but also to serves as a self-defense protection (anti robbery & anti-rape).

***Keywords*:** innovation bag, future bag

B232. A NEW DOUBLE NEGATIVE METAMATERIAL DESIGN FOR ELECTROMAGNETIC ABSORPTION REDUCTION IN HUMAN HEAD

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Abstract: A new double-negative triangular metamaterial (TMM) structure, which exhibits a resounding electric response at microwave frequency, was developed by etching two concentric triangular rings of conducting materials in this invention. A finite-difference time-domain method in conjunction with the lossy-Drude model was used to investigate the electromagnetic absorption (EM) reduction by using the novel TMMs attached to the mobile phone. The specific absorption rate (SAR) reduction technique is discussed, and the effects of the position of attachment, the distance, and the size of the metamaterials on the SAR reduction are explored. The performance of the double-negative (DNG) TMMs in mobile phones was also measured at the cheek and the tilted positions using the COMOSAR system. The TMMs achieved a 52.28% reduction for the 10g SAR. These results provide a guideline to determine the triangular design of metamaterials with the maximum SAR reducing effect for a cellular phone.

***Keywords*:** DNG, metamaterial, microwave, SAR.

B234. TOWARDS DEVELOPING WAQF PROPERTY INNOVATIVE UTILISATION FRAMEWORK

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Abstract: Waqf property is one of the wealth entrusted to the State Islamic Religious Councils (SIRCs) who act as sole trustee at state level. According to His Royal Highness Sultan Nazrin Muizzudin Shah, (The Star, 23 February 2018), until Dec 2017, only two per cent of the 13,500 hectares of waqf land has been re-develop. This clearly shows that SIRCs are dealing with problems in managing and utilising waqf property which affect the development of the property and management of waqf institution. Hence, there is a need to improve the management and the process of utilising the waqf property. This study aims to develop the waqf innovative utilisation framework which integrates the existing procedure and an enhanced waqf property development practices. The implementation of this framework may contribute to the waqf property development to be more systematic, efficient and effective. Besides, this framework may also contributes to the respective waqf property institutions in strengthening their administration and management in developing the waqf property. Indirectly, it may increase public confidence and trust towards waqf institutions in Malaysia.

B239. 21ST CENTURY VIRTUAL LEARNING MODEL

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Abstract: Developments in technology have increased people's expectations on the use of latest teaching pedagogies in applying mobile technology for teaching and learning. The objective of this model is to allow for students to learn independently in its student-centered learning environment. Students are able to explore and increase their knowledge at their own pace, ability and dispositions using reflections and inquiry strategies. The innovation utilizes virtual learning model design was formed based on the UTAUT model which is Interpretive Structural Modeling and Fuzzy Delphi. This virtual learning model has distributed the role of the teacher and the role of the student in the aspects of teaching, discussing, interacting, finding information and doing assessments without time and place restrictions. Experts had agreed on a total of 27 items in forming this 21st century virtual learning model which corresponds to the Industrial Revolution 4.0. Its application in the teacher training setting has indicated a marked improvements in the quality of learning and teaching.

***Keywords*:** vitual learning model, Interpretive Structural Modeling, Fuzzy Delphi

B242. PHYSICAL MULTIMEDIA LEARNING SYSTEM IN COOKING FOR PRESCHOOLERS

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Abstract: Based on the idea of Piaget's theory of cognitive development, a learning gap emerges between preschoolers and multimedia learning system where the cognitive capability of a preschooler whose cognition is still in a state of preoperational level and the condition of multimedia which only delivers information in digital visual-auditory format. In light of the compelling theory, a multimedia prototype augmented with the use of physical objects named "*PhysiCook*" has been designed and developed. *PhysiCook* is a game-like learning system in cooking. Acquiring know-how to cook is not the final objective of the system, but to understand the real objects and ingredients involved, how and when they are used in the cooking process. To examine the capability of the prototype, a research that deployed the instrument called *Smileyometer*, which capable of measuring the level of enjoyment of subjects towards experimental system, on 248 preschoolers recruited from seven Malaysian kindergartens was conducted. Analyses revealed that the *PhysiCook* system stimulates preschoolers' enjoyment significantly more than regular multimedia. Overall, the findings led to the conclusion that the physical multimedia is one of the source of state of enjoyment in multimedia learning for preschoolers.

Keywords: Physical object, Multimedia, Physical Multimedia, Preschoolers

B245. PERSUASIVE MULTIMEDIA APPLICATION ON THE TOPIC OF ISLAMIC FUNERAL (APM-PJ)

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Abstract: In the Muslim society, Islamic funeral is the final responsibility of the living person to the deceased one so it has been known that everyone should have the knowledge about it. However, educational application in the context of Islamic funeral which are tailored and designed for mobile devices is scarce. Therefore, the objective of this study is to design and develop a persuasive multimedia application based on mobile application on the topic of Islamic funeral. This mobile application was developed using Articulate Storyline 2 and Adobe Flash CS6 software and based on five phases in ADDIE instructional design model; that are analysis, design, development, implementation and evaluation. The theories of this application consists persuasive multimedia principles, tutorial learning strategy, and multimedia learning principles. This application have been test to sample consists of 120 students from form two and uses a quasi-experimental design with pre and post test. Data obtained from this study were analyzed descriptively and ANOVA test to analyze the scores of pre and post test. The findings showed an increase in student achievement scores after exposed to the app developed. This application was easy to use and it has interesting interface design, as well as interesting graphics. Based on the feedback, the application developed complements the features of good multimedia design and suitable to be used. It is in the aim of this study that this mobile may contribute to teaching and learning, particularly for the Islamic funeral topic as an alternative teaching tool to be used by teachers of *Pendidikan Islam* (Islamic Education) in schools.

***Keywords*:** Islamic Funeral, persuasive multimedia application, mobile application

B248. IMPLEMENTATION OF MONITORING STUDENTS' ACADEMIC PROGRESS SYSTEM

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Abstract: This study focus on implementation an academic monitoring system (SKPP) for the students who are pursuing the Bachelor Degree of Education Program (PISMP) at Institut Pendidikan Guru Kampus Pendidikan Teknik (IPGKPT). The system developed to meet the accreditation requirements by Malaysian Quality Accrediation (MQA), which requires the higher education program to practice continuous quality improvement (CQI). Monitoring student achievement allows the program owner to track and take both remedial and enrichments steps to encourage better academic performances among our graduates. This study was carried out through a library research and also includes feedback from IPGKPT's stakeholder regarding the needs of monitoring student achievement. This study focuses on the easy accessibility of student academic achievement, identifying trends in individual exam results for each semester and also a systematic monitoring of students academic progress. The finding shows that this system able to monitor students' academic performance by improving institutional administration efficiency in tracking students academic progress. This is because the advancement of student academic achievement can be noted as early as the first semester until the final semester of their study and stakeholders can take immediate action to help improve students academic achievement.

Keywords: accreditation, academic monitoring, PISMP

B251. MIMI LIAU SCALE KIT

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Abstract: Scales are the foundation on which all music is built. Understand the concepts of keys and how they are built facilitates the beginning learner in composition, transposition and improvisation. Be good at scales are likely to be good at playing the various musical instruments. Mastering various scales can have an impressive impact on performance, technique and overall musicianship, but many school music teachers and beginning musicians find teaching and learning the scales challenging and often overwhelmed by the excess information embedded in the scales. Without the basic understanding and comprehension of the concepts and structure of each scale, it will be difficult to understand and remember scales. This innovation aims at developing a scale kit which could simplify and group the excess information on various types of scales, and display structures of the different genre of scales, including all major, minor (both harmonic and melodic), natural minor scales and chords in all keys just in one kit- the Mimi Liau Scale Kit. This scale kit is as good as a scale book that contains scales and the triads in all keys that all music students need to master. Key-signatures, chords, modulations, and many other areas of music theory are much easier to understand with the use of this kit. There are two main objectives for this innovation: i) to facilitate the understanding of the structure of various types of scales in music theory: The major scales, Minor scales (harmonic and melodic), Natural minor and triad tonics, ii) Assisting teachers and students in the process of teaching and learning the various types of scales. This scale-kit was brought for experiment in four primary schools and a teacher training institution. Methods of experiment, survey, observation and interview were carried out for data collection. Findings show that the students can understand and relate the scale structure faster through the Mimi Liau Scale Kit. Teachers' feedback obtained concluded that this kit is very practical, innovative, creative and facilitated teaching of abstract concepts of scales effectively and increased students' interest in learning scale.

***Keywords*:** scales, theory of music, music education, innovation, teaching and learning

B252. INTERACTIVE FARAID INFORMATION SYSTEMS

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Abstract: Faraid is define as a distribution of property using the specific calculation according to the rules that determined by Islamic law as verses in the Qur'an. The importance of faraid is highlight clearly in Al-Quran and provides strong reasons why it should be applied especially on issues which related to property management. Faraid is said to be one of the most important knowledge in Islam. Faraid is the knowledge that will be the first removed by Allah from humanity. Here, the rules of faraid are translated into a technique of mathematics is applied in this project for calculation in order to calculate the property for each qualified heir. Furthermore, this project adds some computerized faraid calculations and the final results to faraid problems. This Faraid information system has been develop using Visual Basic 6.0 as main platform.

***Keywords*:** Faraid, islamic law, qualified heir, hibah, faraid information systems.

B254. EFFECTS OF TORREFACTION ON THE BIO-COAL PROPERTIES OF RICE HUSK: AN AGRO-PROCESSING WASTES

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Abstract: Rice husk, an agro-processing waste in the Malaysia rice mills was investigated for its suitability as a prospective bioenergy feedstock for better fuel characteritics. In order to improve the bio-coal quality, rice husk pretreatment was done for upgrading the biomass feedstock before pyrolysis taken place. Bio-coal was produced by torrefaction which is a thermal process occured in a quartz reactor with nitrogen gas flow 100 ml/min. The operating was varying in reaction temperature (200, 250 and 300 °C) and processing time (10 min, 20 min and 30 min). The results of 1.35% mass yield, 80.07 % energy yield with higher heating value (HHV) of 19.024 MJ/kg was achived at optimum temperature 300°C and 30 minutes processing time. Proximate analysis of bio-coal indicated 1.35% moisture content and 15.69% of ash content. The temperature and processing time of torrefaction are found to be the most sensitive parameters in terms of energy yield and mass yield of bio-coal. Therefore, rice husk would be practical alternative as solid bio-fuel for cofiring with coal.

***Keywords*:** torrefaction, bio-coal, rice husk.

B255. MODELLING OF NORTHERN GEOID MODEL 2017 (NGM17) BY ALOS GLOBAL DIGITAL ELEVATION MODEL (GDEM) AND KTH METHOD

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Abstract: Geoid defines as equipotential surface of the Earth's gravity field that corresponds most closely with mean sea level (MSL). In land surveying, the geoid height is applied to transform GPS-derived ellipsoidal heights to orthometric heights. In Peninsular Malaysia, the geoid model known as MyGEOID is currently being computed using Remove Compute Restore (RCR) method by Geodynamics Dept. of the Danish National Survey and Cadastre in cooperation with DSMM. In this present study, a new geoid model in the northern region of Peninsular Malaysia (NGM17) was computed using alternative method known as the Least Squares Modification of Stokes formula (LSMS) with additive corrections (AC), commonly called the KTH method. The NGM17 was derived from the recent terrestrial gravity data provided by DSMM, ALOS World 3D (AW3D30) GDEM which the most recent global digital elevation model, global geopotential model (GGM) derived from three satellite gravity, marine gravity anomalies extracted from DTU 10 Global Gravity Field and WGM2012 Earth's gravity anomalies. Six GGM models from combination of three satellite gravity are evaluated using 38 GNSS-levelling data distributed over northern region to find the best GGM for study area. A comparison with the local mean GNSS/levelling data indicated that geoid height from go_cons_gcf_2_dir_r3 model fits well with the local geoid mode with an RMSE of ±~0.2804m. In this study, the accuracy of AW3D30 GDEM and SRTM GDEM also were evaluated using local mean sea level height (Hmsl) at 38 Benchmark and indicated that AW3D30 GDEM is the much greater absolute vertical accuracy with an RMSE of ±3.048m. The gravimetric geoid derived in this study (NGM17) and also from DSMM is evaluated against the GNSS-levelling. Statistical analysis shows that NGM17 give better accuracy with the mean error of NGM17 and DSMM geoid model were 0.2568m and 1.1648m, respectively, with RMSE of ±0.2686 and ±1.1656m, respectively.

B257. LIJA 2.0: ANALISIS MASALAH PENGUASAAN PENULISAN JAWI: KAJIAN RINTIS

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Abstrak: Kajian dijalankan bertujuan menganalisis penguasaan penulisan jawi yang dihadapi oleh murid tahun dua. Murid mengenali huruf tunggal jawi namun menghadapi masalah menulis perkataan jawi sama ada suku kata terbuka atau suku kata tertutup. Sampel kajian terdiri dari 31 orang murid tahun dua di salah sebuah sekolah rendah dalam daerah Sungai Petani, Kedah. Sebelum kajian dijalankan, murid diberikan Bahan Bantu Belajar LIJA 2.0 untuk membuat ulangkaji mengenal huruf tunggal jawi. Instrumen kajian ialah ujian 1 iaitu ujian menulis jawi bagi sepuluh perkataan suku kata terbuka dan ujian 2 iaitu sepuluh perkataan suku kata tertutup. Data dianalisis menggunakan skor pemarkahan dan analisis bertema terhadap kesalahan-kesalahan yang dilakukan dalam penulisan. Dapatan kajian dalam ujian 1 menunjukkan penguasaan peserta kajian adalah lemah. Kesalahan paling tinggi dilakukan ialah tidak mahir menulis suku kata terbuka KV+KV, apabila gagal menyambung huruf konsonan dengan huruf vokal alif, wau dan ya untuk membentuk suku kata dan perkataan. Dapatan kajian dalam ujian 2 juga menunjukkan penguasaan murid lemah dalam menulis jawi bagi KVK dan KVKK. Murid melakukan kesalahan menulis suku kata tertutup KVK seperti rah, sah, sat, ran, ram, gam, gam kar dan kas. Manakala bagi perkataan KVKK, murid juga gagal menulis dang, sang, cang dan tang. Namun keseluruhan dapatan kajian menunjukkan murid tidak mahir menulis sambungan huruf konsonan dengan vokal alif, wau dan ya dan tidak mahir tentang konsep pengulangan vokal.

Kata Kunci: kajian rintis, Bahan Bantu Belajar jawi kemahiran membaca jawi, kemahiran

B259. LAV MIST

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Abstract: Dermatology focus on the diagnosis and treatment of conditions related to skin, hair and nails. It also concentrates on maintaining the health of our skin which contributes the largest organ in our body. Anything that irritates, clogs or inflames our skin can cause symptoms such as redness, swelling, burning and itching. Consequent from this condition, most of pharmaceutical and cosmetics industries look for new sources of natural compounds with interesting properties. There are many plants with interesting pharmaceutical activities including Aloe Vera and *Lawsonia inermis* (Henna). Synergistic of *L. inermis* (henna) and Aloe Vera trigger the production of LAV Mist is convincing in treating dermatological ailments and were believed to prevent skin senescence, acne, psoriasis, relieve pruritus, and promote wound healing. This product has been tested their antibacterial and antioxidant activity. Allergic patch test was conducted to test the allergic response in a person and stability test on the product were tested to assure its physical and chemical stability. From the findings, the bioactive compounds in LAV Mist have shown positive results on antibacterial and antioxidant properties. LAV Mist also showed no allergic skin reaction and stable at room temperature for a long-term storage. It is believed that, this LAV Mist product is one of highly potential marketable pharmaceutical product that uses non-chemicals ingredients and effective in skin repairment.

***Keywords*:** Aloe Vera, *L. Inermis*, dermatology.

B263. RESEARCH DATABASE TOOLS FOR ACADEMIC SCHOLARS (DRTOOLS)

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Abstract: Research Database Tools for Academic Scholar (DrTOOLs) version 1.0.0 is a shared database that provides academic researchers with link to various effective online digital tools. It contains 150 tools that are selected based on REOP (i.e. Reliable, Efficient, Open and Practical) approach concept which has been categorized into six different research activities cycle (i.e. Searching, Writing, Analysis, Publication, Outreach and Impact). DrTOOLs is very useful and important for researchers to reduce the time spent on conducting research as well as improving the process of traditional research workflow. Besides, the embedded tools can also improve researchers' and articles' visibilities. DrTOOLs also can be commercialized as an application for Android and Apple market.

Keywords: Research Tools, DrTOOLs, Research Activities Cycles, Database

B266. NATIONAL CHILD DATA CENTRE (NCDC) – CHILD DEVELOPMENT, ALERT & HEALTH MODULES

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Abstract: Child developmental milestones refer to certain achievements that need to be achieved by the children at a certain age. For Malaysia, the standard is according to the Ministry of Health (MOH) as stated in the health record book given to mothers after childbirth. Regular checkups are required by the MOH and is recorded in the book. Beginning 2008, a national curriculum for children under four years old attending childcare centres was established and is being used in all public and private childcare centres in Malaysia. The curriculum also included a details of a child's developmental milestone that complement the MOH standards. Teachers are required to observe and record the child's development throughout their days in the centre and also measure the child's height and weight, at least three times a year. Beginning 2014, an online system that records children's development was developed. After a successful pilot test, the system was expanded to be used by all childcare centres in Malaysia. In 2015, a comprehensive child development, alert and health modules were successfully incorporated into the system to simplify the teachers tasks in recordings child's achievement based on the development milestones as well as child health records.

***Keywords*:** child development, milestones, ncdc, child alert, BMI

B267. NATIONAL CHILD DATA CENTRE (NCDC) MOBILE APP

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Abstract: Mobile devices and applications are changing the way individuals gather, process and share information. A development of such application, which applies to document and records child's development and activity throughout their days at the childcare centre. The apps also enable teachers to record daily child attendance, including daily child's temperature to ensure the child is healthy enough to enjoy care and education. This apps is free for teachers and parents to have instant access related to their child development and activity. Thus, it is very useful to track and monitor the growth of the children in their first 4 years. The development of these modules help teachers and parents in keeping track of their child's development and health for early detection and intervention. The data also can be used to map children's development in Malaysia and also for other data analyses and research purposes.

Keywords: child development, milestones, ncdc, child activity

B268. CLIMBING PERCH FISH SCALE GELATIN FILM INCORPORATED WITH SPENT TEA EXTRACT

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Abstract: Gelatin film from Climbing Perch (*Anabas testidenius*) fish scales incorporated with 0.7% spent tea extract were prepared and characterized in comparison with gelatin film without spent tea extract. The FTIR spectra analysis showed the existence of protein-polyphenol interactions in the incorporated gelatin film. The incorporation of spent tea extract enhanced the water resistance of gelatin film by reducing the film solubility and water vapor permeability but no significant differences in thickness for both films. The incorporation of spent tea extract into gelatin film increased the mechanical properties of the gelatin film. The incorporated had higher tensile strength (TS), elastic modulus (EM) and lower elongation at break (EAB) compared to control film suggesting stiffer and stronger film. The degradation rate of incorporated film was slower than control film. Therefore, the incorporation of gelatin film with spent tea extract could affect the properties of gelatin film due to the formation of polyphenol cross-links.

***Keywords*:** climbing perch, fish gelatin, cross-linking agent

B269. EZ-STOPPER

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Abstrak: Injap penghenti merupakan komponen terpenting dalam sistem perpaipan. Ianya mempunyai dua fungsi yang utama iaitu bagi mengawal kadar aliran air dan memberhentikan pengaliran air. Projek ini adalah mengenai innovasi bagi injap penghenti yang dikenali sebagai EZ-STOPPER. Ia dicipta bagi menggantikan injap penghenti asal yang kerap kali rosak di bilik mandi kolej pelajar UiTM Cawangan Pulau Pinang. EZ-STOPPER telah melalui beberapa peringkat dalam proses innovasi dan juga telah menjalani beberapa siri ujian bagi memastikan keberkesanan fungsi dan juga daya ketahanan alat. Hasil dari innovasi EZ-STOPPER, beberapa impak yang positif telah dicapai iaitu:(1) Penjimatan masa pembaikan - Menjimatkan proses pembaikan sebelum projek dari 8 jam kepada 1 jam sahaja dan tiada lagi proses tempahan alat ganti untuk pembaikan sehingga 6 - 8 minggu (2) Penjimatan kos pembaikan - Menjimatkan kos pembaikan sehingga RM12,254 (94%) (3) Penjimatan kos alat ganti - Penjimatan kos alat ganti sehingga RM3,522 (98%). Dari segi potensi pengkomersialan, terdapat dua syarikat kontraktor pembaikan telah berminat untuk menggunakan EZ STOPPER sekiranya di komersialkan ke pasaran tempatan kerana kos yang murah serta amat sesuai bagi menggantikan injap penghenti yang asal. EZ-STOPPER juga telah didaftarkan bagi tujuan patent di MyIPO (No Pendaftaran: PI2017500024) dan juga turut berdaftar di Reseach Business Unit (RIBU). Projek innovasi ini juga turut selaras dengan misi dan visi Unit Pengurusan Kolej & Non Residen iaitu menyediakan kemudahan yang kondusif kepada pelajar yang menghuni kolej.

***Kata kunci*:** Aci Penghenti, Sistem Perpaipan, Injap Penghenti

B270. MELIPHOENIX: STINGLESS BEE HONEY AND DATE SEEDS HEALING SERUM

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Abstract: Most pharmaceutical products are mainly based on chemical ingredients and this may cause various side effects especially to those who have issues with their skin such as sensitive skin. Therefore, Meliphoenix Serum is developed to promote natural based healing remedy which is beneficial for its great antioxidant and wound healing properties. This miracle serum contains stingless bee honey and date seeds as its main ingredients. All the therapeutic properties of both sources (stingless bee honey and date seeds) play an integral role as the main contributor to wound healing properties of this serum. Stingless bee honey or well known as 'kelulut' is a type of honey that is naturally produced by stingless bees. It has been used since ancient times across the globe. Several studies on stingless bee honey have pointed out the numerous therapeutic profiles of the materials in terms of its antioxidant, antimicrobial, anti-inflammatory, as well as moisturizing properties. Antimicrobial, anti-inflammatory and antioxidant properties found in stingless bee honey could overcome the bacterial contamination and thus improve the healing rate. It may also protect the skin tissue from highly toxic inflammatory mediators. The moisturizing properties of the honey could improve wound healing by promoting angiogenesis and oxygen circulation. The hidden potential of date seed as antioxidant will help to accelerate and boost up the wound healing rate. Therefore, Meliphoenix Serum is one of the highly potential marketable remedy as its main ingredients are naturally developed and provide numerous benefits to skin.

Keywords: stingless bee, dates seed, wound healing, antioxidant

B271. SMART AUTOMATION TRAINER SYSTEM

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Abstract: This project is specially designed to be used for microcontroller subjects. It combines four basic things - mechanical, electrical, electronic and programming. This system uses a variety of pneumatic applications, sensors and electrical components that are controlled by microcontroller programming Arduino Mega 2560. In addition, the system is equipped with Bluetooth Module, where students can use the Android telephone application to control the system in place of the Teach Pendant. This system can move different tasks and materials. Workers are moved from magazine to conveyor module using pneumatic system. Pneumatic and solenoid combinations are used on transfer stations to move tasks. Capacitive sensors are used to determine the difference in workmanship and diffusion according to the prescribed program. This system is best suited for training equipment for subjects related to automation and control systems.

B272. POWER SUPPLY TRAINING KIT

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Abstract: Power Supply circuit is a fundamental knowledge that must be mastered by any electronic students, hence it considered as an important sub topic in most of Electronic syllabus. However, the teaching aids for this power supply circuit usually not giving so much help in making the learning process interactively effective. This Power Supply Training Kit is used as learning aids in subject that need the students know and mastered the function each block in power supply circuit which are transformer, rectifier, filter and regulator. The training kit is included with three options of rectifier blocks which are half wave rectifier, full wave centre tape rectifier and full wave bridge rectifier. It also equipped with 3 mini oscilloscopes that used to display the output waveform from each block. By using this kit, the trainer does not have to construct the circuit from scratch in order to explain the behavioural of the power supply. One simply need to switch ON the main switch and connect the mini oscilloscope probe with one of the rectifier circuits in one time to explain the operation of the circuit. This training kit can be considered as a new evolution approach in making learning process become easy, interesting, effective, less time consuming and at the same time not losing the importance of hands on element in technical and vocational training (TVET).

Keywords: Power supply circuit, Training kit, Technical and vocational training (TVET)

B274. FABRICATION OF DIY PRESSURE CASTING MACHINE FOR GRINDING MEDIA

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Abstract: The rising demand for improved technologies and the growing investment in R&D have catapulted the idea to develop a pressure casting machine. The present project aims to fabricate a pressure casting machine which employs DIY concept due to its competitive process in terms of cost and speed, especially for the small quantities production. This fabricated DIY machine successfully produces a small size of alumina ball of ~ 10 mm in diameter for grinding media purposes. Tank of pressure casting machine was made from re-used material of PVC plastic and the other components were easily available in the current market. The mould of alumina balls was made from gypsum. This economical gypsum mould is an alternative method to replace a tool steel mould which requires high cost for procurement in order to utilise pressing techniques. The fabricated DIY pressure casting machine is user-friendly for operational. Furthermore, the produced alumina balls demonstrated a similar capability compared to commercial product of grinding media as being tested in actual ceramics slip milling process for PhD research project.

Keywords: Pressure casting, grinding media, Al_2O_3 balls, ceramics

B279. GREEN DEEP EUTECTIC SOLVENT AS PLASTICIZER IN BİOPLASTIC

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Abstract: Nowadays, it was estimated that a million of synthetic plastics were disposed and cause great harm to the environment in the form of air, water and land pollution. Therefore, the markets for natural bioplastics are in high demand due to the growing awareness among society. However, the added toxic phtalate plasticizers in which to increase the bioplastic flexibility might leach out and harmful to human. The green solvent of deep eutectic solvent (DES) was suggested to be a good replacement as a plasticizer due to its ability that can improve bioplastic properties. Hence, in this study, choline chloride: glycerol DES (ratio 3:2) was used as plasticizers prior to addition with bitter gourd polysaccharide (BGP) in making bioplastic. The characterization based on physical properties was then conducted. The result showed that the BGP with DES as a plasticizer obtained the highest melting temperature and tensile strain. However, the BGP with DES exhibit lower value of water vapor transmission rate at different relative humidity. The antioxidant, which is ferric reducing antioxidant power (FRAP) as well as the antimicrobial activities of the BPs were studied. Results showed the BPs with DES as a plasticizer showed a higher value of FRAP compared to a glycerol. In addition, these BPs also exhibited high inhibitory activity on the growth of *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, and *Pseudomonas aeruginosa*, with the antimicrobial indices when cooperated with DES. In summary, it could be observed that using DES as a plasticizer had significantly ($p<0.05$) increased the properties of bitter gourd polysaccharide bio-based plastic. As conclusion, the used of DES was evidently improved physical properties as well as bioactivity of the bioplastics.

Keywords: polysaccharide; bioplastic; bitter gourd; deep eutectic solvent; plasticizer; bioactvities

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C015. NEEVESPRAY – MULTIFUNCTIONAL NATURAL SANITIZER

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Abstract: **NeeVe Spray** is a newcomer of multifunctional health care product in the idea of protecting and healing human skin, which focusing in moisturizing, refreshing, healing, and sanitizing our skin. All the miracle properties of the product has been supported by various types of sources that have been used in order to complete the product. There are three magnificent plants which are *Azadirachta indica* (Neem), *Aloe barbadensis* (Aloe Vera), and *Plukenitia volubilis* (Sacha inchi). Each plant provides different properties toward the products, where the sanitizing property is from the antibacterial activity possesses by Neem and Aloe Vera. A synergistic antibacterial activity of Neem and Aloe Vera has been tested on five bacteria that are commonly associated with skin which are *Escherichia coli*, *Staphylococcus aureus, Pseudomonas aeruginosa, Klebsiella aerogenes* and *Streptococcus faecalis*. A promising result was produced from the test and this result can increase the potential of the product to act as sanitizer. Besides that, a phytochemical screening of the *Plukenitia volubilis* sample was run using Gas Chromatography - Mass Spectrometry (GC-MS) in order to identify the phytochemical compounds. According to the result and past study, *Plukenitia volubilis* oil possesses high content (approximately 85% of the total oil content) of polyunsaturated fatty acids (PUFAs), namely alpha-linolenic acid (omega-3) and linoleic acid (omega-6), and monounsaturated oleic acid (omega-9). The basic ideas in this product are to use the essential oil of the plants and the base for sanitizing the selected skin areas from bacteria and also to heal and provide nutrient for the skin. NeeVe Spray is a modern and innovative medicinal product that may serve as natural sanitizer to inhibit the bacteria and as a remedy for treating bacterial infection or disease caused by bacteria.

***Keywords*:** Sanitizer, Skin infection bacteria, fatty acids, GC-MS Analysis, *Plukenetia volubilis*.

C026. VISIBLE LIGHT COMMUNICATION (VLC) : THE FUTURE OF WIRELESS COMMUNICATION USING LIGHT

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Abstract: Limited radio frequency spectrum (or bandwidth) is one of the major issues in wireless communication. Visible light communication (VLC) should be considered as the medium for wireless transmission because it has few advantages over other standard wireless transmissions. The advantages of VLC are low power consumption. The visible light spectrum have 10,000 times larger than the entire radio frequency spectrum which ranges from 428 THz to 750 THz. In this project the performance of visible light communication have been tested on the variation of distance between transmitter and receiver. Besides that the influence of the additional amplifier at the transmitter and receiver on the VLC system are also been characterized. Based on the results and analysis the implementation of the amplifier circuit at the transmitter and receiver helps to improve the signal quality of the audio signal in the VLC system. However the amplifier also increased the noise in this system. Moreover, the distance between transmitter and receiver can give influence to the system performance. The longer the distance means that the signal strength and voltage which has been received by the receiver decreased and cause the data loss in the system. As a conclusion this audio transmission in the VLC system are working properly and have been successfully demonstrated.

C028. FORMULATION AND EVALUATION OF NOVEL ANTI FUNGAL DERMASTICK CONTAINING METHANOLIC EXTRACTS OF RHINACANTHUS NUTANS

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Abstract: *Rhinacanthus nasutus* is used traditionally in Malaysia to treat fungal infection. The present research was intended to formulate a novel antifungal stick subsumed with methanolic extract from leaves of Rhinacanthus nasutus which will increase patient compliance and stability as compared to conventional dosage form. Antifungal stick was formulated using a combination hydrophilic base poly ethylene glycol (4000 and 400), and hydrophobic base such as cocoa butter by fusion method. Formulated stick were subjected to physical evaluation such as hardness, softening time and temperature and *invitro* dissolution test. Poly ethylene glycol based antifungal stick demonstrated a rapid release of the active constituent measured in terms of rutin equivalent. The mechanism of flavonoid released was supported with high regression when the dissolution data was fitted in higuchi and hixson crowell model. The extract showed excellent antifungal activity against selected strains of fungi *A. niger, A. fumigatus, A. calavatus, P. crysogenum and P. italcum* ($P>0.05$). Hydrophobic base exhibited a very slow release which may be attributed to the strong affinity of the bases for the active ingredient**.**

***Keywords*:** antifungal stick, softening temperature, rutin, polyethylene glycol, cocoa butter.

C032. SEVELECT

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Abstract: Electric nowaday is really important for human life, because every tools which used for cooking, washing, comunicating and so on using electrical energy. Now we hardly know the own usage of electircal, so we cant manage the cost of monthly electrical usage, if there is a way for calculate the cost, we can manage the cost that we pay montly, moreover if we can save the electric, the waste when produce the energy, we can decrease waste which it can be poluted for environment and can support go green program which have initiated by the goverment. Based on that background we are initiated to make an application which capable to calculate the cost of electrical energy which we named it SEVELECT "Save Your Electric" which can calculate based on electrical cost which depend on region and the power.

***Keywords*:** Electric, Energy, Save, Mobile Application

C034. BOAT GYRO STABILIZER

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Abstract: The purpose of this project is to identify the real problems of fisherman and overcome the problem by using our product. In our project we are using the concept of gyroscope to enhance the stability of the boat by attaching the gyroscope together with the boat. With a proper attachment of gyroscope, the stability of the boat will increase that help fisherman in many ways especially their safety. We have found the relationship between the properties of wave and the boat in order to understand how boat react with wave as we found the formula to indicate the dangerous wave. We also have found the concept of precession of gyroscope in order to increase the boat stability when got hit by wave.

***Keywords*:** Angular Momentum, Stabilizer, Gravitational, Buoyancy.

C038. WESTLIVE: WEB-BASED ASSESSMENT FOR LEARNING USING GO FORMATIVE APPLICATION FOR IMPROVING STUDENT'S PHYSICS CONCEPT MASTERY

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Abstract: The aim of this research is to test the influence of assessment for learning by using *Go formative* web to student's physics concept mastery. This research is a *quasi experiment* with pretest-posttest control group design. The research population is all of grade X MIA MAN 1 Malang year 2016/2017. The research samples are X MIA 1 and X MIA 3, each consists of 33 students. *Cluster-random-sampling* method is used to determine the sample of this research. X MIA 3 is the control class with direct-instruction model and X MIA 1 as an experiment class applying *assessment for learning* by using *Go formative*. Data analysis shows the students' concept mastery of X MIA 1 is better than X MIA 3. In conclusion, assessment for learning using *Go formative* web influences much on students' physics concept mastery.

***Keywords*:** Assessment for learning, *Go formative*, concept mastery

C041. ANALYSIS THE POSSIBILITY THE LIGHTWEIGHT CONCRETE TO REPLACE MANGROVE WOOD

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Abstract: Mangrove wood is natural resources. Many construction project are used mangrove wood to make building more strength. Nowadays, many mangrove trees are lack and hard to get. Although, for prevent mangrove wood reduce in the world, lightweight concrete had produces. Lightweight concrete is the concrete that having less density and can be used in many things in construction item. It's having less amount density of normal concrete. By adding chemical and other part of substances its will form foam that can reduce density in concrete. Foam will combine with concrete to make concrete are achieved the density target. Types of steel (R10) in lightweight concrete will add concrete strength in high tensile strength. Many of factors that influences the lightweight concrete strength such as types of steel, types of foam used, and procedure to curing the lightweight concrete. To make clear, many methods that used to this experiment for understanding and covering the process the producing of lightweight concrete .Then, experiment are focus by producing lightweight concrete and to know their strength in compressive and bending strength.

Keywords: Lightweight concrete, steel, compressive, bending, mangrove wood, Steel (R10)

C046. DIFODEAF (DICTIONARY FOR DEAF)

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Abstract: College is an educational institution for students to improve academic and non-academic skills. Basically, such activities at the campus which causing high mobilization is dominated by student, lecturer, and staff. Oftenly, students experienced problems in dissemination any information, although it's urgent, but there is no media which made the information quickly spread to someone targeted. The urgent Information for students but difficult to spread to the aim's target are: loss of goods, committee information, accident information. Oftenly, students disseminating information use social media from one group to other by broadcast. This way is effectiveless because itsn't immediately drawn to the object designated student, also interfere with students who don't have interest in such information. Seeing this background, we created PUFORMA (Pusat Informasi Mahasiswa) with concept of Web-Application and Mobile application as a container for all the student information center. So the information provider and receiver has a media to see the other information in the media so itsn't difficult to convey information to aim's recipient of the information. It can also reduce the unnecessary information to the non aim's recipient of the information because it can interfere if the information is not pertinent in the recipient information.

***Keywords*:** Disability, Language, Mobile Application

C049. MOMOVERA BATH DA BOMB - ANTIBACTERIAL SOAP FOR HEALTHY BODY AND SKIN

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Abstract: Antibacterial activity is defined as activity of an agent that kill bacteria or stop their growth. The presence of antibacterial extract from higher plants can be used as a potential agent that prevent bacterial infections on the skin. Certain pathogens from external environment sometimes can give infections to human skin such as skin rashes and allergic reaction rashes. It can be prevented by effective protection like antibacterial soap. MomoVera Bath De Bomb is an antibacterial soap that is made with the antibacterial bioactive compounds in the plant extracts that are effective against bacteria such as *Staphylococcus aureus*, *Escherichia coli*, *Bacillus subtilis* and *Pseudomonas aeruginosa*. This product is made as a medium to give protection for human skin. This product also can nourish the skin with the presence of natural ingredients. Antibacterial activity for this product was tested by the agar disk diffusion method. The result obtained revealed that the synergistic effect between *Momordica charantia* and *Aloe barbadensis* extracts in this product gives an effective antibacterial activity that can act as skin protection.

Keywords: Antibacterial soap, Skin infection bacteria, Agar Disc Diffusion Method, *Momordica charantia, Aloe barbadensis*

C054. GSM BASED HOME SECURITY ALARM SYSTEM USING ARDUINO

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Abstract: Throughout this modernization world, the demands on Internet of Thing (IoT) is keep increasing, such as for the smart home applications. Generally, most of the homes are designed without a proper protection or with poor safety system, which increase the possibility of becoming a victim of house breaking or any unwanted incidents to occur. This issue lead to the needs and demands by the community to improve the existing home security system. Therefore, this project propose an enhancement of the security system by using GSM and Arduino. The objective of this project is to add few important safety sensors such as motion, temperature and gas to a strategic locations and integrate all sensors to the Arduino. The temperature and gas sensors is located in the kitchen to monitor if there is any gas leaking or burning. Meanwhile, the motion sensors are placed at strategic areas to detect any motion due to human activities. To improve the effectiveness of the system, the system is also capable to notify the owner via call and SMS, by connecting the system with GSM module, especially during the absence of the owner. Arduino board is programmed in such a way to process the sensors when detecting the motion, or sensed any hiking temperature and leaking gas, the system is triggerred and will notified the owner immediately. This will alert the owner phones, and with necessary action taken by the owner, this could reduce or avoid any tragedy or incidents to happen. The system will send SMS first and followed by calling the owner until received the response by the owner. The activation of a system is controlled by entering the corresponding password through the keypad. The sensor is continually sense the condition of the house in the duration of the activation mode. With inexpensive system, this project is highly suitable for a general security to be used by the community to improve the safety of the house, and consequently diminish the crime rate which oftenly occurred when the owner is away from their house.

