KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

POLITEKNIK MALAYSIA
KOTA BHARU

itec 2025

3rd INTERNATIONAL TVET & ENTREPRENEURSHIP Conference

"Embracing Diversity with Multiple Intelligences in TVET and Entrepreneurship"

2 -3 September 2025

Politeknik Negeri Medan | Politeknik Kota Bharu

"Embracing Diversity with Multiple Intelligences in TVET and Entrepreneurship"

2 - 3 September 2025

Politeknik Negeri Medan | Politeknik Kota Bharu

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Programme Background

Introduction

3rd International TVET and Entrepreneurship Conference 2025 (3rd ITEC 2025) is an international conference organized by Politeknik Negeri Medan, Indonesia in collaboration with Politeknik Kota Bharu and Polytechnic and Community College Department (DPCCE) through Centre for Research and Innovation (CRI).

This conference is held to prepare a platform for researchers to present the study findings on Technical and Vocational Education and Training (TVET) field and entrepreneurship. The conference's theme "Embracing Diversity with Multiple Intelligences in TVET and Entrepreneurship" is used to emphasise the entrepreneurship aspect in the higher educational institution of TVET field.

3rd International TVET and Entrepreneurship Conference 2025 (3rd ITEC 2025) is being held in hybrid mode, comprising both the virtual and face to face. This conference is expected to give positive impacts on researchers, institutions and industries in Malaysia, Indonesia and other participating countries as well as giving chances for researchers to exchange ideas and inspirations. This conference possesses the potential to spread the findings through publication and presentation. Differences in views across countries are expected to give input towards various of strategies and approaches in enhancing the quality of TVET and entrepreneurship

Objectives

This conference is organized to:

i. Provide platform for researchers to present their findings in the field of Technical and Vocational Education and Training (TVET) and entrepreneurship.
ii. Create a platform for researchers from various countries to exchange ideas and inspirations.
iii. Disseminate research findings widely in publication and presentation.
iv. Assisting the participating institutions in achieving the Key Performance Indicator (KPI) which is to increase the number of staff involvement at the international level, in research writing, presentation and publication activities.
v. Raise the image of the country, ministries, departments and institutions to the international level.

Theme

"Embracing Diversity with Multiple Intelligences in TVET and Entrepreneurship"

Categories

i. Engineering
ii. Vocational Education
iii. Science & Technology
iv. Environment
v. E-Learning
vi. Entrepreneurship
vii. Business & Management
viii. Information Technology
ix. Social Science
x. Lifelong Learning

Dates

2 - 3 September 2025

Venues

Politeknik Kota Bharu
Politeknik Negeri Medan

Mediums

Virtual & Face to Face Presentations

Website

http://itec25.pkb.edu.my

Welcome Address

Director General
Department of Polytechnic and Community College Education (DPCCE)

Bismillahirahmanirrahim. Assalamualaikum w.b.t and a very good day to all of you.

I am especially pleased to witness the strong collaboration between Malaysia and Indonesia, through the Department of Polytechnic and