***Keywords*:** Home security system, Arduino, Smart Home, Internet of Things (IoT), Sensors

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C055. MARINE SOIL BRICK REINFORCED WITH SYNTHETIC FIBER

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Abstract: The rapid growth of construction industries has led to the high consumption levels and demand for various types of construction materials such as bricks. Hence, it is very significant to explore the potential alternative materials for brick in order to minimize the reliance on the existing material only. The objective of this study is to access the performance of marine soil brick with synthetic fiber through investigation of its compressive strength. The soil samples are oven-dried for 24 hours and then crushed into smaller particles. The brick samples were produced which consist of marine soil, synthetic fiber (polypropylene) and water. Two types of brick mixtures for unreinforced and reinforced with synthetic fiber were prepared. All the materials were blend together, placed in the mould and the final product of brick were left for air-dried naturally. The bricks samples were subjected to the compressive strength test by using compressive strength machine according to BS 1881-11:1983. The result of unreinforced and reinforced brick at 28 days are 3.13 N/mm^2 and 3.79 N/mm^2 respectively. The finding shows that the compressive strength of the marine soil brick will improve with the presence of synthetic fiber.

***Keywords*:** Marine soil, synthetic fiber, brick, compressive strength.

C056. CO_2 BFBAR: PRODUCER GAS IMPROVEMENT

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Abstract: In this project, the product of capturing CO_2 gas has been developed. It is called the bubbling fluidized bed CO_2 absorption reactor (CO_2 BFBAR). CO_2 BFBAR consists of a main furnace, stand and gas distributor plate. The overall height of the CO_2 BFBAR is 877.5 mm. The inner diameter of the reactor is 74 mm and the outer diameter is 88 mm. The operation of CO_2 BFBAR is based on absorption-desorption of Calcium Oxide (CaO) and Calcium Carbonate ($CaCO_3$). CO_2 BFBAR product can increase the heating value of the producer gas from 4.37 MJ/Nm3 to 6.04 MJ/Nm^3. It is an increase of 38% in 15 minutes. This will not just improve its heating value but inadvertently improve the amount of combustible gases such as hydrogen, carbon monoxide and methane.

Keywords: Syngas Quality, CO_2 capture, CO_2 absorbent, CaO-$CaCO_3$

C061. PROBIOAESTHETIC ESSENCE

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Abstract: Probiotics are living bacteria and yeast that are beneficial to health, not only focusing on digestive system but also to skin. This good bacteria filtrate can act as exfoliating agent and help to restore the natural balance of skin, ensuring it functions the way it should. It is replenished with the lactic acid, hyaluronic acid and moisturizing agent to prevent signs of ageing caused by nature demolishment. Probiotics are also really effective as anti-inflammatory agent, which makes them great in soothing redness, irritation and prevent acne. The idea of this invention is to create a product that is suitable for both genders, for various walk of life, and different skin tones. Probioaesthetic is an essence that consists of probiotics filtrate as the main ingredient with addition of stingless bee honey and rosemary extract. Stingless bee honey is beneficial in promoting skin moisture as the rosemary extract contains anti-oxidant that keep skin healthier and younger. This product is suitable for users who concerns in looking for healthy skincare because it is fully derived from organic based. This product has been tested for antibacterial test through minimum inhibitory concentration assay on growing acne bacteria suspension. DPPH assay were used to test it's anti-oxidant activity. Toxicity test and pH test were also conducted to make sure this product is safe to be used and suitable with skin pH. Stability test on this product will be carried out to test for it physical, chemical and shelf life. Allergic test were conducted to make sure no allergic response on skin once they apply the product. Probioaesthetic essence will make the world better in changing the perception of society or individual to love their skin color and having healthy and glowing skin. Probioaesthetic essence is a miracle product that believe to be highly marketable as the ingredients are 100% organic and safe for users and environment.

***Keywords*:** Probioaesthetic essence, probiotics, stingless bee honey, rosemary extract

C065. WIRELESS SENSOR NETWORK BASED ON TEMPERATURE AND HUMIDITY ALERT SENSOR FOR QUAILS' HOUSE USING GSM AND ARDUINO

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Abstract: This project title is Wireless Sensor Network based on temperature and humidity alert sensor by using GSM and Arduino. In this project, temperature and humidity alert sensor is used to measure the temperature and humidity inside the quails' housing. The quails cannot live under an extreme temperature. So, there are specific range that suitable for them to grow. The scope of this project is in the farm of UiTM Perlis. So, the agro students are the users of this alert system. The temperature and humidity sensor that is chosen for this project is DHT22 sensor. DHT22 sensor is chosen because the sensor has high level on accuracy. Global System for Mobile communication (GSM) is used to transmit the notification to the agro students when the temperature and humidity inside the quails' housing is out of the suitable range.

C073. CIMON NOODLES

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Abstract: Noodles have been staple foods since many decades all over the world. This is because it is very easy to cook, rich with nutritional value and tasty. In the industries, commonly lots of chemical preservatives such as ascorbic acid, sodium benzoate, sorbic acid, benzoic acid and others that had been used in the industries to prolong the shelf life of the noodles. However, long term consumptions of these chemical preservatives would lead damage to the human health. To overcome this situation, a healthy and convenience ways is needed. Thus, the aim of this invention is to propose a natural additive that able to incorporate in noodle product, mainly for improving nutritional quality and maintaining a strong dough structure without changed its original taste. Lemon peels is a great substitute to ascorbic acid that mainly used in the noodles. In addition, the peels contained natural healing properties which are antioxidant that contains vitamin C by inhibiting the effects of oxygen on food to prevent the growth of bacteria, fungi and other microorganisms. The method use is drying and grinding that will produce a smooth texture of lemon peel. A prototype of flour with addition of lemon peels will be constructed so that the production of noodle can be tested by the consumer. Besides, carbohydrate test will be conducted by using Benedict's solution to determine the presence of glucose and iodine solution will be used to determine the presence of starch, and spectrophotometer will be used to measure the absorbance. As a results, this natural food preservative replace the ascorbic acid can be used to act as an natural antioxidant to prevent spoilage as well as able to improve human health level with the least number of chemical consumed in everyday life. To conclude, this type of natural food preservative is able to improve and produce high quality end products that able to improve human health level.

Keywords: noodles, preservatives, lemon, nutritional, quality

C074. INTELLIGENT DIABETIC MONITORING SCALE

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Abstract: The disease of diabetes mellitus is increasing at an alarming rate along with the complications associated with it. Diabetic foot ulcer (DFU) is one of common complications affecting diabetic patients which could lead to certain chronic effects such as amputation. The aim of this project is to integrate knowledge from system design engineering, computer science, anatomy and physiology and Internet of Things (IoT) to build an intelligent multi-functional monitoring system for early detection of diabetic foot ulcer. This innovation aids diabetic patients, caregivers or medical personnel in predicting the presence of DFU in early stage and also provides other physiological parameters such as weight, body mass etc. This system will be implemented with some electronic components such as pressure sensors to detect pressure difference through piezoelectric concept, Wi-Fi EPS module to allow data transmission, and software such as TheThingBox to use IoT technologies without any technical knowledge. The expected outcome for this innovation is patients and doctors can view the health record through online. This system is needed to reduce congestion at healthcare centres and save more time in diagnosis process. To conclude, our project is to produce an early detection and monitoring system for biological parameters such as development of diabetic foot ulcer, body mass etc based on customers' needs by implementing the concept of IoT.

***Keywords*:** Diabetic Foot Ulcer, pressure, Internet of Thing

C078. OUTSTANDING PERFORMANCE OF NOVEL CATHODE BUTTON CELL FOR INTERMEDIATE TEMPERATURE PROTON CONDUCTING FUEL CELL (PCFC)

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Abstract: A key obstacle to the practical operation of proton conducting fuel cell (PCFC) is the development of high-performance cathode materials at intermediate temperature of 500-800^{o}C. In this study, we report the fabrication and performance of LSCF|BCZY|LSCF prepared by two-step modification processes which are (a) microstructure modification of LSCF by application of ethylene glycol as a dispersing agent during the synthesizing process and (b) compositional modification by introducing a small amount of proton conducting phase to extend the triple phase boundary thus accelerate the electrochemical activity of the cathodes. The electrochemical performances of the LSCF-based cathode after each modification process were monitored by an electrochemical impedance spectroscopy (EIS). The area specific resistance (ASR) of pristine LSCF cathode, modified LSCF cathode ($LSCF_{EG}$) and composite cathode (LB30) measured at 600^{o}C in the humidified air are 9.74, 1.31 and 0.47 Ω.cm^2, respectively. The LSCF-based button cell was found to exhibit a superior performance after undergoes the modification processes (LB30 > $LSCF_{EG}$ > pristine LSCF), thus proven its great potential as a promising PCFC cathode.

***Keywords*:** Cathode, button cell, proton-conducting fuel cell, electrochemical performance.

C080. MUSA EPIGEL

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Abstract:Large quantities of fruit waste are generated from agricultural processes worldwide. This waste is often dumped into landfills or the ocean. However, since banana peels have a valuable health benefit such as antimicrobial properties, it can be one of great alternatives in therapeutic treatments. The purposed of developing Musa Epigel is to allow us maximized the benefit of banana peel as wound healing agent. The antibacterial effect of banana peels extract against several types of common skin infection bacteria were conducted by using disc diffusion method against two Gram positive bacteria (*S. aureus* and *B. subtilis*) and Gram negative bacteria (*E. coli*). Five different concentrations (0.1-1,000 mg/mL) of extract were used. Highest concentration of extract (1000mg/ml) shows the highest inhibitory effect against all the bacteria with *E. coli* (11mm), *B. subtilis* (10mm) and *S. aureus* (8mm). In addition 1,000 mg/mL of the banana peel extract were incorporated in gel and tested on mice to check its wound healing properties. Wound on mice was healed from 1.5 cm (day 1) to 0.3 cm within seven days with 80% recovery. In conclusion, the result implied that the peel extract of banana could be a potential of wound healing agent.

Keywords: banana, gel, antibacterial, natural, wound healing.

C081.THE NEXT GENERATION OF SOLID OXIDE FUEL CELLS: INTEGRATION OF PEROVSKITE NANOTUBES AND SPIN COATING FILM FOR INCREASED POWER

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Abstract: The need for an efficient electrochemical performance of new material has driven technological advancements in the area of solid oxide fuel cells (SOFCs). In fact, it is noticeable that the capacity of these SOFCs is usually a cathode – an active site for the electrochemical reduction of oxygen. For instance, $Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_{3-\delta}$ (BSCF) – a perovskite group of material has fascinating significant unique properties such as high conductivity, excellent in oxygen transport, as well as electrocatalytic activity. These outstanding features have propelled the BSCF to the fore one of the most popular cathode material in SOFCs. In addition, we postulated that if the cathode material is in the nanotubes form, it will also insistently provide additional versatility for such application due to its high surface area. In order to leverage the benefits of the cathode synergistically, we explore spin coating technique to achieve a precisely controlled thin film deposition, so that the cathode configuration can be engineered to control specific surface and bulk functionality. The goal of this innovation is integrating the nanostructured composites of BSCF cathode supported on electrolyte giving rise of power efficiency up to one order of magnitude.

***Keywords*:** perovskite, sol-gel, nanotubes, solid oxide fuel cells

C084. MULTI – FUNCTION LAB EQUIPMENT (MUNIQUE)

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Abstract: The idea for the design came from problems faced by students when they were working on their practical work in the laboratory at Kolej Kemahiran Tinggi MARA Petaling Jaya. They had to work in a very limited space since their worktops were crowded with many different electronics equipments. The objective is to design and develop one equipment with multiple functions of electronic equipment in laboratory for the electronic student, teacher, laboratory assistant, technician and etc. that assist their lab works. The idea of combining these tools/equipments will decrease the need for many different equipments hence increase portability and saving of space on the laboratory worktops. Multi-function Lab Equipment (M-Unique) allows for greater usability as it is a compact unit featuring several laboratory equipment's that are commonly used by students, teachers, lecturers, laboratory assistants and technicians. The M-Unique can be used in the education or industry sector. M-Unique is indeed very unique because it is designed / created by combining multiple functions into one tool and works according to user's requirement and needs. The consolidation of multiple functions into the M-Unique includes Function Generator, Fix AC & Fix DC voltage supply, Variable AC and DC supply, USB Port and voltmeter.

***Keywords*:** AC, DC, USB

C085. WIRELESS HOME SWITCH CONTROLLER (WISER)

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Abstract: The needs of **Smart Home** concept in Malaysia need to be introduced as it is among the requirement of Malaysia Industrial Revolution 4.0 for the IoT part. The introduction of **Wireless Home Switch Controller (Wi-Ser)** concept and prototype will basically meet a few requirements. During researching, we found out that many owners of a house would lefts their home unattended and left their Switches ON (i.e. Lamp, Fan, etc.) the whole day and night thus, we came up with a solution of monitoring and controlling all of these switches by using only an **Android** or **IOS** devices, here the **Wi-Ser** was introduced. People in Malaysia majority uses smart phone, so the project takes advantage of this similarities and use it to archive an IoT concept target. Controlling electrical devices using smart phone is the main idea of this project. The focusing on switches start when it is more practical and easier to setup. The hardware will be focusing on **Wi-Fi** and **RF** communication modules and the mobile application can be use a platform such as **Blynk** or **Cayenne** apps. There are also several other applications on mobile that can be used as the project's mobile application. A series of improvement and development of the project is being carried out. We found out several crucial things that need improvement for example the overall appearance, functionality, long term usage effect and even some popular add-ons that required from a survey. The construction of the new and upgrade version of **Wi-Ser** cost a little more than the previously build as for this particular version put focus on the functionality of the whole project.

***Keywords*:** wifi, RF, IoT, nodeMCU, Blynk.

C090. SWAT (SHOES WITH ANTI-BACTERIA TECHNOLOGY) BY SYNTHESIS SILICA FROM LAPINDO MUD VOLCANO COMBINE WITH ETHYL ACETATE FROM PANDANUS AMARYLLIFOLIUS BASED NANOTECHNOLOGY

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Abstract: Lapindo mud is an incident when the hot mud gushing out at the drilling center of Lapindo Brantas Inc. Lapindo mud has 53,03% of silica's material, so it has a huge potential to be used as a source of silica in Indonesia. The silica gel synthesis of Lapindo mud has been done in combination with ethyl acetate extract from *pandanus* leaves (*pandanus amaryllifolius*) as an antibacterial material against *actinomycetes* bacteria in the shoes. In this research is used synthesis of sodium silicate compound from silica of Lapindo mud. After that, sodium silicate was mixed with the ethyl acetate extract from *pandanus amaryllifolius* leaves and synthesized into sol gel by addition of dropwise HCL 3 M until gel was formed. Anti-bacterial activity test was conducted by Kirby-Bauer diffusion method. Testing of contact time of the absorption bacteria was done by *actinomycetes* bacteria's samples were added by 25 grams of ethyl acetate - silica gel, then mixed in 30, 60, 90, 120, 150, 180 minutes time variations and the number of live bacteria counted with plate count method. The gel will be used as shoelaces, so that it can decrease the *actinomycetes* bacteria population which cause odor in the shoes.

Keywords: Silica gel, anti-bacteria, *pandanus amaryllifolius*, *actinomyccetes*, ethyl acetate

C092. MITOSIS KONDRIA

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Abstrak: Mitokondria sebagai power house dalam sel menyediakan energi untuk fungsi motorik, transpor dan biosintesis. Gangguan proses konversi energi pada organel ini membawa dampak patobiologi penyakit poligenik. Banyak penelitian telah dilakukan untuk mempelajari peran mitokondria pada berbagai penyakit antara lain disfungsi mitokondria pada jaringan somatik dapat menyebabkan beberapa gangguan, terutama yang terkait dengan energi respirasi. Beberapa studi membuktikan DNA mitokondria (mtDNA) berperan pada gangguan motilitas spermatozoa, namun studi lainnya menyatakan tidak ada korelasi antara mtDNA dan motilitas spermatozoa. Penjelasan mengenai peran mtDNA terhadap motilitas spermatozoa sepertinya masih sedikit kontroversial. MtDNA yang ditransmisikan secara maternal, merupakan molekul DNA rantai ganda berbentuk sirkuler, berukuran 16569 pb yang menyandi 13 polipeptida untuk protein kompleks rantai respirasi, 22 tRNA dan 2 rRNA. MtDNA mempunyai daerah pengontrol D-loop yang juga dipakai untuk studi populasi dan penyakit. MtDNA mempunyai peran yang penting bagi motilitas spermatozoa. MtDNA bersama-sama dengan genom inti bertanggung jawab menyandi kompleks enzim respirasi yang sangat diperlukan untuk transfer elektron pada proses fosforilasi oksidasi dalam menghasilkan energi ATP, yang digunakan untuk menggerakkan mikrotubul flagela ekor. Mutasi genetik mtDNA menyebabkan gangguan kompleks enzim yang berdampak menurunnya produksi ATP dan timbulnya radikal bebas yang bersifat merusak membran plasma. Penurunan ATP dan adanya radikal bebas diyakini sebagai penyebab menurunnya motilitas spermatozoa.

Kata kunci: *mtDNA, haplogroup, astenozoospermia.*

C096. BABY MULTIPURPOSE HARUMANIS SERUM

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Abstract: There is a multi-million-dollar industry out there promising to keep the baby's skin as perfect as it was when he or she was first born but unsurprising irony is that none of that is necessary. The fewer soaps, shampoos, and lotions more healthier and more perfect it will be because mainstream baby products contain numerous toxic ingredients that will enter baby's body if used. Therefore, the best option is to stick with natural, nourishing, and edible ingredientssuch as Baby multipurpose HarumanisSerum. Baby Multipurpose HarumanisSerum promise the antibacterial, antifungal and antioxidant to the baby once it used. This product has been tested forantibacterial, antioxidant and antifungal activity. Allergic patch and stability test also were conducted in order to demonstrate any allergic response for baby uses. From the finding,this productis one of the perfect alternative multipurpose baby skincare because the ingredients in harumaniscan showed high antibacterial, antioxidant and antifungal potentials as well as free allergic and stable in the room temperature. So, Baby Multipurpose HarumanisSerumis a unique product from harumanis mango, plus coconut virgin oil as a luxurious moisturizer. Together these ingredients work able to apply by a baby for any purpose such as reduce redness, inhibit bacteria, fungal infection and inflammation associated with diaper rash, sunburn, eczema or allergens. Therefore, Baby Multipurpose HarumanisSerum are gifted to be commercialize and able to compete with other skincare baby product because free from toxic chemical and richness with ingredients that suit to the baby requirements.

C97. CENTELLAPRO CREAM

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Abstract: Wounds occurred upon injury. If it is not treated quickly and properly, it may lead to infection. Micro-organisms may colonize at the wound sites and delay healing process. Wound healing is a process performed by immune system of body that replaced devitalized and missing cellular structures and tissue layers. There is a wide selection of natural resources that can facilitate wound healing. CentellaPro Cream is the one and only natural-based cream made from *Centella asiatica* and *Trigona itama* propolis that provides a cheaper alternative but imperative effort in helping people to treat wounds. This product is developed for those who are seeking for an alternative natural treatment in healing wounds. *Centella asiatica* or pegaga has many benefits such as increasing blood flow, promote collagen production and fasten wound healing process. Asiatic acid, the most active compound in the herb was found to be the compound that contributes significantly to wound healing. *Trigona itama* or stingless bees produce propolis which is mainly a mixture of bees' saliva and beeswax. Majority of compounds in propolis are polyphenols which contribute to antibacterial, antiviral, antifungal and anti flammatory properties. The combination of both ingredients may synergically enhance wound healing process. Ingredients in CentellaPro cream were tested on its antioxidant, antibacterial activity, toxicity test and wound healing properties. DPPH test on the synergistic effect of propolis and pegaga showed high antioxidant properties. CentellaPro cream were found to work effectively against pathogenic wound infective bacteria and fungi including *Acinetobacter baumanii*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Staphylococcus aureus* and *Candida albicans*. Toxicity and irritation test of CentellaPro cream shows that this product is safe to be used. Wound healing properties will be carried out on mice to prove effectiveness of this product. CentellaPro cream is packed in a small packaging that easy for travel. It is believed to be the first natural-based cream in the market consisting of *Centella asiatica* and *Trigona itama* propolis that helps to accelerate wound healing. Local natural ingredients with tremendous benefits hidden in it together with the increasing trend towards natural resource products makes CentellaPro a potential item that will be highly marketable.

Keywords: Wound infection, wound healing cream, *Centella asiatica*, antibacterial activity, natural product

C099. NUNA (NUTRITION PREGNANCY APPLICATION)

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Abstract: Pregnancy is something that every mother in the world expected. The presence of the fetus for the mother very need to be kept and always monitoring monitored about its development. Starting from the development of organs, the development of infant and mom's health as food suppliers for the infant. Therefore we'll make an application aims to help the expectant to monitor the development of the fetus by taking into account the health of mothers and prospective infants in the birth. This application helps to monitor the development of the baby through the recommended intake for the expectant according to the age of the pregnancy and comes with a choice of foodstuffs plus a description of the recommended size in accordance with if there is a disease that also suffered. Will be given a review of the fulfillment of energy ranging from energy needs, carbohydrates, proteins, fats and micronutrients in accordance with the needs of the expectant in accordance with selected foodstuffs. This app will give the reminders and notifications about recommended activities, fetal development, and to do list from the mother to reduce the risk of pregnancy brain. This application completed with articles that refer to the most recent info about pregnancy and this app completed with documentation that helps the expectant of their pregnancy progress through photo albums. Thus, the benefits of this application that helps the expectant in the monitoring period of pregnancy.

Keywords: pregnancy, nutrition, monitoring.

C105. DEVELOPMENT OF ANODE-SUPPORTED BUTTON CELL FOR PCFC APPLICATION

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Abstract: An anode-supported button cell has been extensively developed to achieve a great performance for proton conducting fuel cell (PCFC) application due to its great properties at intermediate temperatures (500-800°C) range. Herein in this work, we fabricated an anode-supported button cell using BCZY as the electrolyte, NiO-BCZY as the anode and LSCF as the cathode with our formulation. The cell configuration of NiO-BCZY|BCZY|LSCF anode support was successfully fabricated by a dry-pressed the anode, slurry brush-painting method to prepare a thin film electrolyte BCZY and the layer of LSCF cathode was completed by a spin-coating technique. The cell was subjected to the fuel cell testing by flowing 10% H_2 to anode side and stagnant air to the cathode side. Interestingly, this button cell with new composition and low cost of fabrication shows lower polarisation resistance as well as ohmic resistance resulting in high electrical conductivity. Moreover, the microstructure of button cell showed a good adhesion between the three layers with characteristic dense electrolyte layer and a unique porous electrode. The obtained outstanding results indicate that this product is a promising cell for PCFC application.

Keywords:.Anode-supported, button cell, Proton Conducting Fuel Cell.

C113. NEEMS LOTION

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Abstract: Traditionally Neem leaves has also been used to treat several viral diseases. Many medical practitioners believe that chicken pox and warts can be treated with a paste of Neem leaves (Daun mambu). It usually rubbed directly on the infected skin. The problem is people nowadays difficult to find the leaves especially those who live in urban area. The process to make a paste also takes several steps and times. Objective of this study is produce a new product as known as Neem Lotion which is easier and convenience for consumer to use the product. Among the ingredients use are RO water, Virgin Olive Oil, Grape seed Oil, pepper mint oil and Neem extract. Potential market is people who are infected with measles or chickenpox. The antibacterial Neem Lotion not just ensures that the virus is destroyed but also prevents a re-lapse. Neem lotion also good for people who infected to the ringworm, people who always have dry skin, people with small wounds on the skin

***Keywords*:** Neem leaves, Neem lotion, target market, smaller size, convenience

C115. E-BEAT

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Abstract: In this project choose one segment of the fashion industry, which is heart rate measurement apparel named E-Beat. A traditional approach of heart monitoring has always meant the people is going to hospital where a cardiologist or medical officer will examine the patient for any heart diseases. The standard Electrocardiogram (ECG) machine normally found in big machine. This will contribute high medical cost for the patients. Objective of this study is to develop a low cost portable heart beats monitor using infrared sensor will be the foundation for an inexpensive portable heart rate monitor. This prototype would benefit the users to monitor their heart rate at home or any place. Our target market for E-Beat are more focused on people active in sports games, athletes and people who concern on their healthy. This prototype design is much towards latest trend of sport outfit fashion which uses technology that able to impress and attract more user. The major concept of this prototype is to provide heartbeat pulse towards the user android application. Athlete or patients can wear the prepared outfit and perform their daily task or exercise. Changes on their pulse beyond the set amount will be triggered through android application and buzzer sound. The E-Beat outfit can benefits many people who want to stay alert with their health condition as well as engaging themselves with a modern technology gadget

***Keywords*:** fashion industry, heart monitoring, e-beat, trends, technology

C119. CE MINI-BAG AND CAJUPUT ESSENTIAL OIL – A SUSTAINABLE NATURAL INSECTICIDE FOR HERITAGE BUILDINGS

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Abstract: Present synthetic insecticide is easy to use and effective for the repellent activity of insect. In contrast, the effect of the chemicals from by-products of this synthetic insecticide proven to have long-term side effects on environment, especially human health. Hence, a new study was designated for a safer natural insecticide product development with sustainable properties. Other than that, this products also would minimized the accumulation of dangerous by-products of synthetic insecticide to the environment. The objective of this natural insecticide product is to repel the house-pest insect with minimal adverse to environment. There are two types of product that had been developed from the study which are CE mini-bag and cajuput essential oils extracted from Gelam tree (*Melaleuca cajuputi*) as natural insecticide. CE mini bag contained mainly of Gelam tree crude extract and packaged in easy-to-use filter tea bags. Meanwhile, for the essential oils, the cajuput oil of Gelam tree packaged as concentrated oil in small bottles. The advantage of this cajuput Gelam tree essential oil is its potential as insect repellent and aromatherapy at the same time. The study found that the aroma released by crude extract and essential oils could repel both of general pest insects and specific pest insects such as carpenter ants which usualy a known pest in heritage buildings made of timber. These products have the potential to be produced as commercial products in the future as it is a sustainable products from natural resource with minimal effect to the environment.

***Keywords*:** Sustainable insecticide, natural, crude extract, essential oil, *Melaleuca cajuputi*

C125. CANDY SORTING ARM ROBOT BASED ON COLOUR DETECTION

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Abstract: This project focuses on an automated material handling system based on colour detection. Nowadays, many automation techniques are being applied or adopted in industry for increase in productivity, for better quality, for better accuracy, minimizing the human errors and for safety purpose. A sorting robot arm based on colour detection is one such advancement in automatic system. It aims in identifying or determining the colour objects which are coming along the conveyor by picking up the objects and dropping it to its respective pre-programmed place. In this project, the colour sensor will senses the candy's colour and transfer the colour into signal form and then send to the microcontroller for processing. The microcontroller will then sends a command to the circuit where it drives the servo motor of the robotic arm to pick up the object and place it to a predetermined location. The robot arm will then back to its original position after placing the previous object. This process will keep repeated until there is an off button being pushed. This candy sorting arm robot is developed with the purpose of reducing human observational error, minimizing the cost, and improving the sensitivity on the colour recognition. Overall, this sorting arm robot has 95.67% of accuracy.

***Keywords*:** automated material sorting system, colour detection, robotic arm

C126. DEVELOPMENT OF WRITING ROBOTIC ARM

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Abstract: Writing is a sequence of letters, words or symbols marked on a surface. It is a medium for human to convey messages and thoughts. Writing is one of the four language skills which are reading, listening, speaking and writing that everyone learn at early age. Though, the disable people such as people who had lost their fingers to hold pen or old people with shaky hand are unable to write properly. As a solution, they will need a robot arm that can write for them. A robot arm for writing purpose is built to assist the disable who had difficulty in writing. It is a two degrees of freedom robot arm, with a programmed Arduino microcontroller to control the motion of the robot arm. There are three servo motor with two of them are rotating at vertical axis (the arm) and one of them is rotating at horizontal axis (the wrist). The robot arm of the project aimed to help people who can still write but slow or unclear when writing. So, the user need to key in the words with a keyboard. Once it is done, the microcontroller will read the input and execute the program. After that, the robot arm will start to write. When the robot arm finish writing, the arm will return back to initial position. Overall, the robotic arm has higher positioning accuracy to perform writing at paper segment three than paper segment one, two and four. Alphabet 'O' at paper segment two has the highest position error among other alphabets.

***Keywords*:** robot arm, writing, two degree of freedom

C127. DEVELOPMENT OF MEAL CALORIES DETECTOR DEVICE

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Abstract: In this modern era, people become more concerned in observing their weight and eating more healthily. Recently, the obesity cases increasing day by day and continues to be a severe health problem in our times. The major factor of this phenomenon is because the quantity of food intake and the energy consumed by the persons is imbalance. In order for the people to maintain their health in a correct way, daily food intake by the individuals must be measured as has been advised by the nutritionist. Unfortunately, majority of people who want to keep their health are facing common difficulties in measuring and estimating the quantity of food intake due to lack of food nutritional knowledge. Due to this case, meal calories detector device which stored some nutritional data information is very useful to the user to know the amount of calorie in their meal. The user just need to put their meal on this device and the weight of the meal will be detected. The calories information will be displayed on the LCD screen after the user enter the code number by using keypad. The code number is represent the type of the meal. This device's system will determine the meal calorie based on the weight and the type of the meal. In addition, this system will help the user to estimate their ideal amount of calorie in their everyday meal intake.

***Keywords*:** obesity, calories, quantity of food, calories detector

C128. HAIRBISCUSS: A NATURAL HAIR SHAMPOO

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Abstract: In Asia, *Hibiscus rosa sinensis* was known as an alternative to treat various of hair and scalp problems such as baldness, itching, dandruff and frizzy hair. However, there is lack of scientific evidents proving this facts and commercialized its potential. Thus, the idea of this inovation is to produce a natural shampoo from extract of *Hibiscus rosa sinensis* leaves with proven scientific data such as antimicrobial (MIC Test), antioxidants (DPPH Assay) and toxicity (Brine Shrimp Lethality Assay) test. İn antimicrobial test, five different concentration of extract ranging from 0.02 mg/ml, 0.2 mg/ml, 2 mg/ml, 20 mg/ml and 200 mg/ml were tested on Gram positive *(S. faecalis and S. aureus*) and Gram negative bacteria *(E. coli and P. aeruginosa).* At both minimum and maximum concentration, the highest inhibition is showed by *P. aeruginosa* which are 88.4% and 87.65%. For antioxidant properties, the capability of the samples to scavenge free radicals increased as the concentration of sampels increased. The highest percentage of antioxidant activities was 80.7% when tested at 100 mg/ml. The LC_{50} for the lethality assay in the *Hibiscus rosa sinensis* extract was greater than 1 mg/mL. Based on Meyer's toxicity index, LC_{50}>1 mg/mL were considered none toxic, hence it could be further developed into a safe product. In short, this innovation is believed had transformed a traditional tips into a beneficial, proven and efficient products.

Keywords: *Hibiscus rosa sinensis***,** antibacterial, antioxidant, toxicity

C130. GARUDA UAV FLIGHT GROUP, MOTHERSHIP AIRCRAFT

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Abstract: Indonesia is a country with a high count of islands, consisting of over ten thousand islands which is prone to natural disasters. And in those times of emergency naval and ground transport vehicles are not that effective at quick responses, which leaves the only option being aviation vehicles. Despite being an agency under the funding and support of the Indonesian government the "Badan SAR Nasional" (BASARNAS) they had to rely on the national military's vehicles for a lot of first-responder missions such as reconnaissance and damage reports. This means crucial information from disaster sites that could help save lives takes more time and effort to be acquired, the same can be said for first-aid kit deliveries. Thus the Garuda UAV Flight Group's mothership aims to fill the gap for BASARNAS aviation support, allowing for immediate response towards an emergency as compared for other methods such as dispatching helicopters. The mothership will have adaptable heavy-lifting capabilities depending on the requirement for the mission at hand, this is coupled with a computerized payload delivery system allowing the aircraft to accurately deliver payloads be it guided or unguided drops. The heavy-lifting capabilities also allow the mothership to ferry other aircrafts along on its flight, extending their operational range and adding further flexibility at handling the current mission by flying cooperatively once reaching the target area. The mothership's heavy-lifting can be traded for flight endurance allowing for longer flight times for extensive reconnaissance and mapping. The mothership also sports modularity, with interchangeable wing fuselage types, this allows for extremely fast deployment rate from other conventional aircraft or even off the shelve UAVs. The mothership is designed to be a part of cooperative aircraft group called the Garuda Flight Group

***Keywords*:** Aircraft, Endurance, Heavy, Ferry, computerized

C133. KROKOT STEAMED BROWNIES : UTILIZATION OF KROKOT PLANTS (*PORTULACA OLERACEA L.*) AS SOURCE OF OMEGA 3 SNACKS

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Abstract: Krokot contains some good nutritions for brain growth and development and also for body health. One of the krokot's chemical components is omega 3. Omega 3 has benefit to increase the immunity and cleverness also has a role as antioxidant which prevents the growth of cancer cell. The easy cultivation and the high good nutritions of krokot can be seen as a profitable business opportunity, especially in culinary business by making steamed brownies. Brownies is a kind of cake with the color of blackish brown. Its main ingredient is flour, commonly, wheat flour but in this occasion, wheat flour is replaced with krokot flour. Krokot plant is used due to it's label as useless plant with less value compare to other plants. Hopefully, this innovation would change people's opinion about krokot plant and turn it into something that has economic value hence increasing people's income. In the process of production, the product named KRONIKUS will be made once a week with 4 months production process from March until July.

Keywords: Krokot, Omega 3, dan Brownies

C138. EASY LATERAL RADIOGRAPHIC HOLDER

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Abstract: A lateral chest projection is a part of standard x-ray examination of the chest. Although the posterior-anterior (PA) view is the mainstay of diagnosis, it provides a clear view of only about 80% of the lungs. Lateral decubitus is also called cross-table lateral chest. It is usually requested for patients who are unable to sit or stand upright and also helpful to demonstrate air-fluid levels in case of pathology. Previously, radiographers have lot of problems in patient positioning. Patients have to flip up side or down in order to get a comfortable position and a good image. Because of lack position of body posture, patient is not in the parallel position with the beam x-ray, thus make the image becomes blur or uncertainly cut off. These blur on the site of Grid Cut Off. Moreover, the result will disturb the radiologist or medical officer to determine the diagnosis. In some cases, the object that holds cassette (e.g. Water bottle) will fall down and water spilled. This makes lot of trouble circumstances. Danger to patient will slip, danger to others and environment too. Physically, this Easy Lateral Holder is modified as a T – shape. It has holder base that can hold multiple cassette sizes from 35cm x 35 cm, 35cm x 43 cm and 24 cm x 30 cm. It is easy to use by inserting plat holder under the patient body without the movement from the patient. Besides, the device has been measured accurately to find the center beam of x-ray. This will prevent the Grid Cut Off. Lastly, it can prevent radiation exposure too. It is easy, simple and better device.

***Keywords*:** X-ray lateral holder, x- ray cassette, patient position, grid cut off, exposure dose.

C139. ECZEMA RELIEF MIST

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Abstract: In spite the efforts directed towards curing Eczema disease, there is still no effective intervention. 'Eczema' term used widely to describe any itchy or rash-like skin or it can be used to describe atopic dermatitis which is a severe skin condition. Specific cause of eczema remains unknown, but believed to occur due to combination of genetic heredity and environmental factors. *Vitis vinifera* or grape sap and *Alcalypha indica* (pokok kucing galak) contain the properties that help to lessen the irritation of the skin. Hence, Eczema Mist is produced to lessen the irritation and itchiness caused by eczema. Eczema Relief Mist is a natural product come in a form of miracle water were developed from plant base ingredients containing *Alcalypha indica* and *Vitis vinifera* extract mixture. The ingredients of this product have been tested for its anti-bacterial activity. Eczema Relief Mist is the first water based plant extract product that has a potential in soothing and lessen the irritation caused by eczema. *Rosemarinus officinalis* were added into the mixture to give natural aromatherapy. The antioxidant strength of the rosemary makes this herb as a favorite food and cosmetic products preservative. This product will be tested for its toxicity to ensure it is safe to be used. Testimony on eczema patient, cat and goats have been conducted to prove the effectiveness of Eczema relief Mist by showing that it can lessen the inflammation and skin irritation upon apply it for one week. Phytochemical test were also conducted to affirm this product is free from steroid. It comes in a form of spray bottle of 50 mL volume make it convenient for travel purposes. The non-sticky texture and refreshing effect make it presentable and suitable to be used by all different ages. This healing water will be certainly marketable due to its uniqueness and miracle properties provided by the natural ingredients.

Keywords: *Vitis vinifera*, *Acalypha indica*, *Rosmarinus officinalis*, eczema, anti-inflammatory

C150. MATHEMATIC EDUCATIONAL GO (MEGO)

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Abstract: The purpose of doing this project is to to ensure the kids performance will increase academically especially in the subject of Mathematics. After UPSR 2016 that cause great pain not only to the parents but also the kids, this project are aim to use games to attract them to study in early age. There are significant growing economic world thus, revolutionary are sure to occur. This may well indicates the possibility of infective teaching method and traditional method of teaching are no longer suitable for this generation of kids. Because of this, the project is made to counter the problem which is MEGO or Mathematics Education Go. This project is to attract kids to learn m ath using gamification as platform of our project. Our project use colour sensor that act as a replacement for number. The colour sensor then send the information to arduino Micro. This project also use bluetooth module to send the information from the arduino to our application. The result is that the kids can learn not also math but learn how to identify colour.

***Keywords*:** TCS34725 color sensor, microcontroller arduino micro, Bluetooth module HC-05

C151: PICK AND PAY

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Abstract: Pick and Pay is a smart basket which a system that is able to calculate the total price of items shopped by user. This project was done based on the researchers experience on having to be in a long queue in supermarket to pay just for a basket of items. This problem have consume lots of people's time waiting for their turn. So, as a solution, the user will scan the item that they want to purchase into the basket and the system will ask for a verification on the item picked before summing up the total item user intended to buy.

***Keywords*:** Pick, Scan, Button, Total up, Pay.

C154. NITROGEN FERTILIZER RECOMMENDER FOR PADDY FIELDS

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Abstract: There are many factors and ways to increase the quality and quantity of paddy yields. One of the factors that can affect the quality of paddy is the amount of fertilizer used. The optimum amount of fertilizer for any field in any year cannot be determined with absolute certainty, thus in this project, we aim to find the optimum amount of nitrogen fertilizer required in paddy fields. Problems that are characterized by uncertainty can be solved by using fuzzy expert system. We develop fuzzy expert system prototype that utilizes Mamdani-style inference where the combination of nitrogen fertilizer data contain factors and rules, would produce results based on user's input. The data which were in form of paddy fields images were captured by an Unmanned Aerial Vehicle (UAV) or commonly known as drone and variables applied in fuzzy rules are obtained from a thorough analysis made with team of agriculture experts from Malaysian Agricultural Research and Development Institute (MARDI).

***Keywords*:** Agriculture, Fuzzy expert systems, Fertilizer Aerial images and paddy

C158. RAPID DETECTION METHOD OF ORTHODONTICS CONTACT POINT DISPLACEMENT FOR PAR INDEX

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Abstract: Rapid Detection Method for Contact Point Displacement by using National Instrument (NI) Vision Builder is a project that help orthodontist to measure improvement of teeth arrangement between pre-treatment and post-treatment according to PAR (Peer Assessment Rating) Index. PAR Index is a summary to score all occlusal anomalies and its deviations from malocclusion to normal occlusion. The difference in scores between the pre and post-treatment cases reflects the degree of improvement and therefore the success of orthodontic interventions. The PAR Index offers uniformity and standardization in assessing the outcome of orthodontic treatment. There are 11 components in PAR Index, the occlusal features recorded are spacing, crowding and impacted teeth. Those occlusal features are identified and measured through teeth's contact point displacement. National Instrument LabVIEW is using PAR Index and its function as graphical programming language that has its roots in automation control and data acquisition. Its graphical representation, similar to a process flow diagram, was created to provide an intuitive programming environment for. Until today, method to score PAR is by using PAR ruler, which may become quite hard for orthodontist to accurately measure tooth contact point displacement, thus may create error during scoring. It also may take a little more time to score all 11 or some components of each patient. The project is using National Instrument(NI) camera to capture the picture of patient's teeth casting as the camera will connect to the computer via USB (Universal Serial Bus). We use National Instrument LabVIEW Vision Builder to process the teeth's picture to get the measurement of the teeth's displacement as the result will appear on the screen of the computer. The comparison result between few times measurement will appear to reduce the error of the measurement as to get an accurate measurement of teeth displacement. Finally, the goal of this project is to find alternative solutions to advance the measurement of teeth displacement.

Keywords: Orthodontics, PAR Index, National Intrument, LabVIEW, Displacement.

C159. GOLD NANOPARTICLES ON VARIOUS SUPPORT MATERIALS AS CATALYST FOR REDUCTION OF P-NITROPHENOL

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Abstract: Gold nanoparticles (Au NPs) on various support materials such as carbon nanotubes (CNTs), metal oxides (MOs), and polymers were successfully prepared by deposition-precipitation method (DP). Supported Au NPs were synthesized in two different platforms which are in the form of powder and thin film. The Au NPs are in form of powder when CNTs as support. While supports such as polymeric materials including polyethylene (PE), and polydimethylsiloxane (PDMS), as well as some porous materials such as anodized aluminium oxide (AAO) and titania oxide (TiO_2) membrane produce Au NPs catalyst in form on thin film. The supported Au NPs catalyst also was improvised by the hybridization of Au NPs on bi-supported material such as CNTs/AAO. Collectively, it was found that the method of preparation was successful and the formation of Au NPs were characterized by Fourier transform infrared spectroscopy (FTIR) and field emission scanning electron microscope (FESEM). All the prepared Au supported catalysts were tested in the of reduction *p*-nitrophenol (*p*-NP) to *p*-aminophenol (*p*-AP). The catalytic reaction was carried out at room temperature and atmospheric pressure in an excess sodium borohydride ($NaBH_4$) and monitored by UV-Vis spectrophotometer. It was found that bi-supported Au catalysts show an excellent catalytic performance up to 10^{-2} s^{-1} of rate constant, which was higher in one order of magnitude compared to conventional catalyst for reduction of *p*-NP. Besides, this Au-CNTs/AAO catalyst was in form of thin film which facilitated the removal of catalyst from liquid-phase reaction medium, thus improved the reusability of the catalyst.

Keywords: Gold nanoparticles, Carbon nanotubes, Metal oxides, Polymers, *p*-nitrophenol

C160. MULTIFUNCTION WIRELESS STETHOSCOPE

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Abstract: A stethoscope is an instrument used for auscultations to convey heart sounds as well sounds in the other parts of the body used by medical profession for diagnostic patient's condition. This device is crucial especially for quick assessment toward patient condition during emergency cases. However, traditional stethoscopes are restricted only to audio representation of such sounds and the diagnosis depends on the expertise of the doctor or any accessor. Hence, with today's technology most of medical instrument can be transform into more accurate and easy to use device. With the integration of the medical device into wireless connection, create oppurtunity for the the information to be interpret much faster. This project purpose a stethoscope with the capabilities as mention before which is to develop a wireless stethoscope integrated with mutiple parameter (temperature and heart rate) using Peripheral Interface Controller (PIC) as microcontroller and can be display onto an application. The device itself then will be connecting to an application which is specifically being develop to display the output from the hardware. The wireless multifunction stethoscope work by converting the acoustic signal that produced by the organ inside the patient into electronic signal. This signal then being processed and amplified to so that it can be play through speaker. The data can be transmitted through the Bluetooth between the stethoscope and the android phone. The reading from the sensors also being processes and the outcome is display onto the interface develop on smartphone application platform.

***Keywords*:** Telemedicine, Stethoscope, Paramedic, Application, PIC.

C161. AN INTELLIGENT COMPUTERIZED TOOL FOR TALENT IDENTIFICATION IN SPORTS

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Abstract: To identify the best candidate for certain type of sport require judgement on various physical fitness components (PFT) which are categorized by well-being (health) and aptitudes (skills). Other than interest on playing certain type of sport, an athlete is compulsory to possess certain physical and skills ability in order to achieve optimal performance. Physical traits and endurance from the physical fitness components have a great influence in athlete's performance. Based on the available data of physical fitness components of athletes from various type of sports, this tool can be trained for identifying suitable sports for athlete, hence detect talents in group of candidates. As a routine in sport development programme known as SPTS, data of various PFT components are collected. However, the connections between these data have not been explored and poorly understood. This project presents the development of an intelligent computerized tool which capable of assigning suitable sport for athlete based on their PFT scores. The technique known as k-nearest neighbours is implemented to obtain the identification results. There are 16 attributes from PFT components which includes age, anthropometric, speed, strength, power and endurance are considered for the training purposes. Development of this tools involved series of data preprocessings which are preparations, digitization and cleaning to produce three data sets. Functional and accuracy testing are conducted to test available features and its identification accuracy of the product to end users. Results from the functional testing shows that expected functions in the application is working as intended. The accuracy testing shows, the tool is capable of identifying accurate sports to athlete with 81.3% accuracy. Overall results shows that the tool developed is able to fulfill the features and accomplish the process towards the objective, which is to identify suitable sport for a particular athlete based on PFT.

***Keywords*:** Talent identification, Suitable Sport Prediction, Physical Fitness Test, k-Nearest Neighbors, Sport Development Programme

C163. I-P^2 T^2: INOVASI PEMBELAJARAN & PENGAJARAN MELALUI TASMI' TAHFIZ

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Abstrak: Lima ayat yang pertama Surah Al-'Alaq diwahyukan bagi mengajak manusia supaya membaca, mengingati dan memahami Al-Quran. Membaca dan menghafal Al-Quran dikira sebagai ibadah dengan diberi pahala yang banyak apabila pelaksanaannya dilakukan secara tartil. Salah satu faktor pelajar universiti gagal memperolehi kejayaan yang cemerlang dalam akademik adalah disebabkan kurangnya mengingati bahan-bahan kuliah. Kaedah inovasi Tasmi' Tahfiz merupakan kaedah latih tubi pelajar-pelajar bagi menghafal ayat-ayat Al-Quran. Objektif kajian ini ialah menjelaskan korelasi inovasi Tasmi' Tahfiz terhadap proses pengajaran & pembelajaran pelajar universiti. Hasil kajian menunjukkan pelajar-pelajar yang terlibat dalam Tasmi' Tahfiz lebih mudah mengingati matapelajaran, pembentukan karektor yang berkarisma dan memperolehi pencapaian yang cemerlang dalam akademik. Pelajar-pelajar Tahfiz menunjukkan peningkatan pencapaian akademik yang cemerlang iaitu pelajar-pelajar yang menghafal 30 juzuk Al-Quran berjaya perolehi CGPA/GPA ≥ 3.5, manakala pelajar-pelajar yang menghafal kategori surah-surah pilhan dan 15 juzuk memperolehi CGPA/GPA ≥ 3. Malah, salah seorang pelajar lelaki Tasmi' Tahfiz telah dianugerahkan sebagai tokoh Maulidur Rasul 2017. Tambahan pula, seorang pelajar wanita dianugerahkan sebagai pelajar Hafazan cemerlang usahawan. Ini menunjukkan inovasi Tasmi' Tahfiz boleh diaplikasi kepada para pelajar universiti dan sekaligus dapat membantu meningkatkan pencapaian akademik dan ko-kurikulum mereka.

Kata Kunci: Pengajaran & Pembelajaran, Tasmi' Tahfiz, pelajar universiti, akademik

C164. D2 MOTOR FOR ECLIMO ELECTRIC SCOOTER

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Abstract: Permanent Magnet Flux Switching Motor (PMFSM) with outer-rotor configuration recently reported that potentially lead to a very compact in-wheel electric vehicle (EV) traction drive and increased cabin space through the elimination of mechanical transmission gears. Nevertheless, the output torque is still insufficient to drive heavier EV especially at starting and climbing conditions. On the other hand, with the permanent magnets placed along the radial V-shaped segmented stator, the PMFSM is prone to excitation flux leakage and demagnetization, making optimization of the rotor and stator dimensions a difficult objective to achieve, while keeping the PM volume constant. In this research, development of high torque capability direct drive dual excitation (D^2 Motor) flux switching motor (FSM) is demonstrated. The motor offers advantage of flux control capability that is suitable for various operating conditions and less copper loss due to non-overlap windings. The design specifications of the motor are similar as interior permanent magnet synchronous motor (IPMSM) employed in the existing hybrid electric vehicle (HEV) Toyota Lexus RX400h. The designated of 12S-14P motor configuration has delivered maximum torque density of 12.4 Nm/kg and power density of 5.97 kW/kg. These values are respectively 30% and 68% greater than IPMSM with comparable dimensions. A reduced-scale prototype D^2 motor has also been fabricated to minimize the manufacturing cost and experimental measurements have been carried out to validate the results. The results obtained show that they are in good agreement with the predicted results and have potential to be applied for in-wheel drive EV.

***Keywords*:** PMFSM, outer-rotor, in-wheel electric vehicle, drive dual excitation, IPMSM.

C166. SALRON MOTOR FOR ELECTRIC BOAT

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Abstract: This model present a new SalRoN motor for an Electric Boat with 3-phase 12S-14P wound field flux switching motor (WFFSM) with salient rotor and non-overlapping windings (SalRoN). This motor have an attractive low cost alternative motor for electric propulsion system. The proposed SalRoN motor is capable to deliver torque and power of 23.52Nm and 8kW, suitable for an electric boat. This machine does not require slip-rings or brushes and combines the stator of WFFSM with segmental rotor and non-overlapping windings (SegRoN) and rotor of WFFSM with salient rotor and overlapping windings (SalRo). The WFFSM SalRoN are found to exhibit high flux linkage, high average torque and high speed with light and heavy duty for electric vehicle application. Non-overlap windings and toothed-rotor are the clear advantages of these topologies as the copper losses gets reduce and rotor becomes more robust. The cogging torque of proposed machines is reduced by different cogging torque reduction schemes. 12 slots with 14 rotor poles have achieved 14.96% greater average torque compared to PMSM. The structure of proposed machine is very simple; ensure sufficient mechanical strength to operate at high speed and enough torque production for an all-electric boat.

Keywords: WFFSM, salient rotor, non-overlapping winding, robust motor, electric boat.

C169. 4IN1 STEPPER MOTOR TRAINING KIT

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Abstract: Stepper motor is a special type of electric motor that moves in precisely. Due to precise control, stepper motors are commonly used in medical equipment, electronic equipment, satellites, automation and robotic that requires special skills to operate. For automation and robotics student, stepper motor is widely used in final project. However, due to the lack of in-depth exposure and less efficient use of teaching aids, many students who cannot control this stepper motor especially in wiring connections to the controller. This is because the training aids used only focus on programming techniques in controlling the movement of the stepper motor. To overcome this problem a teaching aid called "4in1 Stepper Motor Training Kit" was created that combines four learning outcomes; familiarize with stepper motor, control stepper motor by using basic control circuit, control stepper motor by using Microcontroller and control stepper motor by using Programmable Logic Control. In addition, assisted by the interactive system generated by using Microsoft Visual Studio, thereby it makes teaching aids more interesting and effective in order to help students familiarize and control the stepper motor.

***Keywords*:** interactive system, stepper motor, training aids.

C170. ADJUSTABLE ANKLE FOOT ORTHOSIS FOR CEREBRAL PALSY CHILDREN

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Abstract: Children with cerebral palsy may present with several gait patterns due to muscular spasticity and contractures. An effective approach to help correct abnormal gait for cerebral palsy is foot orthotics, which involves the use of synthetic or mechanical devices worn on the feet in order to stabilize, heal, or prevent injury and deformity to weak muscles or joints. Though the effectiveness of ankle foot orthotics is undeniable, the available products in the market is usually fixed at ninety degrees angle or composed of a dynamic dorsiflexion damper. This might provide discomfort or even pain for children who are in the beginner stage of orthotic treatment. Therefore, this design is focusing on the development of device that assists treatment on the foot region. The aim is to design an adjustable ankle foot orthosis so that the angle or ankle flexion can be adjusted little by little according to the children development. The design process is carried out according to proper engineering design process. To assist the decision-making phase, Pugh Method is used for conceptualization selection. The design is made with aid of Computer Aided Drawing software. Analysis is also conducted to ensure the design's feasibility. Lastly, a full-scale model of the design is constructed using 3D printing technology as prove of functionablity.

Keywords: ankle foot orthosis, cerebral palsy, ankle flexion, 3D printing.

C174. CONTROPRONUES DOORSTOPPER

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Abstract: A contropronues doorstopper with a hammer shape and action man shape is a doorstop (also known as door stopper or door wedge) were designed to hold a door open or closed, or to prevent a door from opening too widely. In producing this contropronues doorstopper, a simple two plate mould with single cavity was designed. Initially, the concept of mould of this product is designed using Pro-Engineer WF4 software. Next, Moldflow software (plastic injection moulding design software) is used to analyse and simulate the part design, injection mould design and manufacturing process of this mould. EDM Wire Cut, EDM Die Sinking and CNC Milling were then used to fabricate this mould. By using LDPE & Elastomer materials, a stylish shape of contropronues doorstopper with interactive colour of hammer and action man shape were then moulded using a plastic injection moulding processes.

***Keywords*:** Door Stopper, Two Plate Mould, Machinning, Injection Moulding

C176. DEVELOPMENT OF ADVANCED COMPOSITE MEMBRANES CONTAINING INNOVATIVE COUPLE OF ZEOLITE T AND 6FDA-BASED POLYIMIDE FOR CO_2 CAPTURE

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Abstract: Capturing carbon dioxide from natural gas stream is a critical stage in carbon sequestration. To be technically and economically viable, a successful separation method must be applicable to industrially relevant gas streams at realistic pressures and temperatures. Therefore, membrane separation has been used successfully in a number of industrial applications because it's involved less energy and low maintenance. Here, advanced composite membrane containing innovative couple of amine-functionalized zeolite T and 6FDA-based polyimide membrane has been prepared using feasible fabrication method. Composite membranes developed in the present research showed superior performance in CO_2/CH_4 separation, which sucessfully lies on 2008 Robeson upper bound. This finding leads toward the large-scale fabrication of composite membrane which could resulted in substantial saving in energy and cost, and further beneficial especially to oil and gas industry.

***Keywords*:**. Composite membrane, amine-functionalized zeolite T, 6FDA-based polyimide, CO_2 Capture

C181. 3PS-PMT: PUBLIC PRIVATE PARTNERSHIP PERFORMANCE MEASUREMENT TOOL

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Abstract: Malaysia has been ranked as the second highest country in Asia on its infrastructure development through Malaysian Public Private Partnership (3Ps) projects. In this regard, Malaysian government has set a target to become a developed nation under the 'Vision 2020' country plan to meet high demands for public infrastructure development. Therefore, 3Ps is anticipated to be one of the drivers of such developments. In Malaysia, privatisation of public projects and 3Ps projects has begun since the 1980s and this trend has continued and maintained until the Eleventh Malaysia Plan (2016-2020). Among the crucial elements in the 3Ps implementation is specifying the standard assessment of private concessionaires' performance through the execution of key performance indicators (KPIs). Currently, KPIs have served as the most useful performance measurement tool (PMT) in measuring performance of 3Ps projects. However, the methods performed in assessing the performance of 3Ps projects have been criticized among researchers during the implementation of 3Ps projects in Malaysia. Therefore, 3Ps-PMT was develop to assist the construction stakeholders to overwhelm this issue. With 3Ps-PMT, the performance level of the 3Ps projects can be measured easily and more realistic to ensure value for money (VFM) is achieved. The facility offered by 3Ps-PMT can also be adopted as a very effective Performance Audit Tool for continuous learning in 3Ps project management.

***Keywords*:** Public Private Partnership, Performance Measurement, Key Performaance Indicators.

C182. ZUMBA DANCE APPS : EVERYONE CAN ZUMBA

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Abstract: Everyone Can Zumba is an application constructed by using Adobe Flash Professional CS6 integrated with Action Script 3.0. Recent zumba applications consist of many zumba videos to be followed by the users but not all of them can follow the steps especially seniors users. Everyone Can Zumba application is good news for those who want to stay fit and healthy by practising zumba regardless of their age/health. This application consists of zumba dance videos which is categorised by age and health condition. Moreover, the application is user friendly and can be downloaded through smartphones with android operating system. A pilot study on user's feedback (perception of usefullness, satisfaction and content of the application) is done using the Z-Number CCR model approach.

***Keywords*:** Zumba, Mobile application, Z-number DEA approach .

C187. AC-ADCOAT: GREEN ADSORBENT COATINGS FOR DYE REMOVAL

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Abstract: The aim of this study is to prepare and study the adsorption rate of immobilized rubber seed shell activated carbon –ENR50 – PVC (AC-Adcoat) for the removal of methylene blue dye. Activated carbon derived from rubber seed shell was prepared by chemical activation with potassium hydroxide followed by carbonization with nitrogen gas at 400° C. The activated carbon was characterized by using FTIR, TGA, EDX and BET N_2 – adsorption. The optimum dosage of the activated carbon was determined by batch adsorption. The AC-Adcoat was deposited onto the glass plate as immobilized composite. The effects of various parameters such as effect of activated carbon dosage, time, pH and methylene blue dye concentration were investigated. This study has proved that the removal of methylene blue by using immobilized AC-Adcoat is more efficient and the activated carbon derived from the rubber seed shell showed the highest percentage removal of methylene blue compared to the commercial activated carbon.

***Keywords*:** activated carbon, rubber seed shell, methylene blue, adsorbent.

C188. LINUS 1.0 - ANDROID-BASED NUMERATION MODULE FOR PRIMARY SCHOOL

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Abstract: NumerasiKuis a mobile application that has been developed to serve primary school students as a place to do revision, learn strategies to answer the questions and answering sample questions for each topic in numeracy module of LINUS. This Android-based application is aimed to provide a better approach of learning numeracy module since itincludes the interactive and attractive interfaces to engage students to the module. Furthermore, this application can help in reducing the number of students who are weak in numeracy module since it can attract and build interest among students in mathematics subject and decrease the burden on teachers. The results from usability testing show that this application can be used as an assistive tool to encourage students to learn mathematics in an effective way.

C192. AMINE-FUNCTIONALIZED ZIF-8/6FDA-BASED MIXED MATRIX MEMBRANES FOR CO_2/CH_4 SEPARATION

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Abstract: This work describes the preparation, characterization and CO_2/CH_4 gas separation properties of mixed matrix membranes (MMMs) containing amine-functionalized ZIF-8 and 6FDA based polymer. The purpose of introducing amino-functional groups onto the filler are to improve the interfacial adhesian between the filler and polymer and enhance the CO_2 separation properties. In this work, ZIF-8 were modified with two different amino-functional group including N-(2aminoethyl)-3-aminopropyl-trimethoxysilane (AAPTMS) and 3-(2-(2-aminoethylamino) ethylamino) propyltrimethoxysilane (AEPTMS). The resultant membranes were characterized with different analytical tools. Subsequently, the permeability of CO_2 and CH_4 gases for the resultant membranes were measured. The results showed that CO_2 permeability of 1155 Barrer and CO_2/CH_4 ideal selectivity of 26.2 were obtained using 0.5 wt% AAPTMS-modified ZIF-8/6FDA-based mixed matrix membrane, which were 109% and 151% higher than the CO_2 permeability and CO_2/CH_4 ideal selectivity obtained by using pristine 6FDA-based membrane. On the other hand, 0.5 wt% AEPTMS-modified ZIF-8/6FDA-based mixed matrix membrane exhibited CO_2 permeability of 999.31 Barrer and CO_2/CH_4 ideal selectivity of 27.8. The CO_2/CH_4 separation performance obtained from 0.5 wt% AAPTMS and AEPTMS-modified ZIF-8/6FDA-based mixed matrix membranes successfully lies on Robeson upper limit 2008. Overall, the amine-functionalized ZIF-8/6FDA-based mixed matrix membranes demonstrate excellent performance for CO_2/CH_4 separation which make them a potential candidate for industrial scale gas separation.

***Keywords*:** Amine-functionalized, 6FDA-based, Mixed matrix membrane, CO_2/CH_4 separation.

C194. PHYSICAL PROPERTIES PERFORMANCE OF NATURAL RUBBER LATEX (NRL) AS A RUBBERISED BITUMEN MODIFID BINDER (RBMB)

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Abstract: In Malaysia, the common pavement distress that can be found includes cracking, pavement deformation such as rutting, and disintegration such as potholes and patches. These causes uncomfortable condition to the road users and high cost for pavement maintanance. There are a lot of research had been conducted in order to find the most suitable material could be used in enhancing the properties of the asphalt pavement. Bitumen properties are one of the trigger factors that need to improve the performance of asphalt pavement. Therefore, in order to improve the performance of asphalt, bitumen properties need to be enhanced. Thus, performance of physical properties of asphalt by using natural rubber latex (NRL) that acts as a bitumen modifier binder in asphalt pavement was studied. A series of laboratory experiments such as Softening Point Test (ASTM D36), Ductility Test (ASTM D113) and Penetration Test (ASTM D5) were conducted to distinguish the performance of rubber-bitumen modified binder (RBMB). All RBMB specimens tested are a mixture of bitumen grade 80/100 with the presence of NRL from range of 1% to 7%. The results obtained have been compared with control samples which is 100% bitumen specimen. From the Penetration Test results, it shows the increment of penetration value with the increment of NRL percentage. İt is due to bitumen had become less viscous. Hence, softening point value also increased when the amount of NRL percentage increased and the value almost constant after the additional of 5% NRL. For Ductility Test, all the specimens achieved 100 mm of ductility value which satisfied the JKR requirement. Based on all the results obtained, it can be concluded that the range of 5% - 6% NRL is the optimum percentage to improve asphalt properties.

***Keywords*:** pavement, bitumen, rubber, latex, performance.

C195. FIRE SAFETY USING *FIRE ESCAPE* APPS

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Abstract: The escape process from hazardous events to a safer place is the most crucial aspect during fire events. When a fire occurs, the human reaction is determined by his/her perception and understanding of the environment. *FIRE ESCAPE* is a mobile application developed to educate people on how to respond and behave appropriately during a fire event. It contains a collection of fire safety information, animation and simulation of human behaviour during fire. The special feature of *FIRE ESCAPE* is that it contains the state-of-the-art human behaviour model found in the fire safety literature which identifies the most influential factors or conditions that can lead to survival and successful evacuation. The model is validated by the experts in the field of psychology and risk studies. With it's intuitive interface, this apps is intended for various level of society and can be used as an educational tool or learning supplement for fire safety training. Survey results from 20 respondents show that the application contains relevant contents, encourages knowledge discovery on fire safety, is easy to use, is highly engaging, has direct feedback from the fire safety trainer and is able to share the apps on other social media platform.

***Keywords*:** *FIRE ESCAPE*, Fire safety, Evacuation, Human behaviour, Mobile apps

C202. KITCHEN'S CHIEF 2.0

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Abstract: Kitchen's Chief has been developed and innovated to assist students for them to get better understanding of the procurement process and to apply the procurement process in hospitality business. It is also to provide the students the input of operational activities that are associated with procurement process. The idea to innovate Kitchen's Chief has been initiated following the challenges faced by the students and F&B professionals in simplifying the procurement process. By using Microsoft Access software we innovate and combine a few features into one. The users could use this database to move food stocks around the business and track usage from sales, which is also applicable for the non-food items like crockeries and cutleries, detergents and paper products. From this database, the users can monitor, measure, control and update the price of each item from their suppliers. Nevertheless, they could see their supplier costs line-by-line and be alerted to price fluctuations so they can make changes to ensure dish profitability. Tracking and monitoring crockery, cutlery and glassware inventory across their outlets, hunting down signs of the missing items epidemic and see where they may be losing money is one of the database's specialty. This will reduce the administrative burden for the kitchen teams. The chefs will be more creative on field and no longer have to worry about the unavailability of items, they will have more time to develop their team, listen more to the customers and deliver high quality foods. Students that are studying for F&B courses could also learn about it. It would make them be more familiar about the inventory orderings when they enter the working field after graduating. The program will give the users the right accuracy to their items and ingredients. Kitchen's Chief will bring speed, tractability to any fast moving and growing businesses or outlets.

***Keywords*:** tractability, procurement, database, F&B, management

C220. REMOTE CONTROL SWITCH USING BLYNK APPLICATION

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Abstract: Nowadays, it can be said that almost every house has electricity installed whether to power up their electrical appliances or just to light up their house. Even though the usage of electrical appliances can helps people to ease their daily task, the high usage electricity can increase the electricity bill. Sometimes, the increment in electricity bill is caused by the carelessness of the users themselves like they tend to forget to turn off the lights and unplug all unnecessarily electrical appliances. Hence, the proposed project called Remote Control Switch using Blynk Application (RCSuBA) will help the user to monitor their usage of electrical and electronic appliances. RCSuBA was developed to reduce usage of electricity by controlling the electrical switch through android application. The user can turn on or turn off any electrical switch or socket outlet remotely if the system were connected to the internet. A model with electrical switches, sockets and electrical appliances was designed and developed. To verify the functionality of the developed system, RCSuBA was installed at Electronic Department, IKTBN Bukit Mertajam. The result shows that the developed RCSuBA helps the user to manage their electricity usage by using the installed application.

***Keywords*:** Blynk Application, Electricity

C221. USING 'TETSI' TO HELP TEACHERS IDENTIFY POTENTIAL EDUCATIONAL TECHNOLOGY SKILLS

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Abstract: Supporting a constructivist approach to teaching and learning, technology is used as knowledge-building tools and that pretty much is what is understood about best practices for integrating technology into the curriculum. However, greater understanding of its impact on the interactions of learners of all ages is yet to be explored. The government allocated billions of ringgit providing a complete platform for schools and teachers to integrate ICT into their teaching and learning process in the classrooms, however ICT usage in schools continues to lag expectations-both in terms of quantity and quality (MoE, 2012). Many barriers preventing teachers from effectively using technology, such as teachers' lack of knowledge and skills in technology integration and many teachers do not have the support needed to effectively integrate it. Therefore, four aspects of learning: tasks, interactions, situations and tools are formatively observed. This project introduces an innovative framework or process by using Apple Classrooms of Tomorrow (ACOT) model 'level of adoption' of technology integration to help teachers identify the level of adoption they are in. Through this framework, the teachers are able to rate themselves accordingly (*Entry, Adoption, Adaptation, Appropriation* and *Invention*) and will be able to help them find out their potential educational technology skills and make use of technology tools that will help them and students adjust to the innovation. Therefore, inspired by this model, researchers try to come up with a web application called Teacher's Educational Technology Skills Identifier (TETSI) that will help teachers determine or identify what phase or level they might be in. Learning how to use the technology is hard enough for some teachers and by helping them to recognize their potential educational technology skills hopefully will be a good start to help support teachers who are looking for a powerful tool to support collaborative learning environment through technology.

Keywords: learners interactions, level of adoption, educational technology, constructivism, teaching and learning

C225. AUTO SMILE CAPTURE ON MOBILE PHONE

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Abstract: This research is to propose a method to detect a smile or non-smile on human face. Furthermore, we apply the method to develop a software that automatically make a decision to capture a photo whenever a group or an individual person being shoot has smile faces. For a smile detection, we mark 8 positions on the human face, which are the left most and rightmost of eyes on both sides the leftmost and rightmost of mouth, and the middle on bottom and top of the lip. We then calculate all proportions between any two marked points and compare with the experimental threshold values in order to separate a smile or non-smile face. To assess the accuracy of our approach, we used 100 images and found that the proposed method has 97 % accuracy.

***Keywords*:** Auto capture, Smile detection, Face detection

C226.SMART DISTRIBUTION BOX (DB)

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Abstract: Smart Distribution Box (DB) is the abbreviation for detect short circuit. This project was innovated in order to solve the problem faced by any electrical maintenance workers. With this Smart Distribution Box (DB), it will detect any short circuit and buzzling on the Circuit Board in order to inform the maintenance worker the location. It will also make it easier for a worker to do any maintenance. With this project, it will can also guarantee worker safety.

Keywords: Main switch, Residual Current Circuit Breaker (RCCB), Miniature Circuit Breaker (MCB), cable, power source.

C230. FLY TRAPPER VERSION 3 (FT3)

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Abstract: FT3 is the abbreviation for Fly Trapper Version 3. This project is easily applied by all groups as well as helping people overcome the problem of insect pests (flies). It is suitable to use on areas where appears many flies such as the area of food and beverage produced premises , slaughterhouses, food and beverage premises and also residence. This project is using bait (such as food) and ultra violet light as the attractiveness to the insects (flies) to approach this trap. This project has been fitted with an electronic circuit (circuit shock) which can cause insects (flies) die immediately.

Keywords: plastic bottles, unused wires and electrical shock circuit.

C231. RECHARGEABLE GRASS CUTTER (RGC)

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Abstract: RGC is the abbreviation for Rechargeable Grass Cutter. By using design thinking method, this project was innovated in order to solve the problem faced by landscape workers during survey. RGC is a grass cutter machine that can be used for both flat and uneven surface. The project build up using 12V power supply, Monocrystalline Silicone Solar Panels and Brushless DC Motor is an environmental friendly product because it not using conventional fuel energy such as petrol. Moreover, the equipment designed allows users charging using either solar energy or power supply(bipower source). The equipment does not produce loud sound as other existing machine in the market. Furthermore, the equipment is user-friendly;the machine can be occupied easily although the user does not have any skills.

***Keywords*:** Rechargeable, Solar Energy, bipower source, environmental friedly, Brushless DC Motor

C233. GREENTECH AQUA SMART MIRROR

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Abstract: Electrical and electronic waste are commonly known as e-waste is becoming a global issue. It contains substance that pose environmental and health risk. The intrinsic material value of global e-waste is estimated to be 55 Billion Euro in 2016 that is dominated by gold, silver, copper, platinum, palladium and plastics contents (Balde et al., 2017). The e-waste management needs to be well managed since the the amount of e-waste generated will increase substantially. This study aims to develop "Greentech Aqua Smart Mirror" as a green technology product. It made from recycle and reuse computer components with embedded water cooling system. It's significantly reduce a number of discarded component which contributed to as an e-waste items. As a conclusion, this product demonstrates that we can recycle and reuse computer component as a new product. It also helps to creates an awareness on e-waste management as good etiquette in order to promote green technology product to conserve our health and environment.

***Keywords*:** e-waste, green technology, smart mirror, reuse, water cooling system

C237. EASY TT WITH ME

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Abstract: Primary school students often face problems in learning and remembering multiplication facts and this inability hinders them from mastering more difficult mathematical concepts such as division, fractions, decimals and such. Teachers often use the multiplication table to aid pupils in facts recall but its effectiveness leaves much to be desired. Hence, the objective of Easy TT with Me is to offer a more effective teaching and learning kit for multiplication facts from 1 to 9 which consists of a concrete multiplication table, an interactive multiplication table and an interactive quiz. Hence, Easy TT with Me assists students in understanding, mastering and remembering multiplication facts through fun learning. It comprises of TT Ruler, - a multiplication table board that can be manipulated physically to obtain the facts; ScraTTch Rule - an interactive multiplication table and an interactive quiz to assess student's recall of facts all using a visual programming language, Scratch Programming This innovation incorporates fun teaching and learning as well as accommodating individual needs and abilities. Easy TT with Me has been tested out on Year 4 and Year 5 students. Findings showed that students found it easier and faster to understand and recall multiplication facts through using this kit as compared to before using it.

***Keywords*:** multiplication kit, multiplication table, Scratch Programming, interactive quiz.

C240. 3D MODEL OF BUILDING FOR ROOFTOP-RAINWATER HARVESTING

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Abstract: Malaysia has sufficient water resources to meet all the demand, provided there is proper water resources, development, conservation and management. However, a lack of rainfall over catchment areas with river pollution problems at the water intakes caused a water supply disruptions. Consequently, government of Malaysia, alongside with various government agencies such as Ministry of Natural Resources and Environment (NAHRIM), Department of Irrigation and Drainage (DID) and various official institutions, issued a guideline for installing rainwater harvesting, collection and utilization systems. Building rooftops used as water catchment especially in urban areas since it is the most important land cover types and it covers almost half of the entire surface of urban areas. Therefore, the quantity and quality of rooftops harvested rainwater become a concern to ensure an adequate and clean water supply. In this regard, it is important to identify the suitable roof to be used as catchment area in terms of roof sizes, roof materials and roof conditions. The larger the catchment area, the greater the quantities of rainwater that can be collected per millimeter of rainfall. Remote sensing was applied to discriminate the building rooftops from other urban features and classified the roof types according to their materials and conditions effectively with high accuracy. The 3D model of building is developed from fusion of optical and lidar data. It can provides vital information which assist the nation in managing water quantity and water quality control. In line with National Storm Water Management goal, storm water shall be managed so that it contributes towards sustainable development of the country.

***Keywords*:** Rooftops harvested rainwater, 3D model of building, building rooftops classification, rooftop HRW quantity, rooftop HRW quality.

C241. DEVELOPMENT OF AN INTERACTIVE GIS MAP FOR EVALUATING OIL PALM BIOMASS RESOURCES

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Abstract: Oil palm cultivation in Malaysia has increased since 1960's and Malaysia is one of the largest producers and exporters of palm oil in the world. In 2014, a total of 4.49 million hectares of land is covered with oil palm cultivation, producing 17.73 million tonnes of palm oil and 2.13 tonnes of palm kernel oil. However, managing oil palm biomass resources in such a huge area is very challenging and costly. Without a proper management, the process of transporting oil palm resources from one place to another will not only emit a lot of harmful gases, but it also consumes excessive amount of burning fuel. Utilizing oil palm biomass as one of the renewable energy resources will be less effective when proper management is not being applied. Therefore, Landsat 8 data will be used to produce an interactive Geographical Information System (GIS) map. Providing various information is essential to help improving the oil palm management efficiently, especially in reducing the cost and the emitted harmful elements. The GIS map will have several information showing the layers including the oil palm plantations distribution, road network transportations, general land use/land cover, water resources and oil palm mills location. In addition, this map can later be used for sustainable deployment and planning of the oil palm biomass resources.

Keywords: Biomass, GIS, oil palm, Landsat 8.

C244. CLEANER, GREENER, SAFER AND HELATHIER OF DIHYDROXYSTEARIC ACID (DHSA) FROM JATROPHA OIL

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Abstract: Dihydroxystearic acid (DHSA) is regarded as a high value hydroxyl fatty acid commonly used in cosmetics, persona care sector, an ingredient in colored formulation and as coating agent for pigments owing to its unique structure, hydrophobicity and polarity. This study investigates the formation of DHSA through a two-step reaction involving the epoxidation and hydrolysis steps, conducted in semi continuous stirred tank reactor at 350 rpm.

***Keywords*:** DHSA, palm oil

C249. HELUVA APP V2

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Abstract: An innovation pioneered by students' association under the Faculty of Administrative Science and Policy Studies (FSPPP). This product is an output resulted from the observation of the surroundings, assisted by internal surveys conducted among future targeted users. This project is merely focusing on those who are suffering from depression, one of the mental illnesses that has been a recent major topic among people across the globe. This project will be able to create a social platform for them. It will help depressed people to engage and be engaged with intention to pour their heart out. They can choose either to be a listener or advisor. This project is going to be a middleman to bridge people who might have the same problems to stay connected. It acts as an alternative especially to those who are not really into public sharing on their problems and in the same time refuse to refer to the experts. In the future, this project will be continuously improved through better graphics and great user interfaces that will ease the users. It is anticipated to downsize the depression phenomenon within the country, specifically among youth and active smartphone users.

***Keywords*:** abstract; depression; social platform

C250. SLEA APP V2

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Abstract: SLEA APP V2 is an innovation pioneered by the students association under the Faculty of Administrative Science and Policy Studies (FSPPP). This project is an output resulted from Training Management System applied in public service where all government servant has a system where they can track how many a public servant has attend training for a particular course a year. It is a combination of education and fun which will create a healthy competition among the players as a whole. The players will be competing in extracurricular activities and programs, the more involvements from the students, the higher the students will get the points. Then, those points will be resulted in a ranking table among students, thus will create the urge to compete each other to be the top in the ranking table. This will create a holistic performance-based ranking between university students itself. What more interesting, an innovation of QR code will be used by the students to gain the point by scanning the QR code through our apps. This will be a new version of certificate hence paperless system. In future, this project will be improved through great interface and very light-weight so it can be run in almost every devices. This project is hoped to ease the job recruitment process as it will be an ease for future employers to offer jobs from continuous and holistic student performance.

***Keywords*:** abstract; performance; edufun; ranking; university

C253. GARBAGE TRANSPORTERS IN RIVERS WITH RENEWABLE ENERGY

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Abstract: Waste is a material that is wasted or removed from the source of human activities and natural processes that do not yet have an economy. A polluted environment can affect each other's life in one surrounding, for example, a river that is contaminated with waste will have a negative impact on those who use it and will also cause untouched conditions. In Indonesia problems are very often encountered messages, such as flood services. The effectiveness in cleaning garbage in the river is still very small, it overcomes the limited manpower and time. The solution to this problem is to create a prototype arduino uno based automatic garbage tool that utilizes a 24 volt Dc motor as the prime mover. In this final project is done speed turning motor Dc 24 Volt with Arduino through PWM with feedback. Dc motor will start spinning when the wave emission from the ping ultrasonic sensor reflected by the garbage through it, so when the sensor has been arranged then the motor will move within a certain time bracket. In this tool using two Dc motor, Dc 24 Volt motor as waste transporter and motor 24 Volt as conveyor drive for garbage disposal in the direction of disedikan garbage. The energy used to supply this tool by using solar panels that utilize solar energy that has been converted to the system. The waste transport process will stop when no garbage is detected by the sensor. Expected results on this tool can help the common garbage problem in small rivers.

***Keywords*:** Trash, dc Motor, Ping Ultrasonic Sensor, Speed sensor, Solar Panel, PWM (Pulse Width Modulation).

C258. DIRECT ONE-STEP PRODUCTION OF "CLEAN BIODIESEL" FROM *CERBERA MANGHAS L.* VIA SONICATION TECHNIQUE

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Abstract: The depletion of natural fuel resources had led to the search of an alternative fuel which is biodiesel in order to preserve the depleting non-renewable fuel sources. In this study, a direct one-step process to produce 'clean biodiesel' from *Cerbera manghas L.* seed has been carried out successfully. A yield of 17.52 % 'clean biodiesel' was achieved at a temperature of 55 °C with total time of 60 minutes. This method is simple to operate since it applies only sonication process and required shorter time for the trans-esterification reaction to complete. Moreover, the biodiesel produced has relatively low impurities with no saponification by-product since the process is catalyst-free. Qualitative analysis of Gas Chromatography on C. *manghas* biodiesel showed the presence of FAME (Fatty Acid Methyl Esters) which confirms the occurrence during direct one-step process. The FAME yield from C. *manghas* biodiesel was 93.80 %. This process is viable for commercialization since it can be easily collected and involved one-step process to produce biodiesel direct from C. *manghas* kernel. Thus, it will avoid the normal two-step process – oil extraction followed by transesterification process to produce biodiesel.

***Keywords*:** Biodiesel, Density, Cloud Point, Pour Point, In-situ Transesterification.

C260. PUTRI KACA MAYANG AUGMENTED REALITY STORY BOOK

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Abstract: In this paper, we try to conserve melayu culture through technology in augmented reality (AR) as a story book. Augmented reality has become really popular subject to be discussed these day. Technology has enable people to use augmented reality as educational tools. This encourage us to create interactive story book which contain augmented reality technology. We pick folklore from Pekanbaru, Riau which is the story of Putri Kaca Mayang. Putri Kaca Mayang is a fairy tale that tells about the origin of Pekanbaru city in Riau Province. This story is believed and recounted from generation to generation, let alone its remains can still be seen today at Koto Gasib, Siak. But if its only story book of Putri Kaca Mayang, children will not be interested to read it. In this era, we have to add "something" to the book that will persuade reader even more to open the book and read it. This is where augmented reality play its role. With the immersive technology, blur the line between the physical world and digital or simulated world, which augmented reality has, combine with animation and background music, reader will have a new experience of "reading" story book compare with convensional reading that they have few years ago. With this interactive story book, we would also introduce melayu culture, especially from Riau province, to the world. We hope this kind of culture, folktale will be told for century ahead and never be extinct.

Keywords: Augmented reality, education, culture, mobile learning, story book, animation, interactive book, fun reading.

C264. MYSCANLIB@QRCODE

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Abstract: QR codes are becoming popular in the managing and organizing library material. They play an important role in how books are now being searched into the system. Searching books in library becoming more difficult due to the large number of collection and user's incompetent in library skills. To overcome this problem, an initiative had been created by using QR code in Library System (OPAC). The objective of MyScanLib@QRCode is enhancing book searching in library. If users scan this code with a smartphone, the picture of exact location of the book will appear in the phone, and they can send this information via text, email or just come to the stack to find the book. The MyScanLib@QRCode creation process is pretty straightforward. Only the link of QR code will be added into the library system. This will cost only a small space in the library system. The impact of MyScanLib@QRCode is it can reduce time consumed by 25% for first timer user to find the book. Book searching in library will also become more effective and efficient. This innovation also offers the flexibility to reach users in previously disconnected campus and library spaces.

***Keywords*:** QR Code, Library System, Library Skills, MyScanLib@QRCode, Books Searching.

C265. BIO-DURIOPANDANUS WRAPPING PAPER

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Abstract: The use of paper in food wrapping has become a necessity for many food vendors. Due to its low cost, variety of design and convenient handling, it eventually satisfies the vendors and consumers' need. However, most of this paper consist harmful chemical substances that can lead to health problems. Besides that, nowadays, there are many food poisoning cases caused due to the consumption of food contaminated by household insects such as cockroaches. Furthermore, the massive amounts of the agricultural waste of durian pericarp pose a threat to the environment. With the view of these aspects, this study was conducted to investigate the potentials of paper made from the mixture of *Durio zibethinus* pericarp and *Pandanus amaryllifolius* leaves as food wrapping paper and act as insect repellent. The papers were produced from the mixture of Durio zibethinus pericarp and *Pandanus amaryllifolius* leaves in different ratios which were ratio 0:250, 100:150, 125:125, 150:100 and 250:0 (w/w) with the thickness of each paper was ±1 mm respectively. The produced papers were tested in three aspects which were the ability of the paper to absorb oil, the effectiveness of paper in order to repel cockroaches and also the strength of the paper. The findings revealed that the best ratio in producing a quality paper to be a good oil absorbent paper and act as a cockroach repellent is at ratio 125:125, while for the tensile strength test is at 250:0. Thus, this study shows the potential of paper from the mixture of *Durio zibethinus* pericarp and *Pandanus amaryllifolius* leaves as an alternative biodegradable and eco-friendly food wrapping paper and as an insect repellent.

***Keywords*:** *Durio zibethinus* pericarp, *Pandanus amaryllifolius* leaves, food wrapping paper, insect repellent

C273. EASEIF 2.0- EASY ISLAMIC FINANCE 2.0

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Abstract: EaseIF 2.0- Easy Islamic Finance 2.0 carries out the uniqueness of the modus operandi and operations of Islamic financevia animation with Multilanguage features. EaseIF 2.0is the firstelectronic resourceand neweducation invention in Malaysia which purposely focuses on Islamic finance. This is a new dimension for Islamic finance and it can be one of the solutionsespecially for students and educators to get more exposure about the Islamic finance product operations instead of knowledge from text books and other reference materials. Like before, students hard to memorize and understand the flow of the Islamic finance operations.EasyIF 2.0 contains the variety of operations (including frequent questions and answers) in Islamic Financecontract like Al Wadiah and Al Ijarahwhich practically used in daily activities. Attractive animations of the operations help studentsto memorize the flow of Islamic finance operations more effectivelyand learn the easy way on how the contract works.EasyIF2.0(Via CDs and online) is a medium to aid not only for students and educators, but also benefitsand educatesfor the public in sense of exposure in Islamic financing products in the marketplace.EasyIF 2.0 has a huge potential to commercialize since Malaysia can be considered as one of the big hubs for Islamic finance education centre in the world, yet more Malaysians will use Islamic finance products in their daily transactions.EasyIF2.0 encourages users to have a veryconduciveand warm learning experience as well as inculcate the hedonic experience and educate the users in Malaysia about Islamic finance.

Keywords: Operations of Islamic finance via animation, Variety of operations in Islamic financing contract, Multilanguage features

C275. INTERNET OF THINGS BASED AGRICULTURE MONITORING AND CONTROL SYSTEM

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Abstract: Nowadays, the Internet of Things (IoT) has many advantages in every industry. IoT transformed in some familiar places like home, cities, factories and also in the agriculture industry. By IoT farmers enable to contend with the enormous challenges they face. The agriculture industry must overcome increasing water shortages, difficult to manage costs, limited availability of lands, while meeting the increasing consumption needs of a global population that is expected to grow by 70% by 2050. (Reference: Food and Agriculture Organization of the United Nations). To reach the goal of agricultural growth in 2050, it can be helped by using the data. With the data that the farmers get from new innovative IoT applications can be addressed the issues of fields, water, air and even the livestock. The IoT helps farmers better informed of their land, crops and animals so they know how to increase quality, quantity, sustainability and cost effectiveness of agricultural production. This smart farming system product is based on "Internet of Things (IoT)" technology. Consumers especially farmers are able to monitor soil, environment condition, fish pond and poultry farm via smart phone or computer. Farmers are able to control plant watering system, poultry farm and pond irrigation system. Every data is collected from temperature and humidity sensor, water level and its pH sensor. This system monitors and records the data of soil moisture and its temperature for planting system. Besides, it is also monitor and record the data of water level, pH and its temperature and air humidity. Then, it monitors temperature and humidity, controls ventilation and electricity system at a poultry farm. All of these monitoring, controlling and recording can be done anywhere at any time through internet via smart phone or computer. "Real Time" data can be uploaded in "Cloud" IoT hub (Thingspeak) and analyzed to get accurate information. This product benefits many farmers either in planting or livestock sectors with the ability to reduce losses. Hopefully, farmers will be able to increase their productivity and profit by using this system. Besides, it is useful for university researchers and students of agriculture in monitoring their activity.

***Keywords*:** Internet of Things, agriculture, monitor, control, plant, pond and poultry

C276. SMART INTERNET OF THINGS GARBAGE BIN (IOT)

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Abstract: The project focussed on the implementation of Smart Garbage bin using Internet of Things concept which can be useful for waste disposal planning in smart city environment. The Smart Garbage bin can optimize garbage collection by analyzing the garbage level in the bin based on the sensor attached to the garbage bin whereby the garbage crew can decide when is the optimum time to dispatch garbage trucks to collect waste. The smart garbage bin also can give various statistics on waste production level in the areas where smart garbage bin is deployed which can help in waste disposal planning by the city management.

***Keywords*:** This section should contain maximum of 5 words separated by commas.

C278. DESIGN AND PERFORMANCE ANALYSIS OF A PHOTOVOLTAIC/THERMAL SOLAR COLLECTOR

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Abstract: The world demand of energy is increasing continuously, and solar energy is one of the renewable energy that can be utilized to fulfill the demand. Over the years, there are many researches that have been carried out on hybrid air solar collector. This paper discusses the design and theoretical studies of a photovoltaic/thermal (PV/T) solar collector. Since there is a drop of efficiency of the photovoltaic cells as the operating temperature increases, this study proposes a design of PV/T solar collector with an air-cooling system to improve its overall performance. The aim of this study is to design and analyse the performance of a PV/T air solar collector with fins.

***Keywords*:** Solar energy, photovoltaic/thermal, electrical efficiency, thermal efficiency.

SATELLITE

EVENT D

PRIMARY/SECONDARY SCHOOL
INNOVATION

D009. THE FABRICATION OF ECO GREEN ADSORBENT FOR SUSTAINABLE DEVELOPMENT TO ENVIRONMENT

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Abstract: The research entitles the innovation of eco green adsorbent for capturing carbon dioxide in industry to be made as an alternative for reduces carbon dioxide from the industry. The main objective of this research is to fabricate porous CaO/Zr-Ce a substitute to Amine to CO_2 develop an alternative resource from waste available wastes in Malaysia as well as other countries. Calcium Oxide (CaO) based materials have been proposed as potential candidates for CO_2 adsorption to reduce the emission of carbon dioxide (CO_2) into the atmosphere especially from the combustion of fossil fuel power plants. In this research, calcium oxide (CaO) incorporated zirconium oxide (ZrO_2) and cerium oxide (CeO_2) scaffold were fabricated and polyeurethane foam (PU) was used as the scaffold template. Slurry with 40% solid loading of Cao, ZrO_2 and CeO_2 powders (CaO/Zr-Ce) and additional 3 wt% of polyvinyl alcohol (PVA) powder was prepared, and then immerse the PU foam into the slurry. Heat treatment started with burnout PU foam at 650 ◦C for an hour followed by sintering up to 1300 ◦C and soak for another an hour. And then, the CO_2 adsorption performances of CaO/Zr-Ce scaffold before and after heat treatment were investigated. The CO_2 adsorption capacities of CO/Zr-Ce scaffold after treatment is 0.33 g-CO_2/g-adsorbent within 1 minute compared to as prepared CaO/Zr-Ce scaffold 0.15 g-CO_2/g-adsorbent. To determine the result, the characterization are Scanning Electron Microscope (SEM), Thermogravimetry Analysis (TGA) and X-ray Diffraction (XRD). In the conclusion, CaO/Zr-Ce Eco Green Adsorbent (EGA) was successfully produced by impregnation of PU foam CaO/Zr-Ce and CeO_2 slip. XRD show that Cao/Zr-Ce scaffold is crystallized with $Ca(OH)_2$ dominant peak. CO_2 adsorb by Cao/Zr-Ce scaffold is 0.33 g-CO_2/g-adsorbent which is better than commercial milestone.

Keywords: Eco green, PU Foam

D010. VOTIVE CARBONATE TO INOCULATE SHELLFISH

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Abstract: Mother Nature's poor ocean is acidified due to the excessive amount of CO_2 absorbed. This harmless gas that is coming from uncontrolled industrial activities can turn out to be deadly, as it turns our sea into Carbonic Acid. Carbonic Acid contains Hydrogen Ions that is our main reason why the calcium carbonate creatures in the sea, are abrading at the speed of light. This problem isn't as small as it may seem as ocean acidification is taking a big toll on our shellfish. To overcome this truly depressing effect, we tried to find a substitute to sacrifice itself in order to save our shells, corals, planktons and so many more. We had to act as fast as possible for our shellfish as well as our future generation that might not be able to see a shell on the beach in the near future because the species might be extinct by then. We also want to protect our planet, and we're starting off with our ocean. In the end, we found a perfect alternative that is also calcium carbonate and easy to find. We have decided to use eggshells as our savior. To make sure that this alternative can actually work and it will not cause further maltreat to our ocean, we have prepared an experiment that required 3 sets of 3 jars – each containing a seashell, 100ml of acidified ocean, and different amounts of crushed eggshells in each set. In the first set labelled C (that stands for controlled) it does not contain any pulverized eggshells whereas the set labelled V2 contains 2g and V4 contains 4g of our 'immolating carbonate'. Results have shown an obvious difference as set C suffered 20% mass reduction while the other two sets with 2g and 4g did not suffer any mass loss at all.

D011. PALMERA FLOORING

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Abstract: This research is an alternative to replace wood supply in flooring industry is by using abundance oil palm wood (OPW) which is fast growing species in Malaysia. OPW is dried using kiln dryer to reduce moisture content until 12%-15%. The OPW was impregnation using phenol formaldehyde with 15% solid content with the pressure of 100-120 psi for about 15 minutes. Next, the impregnated OPW again goes through process of drying until the moisture content reach 70%. After that, hot pressing densification method was done with the pressure of 100-120 Bar for one hour to maintain the densification level which is 50% with the temperature of 150˚C. The OPW were tested for static bending, water absorption and thickness swelling test. The results showed that, the treated OPW is 5 times more elastic than untreated OPW. It is also proven that treated OPW absorb only 20% of water content while the thickness swelling is only 22% compared to untreated OPW. In conclusion, the treated OPW shows a better quality in making flooring material. Moreover, it overcomes the problem of deforestation by using waste OPW and OPW flooring is free from termites and mold. Finally, it has high aesthetic value.

***Keywords*:** Static bending, water absorption

D019. ECO SOIL

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Abstract: In the age of modern science and technology, the society is facing the problem in handling waste product wisely especially wasted papers. The accumulation of these wasted papers has fulfilled almost 20% of landfill all around the world. Due to this problem, eco soil has came out to be one of the solutions in reducing the amount of wasted papers on earth. therefore our main objective to produce this product is to reduce the waste accumulation in our country which seem to become bigger, besides designing a new medium for seedling.By using only warm water the papers were immersed for two weeks .The papers were then mix with some organic matter such as coffee husk, wood ash and bone meal that can be found abundantly in our domestic waste . These type of materials are believed to provide important nutrient for the growth of plant. Thus, the innovation of *Eco Soil* in this context is also to design a new medium for seedling. As the world nowadays are also facing the issue of land contamination, the production of our own seedling medium will be helpful in controlling the quality of the medium. Healthy medium of seedling will surely produce healthy source of food for the human kind to sustain the life on earth.

Keywords: domestic waste, wasted paper, agriculture, seedling.

D022. SILENT SOUND ALERT

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Abstract: This innovation is specially made for the hearing impaired drivers to drive safely. He will be alerted of any horn or warning sound thus keeping him and other road users safe. Consist of A Control Unit, Two Led Level Indicators, Two Microphones and specially modified Steering Wheel with Two Vibrators. Microphones are fixed to the front and rear of the car. When it detects a loud sound for example the sound of the horn, the corresponding LED Level Indicator will turn red and the corresponding vibrator indicating the direction of the sound will vibrate. Silent Sound Alert is useful for hearing impaired drivers, senior drivers, and drivers who like to listen to loud music while driving. This innovation has been tested with hearing impaired drivers. They find the innovation to be useful and fulfill their needs.

***Keywords*:** hearing impaired drivers, safe driving, horn detection, senior drivers

D025. SMART CONTROL

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Abstract: This innovation is to help teachers keep track on the number of pupils that leave the class during lessons. It is used to discipline pupils and minimise class interuptions during lessons.Two Smart Control Unit. One for boys and one for girls. Three different colour cards. Purple card is the Master Reset for teachers, Blue Card for boys, Pink Card for girls. First teacher will reset the Smart Contol Unit using the Purple card. The reading will be set to '0' automatically. When a pupil needs to go out, he will tap the card on the unit and the number will go to '1' and so on until the maximum number of '9' is reached. Once the maximun is reached, the Smart Control Unit will freeze until the teacher reset the unit again. The number of pupils who go out and back can than be monitored. In our pilot project Smart Control prove to be very effective in monitoring the movement of students. There is less interuptions during lessons and lessons can be carried out more effectively. Please follow this link to view the effectiveness of this project. https://www.youtube.com/watch?v=M6WeOQWsKQg

Keywords:class control, discipline, less interuption,

D026. GREEN EMERGENCY MULTIPURPOSE PONTOON (GEM)

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Abstract: Flash flood, seasonal flood and all flood will bring a major disaster for human and all. Loss of human life, animal stocks, important documents and others is unavoidable. Take for instance the flash flood that happened in Penang on the 5th November 2017. It is reported that seven (7) lives were lost, a lot of vehicles broke down and the emotional distress felt by the victims were overwhelmed. A lot of Penang citizen were caught off guards, the rain is not heavy but drizzly and it stays that way for about 1 day non-stop. Then suddenly the water start rising because coincidently it is also the high tide for natural water thus, the overflow water cannot be distributed into rivers and sea. With Green Emergency Multipurpose Pontoon (GEM), people will have more time to protect their documents, pets and most importantly life. GEM will be floating according to the water level, thus making it easier for user to grab and use it. In normal daily use, GEM can be used as a table, playing board game, and others. It will not be an eye sore in the house. It will cost minimal because most of the materials used is from recyclable materials. It is hope this GEM can be equipped to each house that are prone to flood and ultimately save life, documents and others.

***Keywords*:** Recycle, flood, safety

D034. SHAKE SHAKE POWER TOOTHBRUSH

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Abstract: Many of us have had past experiences with cleaning our teeth. Sometimes we do not clean our teeth thoroughly or effectively especially children. Eventually, we came out with this idea, "The Add-on Detachable Vibrating Holder for Toothbrush". It will solve this problem with absolute ease. The Add-on Detachable Vibrating Holder for Toothbrush structurally comprises of an elongated body which consists of a releasable toothbrush holder, a vibrator button, a switch and a DC electrical power source. It is lightweight and durable and made of ABS material. Most importantly, our invention virtually fits any toothbrush and easy to use. A user only need to engage the toothbrush handle to the add-on holder and it is ready to be used. The transmission of the high frequency vibration from the add-on holder to the toothbrush will assist in teeth cleaning and simultaneously massage the gum. A user can easily replace a toothbrush with the snap click mechanism on the holder. The Add-on Detachable Vibrating Holder for Toothbrush comes with a LED light and a refillable housing for dental floss. With these added features, the Add-on Detachable Vibrating Holder for Toothbrush will be more versatile. This holder is designed to make brushing a fun part of the daily routine and teach everyone the ideal brushing habit. It is more effective than manual toothbrush. The most important part of our invention is it virtually fits any toothbrush and easy to use. It is user-friendly and ideal for every family.

***Keywords*:** Toothbrush, holder, vibrating, detachable

D035. "POCKET THERMO-LIGHT" TRAVELLER SURVIVAL

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Abstract: As a solo traveller, it feels important to pack light. For this reason an ultimate packing list must be made for a carry-on. A traveller needs a minimal amount of need while travelling. During travelling, the possibilities of unwanted disaster maybe happen. When this happens, for example when in a dark environment at night it is inconvenient and sometimes it happens in the forest. It's scary and needs to keep going survive. The need at that time was to do the living where it needed light to see and also heat to survive. Therefore, this project aims to alleviate the problems faced by the traveller in preparation for the distress. The objective is to design and fabricate a product called "Pocket Thermo-light" where it is small, mobility, no battery needed and at low cost for traveller is an advantage. This innovation can be used by travellers to emit light to illuminate the darkness from the LED light source without battery. Another advantage is that it can also start the fire using some of the heat supplied for subsequent combustion. And the best thing is it can be store in the traveller pocket.

***Keywords*:** treveller needs, no battery touchlight, heat touchlight, pocket tourchlight

D036. "LIGHT AND HEAT" TRAVELLER'S BELT

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Abstract: As a solo traveller, it feels important to pack light. For this reason an ultimate packing list must be made for a carry-on. A traveller needs a minimal amount of need while travelling. During travelling, the possibilities of unwanted disaster maybe happen. When this happens, for example when in a dark environment at night it is inconvenient and sometimes it happens in the forest. It's scary and needs to keep going survive. The need at that time was to do the living where it needed light to see and also heat to survive. Therefore, this project aims to alleviate the problems faced by the traveller in preparation for the distress. The objective is to design and fabricate the "Light and heat" traveller's belt where it is small, mobility, no battery needed and at low cost for traveller is an advantage. This innovation can be used by travellers to emit light to illuminate the darkness from the LED light source without battery. Another advantage is that it can also start the fire using some of the heat supplied for subsequent combustion. And the best thing is it can be placed on the waist belt without worrying about losing, lagging or falling.

***Keywords*:** treveller belt, belt light, belt heat

D040. G-TARSIA

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Abstract: A grammar of a language is a set of language rules which speakers use to make meanings. Grammar is fundamental in the learning of English language, however pupils usually find learning grammar as being difficult. Learning of grammar usually involves drilling and memorizing formulas which it could be a mundane task for the pupils which eventually destroys the joy of learning English. Therefore, G-Tarsia is an innovation in the learning grammar for the primary ESL classroom. Indeed, it is a strategy to assist pupils in grasping better understanding of the grammatical items learnt with the integration of ICT. It helps to attract pupils' attention, lower pupils' anxiety, boost pupils' confidence and provide the chance for real communication. It is an innovation in a form of jigsaws or dominos game that young learners enjoy to play. Furthermore, G-Tarsia had combined the 4C's in the 21st century learning – creativity, critical thinking, communication and collaboration, thus promotes active learning of grammar in the activities designed.

D041. SMART SHOE SAVER

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Abstract: This innovation consist of two fans enclosed in a box with twin air intake and twin air exhaust. There will be a compartment for putting air freshener at the air intake. This innovation will run on USB power supply and batteries. There will be three problems solved by this innovation. a) Washing shoes at the last minute and no time to dry. b) Smelly and damp shoes after school or work. c) Expensive sports shoes are not to be dried in the sun after washing. Drying the expensive sport shoes will cause the gum to dry out and shorten the life of the shoes. The sole of the shoes will come off if dried in the sun and thus the main reason for this project. How to use the Smart Shoe Saver. i) Add some air freshener in the air intake compartment. It can be as simple as pandan leaves or essential oil. ii) Insert the air exhaust pipe into each shoe. iii) Switch on the Smart Shoe Saver and leave over night. iv) By morning the shoes will be dry and smelling fresh. Advantages. i) Very low power consumption. ii) Very silent operation. iii) Fresh pair of shoes to school and work every morning. With this innovation we can be assured of dry, fresh shoes every morning.

Keywords: dry shoes, fresh shoes, smelly shoes, damp shoes

D042. CAP-IT

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Abstract: A very useful innovation was conducted to reuse discarded plastic bottles and aluminium cans. It can be used to store liquid and non-liquid products. This innovation is two-prong as it solved the plastic waste and also aluminium waste. Normally we see plastic bottles and aluminium cans been discarded away. Here we put them together and solved two problems at once. We take a plastic bottle and cut it into half, keeping the upper half with the cap. Then we take an aluminium can and take off the upper lid by light sanding. Then fixed the upper half of the bottle to the top of the aluminium can. Then use a hot blower and heat up the bottom of the bottle. The plastic bottom will shrink and fixed tightly to the top of the aluminium can. It can be used to store liquid and non-liquid products. Cap-it is more robust then the original plastic bottle and if the aluminium cannot be used alone as we cannot put a cap on it. It is environmental friendly and help to reduce waste.

D044. AVERRHOA BILIMBI VINEGAR (ABV)

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Abstract: A study was done to produce acetic acid from bilimbi fruit. Averrhoa Bilimbi Vinegar (ABV) is a product with its own uniqueness. Very safe to consume along with its thousand and one benefits. ABV is produced using the beneficial microorganisms. The acetobacter bacteria as the booster for the fermentation process in the ABV. ABV is more hygienic and safer as it goes through sterilization and is not contaminated with any other microorganisms. ABV benefits as a cure for literally everything. From weight loss to cancer to detoxification and many other claimed uses, it can seem like all you need to do is take some ABV and all of your problems will be solved. ABV is no doubt a competitive and a great product of innovation. Our research has verification from the laboratory of the School of Industrial, University Science Malaysia.

***Keywords*:** Averrhoa Bilimbi Vinegar, ABV

D046. THREE-DIMENSIONAL PAPER-BASED MICROFLUIDIC DEVICE WITH TUBULAR URINARY BASIN SECTION (TUBS) FOR DETECTION OF UTI

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Abstract: Despite its high recurrence and commonality, Urinary Tract Infection continues to be diagnosed with biosensor products that are either costly, derives inefficient processing rate, or has underwhelming sensitivity, thus placing the need to engineer a device that can encompass all these insufficiencies. Microfluidics is a science of designing specialized micro-channels positioned at key areas in order to control the rate of wicking fluid property in sample fluids. This study recognizes the potential of microfluidics in bioprocessing. It aims to develop a novel design of a microfluidic device for the detection of UTI with pH, Nitrite, and Leukocyte esterase colorimetric assays through parameter testing of device dimensions. The parameters set for characterization was channel width, length, assay test point size, and device paste viscosity. Each parameter was designed with a range of values to the independent variable while other dimensions were held constant. The parameters were tested using red food coloring fluid, where the viability of the parameters was gauged through relative comparison of dimensions. Cross-examination was performed by adapting parallel ranges set by previous Microfluidic researches. Following the development of device template design and printing it into book paper with wax, the device was layered alternately in the order of assay layer and neutralizing layer. The results of the study yielded a novel base device product incorporating TUBS with specific dimensions applied in the fabricated design that maximizes the fluid pathway. The most viable channel width and test spot size are 1400µL and 5mm, respectively, while the channel lengths are 7mm, 7mm, 6mm for pH, Nitrite, and Leukocyte esterase assay, respectively. A 1:40 cellulose powder to water ratio maximizes paper adhesion, while the most viable tubular urinary basin section (TUBS) dimension has 4 cm height and 0.06cm hole pathway diameter. The TUBS was integrated to avoid additional accessories upon administering for rural communities' accessibility. Similarly, the device mimics an internal timer, regulating water flow between layers differently that would equalize the processing time between each assay. Overall, these dimensions create a cheap, efficient device that yields faster processing time and higher sensitivity than current urine-diagnosis tests.

***Keywords*:** Microfludics, Urinary Tract Infection (UTI), Diagnosis, Point-of-care.

D048. EASY COOL FAN

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Abstract: Easy Cool Fan is the innovation to help user to control fan automatically by using remote control device. This product use remote control car toys to control fan speed including swing mode. This is a low cost product because the product only uses the existing fan and also the car remote control toys. Car remote control toys is attached to the fan, so all the fan speed and swing mode can be controlled in a certain distance, thus make it perfect to give a convenience to the user. The user can control the fan speed by pressing the forward/reverse button mode of car RC. Meanwhile left/right button mode of RC is used to control swing mode whether continuous swing or static movement. This is a low cost solution to have a remote control fan at our home by using the existing stand/ceiling fan and remote control toys.

D049. HYDRO FERTILIZER

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Abstract: This research work is being done due to the problem of disposable diapers that may clog the drains and cause floods. They can also produce stinky smell if we left them for a long period of time. Therefore, this research presents a preparation method for the production of an organic fertilizer using food waste, dried leaves, brown sugar, a little bit of cultured milk and disposable diapers. These materials are being stored for two weeks by mixing them with soil. Our research has successfully produced an affordable organic fertilizer that can store water up to one week each time you water your plants and provide them with the necessary nutrients without using harmful chemical substances. An investigation has been done and the result showed that plant from our hydro fertilizer grow bigger and healthier compared to the plant from an ordinary fertilizer when they did not been watered for a week. It has been concluded that the utilization of the disposable diapers can absorb water 500 times their size. The water stored will be released from time to time to retain the plants' moisture every time they are exposed to sunlight. It has also been proven that the other substances mentioned will boost your plants' productivity and helps the plants to grow bigger and healthier compared to ordinary fertilizers being sold world-wide.

Keywords: disposable, waste, fertilizer, organic, absorb, productivity

D055. BIOMASS SMART CAMPING STOVE THAT CAN PRODUCE ELECTRICITY USING THERMOELECTRIC GENERATOR

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Abstract: Innovation project that has been chosen by the inventors of Sekolah Kebangsaan Binjal entitled "Biomass Smart Camping Stove That Can Produce Electricity Using Thermoelectric Generator". The stove which is produce from utensils container has been proven to help pupils and teachers in camping activities organized by the school. A rational for the project selection is to help address the constraints faced during camping activities involving all camp activities organized by the school, especially during rainy days. The portable stove also easy to use in a limited space area with no land, easy to carry, use of environmental friendly fuels and reducing environmental pollution. The thermoelectric generator that attach on the stove make the stove can produces electric energy . It is portable and very suitable to be used by the adventurer. Burning material used is renewable energy and reduce pollution. The advantages of the stove that can be used to charge your mobile phone in a desperate situation makes it a tool that can be commercialized. In addition, this project is a project that can attract students in the form of engineering activities. The smoke produced will expel the mosquitos and fowls. Ash wood can be used to fertile the soil. Charcoal can be used to whiten the teeth. The biomass stove is designed not only to improve cooking conditions and increase burning efficiency for fuel saving, but also come with a 12V – 15V thermoelectric generator for lighting during cooking and mobile phone or battery charging to improve life style. The product is said to have commercial value when it is practically used either in the open or closed area such as a room or in a covered area. It not only used for camping purposes, but as a teaching aid and can replace the function of Bunsen burner while doing experiments in the laboratory. Moreover, the benefits of a stove that has a dual function other than as a tool for cooking, frying, baking and as such, this smart stove can also be used to charge your mobile phone if the camping site has no electricity supply. This makes the product more valuable for commercialization.

Keywords: biomass; stove; renewable energy

D073. MARIGOLD MINT BIO BASED INSECT SPRAY (MM-ARI SHOOH!)

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Abstract: Ants can be very destructive house pests. The current available ants repellent is dangerous when constantly exposed to human and pets as it contain harmful chemical substance. Aerosol spray has the tendencies to be inhaled which is not good for health. Many of the propellants used with aerosol products, such as butane or propane, are flammable and may be explosive. The innovation of MM-ARI Shooh contains Terpenes that hinders insects: Myrcene, Caryophyllene, Farnesene. It also contains high menthol compund aromatic - pungent minty smell. The habitat is near rivers, ponds and some other humid places. 500 liter of distilled water is used to soak 250 gram of Marigold and 250 gram of Mint for 2 hours. The mixture was heated to create steam with 50 ml of Hydrosol and pass through a condenser. Lastly, the Hydrosol was collected. The water will steam the plant carrying all the goodness from the plant into the air. The steam collects on the lid of the pan and condenses due to the ice cubes. Because the pot lid is upside down, as the steam turns back into a liquid form, the liquid is directed to drip down into the smaller container. This liquid is MM-ARI Shooh! Hydrosol. The observation results shows that MM-ARI Shooh! hydrosol can kill ants. Concentration test shows ratio of 1:100 can effectively kill ants. However, the higher concentration of 1:20 can have an immediate effect on ants.

Keywords: MM-ARI Shooh! Hydrosol

D075. HIGH FRUIT WRAP

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Abstract: This project is to help in wrapping fruits like mango and guava from insect attacks while it is on the tree. It is able to wrap fruits without using high stool or ladder. It consist of an extendable pole. At the end of the pole we have a device to hold a plastic or paperbag. Once the paperbag is fill with the fruit we want to wrap, a cable is activated and the mouth of the paperbag will close with the use of a rubberband. The fruit will be safely wrap and safe from insects. Fast, easy and user friendly.This device will prove invaluable to orchard owners. Its use can reduce the time needed to wrap all the fruits especially the fruits that are high up and hard to reach. The yield from the orchard will be higher as more fruits are safely wrap. Thus less fruits will be damaged by insects. Saves time and labour.

***Keywords*:** wrapping fruits, insect damaged, higher yield, user friendly, orchard owners

D076. CHEMOGTY

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Abstract: Green technology or environmental technology is the use of environmental science to conserve natural resources and environment and control the negative effects of human activities. Sustainable development is the core of environmental technology which means solutions need to take into account social, economic and environmental aspects. Under the management of waste and wastewater, ChemoGTy innovation is produced from used oils that have been used many times. Used oils dumped into the drains will cause a type of microorganisms that liberate methane gas that pollutes nature. Method to produce ChemoGTy is based on polymerization method using gliserin and used oil. ChemoGTy has got the legitimacy and credibility of the Chemistry specialists. This innovation has been used as a teaching material in atomic structures and carbon compounds. The findings show that students can understand chemistry with the use of this environmentally friendly material. This innovation can also reduce the cost of purchasing a very expensive Ball n Stick model. This ChemoGTy innovation can be commercialized and can save the planet from global warming.

***Keywords*:** Green Technology, Chemistry, and Used oils.

D086. BIOCOMPOSITE PRODUCT FROM NATURAL FIBER KENAF AND HIGH DENSITY POLYETHYLENE (HDPE)

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Abstract: This research entitles the production of biocomposite product from natural fibre-kenaf and High Density Polyethylene (HDPE) by using injection moulding process. The main purpose of this research is to produce an environmental friendly product in plastic industry. From this research, we produced a biocomposite frame. This is because plastics take a long time to be decomposed. To overcome this problem, natural fibre kenaf is used to substitute half of the usage of plastics. The mixture of 50% of HDPE and 50% of natural fibre kenaf were insert into the Twin Extruder Machine to produce biocomposite in pellet form with the temperature of 140◦C. Then, we do the Thermogravimetric Analysis (TGA) and Differential Scanning Calorimetric (DSC) test onto the pellets. The result shows that, the thermos-stability properties of biocomposites were analyzed using a Perkin Elmer Thermal Analyzer model TGA7/DTA7, over a temperature range of 35-600◦C with a heating rate of 10◦C/min with holding for 1.0 min at 30◦C under nitrogen atmosphere. The weight and percentage of residue was recorded to determine the weight losses of the sample after heating. The melting and decomposition behavior of the matrix polymer (HDPE) and the biocomposites were studied using a Mettler Toledo DSC822e Thermal analysis instrument. The scan was carried out at the heating rate of 5◦C/min from temperature range of 25-600◦C under nitrogen atmosphere. From the DSC test we decided to use the temperature 160◦C for injection moulding process. Lastly, 200 g of pellets were placed into the Injection Moulding Machine to produce a frame with the temperature 160◦C. In conclusion, we can produce an environmental friendly product from HDPE and natural fibre kenaf. We also can reduce the cost of frame production by using kenaf to substitute half of the usage of plastic.

***Keywords*:** Biocomposite product from fiber kenaf

D087. SMART SAFETY SCHOOL CHAIR

Anantarajoo s/o Selvarajoo, Pavithiran s/o Chandran, Risshi Ruben s/o Ramasamy, Karan s/o Arumugam and Joshithaa d/o Suresh
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Abstract: In this 21st century world there is various design of chair in market but still some users got fall down from chair. Tipping problem among school students make us to do an innovative chair named smart and safety school chair with multiple useful elements. Whole of the project involve various method and things like mp3 player, safety locker, foldable, bag storage and it also protect student protecting you from unwanted mosquito bites. This chair is proven as safety and multipurpose chair by testimony by users

***Keywords*:** smart, safety, chair

D088. ECO AIR PURIFIER AND MOSQUITO REPELLER

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Abstract: Homemade air purifier & mosquito repeller which have their function respectively. The product is used to remove the contaminants from the air in the room and provides healthier air in our home and office. It prevents air quality-related health conditions. Air cleaner will help for treating discomfort, indigestion, clean the air, keep away the mosquitoes from the room environment. Air cleaner can humidify the surrounding and make the environment clean and fresh. The air cleaner is able to continuously cleanse for 10 hours before needing a replenishing. The product also will repel mosquitoes that are the dangerous insects that carry one of the most widespread human disease agents with them. This product repel mosquito using the odor of essential oil.

***Keywords*:** repeller, purrifier, mosquitoes

D090. R-METAL GREEN CREATIONS

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Abstract: Metals are solid material which are shining, flexible, fusible, and ductile with good thermal and electrical conductivity such as silver, copper, iron, aluminum and alloy. It is used for variety of purposes and products such as in household, industrial and food packaging. However, the worn and used metal are usually thrown, and not properly recycled. This could lead to environmental issues. The objective of this project is to design products from used metal materials thus supports for green environmental. Used metals can be used to create other new, usable and marketable products. R-Metal Green Creations are designed using used metal products which have the potential to be marketed world-wide. This innovation project use the concept of "reuse", "recycle", "redesign" and "reduce" which is to use again the metals and remodel them as new, attractive and higher value products and as the same time reduce the environmental pollution. It also supports 11th Malaysian Plan which is green environmental and waste reduction. The methodology consists of collecting materials, analyzing potential capability, design, and test the products. The products are made from used kitchen utensils but was redesign to become a unique holder for food, stationary or decorations. Educational teaching aid tools are also created using metal food packaging. Variety of products can be produced depends to the size of metals. The results showed that these products can be commercialized as new products such as in educations and decorative metalwork. It has the ability to be redesigned as new products with minimal production cost. Subsequently, minimizing the used of raw material and reduce waste disposal. The price of these new products are in actual cheaper and value for money. These products are unique and therefore have a higher aesthetic value and can be marketed globally. Importantly it supports for green environmental inventiveness.

Keywords: Metal, Reuse, Recycle, Reduce, Green environmental

D092. ECO ROBOT

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Abstract: The project is about management of sustainable environment using robotic system . The Lego mind storm robot was used in the prototype project. First robot will move in the desired track and search for the fallen or destroy trees. When there is tree has fallen, the robot will disperse seed in that place. Besides that the robot also attach with air moisture control system where the surrounding temperature rises it will spray the surrounding with water. It will ensure moderate surrounding temperature and prevent high transpiration by the high transpiration rate by the plant.

Keywords: robot, watering, eco

D097. RAM SEBAGAI SATAH CONDONG YANG DIUBAHSUAI DARIPADA TANGGA

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Abstrak: *A Ramp As An Inclined Plane Derived From A Ladder"* atau secara ringkasnya Tangga Serbaguna *(Multifunction Ladder).* Tangga besi yang diubahsuai menjadi dwifungsi sebagai ram merupakan hasil inovasi dalam reka bentuk dan kaedah penggunaannya. Idea ini telah tercetus semasa menjelang hari sukan sekolah, di mana terdapat banyak kekangan yang dihadapi oleh guru dan murid, terutamanya dalam menyediakan peralatan untuk pelaksanaan pada Hari Sukan. Sekolah Kebangsaan Binjal merupakan sekolah luar bandar yang tidak mempunyai padang. Walaubagaimanapun, acara sukan yang merupakan acara wajib setiap sekolah perlu diadakan setiap tahun menyebabkan sambutan hari sukan sekolah terpaksa diadakan di padang di padang yang lain yang agak jauh dari sekolah. Oleh kerana perlu membawa peralatan yang diperlukan untuk hari sukan dari sekolah ke tempat lain, ianya telah menimbulkan masalah dari segi membawa peralatan tersebut kerana kesukaran dalam kerja-kerja memuat dan memunggah dari kawasan sekolah ke padang kerana memerlukan tenaga kerja dan masa yang lebih. Inilah matlamat utama mengapa kami menghasilkan produk ini. Oleh yang demikian, produk ini telah terbukti merupakan satu-satunya tangga yang boleh digunakan sebagai ramp untuk membantu kami membawa beban dengan lebih mudah, kurang tenaga kerja yang diperlukan dan lebih cepat berbanding cara biasa tanpa menggunakan ramp. Berdasarkan kajian itu, didapati bahawa penggunaan tangga serbaguna ini terbukti dapat mengurangkan masa untuk memuat dan memunggah peralatan dari 2 jam menjadi 1 jam sehari pada bulan Julai 2017. Kesimpulannya, alat ini memudahkan untuk kakitangan untuk menjalankan kerja dengan lebih lancar dan cepat. Alat ini yang mudah digunakan, mesra pengguna dan ergonomik telah membantu melancarkan proses memuat dan memunggah barang. Proses ini lebih lancar, lebih mempercepatkan masa untuk membuat kerja dan mengelakkan pembaziran tenaga kerja dimana lebih ramai pekerja dapat menyelesaikan tugas lain.

D099. NEW-GEN HUMANOID ROBOT FOR FIRE FIGHTING

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Abstract: Our world is currently facing the global warming that may lead to more forest fire and fire disaster occur as everything gets more flammable due to the high temperature of our earth atmosphere. Therefore, a New-Gen Remote Sensing Robot for Fire Fighting is essential to reduce the damage caused by natural or human made fire disaster. In addition to that, the capability of this invention to detect and extinguish fire autonomously is crucial. This is due to the fact that an uncontrolled fire can obliterate an entire room's contents within a few minutes and completely burn out a building in a couple hours. Ironically, the developed system is able to eliminate the risk of fire hazards causing death by detecting the flame before the conventional smoke detector does. The objectives of inventing this project is to invent a system that is capable to detect fires in the shortest time and take appropriate action without any human intervention. Secondly, to develop using an intelligent sensor and microcontroller based robot which continuously monitors variation of the surrounding and capable to perform self patrolling within pre-defined path. The developed robot is a dual tasking invention whereby the robot performs continuous monitoring for flame at the predefined area and execute the fire fighting task. This designated system incorporates many of the features and makes it into a single holistic device. By using Gyro sensors, IR sensor, this invention has the capability to continuously monitors variation of the surrounding area, when the flame or high temperature point is detected. The system is competent to stop automatically and indicates fire has been detected. The developed robot sounds the alarm with the help of buzzer provided to it. Buzzer sounds to intimate the occurrence of fire accident. The robot actuates an electronic valve releasing sprinkles of water on the flame within the shortest time. The robot has the function to communicate with the user with the help of GSM Communication. A warning message will be sent to the respective personnel in the industry and to nearby fire station with the GSM module provided to it.

Keywords: Fire disaster, self patrolling, extinguish autonomously

D101. TITABOS:THE TIMETABLE BOOK SELECTOR

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Abstract: Color plays a dynamic role in human daily life for identification and recognition by representing it in color code. In practice, it is a lot easier to read color codes as compared to letters and numbers. In this project, color code and color recognition sensor is being applied in designing the TITABOS, short form for the Timetable Book. Malaysian students in government schools daily routine is to pack their book according to the lesson set in the timetable. During the process, it consume time even though the student will eventually manage to memorize what book to bring and what lesson will be covered in that particular day. Applying a simple technology to the students is also a positive approach to have them aware that technology can be applied even for simple application. This project is based on both hardware and software. This project works by reading the color that has been assign to a subject ID using a color sensor. In the book shelf, the book are assign to each rack that has its own LED. When a timetable of a particular day is being insert to the timetable reader slot, the specific LED will lit up. User will then collect the book accordingly and set to go for school. This project uses ARDUINO MEGA 2560 as its microcontroller. The project is seen to be helpful for students and even college students. It can also be applied to any timetable.

***Keywords*:** Arduino, timetable, color sensor, organizer, colorcode

D114. SMART ROOM FOR KIDS

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Abstract: Some children have their own bedroom. Before going to bed, children like to turn on the lights and fans at high speed. After they fall asleep, parents need to turn off the lights and reduce the fan speed (the weather gets colder by morning). Failure to do so may increase electricity consumption and affect kids' health. Smart Room for Kids is designed to cater those problems. This smart room will turns off the lights automatically. Additionally, the smart room will slow down the fan speed by morning. Smart room for kids is beneficial not only for kids but also for adults.

***Keywords*:** smart room, smart lights, smart fans.

D115. UTILIZING INTERDIGITATED ELECTRODE (IDE) AS A PORTABLE COCONUT MILK QUALITY AND PURITY DETECTOR

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Abstract: This research was done to determine the quality (time taken to spoilt) and purity (over water addition) of coconut milk by utilizing and interdigital electrode (IDE) - *IDE AU 200*. This IDE allows the reading of induction, resistance and capacitance value through a conductor, in this case the coconut milk. From the resistance reading we can find the quality of the coconut milk. As our hypothesis suggest that when spoilage occurs, the coconut milk will became sour which shows the property of acid. When acidity increases, the resistance decreases. From the capacitance and resistance reading we can obtain the purity of the coconut milk. Based on our hypothesis, we believe that when water is added into coconut milk, the permittivity of the coconut milk (ε_r) changes. From the reading of the capacitance we can calculate the permittivity of the coconut milk. The research was done by connecting the IDE to an LCR meter to obtain the readings. The IDE must be submerged at a specific level to obtain the accurate reading. The reading is taken at different frequency at 20Hz ~ 20 kHz to later be selected the best frequency. The milk is produced by using a cold press machine to get the absolute pure coconut milk. The experiment was done in two ways which is the purity test and the quality test. The purity test is done by taking the capacitance and resistance reading every 10 ml water added until it reach 100% of the water volume (50 ml). For the quality test the resistance reading and pH value is taken every 1 hour for 8 hours to see the change in spoilage. From the research, when spoilage occurs, the coconut milk will became sour which shows the property of acid. When acidity increases, the resistance decreases. Therefore, spoilage of coconut milk can be determined by resistance reading. As more water is added, the capacitance value change slightly. However, the effect of water added are more obvious from the resistance measurement. So it is possible to determine the purity of coconut milk upon water added.

***Keywords*:** IDE, resistance, capacitance, coconut milk, and calculation

D117. ANTI SNATCH-THEFT HANDBAG

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Abstract: Our society has been threathened by the actions of some unlawful people that try to obtain someone's possession illegally by abusive forces. Pickpocketing, stealing, robbery, burglary and so on are not uncommon in today's society.The most condemned one is purse theft burglary because even without proper planning, this crime could be commited with ease through surprise attacks. This creates constant feeling of fear among the pedestrians as they might be the next victims. Therefore, anti snatch handbag is specifically designed to tackle this problem. Our objective is to design a handbag that could prevent purse theft burglary. Conventional handbag is improvised with added safety measures without neglecting the commercial aspects. The safety measures added are designed based on two fundamental principles, first, to prevent the handbag from being easily snatched and secondly, to allow the owners to obtain back their stolen handbags. Firstly, for the prevention purposes, our team has considered to add compatible safety measures which focus on immobilising the burglar and triggering public alert. The fundamental mechanism is, we would attach a built-in sensor. When a sudden and excessive force is applied to the handbag, the sensor would identify it as a threat and will trigger further responses. The first response is, the system will trigger a built in alarm that would alert nearby people. The second response functions to immobilise the attacker, we plan to add a defense system which will transmit non-fatal electrical shock to the attacker only. Secondly, for tracking stolen handbag which is highly unlikely if the prevention mechanism manages to work properly, we plan to attach a hidden GPS-system into the handbag. By doing so, the stolen handbag can be tracked via compatible devices such as smartphones.

D118. EZ PURSE

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Abstract: Nowadays, many famous companies such as Chloe, Dior, and Furla make a purse that focused on the design for fashion. However, they does not focus on the contents of the purse to make the consumer's life easier and feel more comfortable to use it. Ez Purse is created to overcome the problems with the purse designed today. Many people face the problem to take out coins because they are mixed with the cash. It is hard to find the coins in the same section as the cash. The Ez Purse's purpose is to separate the coins and the bill also to ensure the people to take out them easily. The benefit of this purse is less time can be taken to take out the jumbled coins and cash.

D122. MALAY LEGACY TRADITIONAL HERBAL BATH SET

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Nur Qistina Balqis Binti Mohd Roslan and Nur Adleen Danessa Binti Ahmad Firdaus
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Abstract: There are many beauty and post natal products today. However, these product have high chemical substances like paraben, mercury and Sodium Lauryl Sulphate which can damage our skin. They are not suitable for our skin. Nowadays, people in this generation does not have knowledge about Malay herbs. This product can lift the prestige of Malay herbs beside of English and Chinese herbs. This project therefore aims to create a product that is suitable for after birth women, sensitive skins and skin irritation. For the post natal women, they does not have to make difficult steps preparing the herbs bath. This set includes Herbal Soap, Herbal Scrub, Herbal Lotion, Herbal Mask and Herbal Intimate Soap. This product is homemade and tested having a lower pH for a proper skin health. We use 40 various selected herbs that have many benefits for the post natal women or for our skin. This product can be used to all over the world because of it simple form, so we don't have to find the herbs anymore .

D123. MUGTEENIE

Nurin Ashikin Binti Mohd Nazir, Nurul Husna Binti Mohd Zaki, Nurul Nadia Binti Baharuddin and Nur Izni Sabihah
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Abstract: Nowadays, there are variety types of mug design sold in the market. However, mugs in the market can only be used for drinking. Therefore, we produce this product to diversify more of the mugs functions. MUGTEENIE is created to overcome an issue to bring a variety of snacks like biscuits and drink at a time. MUGTEENIE'S function is , it has a tissue store , hanging place for spoons and small snacks storage. You can also put others like candies or anything based on your wish. Besides, snack storage is available for filling small snacks like crackers and biscuits. Furthermore , a tissue store function for drying hands, wiping surfaces , and cleaning up spills . So , this MUGTEENIE is easy for you to bring it anywhere as you travel, go to school or work. We are very sure that our product will be convenient for our users.

D124: TRIPLE E FAN CLEANER

Hanis Mazrah Binti Othman, Eisya Nur Fazrin Binti Ahmad Tarmize, Nur Diyana Athirah Binti Norizan and Fatin Athirah Binti Mohd Tarmizi
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Abstract: Everday we are exposed to hundreds of dust in the air.most of the fan cleaner n the markets nowdays are only cleaning the outside of fan. So, we have to open the fan one by one to get a perfect cleaning. It will be a problem for us and can cause injury for us. From the research we have studied, to open the fan part will take quite a while. The use of triple e fan cleaner in cleaning is growing in popularity. Trople e fan cleaner will completely changing the way people clean their fan. Usually housewives would typically use the regular fan cleaner to get rid of the dust. Using triple e fan cleaner to clean has easily reduced our cleaning time by 50%. When you use this product, it will more easier to maintain and more thoroughly cleaned when using a microfiber clothes which we included in this product. As an added bonus, we have the 2 in 1 cleaning way that will make you will not struggled like the fan cleaner that you using now. If you use this product it will make you no longer dread. Making cleaning truly easy and actually fun is a tall order. Now, when you do find a chunk of cleaning time by using the triple e fan cleaner.

D125. SPAGHANA FLOUR

Nur Kaiyisah Safiah Bt Adzhar, Aisyah Sakinah Bt Amir and Anis Athirah Bt Zamri
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Abstract: Malaysia is a tropical country with an abundance of banana trees. However banana trees are mostly known for their fruit, banana blossom and bark not for their peel. Most of the time after the leaves, fruit and flowers are cultivated so that the peel is dispose. The objective we do that is to discover the potentials of the unripe banana and to save our resources because we can benefit from unripe banana. The novelty is banana content a lot of nutrition the flour contains a combination of unripe banana which has been used before produce a good aroma after process. The potentials commercial is for bakery supermarket and cafe.

D126. LOCKTAINER

Nur Aqilah Binti Abdul Manan, Amiera Zukaikha Bınti Anuar Liza, Wan NurDiana Natasya Binti Wan Malik and Diyanah Kamilah Binti Mohd Ghafri
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Abstract: In this era, people will buy upscale price wardrobe, but less quality such as canvas wardrobe and hinged modular wardrobe. They will not even think, about the wardrobe being crumbled or eaten by termites. In addition,the cloth also a victim of termites. Then we are inspired to create an extraordinary endurance Locktainer, which will ensure the safety of our goods. The main materials to make Locktainer, are disposable items that last long. We guarantee that consumers will be delighted with our product.

D127. SUPER EASY BANK

Wan Nur Batrisyia Bt Wan Mohd Sofi, Nuratirah Huwaida Bt Mohd Zuraidi, Intan Nuramira Bt Mohd Azhar and Nurul Najwa Asyilah Bt Roskifzan
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Abstract: Nowadays, not many children like saving money in piggy banks. This is because when the money is put in there, all of them will get jumbled up together. Children nowadays don't like to waste time doing tiring activities as the piggy bank needs a lot of time to separate the money according their values. Although adults tell them, that saving money can bring to a good future. Our product is the solution to the children's lazy attitude. Our product is a piggy bank that separates the money according to their value, especially coins .Our goal of creating this product is to facilitate quick withdrawals in case of emergency. This product is suitable for children, plus this product can teach the child how to manage money effectively and also simplify everyday life when they want to get money by each value. This can safe time when we want to take money such as coins that are in the piggy bank are mixed up with other banknotes.

D128. PETS' GROOMING KIT

Aisyah Nur Syafiqah Binti Ahmad Rafiqi, Ainin Sofiya Binti Edrus, Siti Mariam Binti Abdul Hafidz and Aina Sofea Binti Abdul Dolamidin
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Abstract: Nowadays, pets are the ideal friend for adult or children. Pet owners will do anything to make their pets look beautiful and stay healthy. However, the pet grooming process is time consuming and quite tedious. Besides that, pets such as cat are exposed to infections like ringworms, fungus, ticks/fleas and other infections that jeopardise their health. Therefore, we have invented a simple way to clean as well as to care for the pets. The pets grooming kit consists of a comb that releases mixture specially formulated with rosemary oil, coconut oil and papaya leaf and seeds' abstract. Each of the ingredients used in mixture are well known for multiple benefits for health. Rosemary oil not only good for consumption but also been used on pets as a hair growth stimulant and for helping produce shiny coats. The smell also found to be effective prevention for ticks and fleas. In addition, the high levels of the proteolytic enzyme papain in the papaya seed can help rid of parasites. Papaya leaf extracts also benefits the hair as a conditioner to add extra shine to dull, unruly and lifeless hair. Finally the coconut oil contains lauric acid which has antibacterial, antiviral, and anti-fungal properties. Coconut oil has also been used to aid flea allergies, dermatitis and itchy skin on pets. Therefore, the pets grooming kit provides an easy way to clean and care for the pets.

D130. SPRAYING TOOTHPASTE

Nurshazira Alisa Binti Abdul Rahman, Nur Mirza Wafina Binti Mohd Helmizan and Nuralina Husna Binti Abd Halim
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Abstract: Today there are different types of toothpaste products produced. One thousand parents have to buy different toothpicks for their use and their children. This product was created for the use of all ages whether male or female. This product is a kind products based on toothpaste. little children still do not know how to use toothpaste in the right way. These products also make it easier for people to brush teeth. Sometimes when pressing the tube, toothpaste will come out too much and more annoying was dropped into the sink. Users just need to spray this toothpaste into the mouth or over the toothbrush and continue to brush their teeth. This product is easy to carry anywhere. This product can clean your teeth more clean and effective.

D131. SPINNING CLEANIE

Nur Adiny Fikriyah Binti Muhammad Azizi, Anis Mashitah Binti Ahmad, Aina Husna Binti S. Mahdzar and Nurin Arissa Binti Zaroni
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Abstract: Nowadays, people are not that fond of cleaning their toilets especially toilet bowls. Usually the normal toilet bowl brush has a small and short handle, thus leading to some people especially the elderly who does not prefer using the brush as they have to bend their backs and hurt their spine. The old toilet bowl brush needs users to put a lot of effort in cleaning the toilet bowl yet still does not ensure a clean bowl. This is where the Spinning Cleanie comes. It comes with along and strong holder, a spinning brush which is powered by batteries and a refillable soap container. When spinning brush is used automatically cleaning detergent will come out from it and ensures that cleaning toilets will be a breeze. Detergent can be refilled in the refillable soap container. A long handle prevents your back from hurting and will make people feel less disgusted when cleaning the toilet as the handle allows them to be quite distant from the toilet bowl. This makes cleaning your toilet bowl easier and ensures a cleaner and amore hygienic toilet bowl.

D132. TOILY KIT

Nurul Husna Binti Abd Hadi, Felia Eliesya Binti Fadzil, Nur Aliya Binti Zulkhibri and Nur Ainin Sofiya Binti Johari
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Abstract: Nowadays, people use plastics bags or bags to put their toiletries when they go for travel. However, plastic bags won't last long because it could easily tore if you if we put too many stuffs in it plus it does not have any privacy if you just put them in the plastic bags. People also love to waste their money by buying expensive bags to put their stuffs, sometimes the price of the bag is not even worth it because bags nowadays are small and don't have any sections to divide your toiletries. Bags also have their own zips and zips also cannot last long because it could easily deprived when the bag is too full. Toiletries can be organize in this TOILY KIT. TOILY KIT has its own sections to divide your stuffs according to how you want it to be placed. You can easily grab your toiletries without having problems. You also can hang it anywhere you like and it is like a sling bag. You can easily bring it everywhere you like such as going for a camp or travel. This TOILY KIT will make your life easier and even more organized. To make it easier and better, we have decided to make our own toiletries holder, this product is save and will last long.

D133. COOL-HIBS

Aisyah Nuwairah Bt Anuar, Nur Adlina Bt Azmel, Faiqah Bt Mohd Nor and Safa Mardiah Bt Mohamed Radzi
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Abstract: People nowadays find that wearing hijabs are uncomfortable because they think that wearing them is hot. Therefore, we make this product to attract all women to wear hijabs. Basically, cool hibs are made to solve people's problem of feeling hot while wearing different types of hijabs. Furthermore, this product can be more fashionable compared to the normal styles. To make this hijab more attractive, we put a mini fan that can spin with the help of the solar panel on the top of the hijab. During sunny day, the fan will automatically spin because of the energy from the sun. thus, can make people feel cooler.

D134. SMART BIS

Anis Zarifah Binti Talib, Rabiatul Najihah Binti Fakarudin, Ainin Najihah Binti Azlan and Siti Aisyah Najihah Binti Rodi
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Abstract: In this century, there are many type of biscuits such as Oreo, Oat Crunch, Lexus and Marie. They are always sold out at the shops and supermarkets because of their pleasure and influenced with the advertisements that appear in the television and social media. However, biscuits selling in shops or supermarkets have many glucose and sugar that can danger our healthy leading to diabetes. In addition, Malaysia has the highest average for diabetes. Furthermore, a lot of doctors are facing more difficulties day by day leading them to stress. As of that, they do not have time to eat nor think about eating. So, we made of our biscuits that may help them to solve this problem. Furthermore our product is healthy food because it is so natural for instance the wheat flour contains no bleach but full of fiber. So, it is so suitable for peoples on diet. The main ingredients that we used in our product is T.aestrivum, Prunus Dulcis,Vitis Vinifera, Olea, Europaea, Barley Beta Glucan Plus and Helianthus Annus. The method is combine and bake using intermediate temperature to preserve the goodness of the quality ingredients.

D135. NATIPALM

Fetima Ezzehra Binti Mohd Yusran, Nur Ashiqin Binti Azizan, Ain Syifa Binti Abdul Rahim and Ainul Balqis Binti Syaharudy
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Abstract: In the era of globalization today, global warming prevents the climate in Malaysia to rise dramatically. There are various types of lip balm in the market such as Aimes Health And Beauty, Wuxi Sunmart Science and Technology Co., Ltd., and the others. The existing balm is not high quality, contains a lots of chemicals, easy to melt in hot place and not suitable for baby and kids. Therefore, we create a new product that is NATIPALM. NATIPALM is a natural product, guaranteed safe and suitable for all ages that are free of any chemicals. Furthermore, the most important part in this product also safe to kids when they swallowed it. NATIPALM can solve the most common problem of lips with made in healthy way. This product will not break because it is created in roll form. Which kind of product is NATIPALM. NATIPALM is a mix of five types of fruits, five types of vegetables which contain various types of vitamins especially vitamin c and nutrients, honey and alive oil. This product also has been tested with PH paper and litmus paper. It contain pH 5 which is suitable for lips. Lastly put the NATIPALM into its container.

Keywords: safe, eco friendly, easy, natural, recover

D140. FIREMAN DRONE

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Abstract: These drones can help firemen to get information and status of the fire and the victim that are trapped in the fire by using infrared capability. Drones help firefighters out of risky situations during rescue missions. During the dangerous blaze, firefighters will take a long time to enter the fireplace because they do not know where the victim is. So the firefighters use drones to discover the accurate destination of the victim. For the body of the drone we chose quadcopter shape. Then, the body will be covered with aramid fiber. This drone can help recognize victims because it has Red-Green-Blue Imaging Camera (RGB). We also use infrared sensor to keep the drone aware with its surrounding. Our drone also have temperature sensor for detecting the surrounding temperature. Last but not least, we also installed HMC 5883L compass to give accurate direction of drone. As a result, this drone can move without staggering because quadcopter shape is more stable and it can create a high pressure for support the drone to move. Then, aramid fiber will protect the component inside the drone from melt and damage when the drone enter the fireplace because aramid fiber is heat-resistant and strong synthetic fiber. Output of Red-Green-Blue Imaging Camera will detect the living things and non-living things. Infrared sensors can be used to detect obstacles which will prevent the drone from colliding with them. Next, the temperature detector will help the fireman to be aware of the rising temperature and bring out the victims safely. The HMC 5883L compass is useful for the controller to bring out the drone safely. In conclusion, the drones can ensure the safety of firemen during a mission and it can reduce the number of firefighters that die in a year. It also can guide the firemen to the trapped victim easily and can shorten the time of rescue. News from USA, New York City firefighters used a drone for the first time to monitor a dangerous blaze, illustrating how local governments deploy remote-controlled aircraft for risky public safety and police work.

***Keywords*:** Drone, firefighter, remote-controlled, Saving Lives, Technology

D141. 5R SMART BIN

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Abstract: Our main objective for this project is to reduce as many rubbish that can be compressed such as plastic bottles and aluminium in the 5R smart bin itself. In this research, by compressing all the rubbish in the bin, it allows more capacity in the 5R Smart Bin itself. Made from Ethylene Propylene Diene Monomer, also known as EPDM rubber, this compression roller was fabricated on a compression molding press and CNC roller grinder. These plain-faced small size rollers employs precise roller grinding capabilities, which also includes tapered, serrated, grooved, and crowned roller grinding. Besides that, the use of InfraRed (IR)sensor is to detect the trash presence whenever it is near the bin. The Passive InfraRed (PIR) sensor functions as a safety signal whenever users wants to put their hand into the bin. It will be combined with LED in order to identify when the bin will be fully compact with rubbish. Additionally, in our study, we found that the values of bin capacitance is affected when the mass of trash increases. This is the study of the compression of the trash increasing as well.

Keywords: IR sensors, PIR sensors, CNC roller grinder

D142. PENGHASILAN BIJI BENIH TIRUAN BAGI TANAMAN MAKANAN YANG BERNILAI EKONOMI TINGGI DI MALAYSIA

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Abstrak: Penghasilan biji benih tiruan merupakan satu alternatif baru yang dapat menggantikan penghasilan biji benih tanaman melalui kaedah konvensional. Melalui projek yang diusahakan ini, biji benih tiruan bagi beberapa tanaman makanan terpilih yang mempunyai nilai ekonomi yang tinggi di negara kita telah berjaya dihasilkan. Biji benih tiruan yang dihasilkan melalui projek ini ialah bagi tanaman seperti *Averhoa carambola* (belimbing), *Punica granatum* L. (delima), *Lagenaria siceraria* L. (labu air) dan *Carica papaya* L. (betik). Penghasilan biji benih tiruan ini dapat mengatasi masalah tanaman yang tidak mempunyai biji benih ataupun menghasilkan biji benih yang terhad. Biji benih tiruan ini dihasilkan melalui proses pengkapsulan propagul dengan menggunakan matriks pengkasulan yang membolehkan benih yang dihasilkan ini bercambah dalam persekitaran biasa ataupun *in vitro*. Propagul tanaman yang dikapsulkan adalah embrio somatik atau pucuk mikro yang telah dibiakkan secara aseptik melalui kaedah kultur tisu tumbuhan. Matriks pengkapsulan pula terdiri daripada bahan-bahan seperti sodium alginat dan nutrien yang diperlukan oleh tumbuh-tumbuhan. Biji benih tiruan yang dihasilkan ini mempunyai banyak kelebihan dalam pelbagai aspek. Ianya boleh disimpan dalam jangka masa yang lama sebelum dicambahkan dengan mengekalkan kualiti dan ketahanannya. Ia juga istimewa kerana dapat dihasilkan dalam kuantiti yang banyak hanya daripada satu tisu tumbuhan yang kecil. Selain itu, ia juga amat bermanfaat bagi tanaman yang tidak mempunyai biji benih ataupun biji benih yang sukar diperoleh dan mahal harganya. Biji benih yang dihasilkan juga dapat mengekalkan pemeliharaan tanaman-tanaman elit tertentu dan juga mengekalkan sifat klon semulajadi tanaman baru yang dihasilkan. Penghasilan biji benih tiruan ini dapat membantu meningkatkan penghasilan tanaman dan sekaligus meningkatkan industri pertanian di negara kita.

Kata kunci: biji benih tiruan, tanaman makanan, ekonomi, pengkapsulan, kultur tisu

D143. RECYCLING BINS FOR CLASSROOM

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Abstract: In Malaysia, recycling program has been widely initiated since 1993. However, to 2016, the recycling rate in Malaysia is only 17.5 %. Eventhough the rate is increased from 10.5% in 2012, it also means that Malaysia is very much behind compared with a number of developed countries such as Germany (62%), Austria (68%), Taiwan (60%) and Singapore (59%). Recycling awareness should be introduced since childhood by start teaching children to recycle from home and shcool. 'Recycling Bins for Classroom' is a basic way in encourage recycling behavior among Primary school students. These bins are designed to be easily recognizable, and are marked with slogans promoting recycling along with the universal recycling symbol for children. The objective of this innovation is to increase recycling rates, which translates into measurable benefit including waste reduction, energy saving dan natural resource conservation.

***Keywords*:** Recycling bins, classroom.

D146. HOMEMADE SOLAR WATER HEATER

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Abstract: The project is about management of sustainable environment. The Solar Water Heater is designed uses the concept of solar water heating technology. Water heater is an solar energy efficient way of heating water either continuously flow or in batch quantities. A homemade friendly water heater was designed by using waste products and recycling materials which can lower the cost of product itself. This design is easy to be built because of its noncomplex structure. The parts in the water heater can be replaceable. This product is simple and we use lighter equipment because can carry this product whenever we want to use it.

***Keywords*:** solar, heater, homemade

D147. IOT BASED RABBIT HOME SYSTEM

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Abstract: Rabbit industry is still new in Malaysia but has become popular since many campaigns and encouragement have been given by the government towards the development of this industry. Rabbit meat contains high ratio of protein, energy, calcium and vitamin than any other types of animal meat. The amount of cholesterol, fat and sodium is also less than other meat. There is a great opportunity of rabbit farming, and commercial production can be a great source of income and employment. Rabbits need small place for living and less food for surviving. Rabbits grow very fast and the female rabbit produce 2 to 8 kids every time. They can consume very low quality food and turn this food to high quality meat, skin or fibre. Raising rabbit can be a great income source to the unemployed educated people and landless farmers. Commercial rabbit farming business can be a great source for up the food or protein demand and a great source of employment opportunities. Through the use of Internet of Things (IOT) in relation to Industrial Revolution 4.0 (IR4.0), the farming system could be improved in term of real time and remote management in monitoring the feeding, temperature, disease and other parameters.

D148. MOUTHICA: NATURAL MOUTHWASH

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Abstract: The aim of this project are to study a potential of *Pluchea Indica* as main ingredient in natural mouthwash to study inhibition of growth of bacterial colonies against natural mouthwash sample and to study inhibition growth of bacteria colonies against difference plaque sample treated by natural mouthwash sample. This project had been made because of longer time be taken to clean up the mouth using normal way and mouthwash that had been marketed contains harm chemical. This study was conducted by using nutrient agar with three specimen which is clove, cinnamon and peppermint tea to get accurate result of the stability of product

***Keywords*:** *Pluchea indica*, natural mouthwash, plaque

D149. SINT TERRA

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Abstract: In our everyday lives, our community has to face many kinds of problem in their daily routine especially on cleanliness. As you can see there is a lot of rubbish that are making the environment dirty especially in this country. The trash can provided to the community has not been used wisely. There are still a lot of rubbish in the environment even though there is a lot of trash cans. The rubbish that people dump did not go into the trash can but instead there are on the trash can lid and just beside the trash can because people just don't care whether it is inside the trash can or not. These means that the trash can provided is not useful. This product is designed to meets the needs of the community which can solve these problems and help improve the cleanliness of our environment. Overall, the project will teach the people to throw the rubbish correctly inside the trash can. This tool can reduce labor and improve the quality of a better job in ensuring that the level of hygiene is maintained. This will help to ease the burden of the community especially in Malaysia and across the globe as well.

Keywords: community, environment

D150. I-NOBILIS ECO AQUA

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Abstract: As the population of the earth grows, so does the need for food will accure amongst human beings. Billions and billions demands of food are being requested from countries all over the world.However the lack of workers and equipment causes food production to slow down and countries with enough workers are spending a fortune exporting and importing resources. Not to forget, that the increase in food production means lower quality of item due to budget cuts etc. These factors would affect agricultural greatly where time and care is most essential. The agricultural product in question are prawn breeding sites. Prawn breeding sites require meticulous care and attention as the slightest change in tempreture and pH value of water could cause huge mishaps and major losses. Through careful planning and research, the MCKK innovation team has successfully created a machine aimed to help aspiring prawn breeders and sellers to breed and sell good quality products at a low and reasonable price. Not only is the machine able to be operated over the internet (IoT), it is also consideberaly safer and has lots of safety mechanisms to detect thieves and dangers alike. The initial cost of the machine is also very cheep. Not to forget, the machine's main fuction to detect the change of pH, BOD, ORP and tempreture of water accurately to determine the state of the prawns and is able to change it with a single command by the user as long as the user is connected to the internet. This concept is based on the usage of "Internet of Things" (IoT). The huge perk of this machine is its ability to be changed and adaptability across huge range such as salt water fish ponds, decorative fish pools and even tourist sites.

D156. POT OF GLORY

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Abstrak: Tanaman hiasan merupakan keperluan landskap di persekitaran sekolah dan juga asrama sekolah. Projek ini adalah mengenai innovasi berasaskan kitar semula untuk kegunaan hiasan landskap di sekolah yang dinamakan POT OF GLORY. Ia dicipta sebagai hiasan landskap untuk menggantikan pasu yang sering rosak serta pokok yang kerap mati disebabkan pengurusan tanaman yang tidak praktikal dan cuaca yang tidak menentu. POT OF GLORY telah melalui beberapa peringkat dalam proses innovasi dan juga telah menjalani beberapa siri ujian bagi memastikan keberkesanan fungsi dan juga daya ketahanan alat. Hasil dari innovasi POT OF GLORY, beberapa impak yang positif telah dicapai iaitu: *(1)Menggalakakan kempen kitar semula bahan terbuang(2)Penjimatan kos penggantian pasu – kos pasu RM 10.00/unit digantikan dengan POT OF GLORY RM1.50 (85%) (3) Menjimatkan kekerapan pengurusan siraman tanaman hiasan (sekali seminggu sahaja).* Dari segi potensi pengkomersialan, terdapat permintaan dari masyarakat luar berdasarkan permintan dari individu dan agensi semasa pameran POT OF GLORY diadakan kerana kos yang murah serta rekabentuk yang menarik. Projek innovasi ini juga turut selaras dengan misi dan SMK Sri Muda Penaga iaitu membangunkan potensi diri pelajar di dalam bidang inovasi yang merupakan salah satu inspirasi negara.

Kata Kunci: Landskap, bahan terbuang, pasu hiasan

D157. THE EFFECT OF ANNONA MURICATA ON RATTUS RATTUS

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Abstract: *Annona muricota* (soursop) can be used as deterrent to avoid pest species for example *Rattus rattus* (house rat). *Rattus rattus* is a common pest animal can live along human. *Rattus sp.* has been a problem for human as they are the vectors for many diseases and they also cause many instrument damaged.*Annona muricata* had been used for deterrent purposes in two different physical states, which are fresh leaves, and also agar made from blended *A. muricata* leaves. *Rattus rattus* had been released into a Y-maze to study their behavioral toward the deterrent. This finding has proved that blended *A. muricata* leaves in agar are more efficient in repelling *R. rattus* compared to fresh leaves itself. This is due to the strong and faulty odor emitted by the agar. In comparison of agar and fresh leaves of *A. muricata*, agar shows significant difference in efficacy of rendering *R. rattus*. This finding also determined that the best product in repelling *R. rattus* is blended *A. muricata* leaves in agar.

Keywords: *Annona muricata*, *Rattus rattus*, pest control, plant based deterrent, animal behavior.

D163. I-RATS

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Abstract: This innovation will help to increase the productivity of catching mouse in targeted areas especially in paddy fields or in factories as well as at homes. Furthermore, it can notify the data to its owners regarding the amount of mice that they have caught and when the trap was almost full of the rodents via programmed gsm module . The data collected shows where the highest population of mice would be and which part they would be attracted to the most. This project was equipped with a motion sensor to detect the mouse, two dc motors to move the plate (flap) and the arduino to notify its owners.The project that we have invented improved the classic mouse trap which can only catch a mouse at a time and has low durability. Our mouse trap uses electricity to electrify the mouse. The mouse will be killed quicker with less amount of sufferings. In coclusion, this innovation is hoped to replace the outdated mouse trap in order to avoid the huge number of mouse from harming our products and necessities.

D167. RIDE AND PLANT

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Abstract: In Rawang, Selangor, there are some critical environmental issues such as deforestation and air pollution. To summarize each of these issues, deforestation happens due to the rapid development of residential area and highways. Meanwhile, the air pollution is caused by the carbon dioxide released by massive transportations and also nearby factories as Rawang known as one of industrial area in Selangor. All these environmental issues will eventually lead to serious climate change if no prevention is taken. As a concern citizen, we came out with Ride and Plant, an innovation which is built to overcome these environmental issues. Ride and plant is a dual-function bicycle that is equipped with a set of soil auger. This means, a user can use the bicycle and plant trees right away. With this innovation, user may plant trees anywhere that is suitable in an easier and safer ways, anytime. To support green initiatives, Ride and Plant prototype is made by recycled materials. For Ride and Plant goals, the short term is to influence more children to plant trees and reduce the carbon dioxide in their area, while the long term goal is to combat global climate action and help the nation reach Sustainable Development Goals (SDGs). Ride and Plant is also built specifically for children where we aimed to ensure inclusive participation of them in preventing the climate change. With that, Ride and Plant hopes many children would be responsible in the environment and take part in planting trees.

Keywords: Environment, Planting, Bicycle, Children, Sustainable Development Goals

D170. FLOOD'LERT: ALAT PENGESAN DAN PEMBERI AMARAN BANJIR

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Abstrak: Projek menghasilkan satu alat yang dapat membantu mengesan paras air sungai secara terus dan cepat. Alat ini dapat membantu penduduk di pinggir sungai-sungai kecil yang sering mengalami banjir untuk membuat persiapan. Terdapat pelbagai jenis alat pengesan banjir yang telah digunapakai sebelum ini. Namun alat tersebut tidak sama sekali membantu penduduk secara terus. Fokus projek ini adalah untuk memberi kemudahan kepada penduduk agar menerima maklumat awal banjir tanpa melalui karenah birokrasi seperti yang berlaku sekarang di mana amaran banjir akan diketahui oleh pihak atasan terlebih dahulu barulah maklumat tersebut disalurkan ke peringkat bawah secara berperingkat. Alat ini dapat mengesan kenaikan paras air sungai serta menyampaikan terus maklumat kepada penduduk bagi membolehkan mereka membuat keputusan sama ada untuk bersiap sedia menyelamatkan diri atau harta benda. Maklumat yang disampaikan adalah dalam bentuk isyarat lampu serta siren dan audio amaran bagi memudahkan penduduk terutama ketika waktu malam atau waktu penduduk sedang tidur. Alat ini juga telah ditambahbaik dengan menambah ciri iaitu penghantaran maklumat terus kepada telefon orang yang bertanggungjawab. Kajian terhadap penduduk Kampung Padang Tembak, Kulim, Kedah telah dijalankan melalui kaedah menemuramah penduduk. Kesimpulan yang dapat dibuat ialah penduduk di pinggir sungai kecil yang sering mengalami banjir hanya memerhati paras air sungai bagi mengetahui keadaan semasa. Oleh itu mereka sering mengalami kerugian akibat kerosakan harta benda apabila kejadian banjir berlaku pada waktu malam ketika penduduk sedang tidur. Beberapa hipotesis telah dibuat dan alat ini telah diuji. Hasil ujian, alat ini telah membuktikan bahawa ianya dapat berfungsi dengan baik. Diharapkan agar alat ini benar-benar dapat digunapakai oleh masyarakat kerana kebolehgunaannya serta manfaatnya yang sangat baik.

D171. STB KITS

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Abstract: STB Kits is a project based on green technology was designed to overcome power interrupted (blackout) from utility. Main component of this project is Solar panel which power by renewable energy (sun). Currently when power interrupted, there were no backup supply to user and whole house will dark and no power. Some times when disaster happen it will also cut out electrical supply, then with this project it will able to save human life by provide power to make sure human can communicate to others. The project using Solar panel to catch sun energy than stored into battery 12V. The storage process support by charging circuit that able to control the efficiency of the charging system. Output from battery is connected to inverter where voltage from inverter was invert to 240V that able to powered up all electrical appliance. At same time this inverter also have usb port which is to supply 5V Dc voltage. The 5V dc normally use for charging mobile phone and other gadget. All equipment was included in small box make it compact and portable .The result from this project shows that voltage are stable and good to use in any appliance. Testing for LED lamp and fan was conducted and proven the STB kit functionality. Overall this project is usefull and good to have at every house to backup electrical power where it able to save our life.

***Keywords*:** Solar, Renewable Energy, Inverter, Power Supply, LED

D172. PPSR GOAL SETTING SYSTEM

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Abstract: Pelaporan Pentaksiran Sekolah Rendah(PPSR) yang mula diperkenalkan pada tahun 2018 merupakan pendekatan pelaporan menyeluruh kejayaan murid yang telah melalui peringkat persekolahan rendah selama 6 tahun daripada tahun 1 hingga tahun 6. PPSR menggabungkan 4 elemen penting iaitu keputusan UPSR, kecerdasan semulajadi dan aptitud, tahap penguasaan dalam mata pelajaran di sekolah serta kecergasan, tahap penglibatan dalam aktiviti luar bilik darjah. Berikutan perlaksanaan PPSR, kemasukan pelajar ke sekolah berasrama penuh (SBP) tidak hanya berdasarkan kepada kelayakan akademik, tetapi turut mengambil kira 3 kriteria lain selain daripada perlu menduduki peperiksaan khas. Ini bermakna, keputusan semua A tidak menjamin peluang pelajar untuk mendapat tempat di asrama penuh. Berdasarkan tinjauan dan pemerhatian yang dilakukan, selain daripada UPSR, masih terdapat ramai ibubapa serta pelajar yang tidak mengetahui ciri-ciri kriteria lain yang diperlukan untuk memasuki sekolah berasrama penuh (SBP). Ini menyebabkan pelajar hanya memberi tumpuan kepada pencapaian akademik tetapi mengabaikan kriteria-kriteria lain yang penting dalam PPSR. Akibatnya, pelajar mungkin tidak layak untuk menyambung pengajian ke sekolah menengah walaupun mencapai keputusan yang cemerlang dalam peperiksaan UPSR. Oleh yang demikian, perlu ada satu sistem yang membolehkan pelajar melihat dan memantau pencapaian semasa pelajar dalam semua kriteria PPSR sejak memasuki tahun 1 lagi. Ini bagi membolehkan ibubapa dan pelajar membuat perancangan serta bersedia lebih awal lagi mencapai matlamat serta memenuhi kesemua kriteria PPSR. Berdasarkan kepada kajian yang dijalankan, penggunaan sistem ini dapat membantu pelajar memahami kriteria PPSR secara keseluruhan serta membantu pelajar mengenalpasti potensi dan meletakkan sasaran untuk mendapatkan keputusan yang cemerlang dalam PPSR.

***Kata kunci*:** Pelaporan Pentaksiran Sekolah Rendah, Ujian Penilaian Sekolah Rendah, Sekolah Berasrama Penuh, SEGAK, Sekolah Rendah.

D176. SK IPGM PORTABLE OFFICE

Hafidzan bin Azmi, Syakirah Samat, Muhammad Amerul Naim, Eiman Faheem bin Khairuddin, MuhammadAfif Fahiim Khairil Anuuar, Muhammad Wafi Zaidi and Muhammad Afifuddin bin Mohd Abdul Rahim
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Abstract: Portable library powered by green technology was designed to overcome the fixed library normally use high electricity due to make students comfort. Previously user need to apply the supply from TNB and need to stop it when project finish. So with the invention there will be no more supply from TNB and its functions fully powered by solar system. The system is very simple where the container is modified as library and the electrical is supply by solar PV System and stored in batteries. The main component there is the solar panel and inverter which is able to convert supply from DC to AC that able to powered mostly electrical appliance in library. From result simulation that it capable to provide a lot of saving.

D177. SK IPGM SMART BUS STATION

Hafidzan bin Azmi, Syakirah Samat, Nur Arissa Umaira bt Hisyam, Hariz Hazim bin Mohammad Mujahidin, Muhammad Aqief Miqael bin Nor Halmey, Nur Aleesya Damia bt Ahmad Zaidi and Siti Nur Iman Irdina bt Azmi
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Abstract: Smart Bus Stop is powered by green technology which is solar. It was designed to overcome the issue of no electricity at bus stop. Previously every bus stop does not have lighting and fan. So student feel uncomfortable and sometime it can become dangerous due to night session. So with this invention of SK IPGM Smart Bus Stop, there are included with LED lighting., fan, socket 3 pin and also WIFI coverage. Best part is there are no electricity bill require since fully powered by solar. The system is comprise of Solar PV Panel, 200W inverter, PWM charger, and 12V battery. From result it should be able to powered up until 5 hours.

D178. SOLAR SHOES DRYER

Hafidzan bin Azmi, Syakirah Samat, Afif Faheem bin ohd Zuraiz, Nor Atina Qurrotu'ain bt Hakimi, Anis Nur Izzani bt Abdul Aziz, Alif Amiruddin bin Zul Qarnain and Nur Natasya Adilla bt Hafidzan
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Abstract: Solar Shoes Dryer is very handy and helpful to parents to dry school-shoes easier and more effective.

D183. INNOVATIVE MULTIPURPOSE MINI BRICK FROM WASTE OF LANDSLIDE (FROM WASTE TO WEALTH)

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Abstrak: Kejadian tanah runtuh kerap berlaku di Malaysia dan membahayakan nyawa dan harta manusia. Runtuhan tanah ini dibuang begitu sahaja dan kebanyakan dibuang di tebing bawah cerun. Apabila hujan turun timbunan sisa tanah runtuh ini menyebabkan runtuhan berlaku kali kedua dan menyebabkan pula rumah dan kampung tertimbus. Kini inovasi bermula dengan penghasilan unicbrick yang terhasil dari tanah dari runtuhan tanah runtuh, simen dan campuran kimia yang lain. Bata bersaiz mini boleh digunakan sebagai bahan hiasan dalaman, lanskap dan sebagai alatan mainan bagi kanak-kanak. Kos yang berpatutan dan inovasi berkonsepkan 'from waste to wealth' berdaya maju untuk di komersialkan. Tempahan telah dibuat oleh pihak pelanggan untuk membeli produk bersaiz mini tetapi bersignifikasikan dan mempunyai ciri-ciri perbagai guna. Unicbrick berteraskan konsep green ini juga berdaya maju untuk dipelbagaikan lagi fungsinya berteraskan konsep kreativiti dan inovasi

***Kata kunci*:** Unicbrick, from waste to wealth

SATELLITE
EVENT E

KINDERGARTEN INNOVATION

E014. POP! POP! JAWI BOOK: FUN AND INTERESTING

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Abstract: Pop-up book can be defined as a book with pages rise when opened to simulate a three-dimensional form or movable book. With 3D illustrations, it encourage readers especially kids to read consistently. By reading frequently, it will strengthen the child's vocabulary, visualization and sensory. In this project, we focus on the development of a 'pop-pop' book which is the Jawi pop-up book. The selection of Jawi as a pop-up book is because there is no Jawi Pop-up book in the Malaysian market. Besides encouraging the kids to love Jawi, we hope that this POP! POP! Learning Jawi book will sustain the Arabic-based scripts in the Malay education and culture

***Keywords*:** pop-up, kids, Jawi

E023. KELUARGA U DAN N AJAIB

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Abstrak: Kemahiran mengenal huruf merupakan satu kemahiran bahasa yang perlu dipelajari dan dikuasai oleh murid dan khususnya murid Prasekolah serta murid Pemulihan Khas dalam mempelajari bahasa. Murid-murid pemulihan Tahun 2 Bestari, SK Titi Tinggi, Perlis menghadapi masalah dalam kemahiran mengenal huruf kecil. Inovasi yang dilaksanakan ini adalah bagi menangani masalah mengecam dan mengenal huruf-huruf kecil. Fokus utama inovasi ini adalah untuk meningkatkan kemahiran mengenal huruf d, y, g, a, q, b, p dan h dan kemahiran membezakan huruf seakan sama b dan d serta p dan q. Bagi mendapatkan maklumat yang lebih terperinci, satu tinjauan awal telah dilaksanakan dalam bentuk ujian diagnostik, temu bual dan pemerhatian. Justeru itu, inovasi **Keluarga u dan n Ajaib** telah dicipta dan dilaksanakan sebagai tindakan. Inovasi ini adalah inovasi daripada pembelajaran mengenal huruf kaedah biasa kepada suatu kaedah yang lebih menarik. Kaedah ini mengaplikasikan Kaedah Cantuman Komponen Huruf dan Kaedah Membayangkan Huruf. Subjek kajian akan diberikan tindakan Keluarga u dan n Ajaib yang meliputi kitaran aktiviti berbentuk abstrak, visual, audio, kinestetik dan bertulis. Data kajian telah dianalisis dalam hasil kerja (ujian pra, ujian pos dan hasil kerja responden), pemerhatian tidak berstruktur dan temu bual. Hasil dapatan kajian, kesemua responden telah berjaya meningkatkan penguasaan dalam kemahiran mengenal huruf kecil. d, y, g, a, q, b, p dan h iaitu peningkatan bagi ketiga-tiga responden iaitu Murid 1 (7.4% kepada 100%) , Murid 2 (11.1% kepada 100%) dan Murid 3 (7.4% peningkatan kepada 100%). Inovasi ini telah disebar luas kepada beberapa sekolah dan telah diuji keberkesanannya iaitu ke sekolah SJKC Hai Ping, Sungai Besar, Selangor dan ke SK Meru, Klang, Selangor. Melalui dapatan ini, dapat dirumuskan bahawa kemahiran mengenal huruf dalam kalangan murid Prasekolah dan Pemulihan Khas dapat dikuasai sekiranya guru mempelbagaikan kaedah, bahan dan aktiviti yang bersesuaian dengan tahap murid. Suatu dapatan yang dapat diperoleh juga adalah, inovasi ini bukan sahaja sesuai untuk murid Prasekolah, malah boleh disebarluaskan kepada murid Pemulihan Khas, murid Pendidikan Khas dan murid arus perdana yang juga menghadapi masalah sama iaitu masalah mengenal huruf kecil. d, y, g, a, q, b, p dan h dan membezakan huruf seakan sama iaitu b dan d serta p dan q.

E024. DYSLEXIA LEARNING KIT (VERSION – 1) (DYLIKIT - V1)

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Abstract: Dyslexia Learning Kit versi 1 (Dylikit - V1) merupakan satu kit pembelajaran khusus untuk mengajar murid-murid bermasalah pembelajaran dyslexia di peringkat prasekolah dan pendidikan khas. Dylikit - V1 merupakan sebuah produk pembelajaran khusus tentang dyslexia yang sesuai dipasarkan secara komersial. Ciri unik kit pembelajaran ini ialah ianya mobile, menarik, ringan dan menggunakan gabungan teknologi elektronik. Dylikit - V1 ini dibina berlandaskan gabungan teori Kognitif dan Behaviourisme. Objektif pembinaan Dylikit - V1 bertujuan menjadi alat bantu mengajar atau kit latihan pantas membantu kanak-kanak dyslexia mengecam dan mengenalpasti huruf-huruf seperti b,d,u,n,p,q yang sukar dibuat pengecaman dan menimbulkan masalah utama dalam pembelajaran murid-murid disleksia. Justeru itu, Dylikit - V1 mampu meningkatkan keupayaan murid mengenal huruf dan membantu guru menjayakan pengajaran berkesan. Kajian dan temubual yang dilakukan telah menunjukkan bahawa penggunaan Dylikit - V1 secara signifikan telah berjaya membantu murid bermasalah disleksia mengecam dan mengenalpasti huruf-huruf tersebut dengan lebih baik dan seterusya meningkatkan prestasi akademik mereka di bilik darjah.

***Keywords*:** Disleksia, Kit Pembelajaran, Murid-Murid, Masalah Pembelajaran, Latihan Pantas

E031. LET'S JUMP AND THINK WITH KETINGTING

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Abstract: Today, smartphones and tablets are the latest fads among the younger generation to preoccupy them with learning entertainment, distraction, and technology to pass their time. Even in early education (kindergarten), kids have been exposed to gadgets more than they should. There is that one element that seems to be missing from most of those electronic learning gadgets - those physical and personal human interactions. This innovation of this game is designed to carter learning and physical game to incorporate both into becoming an effective learning. The game is a combination of cards game with Ketingting game (Malaysian cultural heritage). Ketingting game is not only entertaining but also beneficial for mental and physical development to the players. **'Let's Jump and Learn with Ketingting'** is an innovation of a traditional game created to add vibrantly and creativity to this learning game. With a new compelling shape and colours, **'Let's Jump and Learn with Ketingting'** is hoped to aroused curiosity and interest among the youngsters while learning.

***Keywords*:** Kindergarten, learning game, Ketingting.

E056. MAGIC CARPET

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Abstract: Magic Carpet is a product introduced as an alternative to enhance of teaching visualization and improve class management. This product is an environmental friendly because it can reduce electricity and reduce cost of preparing teaching aids. Besides, this product is durable and recyclable. Therefore it can be used for a long time compared to the present teaching aids. Magic carpet has potential marketable value to those involved in providing teaching aids for early age education.

Keywords: Magic Carpet, teaching aids, visualization, early age education, environmental friendly

E067. A STORY OF SAFIY: MY DAILY ROUTINE

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Abstract: Early childhood education is very important for the development of children's characters and identity, especially when the children have autism. The autism children need different methods of teaching and learning to ensure that they can understand things and able to solve problems. There are various methods that can be used to attract them including visual representation, diversity of colors and the use of simple and easy-to-understand sentences to draw their attention and stimulate their understanding ability. These children must be well prepared before they can enter into a primary school. Therefore, it is essentials for parents and kindergarten teachers to find ways to ensure that the children are able to manage themselves at least for their daily routine. Hence, A Story of Safiy: My Daily Routine is one of the series where it combines the most appropriate teaching and learning method not only applicable for autism children, but also for other children in nursery and kindergartens. The My Daily Routine series consists of three books; When I Wake Up, Hye I am at School and Good Night Friends, which will tell, what children need to do all day long. It is able to provide a positive impact in children's development and will also facilitate parents and kindergarten teachers to teach and discipline the children at the same time. The best is, this series can be used at anytime and anywhere since it comes in a pocket size.

Keywords: early childhood education; autism; kindergarten

E072. MINI PUPPET SHOW: MYPUPPETS

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Abstract: The purpose of this study was to evaluate the effectiveness of a set of created puppets dressed in the traditional attire of the Malaysian people together with the story cards which accompanied these puppets towards preschool children's language and social skills. The stories of these story cards were themed on two elements: i) towards environmental awareness with Malaysian historcial backgrounds as the context; and ii) inculcate Malaysian values. Upon creation of the puppets and the story cards, these were tested with a group of five year old preschool children. The methodology used was a true experiment where the presechool children were randomly selected from X preschool in the district of Mualim. The criteria for selection were children with language disorders and shyness from rural area. The findings showed that with the use of these tradionally dressed puppets and the story cards, preschool children showed improvement in their Bahasa Melayu language and social skills such as interaction with teacher and friends . In addition, the puppets and the stories were also able to stimulate the interest of the preschool children's awareness towards multicultural Malaysia, and Malaysian values.

***Keywords*:** Mini Puppet Show, MyPuppets, Multicultural, Environmental, Children

E074. ABC'S IS FUN

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Abstract: ABCs is FUN is a kind of teaching tool that can be used to help students learn and recognize letters. This tool is designed specifically to help attract students to learn the letters. This tool is shaped like a game designed to allow students to learn while playing. It is designed to attract students to learn the letters. Students will feel like they are playing, but in fact they learn to recognize and remember the letters. The material used to make ABCs is FUN is readily available. Among them are cardboard paper, mineral water bottles, adhesive tape, letters and pictures. Sketches are made on cardboard paper. The mineral water bottle is cut halfway over it. Bottle lid is stored. The cut-off portion of the bottle will be attached to the cardboard paper. The number is as much as 26. In the bottle lid will be affixed to the letter. How to use the tool is to match the bottle lid with the letter writing with a bottle that is attached to the picture next to it. ABCs is FUN has many advantages. The material to produce this product is very easy to find and cheap. It also uses wasted materials. The process of producing this product is not difficult. This product is a great benefit to students who are just beginning to learn the letters and will try to remember them. Learning process will be easier.

Keywords: tool like a game designed to allow students to learn while playing

E089. KIRA-KIRA MATEMATIK

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Abstract: *Kira-Kira Matematik* is an educational animation created using Scratch™ Programming to cater the learning of Mathematics for preschool children. Based on the workbook used by many pre school children, *Kira-Kira Matematik* emphasizes on applying the concept of gamifications such as story narrative, games and achievements and interactive quizzes. This is to make use of the educational technology concept that will engage preschool children to learn and becoming increasily interested in learning Mathematics at the very young age. Gamifications elements used in the development of this animation is to encourage preschool children to view Mathematics as a fun and enjoyable subject. The animation covers the sub topics to learn how to count in ascending and descending order, to match and list the numbers, and to add and subtract numbers. The animation can be viewed online by parents and teachers where they can assist their children learning sessions for free from dispersed locations or it can also be viewed as an educational courseware that can be used offline.

***Keywords*:** Mathematics, preschool children, gamifications, animation, Scratch™

E095. INTERACTIVE ANDROID PHONIC READING FOR KINDERGARTEN

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Abstract: The learning process at kindergarten becomes more important in early education for children. Suitable learning tools need to be used by teachers in order to enhance the learning process. Due to that reason, this Android phonic reading application has been developed for kindergarten since the technology can attract and engage children's attention. This application is known as 'Kenali ABC' and focuses on the phonic reading approach. This application has been tested using the usability test on the targeted users including kindergarten children, kindergarten teachers and Universiti Teknologi Mara (UiTM) lecturers as the experts. The results of the usability test indicate that the application has potential to be used as an alternative method in reading using phonic technique.

E100. ESCTI: ASSESSING MALAYSIAN PRESCHOOL CHILDREN IN SHORT TERM IMPACT

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Abstract: Early Childhood Education (ECE) has recently garnered much attention. Its vital role in developing children and in forming the basis of further child success and development has been recognised worldwide. The purpose of this study is to assess the impact of Early Childhood Education. ECSTI are developed based on an in depth review on impact of ECE research and literature. The instruments are developed by early childhood specialists, preschool teachers meant to assess the short term impact of ECE of 6 years old children in seven domains. The seven developmental domains assessed are cognitive, social, emotional, moral/spiritual, physical/ health, creativity and global readiness. Test booklet on all seven domains are administered through quantitative such as observation, oral interaction and written test. All instruments are administered to preschool children in Malaysia. The findings show that the most prominent domain for 6 years child development was the spiritual domain followed global readiness. The least prominent domain was cognitive and emotional domains. The findings demonstrated that the impact of ECE are moderately positive in most domains of development. Therefore, the role of ECE educators and parents is very important to make sure the children have access to these seven domains: cognitive, social, emotional, moral, physical and health, creativity and global readiness during early their childhood education.

Keywords: ECSTI, impact, assess, domains

E105. 3SKILLS4LIVE

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Abstrak: Tujuan kajian ini dijalankan adalah untuk membangunkan Modul Pengajaran dan Pembelajaran Pendidikan Alam Sekitar berasaskan KBAT. Modul bernama **3Skills4Live** adalah hasil gabungan elemen pengetahuan, kemahiran berfikir KBAT serta sikap murid-murid prasekolah terhadap penjagaan dan kehidupan di alam sekitar. Proses pembangunan modul melibatkan tiga fasa iaitu fasa analisis elemen keperluan, fasa pembangunan modul dan fasa pelaksanaan dan penilaian modul. Pembangunan modul merangkumi tiga kemahiran melibatkan Survival, Safety dan Self-Taught ketika berhadapan dengan alam sekitar, iaitu flora dan fauna, penjagaan alam sekitar dan kemandirian hidup. Pengkaji telah menjalankan program **3Skills4Live** di salah sebuah tadika terkemuka di Serdang dengan melibatkan guru dan 30 orang murid prasekolah. Dapatan kajian mendapati bahawa guru prasekolah mempunyai pengetahuan kemahiran dan sikap yang tinggi tentang KBAT. Hasil dapatan analisis dokumen dan pemerhatian menunjukkan bahawa terdapat peningkatan dalam pengetahuan, kemahiran berfikir KBAT dan sikap murid-murid prasekolah terhadap alam sekitar melalui pelaksanaan program di dalam hutan. Pengkaji juga mendapati bahawa murid prasekolah menunjukkan minat yang tinggi terhadap aktiviti dalam **3Skills4Live** berasaskan KBAT ini.

E116. 1, 2, 3! WITH AUGMENTED REALITY

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Abstract: Handwriting skill is taught very early in childhood, specifically, during pre-school. The process of learning handwriting is called handwriting-instruction and is a complicated, repetitive and time-consuming process. Often pre-school learners are quick to lose focus, enthusiasm as well as motivation. On the other hand, pre-school educators have trouble keeping them motivated and engaged, even so with a class of more than 10 pre-schoolers. One of the reasons that pre-school learners are not able to stay focused could be due to the possibiliy that they are not taught in a manner that matches their learning modality. There are three known types of learning modalities which are visual, auditory and kinaesthetic – in most cases, learners are a mix of more than one modality, with one being more predominant than the other. Augmented reality is a technology that allows for the augmentation of virtual objects in the forms of 3D models, animations or sounds, superimposed upon real-world objects and landscapes viewed through a mobile device. To address the needs of different types of learners and thus facilitate the handwriting-instruction, an mobile augmented reality book application was designed and developed by incoporating these features. Initial feedbacks from a survey among pre-school learners and instructors using the developed prototype shows that using AR as a tool in facilitating the handwriting-instruction can engage and motivate pre-school learners.

***Keywords*:** Augmented reality, pre-school education, handwriting-instruction, multimodal-learning, EMARG

E145. MODUL LITERASI AWAL (MODUL LIT-A) UNTUK KANAK-KANAK BERUMUR 2+, 3+, DAN 4+ TAHUN

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Abstrak: Di Malaysia, modul pengajaran dan pembelajaran yang spesifik berkaitan kemahiran literasi awal untuk kanak-kanak berumur 4+ tahun dan ke bawah adalah terhad. Oleh itu, Modul Literasi Awal (Modul Lit-A) telah dibangunkan yang memfokuskan lima komponen kemahiran literasi awal, iaitu; (i) bahasa dan komunikasi; (ii) konsep cetakan dan cetakan persekitaran; (iii) fonemik dan fonetik; (iv) bacaan dan kefahaman naratif; dan (v) tulisan awal. Pembangunan Modul Lit-A adalah berpandukan reka bentuk pengajaran model ADDIE (Analisis, Reka Bentuk, Pembangunan, Pelaksanaan, dan Penilaian). Modul Lit-A terdiri daripada tiga set yang berlainan mengikut umur, iaitu 2+, 3+ dan 4+ tahun supaya bersesuaian dengan pengetahuan, pengalaman, dan minat kanak-kanak. Seterusnya, kajian kuasi eksperimen telah dijalankan untuk mengenal pasti kesan Modul Lit-A terhadap pencapaian kemahiran literasi awal kanak-kanak. Sampel kajian adalah seramai 157 orang yang terdiri daripada 42 orang kanak-kanak berumur 2+ tahun, 53 orang kanak-kanak berumur 3+ tahun, dan 62 orang kanak-kanak berumur 4+ tahun. Sampel kajian dibahagikan kepada dua kumpulan bagi setiap peringkat umur kanak-kanak, iaitu kumpulan rawatan yang mendapat pembelajaran Modul Lit-A, dan kumpulan kawalan yang mendapat pembelajaran konvensional. Instrumen Literasi Awal (Instrumen Lit-A) digunakan untuk menilai pencapaian kemahiran literasi awal kanak-kanak semasa praujian dan pascaujian. Dapatan kajian menunjukkan Modul Lit-A mempunyai kesan yang signifikan terhadap pencapaian kemahiran literasi awal bagi kanak-kanak berumur 2+ tahun sahaja, manakala Modul Lit-A mempunyai kesan yang tidak signifikan terhadap pencapaian kemahiran literasi awal bagi kanak-kanak berumur 3+ dan 4+ tahun. Selain itu, kesan Modul Lit-A terhadap pencapaian mengikut komponen kemahiran literasi awal adalah signifikan yang berbeza mengikut umur kanak-kanak, iaitu 2+ tahun (konsep cetakan dan cetakan persekitaran, bahasa dan komunikasi, dan fonemik dan fonetik), dan 3+ dan 4+ tahun (fonemik dan fonetik, dan tulisan awal). Justeru, Modul Lit-A memberi impak yang positif terhadap amalan pengajaran dan pembelajaran kemahiran literasi awal bagi kanak-kanak berumur 2+, 3+, dan 4+ tahun di Malaysia.

***Kata Kunci*:** modul literasi awal, kemahiran literasi awal, awal kanak-kanak.

E162. SCIENCE, TECHNOLOGY, RELIGION, ENGINEERING, ARTS AND MATHEMATICS (STREAM) PROGRAMME

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Abstract: The STREAM program was developed to add value to the six learning areas of the National Preschool Curriculum Standard (KSPK) namely the Communication, Spirituality and Attitudes, Self-Esteem, Physical and Aesthetics, Science and Technology, and Humanity. The content and learning standards in the KSPK are referred to preparing the STREAM modules. The activities in the modules are meant to be more challenging, fosters creativity, promote problem solving abilities and thinking skills among children as young as 4+ years old. This program consist of six modules namely Ark of the Mind, Whole World, Magic Cape, Lollipop Logic, Secret Life, and Fast Track, which were written by experienced teachers at National Child Development Research Centre (NCDRC), Universiti Pendidikan Sultan Idris (UPSI). The focus of Ark of the Mind and Whole World modules are communication skills, which include children's abilities to understand and use language in many ways when interacting with others specifically in Malay and English. Magic Cape emphasizes knowledge in relation to life involving the communities, environment, nation, global awareness as well as patriotism and unity. In addition, the Lollipop Logic module provide young children with opportunities to observe maths and science in everyday life and help children build basic understanding and interest in these areas. The Secret Life module focuses on the development of socio-emotions, build interaction skills, enhance social skills and nurture leadership and personality among children. Finally, the Fast Track module emphasizes physical and health development cultivate the power of imagination, creativity, talent and appreciation of artworks among children. The STREAM program also offers three additional languages such as Arabic, Mandarin and Spanish and martial arts training sessions conducted by language and martial arts experts. As a concept, the STREAM program offers an active and engaging approach to thinking and learning while encouraging creativity and innovation, through meaningful experiences that helps children build the skills needed for lifelong learning and problem-solving.

Keywords: STREAM, Healthy Mind, Whole World, Magic Cape, Lollipop Logic, Secret Life, Fast Track

E164. OPEN ENDED CHILD INITIATED LEARNING (OECIL) THROUGH PROJECTS

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Abstract: Early Childhood (EC) is widely acknowledged as the most significant period during which children experience cognitive, language, thinking, socio-emotional and motor development for their growth and future achievements. In order to ensure that children's learning is engaging and holistic, the teaching and learning methodology should change in tandem with the development of cyber technology and 21st century education needs. Consequently, TADIKA BITARA at the National Child Development Research Centre (NCDRC) introduced the Open Ended Child Initiated Learning (OECIL) through projects investigations as an innovative approach to learning conducted at the EC level. OECIL taps upon children's natural inquiry which allow them to follow their own interests to find answers based upon their own initiatives. The children will also gain deeper understanding through this learning approach. The exploration of a topic starts from a selected theme in which the child acts as a young investigator in finding answers to the questions raised while the teacher acts as a facilitator during learning. The teacher do not offer direct answers to the children's questions, but as a facilitator, they will provide experiences through which children can find the answers themselves from field visits or talking to experts. One outcome of OECIL include the integration of the learning areas in the National Preschool Curriculum Standard (KSPK). In addition, the Science, Technology, Engineering and Mathematic (STEM) elements are also integrated as a result of the exploration activities and projects by the children. Through this learning approach, children also applied the skills of searching information not only from printed materials but also using ICT. In fact, children's imagination and creativity are also used extensively in the construction of model through projects. In conclusion, this initiative approach presents many opportunities for young children's ideas to be appreciated, their creativity are enhanced, and interests nurtured leading to impact on a child's future learning.

Keywords: OECIL, learning approach, project, STEM,

SATELLITE

EVENT F

COMMUNITY INNOVATION

F007. 2G REFLECTOR (2ND GENERATION ROAD REFLECTOR)

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Abstract: The road studs, raised pavement markers and road delineators are designed to provide a clear, definitive outline of pavement markings. They provide visibility to catch the eye of vehicle drivers as they indicate as a permanent marker, even under adverse visibility conditions such as rain, fog, and darkness.The purpose of pavement reflectors is to help drivers see lanes better and sooner, especially when it's raining. Using different types of road studs and delineators can be expected to give different results for daytime and night-time. Unfortunately the function of these road studs or raised pavement markers will totally disable if the water rises above the device surface level. This innovation is the solution to the problem. The advantage of this innovation is that it serves as normal reflector function under normal circumstances, delineator to the actual position of the road surface when the road is flooded, guides for categories of vehicles that is safe to go through the road and also as guides whether the road is safe or not to be used when flood occurred. It is designed to withstand the structure if it is being hit by vehicles, using flexible nylon rod with a properly designed bending angle. The concept used is simple that is between buoyancy and gravity, whichever is dominan would rule the situation. If water level rises then buoyancy would take the role. If there is no water then gravity will take over.In terms of manufacturing costs, this device can be produced at very low prices. The potential to market this product is huge..Relevant job opportunities can be created through the manufacturing, installation and maintenance of this device. The materials used are easy to get and have very minimal impact on the environment.The objective of using this devise is to save lives and vehicles from plunging out of the way, avoiding damage to the engine and other parts of the vehicle due to running in water at unsafe levels, smoothing traffic movements if the road is safe for used and as a warning alert if the road unsafe for all vehicles.

***Keywords*:** road, studs, reflectors ,flood, pavement

F012. ACKIT: EASY AND CONVENIENT

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Abstrak: AcKit merupakan beg aksesori yang dapat menyelesaikan banyak masalah penyimpanan barang bagi mereka yang berkerjaya. Penggunaan beg aksesori dikalangan lelaki dan wanita masa kini sudah menjadi trend. Walau bagaimanapun, kebanyakan beg aksesori yang ada di pasaran hanya memfokuskan sama ada kepada pengguna lelaki atau wanita sahaja. Oleh sebab itu, kami telah mencipta beg aksesori AcKit yang boleh digunakan oleh lelaki dan wanita. Beg ini boleh digunakan untuk pelbagai kegunaan mengikut keperluan. AcKit juga dilengkapi dengan ruang penyimpanan kerongsang dan 'power bank' yang menjadikan ianya unik berbanding dengan beg yang ada dipasaran. Pemilik beg pastinya akan lebih gembira jika menggunakan beg ini kerana barang-barang mereka tersusun kemas dan mudah diambil. Penggunaan beg ini juga dapat menjimatkan ruang dan masa.

***Kata kunci*:** AcKit, beg aksesori, trend, ruang penyimpanan

F013. MUMKIT

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Abstrak: Pembangunan dan kepesatan ekonomi hari ini menyebabkan sumbangan wanita amat diperlukan dalam pelbagai bidang. Kesibukan dalam dunia kerjaya tidak menghalang wanita-wanita hebat ini untuk bergelar seorang ibu. Namun bergitu, disebabkan kekangan masa kerana sibuk dengan tugasan kerja serta kurang pengetahuan bagi wanita yang pertama kali bergelar ibu ramai antara mereka tidak dapat menyediakan kelengkapan lengkap ketika di bilik bersalin. Bagi mengatasi masalah ini, kami telah mencipta beg "MuMKiT" yang mempunyai ruang khas untuk mengisi barang secara tersusun dan mudah digunakan. Bagi menambah nilai lagi, "MuMKiT" dilengkapi barang-barang keperluan ibu untuk digunakan semasa di bilik bersalin, samada sebelum atau selepas proses kelahiran. "MuMKiT" juga dilengkapi barang-barang asas bayi. "MuMKiT" boleh digunakan oleh para ibu sebagai *diapers bag* untuk dibawa ke klinik atau ke taska. Malahan cantik dan selesa untuk digunakan semasa bersiar-siar bersama bayi. Dengan adanya "MuMKiT" ini, wanita-wanita yang akan bergelar ibu akan lebih tenang serta yakin untuk melalui hari bersejarah mereka.

***Kata kunci*:** MuMKiT, beg bersalin, ruang khas, tersusun, mudah.

F032. MINOVEIN

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Abstract: Venepuncture has been practiced for centuries and is still one of the most common invasive procedures in the health care industry. Overweight and dark skin tone patients generally have veins that are very deep and are difficult to visualize or palpate and any puncture made may have to be made based on phlebotomist's knowledge of venous anatomy. MiNOVEIN is a device proposed to make vein detection easier to visualize. In order to obtain a high success rate, cannulation site on the forearm needs to be clear and visible so that vein identification is confirmed thus minimizing errors caused by medical staffs. This innovation aims to study on the appropriate light of wavelength used to make cannulation sites visible on several types of skin tone and on overweight people based to the body mass index chart (BMI). The concept of MiNOVEIN is by implying non-invasive near-infrared (NIR) technology that is used for veins projection onto the skin's surface. MiNOVEIN uses 18 units of 5mm near-infrared LEDs with the range of 650nm to 680nm. NIR LEDs penetrates deeper into the skin, to a depth about 25 mm while vein is located 6 mm under the skin surface. Veins can be traced due to haemoglobin in the blood absorbs infrared light making the veins to appear darker than the surrounding tissues. Based on the results, cannulation sites are visible in most skin tones thus indicating veins underneath the skin. However, for overweight patients, not all cannulation sites are visible. The cannulation sites detection areas decrease as the BMI increases. In conclusion, MiNOVEIN has successfully reached its target by completing the study objectives. The higher the cannulation sites the higher the chances of veins to be detected. The hypothesis of this study was accepted.

***Keywords*:** Vein Finder, Near-IR LED, Venepuncture

F038. REHABILITATION DEVICE FOR KNEE OSTEOARTHRITIS PATIENT

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Abstract: Osteoarthritis is the most common joint disease whereas knee osteoarthritis occurs at the knee. It cause pain and disability which can affect normal daily life. Knee rehabilitation is carry out to reduce pain by strengthening muscle and reduce load on knee joint. The number of knee osteoarthritis patients undergo physiotherapy increased drastically. Guidance of physiotherapist guarantees that physical exercises are being practiced correctly but unfortunately, there is a high demand in large public health services, and it is often impossible to meet the needs of everyone, particularly whose have difficulty traveling to the rehabilitation center. By developing a home-based rehabilitation device, it will help to solve the issue of physiotherapist shortage. In this project, a home-based rehabilitation device for knee osteoarthritis patient will be developed. The assistive device will be integrated with interesting mini-game to reduce the dullness of rehabilitation process. It is also include two form of exercising system which are active and passive. Passive exercising system will be assisted by a motor. Furthermore, the device will be also equipped with a performance monitoring system which will measure and save the range of motion achieved by patient during rehabilitation process. The saved data will be analyzed by doctor in their meeting routine. This assistive device tend to help patient to undergo rehabilitation process that will reduce their pain and solving physiotherapist shortage issue simultaneously, by enabling the process to be carried out without supervision of physiotherapist.

Keywords: knee osteoarthritis, rehabilitation, range of motion, home-based, assistive device.

F039. UV REACTOR BENCH TOP

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Abstract: The outbreak of the illness caused by the use of polluted water is often associated with users who do not get clean tap water from the authorities or users who use untreated daily water sources such as rivers and wells. Various contaminants found in untreated water such as high or low pH levels, taste and odours, harmful bacteria, chemicals, and other hazardous pollutants. In addition to river and well water, flood disasters are often the cause of various waterborne diseases. These problems lead to machine-created innovation to treat water that is small and easy to carry to treat the water to use easily. In addition to being easy to use and moving from one place to another, constant use can save money as it uses low cost for maintenance. Many municipal wastewater utilities have adopted ultraviolet (UV) disinfection treatment over chemical disinfection as UV is environmental-friendly, safe, easy to maintain, and cost effective. Water borne diseases caused by untreated water and partially treated wastewater are getting widespread nowadays. Creation of this UV reactor is made for batch testing to eliminate the pathogenic bacteria. The use of UV/TiO_2 which is cost effective, easy to maintain and time-saving treatment may give good performance treatment to the water and wastewater, and the additional support to physical treatment. By using UV doses of 252 mJ/cm^2, AR-*E.coli*, AR-*Salmonella* and AR-*Shigella* reached 5.5-log removal (with 1.75g/L of TiO_2), 4.9-log removal (with 1.75 g/L of TiO_2) and 5.4-log removal (with 1.25 g/L of TiO_2). It is possible to do any type of treatment that uses UV lamps as a major treatment. This small-scale treatment can give an overview of the other further treatments to be performed. This portable system will benefit researchers who conduct on-site tests and in the lab, as well as people who lives in rural area.

Keywords: antibiotic-resistant bacteria, UV-based treatment, UV/TiO_2 treatment, water and wastewater.

F047. JUNIOR SCIENTIST DAY PROGRAM

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Abstract: The Junior Scientist Day program is a science program organized by the Institute of Medical Molecular Biotechnology (IMMB), Faculty of Medicine, UiTM Sungai Buloh Campus.The main objective is to expose and attract children and teenagers aged between 6 to 15 years old to medical sciences world. As reported in klang valley since October this year, the percentage of students taking science stream was declined rapidly. Therefore, it is important for research centre such as IMMB to play a role in helping the country to increase number of students in science stream. This is in line with Science, Technology, Engineering & Mathematics (STEM) objective which is to enhance analytical thinking by contextual learning with practical exercises. In this program, we provided students with interesting science activities. Furthermore, students were given a chance to do 'real' hands-on experiments in our laboratory. Lab coat and goggles were given to students to stimulate their enthusiasm and focus in conducting science activities. Nine different activities were conducted according to sub-discipline which were surprise experiments (volcano, blood hemolysis and blood components), DNA extraction from banana, rat anatomy, human anatomy, microbiology, parasitology, cellular imaging using confocal laser scanning microscope, crime scene investigation and lab exploration. All of these activities were planned, structured and facilitated by expert scientist in their field. Most importantly, each activity conducted were done to enhance participants' cognitive development with analysis and soft skills. Sharing or interactive session with expert scientists were conducted at the end of hands-on activity. Students were involved in quizzes provided by expert scientists. This session was done to test the understanding of students with the hands-on activities and at same time to imbue students with latest scientific finding produced by each expert scientist. In conclusion, Junior Scientist Day 2017 has been conducted on 22 July, 30 Sept, 7 Oct, 28 Nov and 29 Nov in total 196 participants had attended this program. The main objective of the program was achieved as we gathered positive feedback from parents and students themselves. Due to the success of previous program, we are proposing for the program to be conducted as outreach program and "orang asli" children.

***Keywords*:** Junior Scientist Day, STEM, hands-on experiments, expert scientist

F050. "HOPE" (HEALTHY AND OPTIMAL DIET) ANDROID APPLICATION WITH SUPPORT FEATURE TO GUIDE BALANCED DIET FOR REACH OPTIMAL HEALTH

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Abstract: Maintain weight is important for everyone. Mostly, people try to reach ideal body shape. Balance diet is not about minimalize dietery intake but equalize dietery intake and activity so you can reach your optimal health. Dietery intake consist of carbohydrate, protein, fat, vitamin, and mineral. Balance diet was influenced by age, weight, height, activity, and stress level. Most people who want to reach optimal weight and body mass only by decrease dietery intake, whereas sedentary lifestyle or minimal activity will increase degenerative desease. Based on background, we are proudly present scientific paper named "HOPE" (HEALTHY AND OPTIMAL DIET) is a android application with support feature such as body mass calculator, dietery calculator, dietery menu, and nutrition information that guide you to get balanced diet for reach optimal health. HOPE can give effective diet recommendation for consumer based on weight, height, age, gender, and physical activity. After input the data, users can choose their's own diet menu based on calories necessity in a day. User certainly can't choose diet menu which yield calories more than calories needs. This application can tell consumer the ideal body weight, nutrition status, and calories necessity which used for determine their own diet much in easy, appropiate, and can access everytime and everywhere. Not only that, but HOPE can will tell you information about diet and nutrition that really help. This application provide either junkfood menu nor food which contains preservatives menu. But the selections food is an ingredient which can be processed at home. Thoose the benefits of the "HOPE" is whom user can have wrong diet programme which even can be dangerous in body health.

***Keywords*:** HOPE, balanced diet, optimal healthy

F051. MISS (MILK FROM SALAK PONDOH SEEDS) AS AN INNOVATION TO FULFIL CALCIUM AND PHOSPHORUS NEEDS FOR SOCIETY

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Abstract: Indonesia is a tropical country with many different kinds of tropical fruits. There is a wonderful variety of tropical fruit to be found in Indonesia. Much of it is seasonal, while other fruits are available all year round. One of the seasonal fruit is salak. Salak (Salacca zalacca) is one of the most popular fruit in Indonesia because of the sweetness and the tender texture. Based on horticultural production statistics published by the Ministry of Agriculture Directorate General of Horticulture, stated that in 2014 production of salak in Indonesia reached 1,118,953 tons. It cause increasing of the salak seed waste which is still not utilized maximally that is equal to 10% from the entire utilization of national salak seed. The variety of salak that we choose is salak pondoh which is widely planted in Indonesia. Therefore, it is necessary to utilize and development of salak seeds pondoh as a product of innovation that many people consumed. The highest nutrient in salak pondoh are calcium and phosphorus so that potential as the basic ingredients of calcium products. Production of milk is one innovation to utilize waste of salak pondoh seeds. The propose of this innovation is to reduce the amount of waste salak pondoh seeds and to fulfil calcium and phosphorus needs. Moreover, every person have a different needs of nutrient it depends of physical, age, occupation, weight, gender and climate condition. A newborn baby up to 6 months needs a 200 mg calcium/day and adolescents needs 1300 mg/day. The high content of calcium and phosphorus in salak pondoh seeds that has a great advantages for bone and tooth growth. Deficiency of calcium and phosphorus can lead to *Osteomalacia* (softening bone). The method used is study literature, preparation of tools and materials, design, testing and application in the field. Salak seeds that have been given yeast and stored for 3 days then blended and dried can produce 5 mg flours. That's milk product can be consumed by society.

***Keywords*:** Calcium, Milk, Phosphorus, Salak pondoh (*Salacca zalacca*).

F060. KEBERKESANAN E-PENGKALIAN BAGI MENGATASI MASALAH LEMAH OPERASI DARAB DALAM KALANGAN PELAJAR PERINGKAT AWAL PERSEKOLAHAN

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Abstrak: Kajian tindakan ini dijalankan untuk menilai keberkesanan "E-Pengkalian". E-Pengkalian dicipta untuk membantu pelajar yang lemah sifir agar dapat menguasainya dengan cara yang lebih mudah dan berkesan. "E-Pengkalian" dibangunkan dengan gabungan dua aplikasi iaitu video scribe dan powtooon. Melalui video, muzik dan kartun, "E-Pengkalian" dapat menarik minat dan mempercepatkan pelajar mahir sifir dalam masa yang singkat berbanding dengan teknik konvensional. Teknik ini diperkenalkan bagi mengatasi masalah pelajar lemah matematik asas iaitu operasi darab. Sehubungan dengan itu, kajian ke atas 30 orang pelajar tahun 4 penghuni Rumah Kebajikan Anak Yatim Dan Dhuafa Siti Aminah, Kelantan telah dijalankan untuk menilai skor bagi operasi darab dan minat mereka terhadap matematik dan operasi darab pada pra dan pasca E-Pengkalian. Data diperolehi melalui skor operasi darab bagi ujian Pra dan Pasca iaitu sebelum dan selepas pengajaran dan pembelajaran E-Pengkalian. Penemuan menunjukkan pelajar mendapat skor yang lebih tinggi bagi ujian Pasca berbanding ujian Pra E-Pengkalian bagi sifir 4, 5, 6, 7, 8 dan 9. Namun begitu, untuk sifir 1, 2 dan 3, skor ujian pasca adalah lebih rendah berbanding ujian pra dengan perbezaan yang amat kecil. Pelajar mendapat skor yang lebih tinggi pada Pasca berbanding Pra E-Pengkalian untuk minat terhadap matematik dan operasi darab. Kajian ini memberi implikasi kepada pelajar, ibu bapa, guru dan kementerian Pelajaran di mana untuk memupuk minat pelajar dalam matematik dan operasi darab; "E-PEngkalian" perlu dijadikan teknik dalam aktiviti pengajaran dan pembelajaran. Ironinya, teknik ini diharap dapat melahirkan pelajar bijak matematik seiring dengan aspirasi negara untuk melahirkan modal ihsan yang cemerlang bukan sahaja di peringkat awal persekolahan malah terbilang di peringkat negara juga di persada antara bangsa.

Kata kunci: E-pengkalian, operasi darab, lemah, matematik

F062. WOMEN ORBIT- EASY METHOD FOR UNDERSTANDING MENSTRUAL CYCLE

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Abstract: The innovation produced is a wheel chart called "Women Orbit" to be applied in understanding the menstrual cycle of a woman. This product is based on the statement of problems faced by women where it was discovered that some have yet to understand their menstrual cycle and the changes that occur within them each month. Before the innovation was introduced, a questionnaire was distributed to the samples to determine the women's understanding of their menstrual cycle and it was found that the number of women (samples) who did not understand their menstrual cycle were many. The findings also showed that most women were still not able to determine their fertile time and were unaware of the physical and emotional changes that would occur every month. Therefore, "Women Orbit" is produced to facilitate the understanding of women's menstrual cycle. Through "Women Orbit", the samples can understand and determine the number of days in their menstrual cycle, their fertile time and the changes that take place in their body system throughout the month. Also included are some easy tips for women to apply throughout their menstrual cycle. "Women Orbit" only requires 2 chart cards showing the date for each month and the number of days in the menstrual cycle. It also includes hormonal, emotional, physical and other changes that occur. The wheel chart can be moved on the first day of the first menstruation and the whole changes that occur in women every month will be identified and understood. The total cost required to produce the chart is between RM20 to RM25. The product is also interactive, attractive and portable because of its small size and low cost. With "Women Orbit", women can identify menstrual cycle hormones throughout the month, determine the fertile time (as a family planning method), identify menstrual cycles in the next month and understand the emotional and physical changes that occur throughout the month. The positive impact of this innovation is expected to help and benefit more women in understanding their body system better.

Keywords: menstrual, cycle, wheel chart, women, month

F063. M-LEARNING OF ATOMIC ORBITAL OF ELEMENTS IN PERIODIC TABLE FOR STEM

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Abstract: Downward trend of student's enrolment in science and health studies may jeopardise the successful implementation of government's agenda in alleviating Malaysia's performance in the world stage. Due to this concern, mobile application named SPATO, a teaching aid in the learning of atomic orbitals of elements in the Periodic Table was developed. The use of SPATO had provides a platform for community to engage themselves to the topic of atomic orbitals. SPATO is aimed to spur the interest of community in studying the science-related subjects in the guise as a mobile-learning tool. Communities were involved in the testing of this mobile-learning tool. Results show that SPTO application was well accepted by the users. They found that the application is easy to be used, even though initially they might not familiar with the m-learning application. These results indicate that SPATO can function as an alternative approach for community in understanding the chemical elements.

F069. DISABLED PARKING SYSTEM (DIPARKSYS)

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Abstract: One of the high debated issues today's local community is the violation of the disabled rights. Nowadays, the community is less aware of the violation that occurs in their surroundings. In the context of disabled parking spaces, many easily violate that allocated spaces without guilty. Having this situation is a complete disaster as it now becomes a norm to park at the disabled parking spaces for the able-bodied. Disabled Parking System (DiParkSys) is designed and developed by integrating an alarm and notification system to secure the disabled parking spaces by using current technology which is Internet of Things (IoT). The components used are Arduino UNO, RFID RC522 reader, HC-SR04 Ultrasonic Sensor, LED, buzzer as the alarm and Global System for Mobile (GSM) module.

***Keywords*:** smart city, IoT, disabled parking, arduino, gsm module

F070. ACTIVITY ATTENDANCE MONITORING SYSTEM BASED ON IOT

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Abstract: The use of manual procedure such as paper-based system are resulting the information stored might be wrong or erroneous and potentially damaged due to surrounding factors especially. The old method had to face the some challenges in order to maintain the quality of the paper and the security of students' information. Basically, the purpose of this research study is to design, develop and examine the Activity Attendance Monitoring System based on IoT platform. The methodology for this research study consists of three phases which are system design, functionality testing and usability testing. Functionality testing is a technique where it is determine whether the system are working as expected or not while the usability testing being conduct in order to measure the effectiveness of the system. The tools that can be used for usability testing is questionnaires which this tool is expected to acquire the opinion or response from the respondents. In this study, the target users are students and employees of the university. This research ultimately visualizes the management of students' activity in the university by using the platform such as IoT technology. The research will be conduct using Arduino Software (IDE). The effectiveness of the system is tested through several techniques for example functionality testing and usability testing. The importance of this research study are includes to help the management level to keep on track the activities that are involved by students. Other than that, since the electronic management system generates more organized, updated and provides productivities for the university's staff, problems such as data loss and data redundancy can be minimize. This research intend to construct a prototype of Activity Attendance Monitoring System. The prototype can be used to keep on track the attendance of the students' activity. Therefore, we outline research objective, the proposed method used to conduct the research, potential contributions and the expected results of the research.

***Keywords*:** Smart City; IoT; Arduino Technology; RFID technology; Functionality Testing.

F071. SOLID-WASTE MANAGEMENT MONITORING SYSTEM

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Abstract: In studying municipal solid waste management in smart city, there are various issues appeared. The issues are wastage of time to collect solid-waste from the garbage bins that are placed at public places in the urban area and ineffective solid-waste management resulting in the spread of deadly diseases. This project is intended to design and develop a solid-waste management monitoring system and to focus on facilitating the city council in monitoring the level of solid in the area of smart city. Furthermore, the development of this system addressed some of the health and environmental issues that occurred in developing countries that practice smart city concepts.

***Keywords*:** smart city, IoT, arduino technology, waste monitoring

F096. SMART CUTTER

Afid Ainzat bin Suhaimi, Wan Mohamad Zulfadli bin Wan Hanaffi, Wan Khairul Hazwan bin Wan Kaswadi, Che Nur Fatymah binti Che Zainudin, Nur Farisha Izzaty binti Mohd Shazali, Zubaidah binti Mat Nor* and Ainee binti Hj Ahmad
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Abstrak: Smart Cutter merupakan alat inovasi yang direka khas untuk murid Pendidikan Khas Masalah Pembelajaran. Smart Cutter ialah gunting yang direka khas dengan lampu isyarat dan kanta pembesar. Alat ini direka untuk kumpulan murid yang sukar memegang gunting dan menggunakan gunting. Kemahiran memegang dan mengunting merupakan kemahiran asas yang perlu dikuasai oleh setiap murid kerana melibatkan kemahiran motor halus. Oleh itu, guru perlu kreatif sebagai usaha bagi meningkat kemahiran ini. Segala bukti awal dikumpul melalui pemerhatian, dan temu bual. Melalui dapatan didapati penggunaan Smart Cutter dapat meningkatkan kemahiran memegang dan menggunting. Dengan bantuan kanta pembesar dan lampu isyarat murid dapat mengunakan gunting dengan lebih baik berbanding sebelum ini. Ini menunjukkan Smart cutter berupaya membantu meningkatkan kemahiran memegang dan menggunting semasa berada di bilik darjah. Murid lebih seronok dan bertambah yakin. Sebagai cadangan seterusnya smart cutter ini boleh digunakan untuk kanak-kanak normal dan murid prasekolah yang belum menguasai kemahiran menggunting.

Kata kunci: Smart cutter, gunting, pendidikan khas, masalah pembelajaran

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F104. APLIKASI SISTEM E-MOJI (SISTEM E-MAKLUMAT ONLINE JARINGAN INDUSTRI) DALAM PENINGKATAN TAHAP KEBOLEHPASARAN PELAJAR LEPASAN INSTITUT LATIHAN KEMAHIRAN BELIA DAN SUKAN (ILKBS)

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Abstrak: Di bawah Rancangan Malaysia ke-Sebelas (RMKe-11), sebanyak 60% daripada 1.5 juta pekerjaan yang bakal diwujudkan, dijangka memerlukan kelayakan berkaitan pendidikan serta latihan teknikal dan vokasional (TVET). Dalam hal ini, Kementerian Belia Dan Sukan melalui Institut Latihan Kemahiran Belia Dan Sukan (ILKBS) komited dalam menyumbang kepada usaha memenuhi keperluan tenaga kerja tersebut, dengan membekalkan graduan TVET yang bukan sahaja berkualiti tinggi, tetapi juga sesuai dengan kehendak industri serta pasaran semasa. Pelbagai inisiatif untuk memperkasakan Pelan Transformasi Institut Kemahiran Belia Negara (IKBN) diteruskan dalam memastikan IKBN muncul sebagai institusi TVET yang unggul. Kayu pengukur utama kejayaan Pelan Transformasi IKBN adalah kebolehpasaran para graduan di alam pekerjaan, dengan tahap pendapatan yang setimpal. Berdasarkan Kajian yang dijalankan di Institut Kemahiran Tinggi Belia Negara Pagoh (IKTBN Pagoh), didapati masalah utama yang dihadapi dalam usaha meningkatkan kebolehpasaran pelajar adalah kesukaran industri untuk mendapatkan maklumat pelajar lepasan IKTBN Pagoh. Justeru itu, sistem e-Maklumat Online Jaringan Industri (e-MOJI) iaitu satu sistem pengkalan data perekodan maklumat pelajar telah dibangunkan dan boleh diakses oleh pihak industri untuk pemilihan dan tawaran kerja kepada pelajar. Sistem e-MOJI ini telah dibuat ujicuba melibatkan 116 orang pelajar lepasan keluaran Diploma April 2016 dan penglibatan 20 buah Syarikat. Hasilnya, peratusan kebolehpasaran pelajar yang dapat dicapai adalah 91.4%, lebih tinggi daripadan sasaran KPI yang ditetapkan iaitu 90%. Disebabkan output sistem yang memberangsangkan, penggunaan sistem e-MOJI akan dikembangkan ataupun dibuat replikasi di semua ILKBS Se-Malaysia.

Kata kunci: Kebolehpasaran pelajar ILKBS, Pelan Strategik KBS, Pelan Transformasi IKBN, Perekodan maklumat pelajar alumni, Pengupayaan Industri

F119. EASY-TO-USE APPLICATION SOFTWARE FOR ADMINISTRATION OF ESTATE IN WEST MALAYSIA

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Abstract: In West Malaysia, the jurisdiction to administer the deceased's estates lies with the High Court, the Small Estates Distribution Division and the Public Trust Corporation (Amanah Raya Berhad) depending on the types of estates left by the deceased and governed by various statutes of general application, namely, the Rules of Court 2012, the Probate and Administration Act 1959, the Small Estates (Distribution) Act 1955 and the Public Trust Corporation Act 1995. In cases of testate or where the value of estate exceeds RM 2 million and/or the estate consists of moveable property only, then, it should be administered by the High Court. On the other hand, where the intestate estate total value does not exceed RM 2 million which consists wholly or partly of an immovable property, the jurisdiction to administer the estate lies with the Land Administrator at the Small Estates Distribution Division. Whereas an estate which consists of only moveable property and the value which is less than RM 600,000 would be administered by the Amanah Raya Berhad. These various administrative bodies, estates and statutes have resulted in the public concern and confusion over the different roles and functions of available bodies applicable to the administration of estates. Hence, we develop an application software or device that enable end-users to determine the applicable administrative bodies in administering the deceased's estate. The purpose of the software is to increase efficiency, certainty and ensure compliance with law and procedure in administration of estate. It is a user-friendly interface which makes it easy, efficient and enjoyable to operate as it is designed by using, among others, clear dual languages namely, Malay and English, patterns in layout and design, colour, light, contrast and texture in software features, and legibility in typography. The user can also print the end results as the software provides print release integrating directly with printer devices.

***Keywords*:** Estate Administration, Administrative Bodies, Property, User-friendly Interface.

F136. SAMBALICIOUS

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Abstract: The food processing industry is a growing business sector in Malaysia. Malaysian really loves to eat spicy yet delicious foods. This SAMBALICIOUS is a product that has potential to be developed because nobody commercialize this product. Furthermore the product is a favorite because many people are busy and want a fast, tasty, cheap and nutritious. Hence why we are compelled to innovate this product into a product that was good, clean and good quality and suitable for all generations of Malaysians. SAMBALICIOUS is great because it has many health benefits. It has considerable potential for growth, which to produce more entrepreneurs among graduates to choose entrepreneurship as a career after graduation and become a job creator to the community. SAMBALICIOUS is a new and latest innovation (none in Malaysia) and in accordance with a busy lifestyle of Malaysian nowadays. Challenges and pressures faced by Muslim community facing of socio-economic problems and food products, which are mostly longer in Malaysia market where we use chilies as one of the main ingredients with a mixture of a few ingredients that is not endanger the health or others. All information and concepts are our own ideas generated through a series of studies, discussions and research from time to time. It also suitable for people whom like to eat sambal. It contains many nutrients inside. This SAMBALICIOUS is suitable and good to eat by all groups. Users need boiling, steaming or frying it according to taste each menu either bolognaise, carbonara or marinara. The users only need to add and mix with water and ready to be eat. Prawn, eggs or squids can be added to the SAMBALICIOUS to make it tastier.

***Keywords*:** Food Processing, Entrepreneurships, Community

F137. SMART AGRICULTURE POWER FAILURE SYSTEM (SA-PFS)

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Abstract: Smart Agriculture Power Failure System (SA-PFS) is a resolution for the problems of power failure in agricultural sites which causes electrical equipment to not operate on a consistent basis. Hence, this problem will lead to plant damage or livestock death. This SA-PFS is a backup of the notification system to the owner of the field whenever the power supply is detached. SA-PFS operates under 2 circumstances. Firstly, when the power supply is cut off due to the elaborate Residual Current Devises (RCD), SA-PFS will continue to bypass the RCD and supply the current to MCB to resume supplies. At the same time, a warning message will be sent to the farm owner's smartphone for further action. Secondly, if the power supply is broken due to interruption from the supplier, SA-PFS will automatically turn on the generator and the warning message will be sent to the farm owner for further action. In addition to this, SA-PFS is equipped with a safety alarm system, which will be active when the interference occurs. SA-PFS is based on easy access, since the farm owners could be able to turn on the lights via smartphones in order to monitor besides for the security purposes. The SA-PFS is appropriate for all systems of agricultures, such as fertigation systems, hydroponics, aquaponics and other agricultural systems using electricity as well.

***Keywords*:** Power failure, agriculture

F159. REG: TOWARDS THE LIFE QUALITY OF COMMUNITY

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Abstract: Recycle Edible garden (REG) is an initiative project that practically involved the researchers and designers together with the immediate community. In general, REG was composed to accommodate community with edible resources such as plants, herbs, fruits and vegetables for daily or annually purposes. The objectives of this REG are to (i) motivate community interaction through program involvement; (ii) minimizing living costs by self-produce of daily use plants; (iii) improving the community quality of health through gardening, interacting with neighbours and utilizing the harvested resources for events such as 'kenduri' and gathering. This garden has received unexpected attention from both the experts and public which makes REG significant for the community. The REG also apply the green living concept by implementation of rain water harvesting as the watering system irrigation and the used of recycle materials as plants containers and also give an attraction to the garden. The importance of this recycles edible garden are to connects and communicate between community besides accommodating each other needs through subsistence living. There were about 500 participants representing the researchers and designers, the masjid committee, the industry experts and learning institutional like university, college and school people and also the business entrepreneur nearby Bandar Seri Iskandar got involved in the REG development. A photographic method comprising the process, issues and situations will be shown and discussed. The results will interpret relevant information about the rationale, risks and recommendation of how REG would benefit and fold the community towards sustainability. The outcome of this study will uphold the benchmark in designing a recycle edible garden that would not only giving experience to the experts to work on the ground, but has also successfully engaged the community in contributing and achieving quality in subsistence living.

Keywords: Recycle Edible Garden, community, collaborative participation, masjid

F016. GREEN MOSQUE MODEL: SHAPING MOSQUES OF THE FUTURE

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Abstract: A mosque has always been known as a centre of a Muslim community. Traditionally, mosques, especially in the Middle East perform more functions than just being a place of worship. A mosque is not only for the Muslims to perform prayer in congregation but also as a place to generate economy, education and social cohesion of the community. Therefore, both mosque and its surroundings are living symbiotically together. Green mosque is defined as a multifunctional community centre that is strategically located, accessible, environmental-friendly, support local business, increase social interaction and exploration of knowledge. In this paper, it is aimed to explore the potential of a green mosque in a small newly developed neighbourhood which is Masjid as-Siddiq in the State of Perak as a case study to become a living nexus. The focus of this paper encompasses three main aspects of sustainability which are environmental (site location, accessibility, green space, resource conservation), social (activities, collaborative participation and communal space) and economic (local business, *wakaf* and cost saving). Firstly, the functions of a mosque as a lively center was analysed; from the Prophet's time compared with the current situations. Secondly, qualitative data on spatial characteristics of a green mosque were studied based on various literature reviews. Thirdly, descriptive analysis was done to analyse the green aspects potentials of Masjid as-Siddiq. Primary data was obtained through site observations and photographs of the site. Secondary data of site plan, reports, and newspaper articles were also analysed to achieve the aim of this research. Lastly, new recommendations will be suggested for Masjid as-Siddiq. As a conclusion, mosques have always been green historically and indeed, mosques in the modern days have many alternatives to be greener today and for the future.

***Keywords*:** Green mosque, community centre, neighbourhood, sustainability

F169. PENGGUNAAN *GAME* MONOPOLI SOLAT SEBAGAI PEMUDAH CARA DALAM PENILAIAN BERTERUSAN (PB) HAFAZAN BACAAN-BACAAN DALAM SOLAT PENDIDIKAN ISLAM

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Abstrak: Pembinaan "Game Monopoli Solat" ini bertujuan untuk memastikan inovasi yang dilakukan dapat menarik minat pelajar dengan menggunakan teknik permainan dalam Pengajaran dan Pembelajaran. Objektif utama teknik yang digunakan dikenal pasti dapat meningkatkan kualiti hafazan pelajar dalam bacaan-bacaan solat di samping dapat menjimatkan masa dalam proses penilaian PB. Pelaksanaan kajian ini telah dilaksanakan di Kolej Matrikulasi Johor. Kajian adalah berbentuk Mixed-Method (Qualitatif dan Quantitatif) yang melibatkan 33 orang responden dari Praktikum MS 7 dan MS 14 sesi 2016/2017. Data kuantitatif menggunakan rekabentuk Pre-Experimental Design (Pretest-Treatment-Posttest). Analisis kajian diambil dari data kuantitatif melalui edaran kertas soal selidik ujian keberkesanan. Data qualitatif dianalisis dari temu bual terhadap semua responde yang terlibat. Ujian pra dan ujian post dilaksanakan bagi membuktikan keberkesanan alat yang duji dalam membantu proses menghafaz. Hasil utama kajian ini mendapati qualiti bacaan hafazan pelajar berada pada tahap maksimum apabila semua responden mencapai tahap hafazan 100% (lancar) setelah menggunakan"Game Monopoli Solat". Melalui kajian ini juga didapati tempoh masa untuk proses penilaian bacaan hafazan dalam solat dapat disingkatkankan dan sekaligus menjimatkan masa. Menyokong dapatan kajian ini juga mendapati terdapat hubungan yang positif antara alat pemudah cara dengan tahap hafazan bacaan solat pelajar melalui proses ujian perbandingan antara markah pre dan post. Analisis borang soal selidik dan temu bual turut mendapati ramai responden sangat bersetuju bahawa "Game Monopoli Solat" membantu meningkatkan kualiti amalan ibadat solat mereka.

F179. MERBOK-SALSPLINE

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Abstract: Salinity has the ability to affect fish farming and eco-tourism activities over Sungai Merbok, Kedah. Interpolation map of salinity is a useful scientific tool for environmental monitoring and for social economic development especially for the community lived in Sungai Merbok. This research is conducted to develop a spatial model of salinity in water using deterministic interpolation technique. 20 sampling stations have been randomly set up and recorded their coordinate using Global Positioning System (GPS) to collect surface water samples. The level of salinity was measured using YSI 650 Multiparameter Display System (MDS). Then, the data from each station was equally divided into testing set and validation set. Two types of deterministic interpolation technique namely Tension Spline and Regularized Spline were used to develop the spatial models. In order to check the accuracy of the developed models, statistical analysis of the correlation coefficient (r) and root mean square error (RMSE) was used. The research found that the Tension Spline type performs better than the Regularized Spline type. The developed Tension Spline model achieved positive correlation and low RMSE value. The community lived in Sungai Merbok can use the developed spatial model of salinity for guidelines and future development of Sungai Merbok.

Keywords: Sungai Merbok, GIS, Spline, Salinity, Interpolation.

F181. TUBA-DETEMP

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Abstract: Many of the chemical, physical and biological characteristics of estuarine and coastal waters are directly affected by temperature. Interpolation map of temperature is a useful scientific tool to monitor water quality and for social economic development especially for community lived in Pulau Tuba, Langkawi. This research is conducted to develop a model of temperature in surface water by using deterministic interpolation technique. 20 sampling stations have been randomly set up and recorded their coordinate using Global Positioning System (GPS). The temperature was measured using YSI 650 Multiparameter Display System (MDS). Then, the data from each station was equally divided into calibration set and validation set. Two types of deterministic interpolation technique namely Regularized Spline and Tension Spline were used to develop the spatial models. In order to check the accuracy of the developed models, statistical analysis of the correlation coefficient (r) and root mean square error (RMSE) was used. The research found that the Tension Spline type performs better than the Regularized Spline type. The developed Tension Spline model achieved positive correlation and low RMSE value. The developed spatial model of temperature can be used by the community of Pulau Tuba for environmental monitoring and social-economic development such as fish farming and eco-tourism.

Keywords: Pulau Tuba, GIS, Spatial, Temperature, Interpolation.

F182. MUSA ACUMINATA PEEL - A WATER PH NEUTRALIZER

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Abstract: The contamination of freshwater by ammonium nitrate (NH_4NO_3), a fertilizer that is commonly used in agriculture is profound. A safe water treatment method is required to remove this pollutant. Absorption is one of the methods which meet the above objective by neutralizing pH of water. In this research, *Musa sp.* peels, a discarded agricultural waste was used to produce absorbent and pH neutralizer through simple, low-cost and eco-friendly processes. Varieties of *Musa sp.* peels; *Musa acuminata* Triploid AAA (Pisang Berangan), *Musa x paradisiaca* Triploid ABB (Pisang Awak), *Musa acuminata* Diploid AA (Pisang Mas) were tested in this research in order to determine which varieties of *Musa sp*. peels are most effective as an absorbent material. The effects of pH on different parameters like absorbent particle shape, contact time, absorbent dosage were investigated for *Musa sp.* peels. Overall, this research has proven that *Musa acuminata* Diploid AA (Pisang Mas) was the most effective for absorbent material as its peels have achieved the highest improvement of pH on different parameters analysis. The optimal condition of absorbent was achieved when the particle's shape was in powder as it had a very high specific surface area, potential binding sites and functional groups. In addition, the most effective absorption analysis was found at 30 minutes contact times and a dose for 1 gram for both absorbent material. Thus, the result indicates clearly the effectiveness of *Musa acuminata* Diploid AA (Pisang Mas) banana peel as a low-cost safe water treatment for neutralizing pH of water contaminated with ammonium nitrate (NH_4NO_3).

Keywords: Peel, pH, Neutralizer, Banana, Ammonia Nitrate.

SATELLITE
EVENT G

SECONDARY SCHOOL

G006. ADSORPTION FROM NON AQUEOUS SOLUTION BY RAW SUGARCANE BAGASSE AND TARO STEM

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Abstract: One of the major sources of water pollution is oil spills or oily waste waters and removing this pollution is a global concern. Nowadays natural sorbents are applied as single solution for oil spills since this technique is effective, rapid and cost saving for cleaning these pollutions and reduce environmental effects. Adsorption are promising choice of treatment for its simplicity, effectiveness, and feasibility when appropriate sorbent is used.The used of bagasse as adsorbent especially when structural component of bagasse which is made up of carbon material is suitable as adsorbent and the fact that, adsorbent bagasse further reduce solid waste disposal and hence reducing one source of environmental pollution. In this paper, raw sugarcane bagasse and taro leaves in different particle sizes was used for the sorption of layer of crude oil from lubricating oil get from motorcycle workshop. Mineral fluid lubricants are based on mineral oils. Mineral oils (petroleum derived) are product of refining crude oil. There are three types of mineral oil such as paraffinic, naphtenic and aromatic. In this experiment, we are use paraffinic oil. paraffinic oil are used for manufacturing engine oils, industrial lubricants and as processing oils in rubber, textile and paper industries. The adsorption process is on going, found that organic waste such as taro stem and sugarcane bagasse can adsorb lubricating oil waste quickly by using a reagent, N-BromoSuccinimide (NBS) as an additive for adsorption. The result showed that máximum adsorption capacity of raw sugarcane bagasse for dry system was about 40% to 50% and for taro stem was about 30% to 45% depends on their mass, size and time taken. In this study, it can be concluded that using taro stem and sugarcane bagasse with NBS probably can remove the oily layer in drainage system.

Keywords: natural sorbents, non aqueous, sugarcane bagasse, taro stem, adsorption, lubricating oil, pollution

G007. I-STOP @ PETROL PUMP

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Abstract: Drivers nowdays often take for granted on the safety precautions when refuel at petrol station.Commom behaviours of drivers is not to switch off the car engine when refuel at petrol station.This is actually the major cause of some severe accidents which may lead to jeopardize as it will assume explosion and fire. Despite many advertisement to remind the drivers to switch off the car engine while refueling, there are still drivers who ignored this problem even though they are aware of bad consequences with our I – STOP @ PETROL PUMP the car engine will switch off automatically when the lever to open the oil filling is pulled. Based on the problem,we make an innovation named I – STOP @ PETROL PUMP. This innovation is created specially to solve the problem .When the drivers or any person pull the lever to open the oil filling hole,the car engine will switch off automatically.So,the risk of jeopardize that will assume explosion and fire can be reduce. With this,it is clear that our product I –STOP @ PETROL PUMP is able to overcome the problem of drivers who refuse to switch off the car engine while refueling.This will also increase the safety standard of car besides improving safety of all people as this product will reduce the risk for explosion and fire to happen when refuel at petrol station.

Keywords: precautions, switch off, automatically, explosion, refuel, petrol station

G056. A NOVEL BIO-BASED CAT LITTER (BIO-CATLIT)

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Abstract: Bio-CATLIT is an alternative solution for pet parents who are looking for planet- , pet-, and people-friendly cat litters. It's made from recycle substances and natural ingredients, therefore there is no concern about open mining or silica dust health hazard risk rising from the conventional clay and silica based litters. Today's cat lovers are demanding solutions that are simple, sustainable and safe for our pets and family. Odour-control, tracking and dust are 3 (three) areas of concern in the manufacture of cat box fillers. Some cat litter is made from silica gel, a crystallized form of silicon dioxide. Silica gel absorbs liquids and helps eliminate odours. Cat box fillers made from absorbent clay, (bentonite clay) account for approximately 95% of all cat litter. Bentonite clay has the features of clumping in the presence of moisture so cat urine can be removed more effectively. Bentonite clay comes from open strip mines, leading to environmental problem. The clay granules are easily crushed to smaller grains which leas to the problem of being very dusty. The ingestion of super-absorbent sodium bentonite clay by cats can lead to an accumulation of insoluble masses inside the body causing bowel blockages, kidney problems, dehydration, an inability to absorb nutrients and can lead to death. Inhaling silica dust can cause irritation and in some cases, permanent damage of the mucous membranes of the lungs and upper respiratory tract as well as leading to silicosis and lung cancer. Its made from recycle papers, pandan leaves, bio-based soap (bleaching agent), bio-char and coffee beans. First, shred waste paper and bleach waste paper. After that, drain and dry paper and lastly mix with filler agent. The samples are divided into 5 which is Commercial Product, Paper + Bio-Char, Paper + Pandan, Paper + Coffee and Paper + Mix of all (Bio-Char, Pandan & Coffee).Water (150ml) is added to all 5 samples and through filtration process the absorption of each sample is obtained. T5: paper and mixture shows the highest water holding capacity at 87% (130ml) of which the water is absorb. Ammonium hydroxide (50ml) is added to all 5 samples and 15 people are used to smell. T5: paper and mixture shows 9 people (60%) said the sample shows no unpleasant smell. Bio-CATLIT is approximately 58% cheaper than the commercially available cat litter in the market. Bio-CATLIT is safe, non-toxic, 100% Biodegradable (natural fertilizer), environmentally friendly, clay and silica dust free. It has high absorption properties ad suppress odour. It is home grown, highly cost effective, easily available materials and easy to produce

G062. FIRE RESISTANT WALLPAPER FROM CEIBA PENTANDRA

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Abstract: *Ceiba pentandra* famously known as kapok tree are planted widely in East coast of Malaysia. Fortunately, as the education technology improves throughout the revolving era, ideas, and creativeness starts to improve as well in making our earth better place to live. Producing papers made out of Ceiba pentandra would not solve our earth's problem but it will also increase our country's reputation to another level. Today, in the news flashed about the flora and fauna being destructed by pollution that was driven by reckless behaviour of human being that would give serious effect to next generations.Clearly, paper that we use usually is not a fire resistant. It can burn easily. Paper made before the 19th century was often made by hand from linen and cotton rag materials which are excellent sources of high cellulose, long fibers. Gelatin, from animal hides, was used to size such papers and because the resulting papers were neutral to only slightly alkaline they had very good storage properties. The paper machine appeared at the end of the 18th century, and as the demand for paper outpaced sources of available gelatin, cotton rags and linen, wood fiber took the place of cotton and linen. However, wood has shorter fibers and lower cellulose content along with lignin so that chemical methods had to be developed to free fibers from wood and other plant matter to supply the increasing amounts of paper furnish needed. Mechanical action "beating" to soften and bleaching to whiten these new materials yielded pulps that could be laid down by machine as a sheet with subsequent drying to form paper. Due to the development of sustainable technology, green renewable resources have attracted increasing interests in recent years. Kapok fiber belongs to a typical cellulosic fiber, which is obtained from the seed hairs of kapok trees. Kapok fiber possesses the features of thin cell wall, large lumen, low density, and hydrophobic-oleophilic properties. Kapok fiber also has no residue of pesticides and chemicals. Ceiba pentandra is a heat and sound insulation material as well as a good filling and floating material. Based on the result, our fire resistant wallpaper cannot be burn easily. It is because of the addition kapok fiber is a heat insulation material as well as a good filling and floating material which can avoid from burning. Conclusively, fire resistant wallpaper will give benefits to consumers. Thus, it will also put a leap to the Malaysian economic status successfully. Lastly, we believe our product could mark the end of the worsening pollution.

Keywords: *Ceiba pentandra*; kapok; insulator

G063. CALCIUM CARBONATE SUPPLEMENTS TO COMBAT OSTEOPOROSIS

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Abstract: In our modern age, people now do not care about their health. Health is one of the important values in people's lives. At the age of 30s, there are a lot of people who suffer osteoporosis disease without realizing it. Osteoporosis means a condition of fragile bone with an increase susceptibility to fracture. In our study, we found that egg shells wealth in calcium carbonate. Due to this situation, we take a wise step to create pills that contain calcium to elixir the disease of osteoporosis. Hence, we choose pills as our method to achieve our goal. We blended the egg shells to become powder. Then, we stored the egg shells powder into pills. Based on the results from previous researches we found that calcium carbonate had positive effects in piglets which was an the bones and cartilage. In addition, this brilliant powder was tested to 54 postmenopausal Vietnamese women. The result was marvelous because the egg shells calcium was very efficient to gain bone mass. This product will reduce the probability of osteoporosis from happening. Therefore, the population of humans will not be effect to this disease.

Keywords: Osteoporosis, Calcium, Egg shells

G064. FRACHET TO PREVENT WEEVILS IN ORYZA SATIVA

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Abstract: The objective of the project is to produce a fragrant sachet (Frachet) to prevent weevils in the rice storage container. This sachet also can provide many advantages especially to decrease the presence of weevils in rice container, without ruining the rice it also can make the rice more fragrant and bacteria free. Weevil is a type of pest that attacks food especially rice. Weevils are black beetles that are always found in a container of rice. Weevils can get in your rice container through the packed food from outside. Any aromatic smell can repel them from the rice storage container.That is why, we have found a way to pack a very aromatic smell in a very conveniently sized bag. With that, we have come up with 'Frachet'. It is an aromatic sachet containing dried aromas. It is produced using materials such as citrus hystrix (lime leaves), Capsicum annuum (dry chilli), pandanus (pandan leaves). The main material is a sachet. The sachet is a small net made by cotton. The sachet had a length of 10 cm, width 5 cm and high 2 cm. First, fry all the ingredients without oil until the ingredients turn dry. Make sure to fry all the ingredients one by one. Then, blend all the ingredients into small pieces. Then, insert all the ingredients one by one into the sachet slowly. After inserting all the ingredients in the sachet, keep the sachet at a room temperature for a while to let the aromatic smell diffuse into the air. This sachet can be used for a month before it needs to be changed to a new one. After conducted an experiment, the project has successfully eliminated the weevils in the food container. We had made an example to make sure this project is successful. Rest assured that this product won't ruin the rice or create health problems because all the ingredients are natural. In the conclusion, weevils hate anything that has an aromatic smell.

G065. *GARCINIA ATROVIRIDIS* AS A GREEN TECH CHEMICAL FOR ELECTROLYTES

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Abstract: *Garcinia atroviridis*, known as Asam Gelugur, asam gelugo, or asam keping in Malay, is a large rainforest tree native to peninsular Malaysia. This species grows wild throughout peninsular Malaysia but is also widely cultivated, especially in the northern states, owing to its economic and medicinal value. Garcinia is a large perennial plant commonly found in evergreen forests in the southern region of Thailand and Malaysia. Fortunately, as the education technology improves throughout the revolving area,ideas and creativeness parts to improves as well in making our earth better place to live. Producing *garcinia atroviridis* as a electrolyte in the electrolytic cell to generate electricity will decrease the using of chemical substance in electrolytic cell and can also generate electric as same as the using of chemical subtances. This product can also increase our country's reputation and would solve our earth's problem. Clearly, the electrolytes that commonly people use to generate electricity are harmful and it contains mostly of toxic chemicals. For example,sodium chloride can cause allergic reaction when it exposes on hand. So, the electrolytes from *Garcinia atroviridis* are renewables and safely to handle with it. Our product also produce save energy that totally save for the environment by replacing the electrical sources with *Garcinia atrovirdis*. For example, we can replace the content of the powerbank with something organic that is renewable and not harmful. From research and basic knowledge we know that the chemicals that acts as electrolytes are expensive and non-renewable. By making *Garcinia atroviridis* as electrolytes can save the cost. All the ingredients to make garcinia atroviridis are 100% organic and it is easy to make it. We can produce it without spending with high cost. Based on the result, garcinia atroviridis bring absolute benefits for us. Our *Garcinia atroviridis* electrolytes are safely decompose compared to the other chemicals electrolytes.We can produce electric by replacing the *Garcinia Atroviridis* as the electrolyte in the electrolytic cell. As the conclusion,our product is green tech and our country will have more stable and increasing income. Lastly,we believe our product could mark the end of the porsening pollution. We hope this product will be marketed and receive favorable response from all parties.

G072. DARK PHOSPHORESCENT POWDER

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Abstract: In a titrimetric analysis, there are other materials that can replace the LED and incandescent lamps as decorative lights. These are Strontium Nitrate and Aluminum Nitrate as the base material. LED lamps and incandescent lamps cost much compared to Strontium Nitrate and Aluminum Nitrate which are much lower. After several tests run Strontium Nitrate and Aluminum Nitrate last longer. This means that the duration of use of Strontium Nitrate and Aluminum Nitrate is longer than LED lights and Incandescent incandescent lamps that are easily damaged and do not last long.

G074. MULTI-FUNCTION STICK

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Abstract: Mountain climbers, jungle trekkers and even blind people that uses a white cane will use a long pole or stick as a common accessory to assist them with their rhythm and provide stability on rough terrain. It is well – known as a trekking stick and provide limited usage to the users. It is inconvenient for the user to load them with essential equipment or tool with them. A research has been made to overcome this problem which is by developing a multiple function stick that integrates essential equipment either for mount climbing or jungle trekking. Visually impaired people also can use it replacing their white cane according to the function provided. This enable those to not just carry a one functioning trekking stick along. The researchers aim is to help by providing a multiple function trekking stick that is fully equipped with their requirement.

Keywords: trekking stick, multiple usage

G075. MULTI-FUNCTION UMBRELLA

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Abstract: Pedestrian that uses an umbrella as a protection and shelter from the direct sunlight still encounter several problems that could be prevented. The usage of an umbrella only provide several benefits to the users which is protection from rain and direct sunlight. Users will still feel hot due to the atmospheric temperature. A research have been made to work as a solution. In this research, there are several additional parts that we install to the umbrella to provide multiple function for the users but still with an optimum weight range. In this research, the researchers aim is to show that several additional parts like small fan, led lights, solar panel and reflective material could be combine into an umbrella.

Keywords: umbrella, multiple usage

G076. MULTI PURPOSED ROLLER

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Abstract: Multi purposed roller are used to clean thing that have two side such as ceiling fan as it have two sticky roller which can remove any loose or stray particles and extensible pole. The common way to clean the fan are hard and not convenient as it take a long time and a wasteful of energy. After some research and reading, it was found that majority of housewives use a pole and a rug to clean ceiling fan and climb higher surface to reach the fan. Our aim is to reduce the use of time and energy. At the same time it will not risk the safety of the consumer.

G078. *CHROMOLAENA ODORATA* EXTRACT FOR HEALING PROCESS

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Abstract: Innovation project that has been chosen by the inventors of Sekolah Kebangsaan Binjal entitled "*Chromolaena odorata* synonyms as *Eupatorium odoratum* is a traditional medicinal plant that is widely used for its wound healing property. In particular, the several parts of this herb have been used to treat wounds, burns, and skin infections. Furthermore, it has also been shown to possess anticancer, antidiabetic, anti-hepatotoxic, anti-inflammatory, antimicrobial, and antioxidant properties. Its phytochemical components are alkaloids, flavonoids, flavanone, essential oils, phenolics, saponins, tannins, and terpenoids. The other important constituents of this plant are Eupolin, chromomoric acid, quercetagetin, and quercetin, all of which contribute to its remedial properties.

Keywords: Antioxidant, *Chromolaena odorata*, healing property, plant, traditional medicine, wound

G080. AIR STABILIZER: AUTOMATIC AIR VENTILATION SYSTEM

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Abstract: This is a product that can control the temperature and maintain the quality of the air circulation. The air stabilizer works automatically following the commands programmed in the Arduino. The fan that is connected to the Arduino will start to spin whenever the temperature recorded by the sensor is above room temperature to stabilizer the temperature and to make sure there are circulation in the room even when the user is not at home. The fan will stop to spin when the temperature decreases to ensure the room is at a desired temperature. This will also help the air conditioner cool the room faster since the temperature is already at a desired level and does not need the user to switch on the air conditioner for too long. As the result, the user won't be wasting much electricity by switching on the air conditioner for too long just to have the desired coldness. As the conclusion, this air stabilizer can help the air conditioner to perform better and maintain the quality of the air circulation automatically and not waste much electricity.

Keywords: air stabilizer

G083. STIMULATION OF WOUND HEALING ACTIVITY BY *ALOCASIA DENUDATA* STEM CRUDE EXTRACT AS TESTED ON DF-1 CHICKEN FIBROBLAST CELL LINE

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Abstract: Among most essential factors in wound healing pathways is transforming the vascular endothelial growth factor. Fibroblasts are the main cells in all stages of wound closure. In this research, the crude extract of *Alocasia denudata* from its stem was used to treat the DF-1 chicken fibroblast cells as they were also adherent cells, similar to human fibroblasts. Firstly, the cytotoxicity of the *Alocasia denudata* stem crude extract was assessed using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay or commonly known as MTT assay. Using a suitable range of concentration of the crude extract, we then conducted the cell migration assay to assess the migration rate of the DF-1 chicken fibroblast cells in response to the crude extract. The rates of cells migration process was monitored for 48 h. We found that the crude extract of *Alocasia denudata* stem at 50 (µg/mL) was able to promote the migration of chicken fibroblast cells *in vitro*. Based on this research outcome, we propose that the raw stem juice of *Alocasia denudata* could have a stimulatory effect in wound healing process.

Keywords: *Alocasia denudate* stem, crude extract, fibroblast cells, in vitro, wound healing

G085. THE MAKING OF BIOPLASTIC FROM FOOD GRADE RESOURCES BY USING HOUSEHOLD MICROWAVE

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Abstract: The production of starch based bioplastic from food grade resources plasticized by glycerin was investigated. Physical properties of bioplastics were determined by water uptake and tensile strength. 8 sets of bioplastics were prepared from different percentages of cornstarch plasticized using glycerin with variation of 5%; 10% and 15%. The tests were conducted in household microwave oven with 50°C -180°C. Only 4 sets were tested as these sets were managed to form bioplastic films. For the first 60 minutes, the minimum percentage of water uptake in was 7.66% by Set B(30% starch, 10% glycerin, 100% water as solvent and temperature of 150°C). On the contrary, the maximum percentage of water uptake was 19.35% by Set E (20% starch, 10% glycerin, water and vinegar as solvent and temperature of 150°C). However, after 24 hours, it is observed that bioplastic Set E was degraded in the water thus affect water uptake reading. As for the tensile strength test, the highest tensile strength was obtained for bioplastic set B with the starch content 30%, 10% glycerin and 100% water as the solvent with temperature of 150°C. Bioplastic set E on the other hand showed the lowest tensile strength. This showed that bioplastic Set B has the best properties compared to the other tested bioplastics. It is also proven that bioplastics film can be produced by using household microwave with low energy consumption and short time taken. Furthermore, with good adhesion between starch and crosslinker, the production of bioplastics could be widely used as a substitute for conventional plastics with more benefits to the environment.

G091. NATURAL ANT REPELLENT

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Abstract: The title of the research is the natural ant repellent. This research is aim to determine whether the herbs such as peppermint, lemon grass and basil can be used as the natural ant repellent and discover some of the reason why these natural herbs can be used as natural ant repellent. The method that we used in this project is collecting three kinds of herbs which is peppermint, lemon grass and basil which basically contain the insect repelling properties. To test whether these herbs can repelled ants, the herbs are cut into piece and squeezed it into juicy form then placed above on the sugar A and sugar without any herbs will be the controlling variable of this project. Placed the all the following sugar in the ants favorable place. Observed the sugar every 30 minutes for a 2 hours period and observation is recorded. In a nutshell, certain herb can used as a natural ant repellent than lemon grass and basil.

Keywords: Natural, Ant repellent

G092. CACO TILES

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Abstract: CaCOtiles is defined as a tile made from reusable materials which are egg shells. This is yet another proud invention from students of Gombak Integrated Fully Residential School. CaCOtiles are made up from egg shell collected from various sources as an attempt to save human nature. Human nature that is polluted and corrupted by us, humans. Tiles that we step on everyday are actually polluting the air and land of this precious Mother Earth. Tiles from ceramic and cement are expensive, polluting, and most of all, hideous especially the very cheap ones. On contrary, tiles made up of reusable materials are just as beautiful as the blood strangling tiles. Why not save the world while gaining something that we could benefit from? CaCOtiles are made up in just a few minutes. Based on experiments, CaCOtiles can withstand until 750 degree Celcius and 4.67kN/m². Water resistant and amazing strength of these eggtiles are inventions worth a lifetime in the short life of a man. What else could we ask from ourselves? Save human nature, save our kind, save money and save the lives of the ones we love. The solution is here, right here, right now. Science and God knows, works in perfect harmony.

G093. MANGOILSTEEN

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Abstract: The batik industry is the biggest cottage industry in Malaysia and it contributes positively to theeconomic growth of Malaysia. This industry produces wastewater rich in color due to the dyes. Colors is one of the characteristics of an effluent which is easily detected and readily traced back to its source. Most of the dyes are stable to biological degradation and are toxic as well. In view of the harmful impacts of this wastewater to the environment and society, the Malaysian government hasimposed stringent limits on the quality of discharged waste-water. The conventional wastewater treatment processes for the textile industry is not capable of degrading many of thedyes present in industrial effluents. In addition, the conventional treatments are not economical since it involves costly treatments. So why don't we save the world with waste that can be easily found in our kitchen? Treat waste with waste. What is this waste? A new adsorbent made from waste material of food with combination of waste cooking oil as an attempt to save nature.We believe that this low-cost sorbent,due to their sustainable sources and excellent biodegradable nature is an innovative and competitive bio-product for the removal of dyes from environment samples.The reuse of these waste materials is both an advantage and an effective alternative for waste management. Let's go green and save our planet!

G094. LEMUNI HITAM-SHERBS: A GOOD ANTICEPTIC SOURCE

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Abstract: 'Lemuni Hitam'(Vitex Negundo) is an aromatic shrub.The leaves of 'lemuni hitam' are widely used in preparing "Nasi Lemuni". The purpose of conducting this project is to investigate the effects of 'lemuni hitam' leaves on antiseptic. Ethanolic extract and water extract of lemuni leaves are used to investigate the effect on antimicrobial activity. The extract was tested on *Staphylococcus aurues, Escherichia coli* and *Aspergillus oryzae.* For paper disc diffusion method, the clear zone is measured to show that 'lemuni hitam' leaves extract could kill the microbes as it could be an antiseptic.) 'Lemuni Hitam' extract can inhibit the growth of bacteria and killed bacteria. Thus, it can be used as natural antiseptic. This plant can benefit us, as an alternative form as a natural antiseptic solution. We should grow it as a cash crop plant. Ethanolic lemuni extract shows positive results with Staphylococcus aureus. Therefore it is really suitable to be an antiseptic substance as *S.aureus* can be found on the wound. This product can treat external wound and prevent the entry of bacteria into our body. This natural antiseptic is a new alternative to the use of artificial antiseptic such as Dettol and iodine.

G96. ELECTRONIC BRUSH

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Abstract: Project that we had discussed is a brush that have an electronic system.We had found an innovative problems that have side effects then we transform our product into a non-innovative product. This product is based on gear system.We also used a solar system to make it work. The way to use is the users have to put hair liquids such as hair gel and hair oil.Then, you have to power the 'on' button to make it works. We got this idea from a federation of a regular brush,gear system and battery and it becomes an electronic brush.We also got this idea from a problems that all busy men that had no time to brush their hair.

G099. GYNURA PROCUMBENS ACTS AS NATURAL INSULIN

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Abstract: As the entire world could obviously see of what is changing, the rate of mankind suffering from diabetes or high Glucose level had been increasing drastically due to the irresponsible food sellers which are serving extremely unhealthy food such as fast food, sweet drinks in gigantic cups and snacks. This study shows that the constant consumption of Gynura Procumbens in the form of liquid which is tea could reduce the Glucose level in our blood. Excessive Glucose level leads to diabetes and also high Glucose levels which could be deadly to us. Other than that, consuming Gynura Procumbens in the form of Tea will make a change in minutes to the Glucose level in our blood. This is shown by examining the blood using a Blood Monitoring Kit. So, what is Gynura Procumbens? Gynura Procumbens is a tea plant originates from the African region. Gynura Procumbens could be planted right at our backyard in our Malaysian tropical condition which makes it easy for us to plant and grow. Gynura Procumbens becomes a better and healthier alternative overtaking tablet medicine as it comes with side effects such as Nausea, Upset Stomach and Skin Rash. Flavonoids are also found which could suppress illness such as hypertension lead by high blood pressures and diabetes which are lethal. Gynura Procumbens could drop the Glucose level in our blood which will lead us into a way healthier lifestyle.

Keywords: Gynura Procumbens, Diabetes, Insulin, Side Effects, Glucose Level, Tea

G104. LUMINARIA LIGHT

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Abstract: In this era, statistic had state that most of poor students' education down because of their housing status which lack of electrical supply Statistic also states that some of poor country could not extend the electrical supply to some district area. It is difficult for students from this community to study without electrical supply because they need to use candle which produce CO_2 that can make air pollution. This project consists of part energy converter tile, battery, bulbs and holder. This project is inspired by the thermoelectricity tile. Students can switch on the lamp by just putting their hand on the tile. The tile required about our body temperature to conduct by the tile. After the heat transferred to the electrical energy. Then the electrical energy will light up the bulb. This project aim to help the students that are from low income family that could not pay the high cost of electricity bill and the students from poor country. This project can reduce the money provide to buy candles for students that study during night. From the all the statement above, we can conclude that this HAND ELECTRICAL DESK LAMP can be used in anyway and anytime at everywhere because it is portable to move about. This device does not use any energy from natural resources, instead of using the heat from our own body in others word it is renewable.

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H004. ATTACHABLE MICRO-CHIP NEAR-INFRARED SENSOR (AMNEIS)

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Abstract: Landsat imagery provides a 30 x 30 meters' coverage area per pixel such that low resolution imagery gives less visual perception in determining features and plant healthiness. The high spatial resolution imagery is costly such that inconvenience for small-scale projects that covers small area. This project aims to develop attachable micro-chip near-infrared (NIR) sensors in order to detect the healthiness of vegetation cover specifically for harumanis plantation in Perlis. This project is designed to provide the detection of vegetation by using attachable micro-chip on drones by analyzing spatio-temporal change of harumanis plantation cover using infrared sensor. Besides, this project also intent to assist farmers in early detection of harumanis plantations' healthiness for their orchard. With the development of this outstanding project, it is expected to move parallel towards the latest technology used in recent days.

Keywords: near-infrared sensor chip, NIR, drone, plantation healthiness, harumanis healthiness, vegetation detection

H09. HYLITS: HYBRID LIGHTING SYSTEM FOR PEDESTRIAN WALKWAYS

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Abstract: Malaysia is dependent on nonrenewable fuel as a source of energy that are gradually exhausting and contribute in greenhouse gas emission. Harvesting energy is one of the most promising techniques in response to the global energy problem without depleting natural resources. HyLits product is a hybrid renewable energy system uses two sources of solar and kinetic energy of walking, simultaneously. The aim of the study is to generate sufficient power for pedestrian walkway lighting system during nighttimes through harvesing renewable energies. The study used the experimental method, and the results are compared with the theoritical investigations findings. The prototype of a pedestrian walkway in size of 5' x 5' fabricated and consisted of 16 tiles equipped with piezoelectric sensors and a roof equipped with two photovoltaic solar panels. The scaled prototype of pavement fabricated according to the spatial structure of the walking cycle and normal range of motions assuming a velocity of 1.3m/s. The top layer of the pavement also made of synthetic rubber as a flexible material. The study examined different connections and arrangements of the materials and layers to obtain the optimum condition and output power. The results shows that assuming the case study of pedestrian walkway between Pavilion and KLCC for implementing the prototype, hybrid system can generate 187.54 kWh per day, using kinetic energy of 2607 pedestrian in average per hour (according to the observation) and 110 solar panels. Totally, in the short term benefits, this power can light 2084 LED (18 Watt) along the walkway for five hours at night for equipping only 220 meter of the case study walkway. In comparison with other research, the hybrid system can generate 7% more power. The product is in line with the strategy of "Pursuing green growth for sustainability and resilience" which is determined in Eleventh Malaysia Plan, 2016-2020. Therefore, this study is significantly follows the goal and vision of 2020 and contributes in reducing the fossil fuel consumption and approaches to a green concept. The potential market is urban cities, populated areas, buildings and any populated district.

Keywords: piezoelectric material; renewable energy; kinetic energy harvesting; walking energy, solar energy

H019. AUTOMATIC DETECTION OF LUNG NODULES USING IMAGE PROCESSING

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Abstract: Lung cancer is being one of the most deadly cancer in current society. The early diagnosis and detection of lung nodules increases the probability of survival of lung cancer patient. The main reason for the increase trend in the lung cancer among world citizen is being smoking. Conventionally, the radiologists will examine the lung CT scan images of patient and detect the possibility of having malignant nodules (cancerous). The whole process of reading and marking the lesions (nodules) consumes a lot of time and in most cases, the radiologists will become exhausted. They will experience fatigue due to large number of lung CT scan images to be analysed. Thus, there arise the need for an automated CAD (Computer Diagnostic System) for lung nodule detection. The introduction of Lung nodule detection using a CAD system reduce the computational cost of hiring many professional radiologists and in return reduce the errors made by human during analysis of nodules on the images. The CAD system proposed has the ability to detect the nodules in an efficient and faster way compared to radiologists' analysis. Thus, the patients can have earlier treatment and improved their life quality. The implementation of various image processing techniques enables the medical personals to examine the nodules effectively. A GUI (Graphic User Interface) system is designed for the radiology department of current hospital system. The system basically able to compute the analysis of nodules detected in the lung CT scan images of patients. Basically, there are four stages in the proposed CAD system. The proposed CAD system could effectively detect the nodules in the lung CT scan images and classify them into two categories (cancerous or non-cancerous). Therefore, the medical personals could conduct proper treatment to the patients with reference to the diagnostic result from the CAD system proposed. The chances of survival of lung cancer patient can be improved and increased.The proposed CAD system could segment the nodules efficiently from the lung image. The important features of the nodules are extracted for the classification process. Lastly, the isolated nodules will be classified as being cancer or non-cancerous. The proposed CAD system will eliminate the possibility of poor visual contrast, inaccurate segmentation by human manual cropping, and low accuracy due to variant expertise of radiologists. The misclassification between diseased and normal person can be avoided. The designed system also reduces the time for manual segmentation conducted by radiologists in previous days. Most importantly, the system has the better accuracy in detecting lung nodules than human analysis.

H044. CRIMSON HEALTH APPS – ONLINE HEALTH TRAINER

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Abstract: The percentage of obesity among Malaysians is high and keeps increasing every year. This happens because of the ignorance of public towards their Body Mass Index (BMI) and Body Metabolic Rate (BMR). BMI and BMR are two important elements that are crucial to avoid one being obese. Therefore, researcher believe that it is important to invent an app to monitor their BMI and BMR. In this research, an apps named Crimson Health Care that is mobile, cheap and reliable is invented for public use.

H021. ELECTRONIC SENSOR TO DETECT LAND ENCROACHMENT

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Abstract: Nowadays, many crises are increasing year by year. In Malaysia, we have bumped into humanitarian crisis which is affecting hundreds of thousands of refugees and migrants such as from Myanmar, Indonesia and more. In the future of border control by enforcement agencies will become easier, that is meaning that the illegal and crime rate along the border will be minimized. The electronics sensors in detecting land encroachment should be well-appointed along the fence of our border and it can be placed the sensor underground boundary. The objective of this project, it can prevent drug smuggling, illegal trade, illegal immigration, weapon smuggling, and more. It can be a huge impact to community and nation. The major advantage of this project is that it can reduce humanitarian crisis in Malaysia as long as can improve the local economy and sociality. Overall in this project, we can create a new kind of ways to control the humanitarian crisis around our border to be more efficient.

Keywords: land encroachment; electronic sensor; border

H022. REAL TIME ROAD ACCIDENT ANALYSIS (RTRAA) WEB BASED

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Abstract: Accident analysis plays the important part in order to decrease the road accident cases. In the past, the main analysis tools available to the road safety engineer were paper maps allied to databases like Excel spreadsheets. This was very time consuming process and some of the data was missing and uncompleted. The aim of this study is to improve road accident data storage and accessibility the use of WebGIS by creating a real time road accident analysis data management system. Selection of study area was Kedah. The use of analyses tools such as hotspot area of road accident, spatial temporal pattern of road accident, ordinary least square (OLS) analysis. RTRAA Web based develop through PostgreSQL and a webserver. By making use of RTRAA the police would be control and manage whole accident events as a real-time monitoring analysis system.

Keywords: road accident, real time, web based, WebGIS.

H032. 4D HOUSEHOLD ASSISTANCE GAME

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Abstract: Parents often have a big headache cleaning up a messy home .Children, being creative and energetic, normally use almost everything at home as toys, play all over the house including the kitchen, bathroom, living room and the balcony. Instructions to do housekeeping are often ignored unless an incentive / reward is given. A 4-Dimentional Household Assistant Game can help educate children to assist parents in keeping the house clean and tidy. The game requires children to play and participate in doing simple household activities. By playing this game children indirectly learn the 5S way to do housekeeping while having fun. This game has been simulated and statistically found to be effective in asking children to assist parents in doing household chores.

Keywords: Household, housekeeping, 4D game; 5S implementation, rewards.

H033. "SILVIDEL ANALOG" HIGH NUTRITION PRODUCT GENERATION

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Abstract: Rice is the main food for most people in the world, especially in Asia. Rice is an agricultural product derived from processed paddy that have been harvested through a manufacturing process. Howefer, the problem in Asia, have the unbalanced domestic rice production with large consumption by very high society. Because every day, people only choose rice as the main food for energy source. Diversification of food is one effort to optimazing the potential of other ingredients instead of rice to meet energy needs. Analog rice is one of food diversification effort, made from various kinds of flour which can become alternative material of rice substitute. Silvidel is one of the innovations of analog rice products from silviculture treatment composition made from yellow yam, banana hump, sago and shrimp oil that have high nutrition value. Yellow yam that have high of carbohydrate and vitamin levels. Banana hump is a natural materials that contain high of fiber obtained from banana trees. Sago that have high of carbohydrates, minerals and vitamins. Shrimp oil that contains high of calcium and protein. The ingredients are mixed in accordance with certain compositions using a silviculture treatment. Silvidel's very high nutrition content reaches 80% of the perfect foods. So the Silvidel becomes a new analog rice product that contains high carbohydrate, vitamins, fiber, minerals, calcium and proteins so it is suitable as a multifunctional food ingredients ready to enter the local and global markets.

Keywords: Analog rice, diversification, Silvidel.

H034. SYNERGISTIC EFFECT OF *ANANAS COMOSUS* CROWN AND *PUNICA GRANATUM* PEEL TO INHIBIT POST-HARVEST *MANGIFERA INDICA* FUNGAL (*ASPERGILLUS NIGER*)

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Abstract: Post-harvest *Mangifera indica* is predominant to fungal attack especially by *Aspergillus niger*. *A. niger* may lead to crops failure and quality reduction by forming circular brown spots and enlarged to become dark lesion on the fruits. Nowadays, the usage of synthetic fungicides has become a critical issue according to the negative impact to human health and environment quality. In the other hand, the accumulation of agriculture waste included *Ananas comosus* crown and *Punica granatum* peel have become one of the major concerns by the nation according to the high cost allocated for waste management. Extensive study showed that several fungal growth were disrupted by the presence of several compound such as bromelain and phenolic acids that can be retrieved from *A. comosus* crown and *P. granatum* peel respectively. Thus, in this synergistic study, the researchers aim to determine the potential of *A. comosus* crown and *P. granatum* peel extracts from soxhlet extraction to inhibit *A. niger* growth through well-diffusion method. Thus, the finding will help in substituting synthetic fungicides while reducing environmental pollution.

Keywords: Synergistic, phenolic acids, bromelain, *Aspergillus niger*, antifungal, waste

H045. DISASTER RELIEF DRONE SYSTEM

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Abstract: Malaysia has been suffering with natural disaster of flood every year, especially during the monsoon season, which is a regular occurrence in Malaysia. During the event of such disaster, the National Security Council (MKN) will be enacting Directive No. 20 where it requires the mobilization of huge amount of resources, equipment and extensive man power from various agencies as well as effective coordination (adapted from Directive No. 20: paragraph 5, page 3). But there are a few short comings for the current flood relief management mechanism. Among them are lack of focus, lack of coordination and others but most importantly is the inadequate process of disseminating the information through the knowledge management process. This paper aims to propose the idea to develop and implement DRDS, acronym for Disaster Relief Drone System. The system is to provide relief assistance to the different agencies involved in Directive No. 20 to perform a much effective and efficient disaster relief effort during and after the disaster. The system is also to integrate with the Medical Drone and Mobile Relay Station and are included in their conceptual designs and functions of the DRDS.

Keywords: disaster relief, drone system, knowledge management

H047. ERUDITE MENTAL HEALTH CARE APPS

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Abstract: Many research studies have shown that many people with mental disorders manage their mental state themselves, they refuse to seek for a proper medical treatment. This is basically because a lot of people believe that a proper mental health care requires time and money and they want to avoid public negative stigma. Mental disorders defined in this research are Depression, Anxiety, Stress, Addiction towards internet and pornography materials. Erudite Mental Health Care is developed to help users in identifying their mental health level and recommend the solutions to the problem. The apps will monitor the users' mental health by keeping record of their test progress. The apps will help user to analyse their Depression, Anxiety and Stress levels, addiction towards internet and pornography materials.

Keyword: mental health.

H051. MATERNAL ABSTINENCE

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Abstract: Special care or generally known as "confinement" are needed by mother of newly-born infants to ensure the health and extensive care of their reproductive system. But, some of the women nowadays would not even blink an eye or even care about their health and they consider confinement to be old-fashioned and decide not to follow the practices. Therefore, we do some research and found out that confinement practices give a lot of benefits to women's health and every woman after giving birth should practice it because if they ignore it they might get long term problems. Researchers' aims are to provide an application which will come with variety of services for women during their confinement period and have confinement ladies on hand to help or in easy words Modern Confinement Solutions. With this application, it will help women to practise confinement suits with their needs and lifestyle nowadays.

Keywords: Confinement solutions, Application, Services, Health

H059. FAST COOL GEL

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Abstract: Traditional flower such as hibiscus has been recognize as a cooling agent when people got fever. The preparation process is too complicated and requires many steps before it can be used. Hibiscus leaves have been used by our ancestors for a long time ago to cure their illness especially reducing body temperature. The traditional method and breeze the new form of using hibiscus as a one way of medication. Objective of this study is to produce fast cool gel a combination of organic and traditional ingredients such as hibiscus, aloe vera extract and essential oil. It is suitable for all ages include infant due to it delicate fragrance and got cooling agent. The product will best suit to the people who are working under the sunny day in a long period. This gel can decrease the body temperature and give cooling sensation when put in our body. It can replace the usage of more chemical product that surely can harm our body.

Keywords: health and beauty, fast cool gel, hibiscus, cooling agent, modern way.

H061. ANODIC ALUMINIUM OXIDE MEMBRANE AS SUPPORT MATERIAL FOR GOLD NANOPARTICLES CATALYST

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Abstract: The use of catalyst is to speed up a chemical reaction or to make a reaction cost effective by lowering the energy needed for a reaction to occur. In industries, catalysts can be referred as 'performance chemicals', which enhance the processing of other chemicals. Gold (Au) nanoparticles is an example of metal catalyst, which efficiently can enhanced the catalytic reaction at room temperature and atmospheric pressure. Versatile application of the gold nanoparticles catalyst can also been improved by depositing the Au nanoparticles on aluminium oxide support. The aluminium oxide as the support offers better dispersion of gold nanoparticles as well as increase the total surface area of the catalyst. The idea of this work is to fabricate aluminium oxide support in form of thin membrane by electrochemical anodization method for further deposition of the gold nanoparticles. This catalyst is in form of thin membrane, which will facilitates the removal of catalyst in liquid-phase catalytic reaction compared to conventional powdered catalyst. Effective removal of the catalyst from the reaction medium is necessary to further reuse the catalyst for another catalytic cycle.

Keywords: Gold catalyst; aluminium oxide membrane

H067. STREET LEGEND: PRESERVING TRADITIONAL CULTURE OF KONDA-KONDI THROUGH MOBİLE GAME APPLICATIONS

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Abstract: Traditional games are now disremembered so it is time to bring back the memories of our childhood and make it alive throughout the next generation. The focus of this research is to develop a sense of awareness and cultivate them in our people sentiments. Konda-kondi will be turned into an interesting app to attract the children rather than having them playing some worthless games. By using the mobile application, the developers want to introduce the supreme of traditional game of konda-kondi. Adobe Animate is use to build a mobile interactive game that user can interact with and enjoy the forgotten game of konda-kondi.

Keywords: Konda-kondi, traditional, children, mobile, games, culture

H068. PERCEPTUALLY ADAPTIVE IMAGE WATERMARKING APPLICATION

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Abstract: Watermarking in image and video has a grown interest during last decade due to wide spread of digital media through the internet. Watermarking can be used for copy right protection, copy protection, authentication, channel quality measurement and many other applications. In this poster, an efficient watermarking algorithm is proposed based on simplified perceptual mapping model that combines three factors, texture mapping factor that is implemented using a simplified method referred as ALD (Accumulative Lifting Differences), simplified edge detection technique, and luminance mask. The perceptual model which is consists of new texture map called Accumulative Lifting Differences (ALD), simplified edge extraction method, and luminance mask; is utilized to find the severity of watermark embedding in a new blind image watermarking application that relies on simple and fast calculations which make the design suitable to be implemented on real time systems. Also, the proposed watermarking algorithm shows high robustness against different geometric and nongeometric attacks, high perceptual quality and friendly graphical user interface.

Keywords: Watermarking; LWT; Perceptual Mapping; Texture Mapping; ALD.

H071. WARIS DIGITAL COMMUNITY HUB

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Abstract: Living 'green' is becoming more and more popular as people start to realise the importance of nature. The architectural sector is steadily adopting more green designs, including new ideas like indoor gardens and the usage of sustainable building materials to help reduce global warming. Our proposal is to upgrade an internet cafe, turning it into a digital community hub. Its provides advancement of life and technology, besides that, it will also be a place where youths can hang out. Waris community hub's location is chosen as the site for this project as it is located at the heart of Rembau District, surrounded by secondary schools and higher institution. The concept of 'Geometry Rejuvenation' is adopted and elements such as natural lighting and ventilation are used for sustainable purposes. A combination of pure white, light brown and light blue colours are used to create a natural effect.

***Keywords*:** Green, sustainable, digital hub

H082. MULTIPURPOSE POLE FOR FRUIT HARVESTING

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Abstract: In fruit plantation, wrapping and harvesting of fruit was done manually by worker by means of a ladder to reach a fruit more than 2 meters high. This job is tedious and can endanger the worker if the ladder collapsed. A multipurpose pole was designed to help the worker reach the high fruit in order to wrap or harvesting it. The pole is made from a lightweight aluminum with adjustable height up to 15 foot. The wrapping and harvesting mechanism is attached on top of the pole and manually operated by means of a cable. The mechanism consists of a round aluminum loop on which a wrapper sheet(plastic/paper) is attached. The pole can be extended to cover the fruit and the cable will be pulled to tie the wrapper around the fruit. For harvesting purpose, the wrapper is replaced with a bag or chute. Once the bag is placed under the fruit, a cable is pulled to cut the fruit stem and collected in the bag or sliding down the chute to be collected in the basket on the ground.

***Keywords*:** harvesting; pole; fruits; wrapping, aluminum.

H090. PELAPIK SAJI

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Abstract: Usually in a family setting, food cover is a must-have household item. The only function of this item is to keep the food clean. Unfortunately, while it can ensure the cleanliness of the food, it cannot guarantee that the food is hot when we are ready to eat. After some discussions, we decided to improve the food cover to have the function of keeping the food warm, so we do not need to reheat the food as we want to eat it. For this project, we plan to use car heat reflector to cater the above function. Besides, we also want to make this food cover to be storage friendly, where we require only a small space to keep the food cover, compared to the ones that we are having nowadays that need big space for this purpose.

H095. PARABOLIC TROUGH COLLECTOR WITH THERMOELECTRIC GENERATORS

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Abstract: 2 out of 10 people in Asia suffer from electricity abruption, while 1 child dies every 21 seconds from water-related disease. Much efforts have been focused onto providing clean drinkable water and electricity to marginalised communities in rural areas, but most of the existing solution are not portable or accessible and largely expensive. Water distillation system is considered to be one of the more convenient and cheaper way to obtain clean drinkable water. To distill water, the water source is heated into steam, transferred into a condenser and condensed back into distilled water. Therefore, a portable parabolic trough collector (PTC) integrated with thermoelectric generators (TEGs) could possibly be the solution to these barriers when it is manufactured in a minimal cost, where we named it as Light2O.

Keywords: marginalised communities; distillation; water; electricity; parabolic trough collector; thermoelectric generators

H097. SLEA APP

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Abstract: An innovation pioneered by the students association under the Faculty of Administrative Science and Policy Studies (FSPPP). This project is an output resulted from Fun Fair Tycoon game's concept. It is a combination of education and fun which will create a fun learning process by the students. This project is aiming to create a healthy competition among the players as a whole. The players will be competing in various types of fields involved in university's life such as curriculum and co-curriculum. It will result in ranking among students. This will create a holistic performance-based ranking between universities, globally. An innovation of QR code will be used to evaluate the points awarded to each student. This will be a new version of certificate hence paperless system. The ranking table is divided into three; university league, country league and global league. For the university league, the players are competing within their university. Meanwhile for the country league, the players are competing with all students from various universities within the country. Lastly is global league which all the players are competing globally, across the national borders. In future, this project will improve through great interface and very light-weight so it can be run in almost every device. This project is hoped to ease the job recruitment process as it will be an ease for future employers to offer jobs from continuous and holistic student performance.

H098. HELUVA APP

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Abstract: An innovation pioneered by students' association under the Faculty of Administrative Science and Policy Studies (FSPPP), this product is an output resulted based on the observations of the surroundings. This project is merely focusing on those who are suffering from depression, one of the mental illnesses that has been a recent major topic among people across the globe. This project will be able to create a social platform for them. It will help depressed people to have someone to let their heart out. They can choose either to be a listener or advisor. This project is going to be a middleman to make people who might have the same problem to stay connected. It acts as an alternative especially to those who are not really into public sharing when it comes to their problems and at the same time refuse to refer to the experts. In future, this project will be improved through better graphics and greater user interface that will ease the users. It is also expected to downsize the depression phenomenon within the country.

H101. MOBILE APPLICATION ATTENDANCE SYSTEM(MA2S)

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Abstract: This study was carried out to automate the attendance procedure of an Educational Institution by implementing the Mobile Application Attendance System (MAAS). This application integrates the use of QR code technology into its system where the students or users can use the QR code embedded into the system to take attendance using their Smartphone by scanning their QR code using the provided scanner implemented into the MAAS system. This will save time wasted on calling out names and it gives a fool-proof method of attendance taking. This system also will try to improve the vulnerabilities of the QR code that will be implemented into the MAAS system and provide securities for the attending system. By developing this application, it can help to improve the vulnerabilities of the QR code securities and help to solve the problems involving the current attending system in the Educational Institution.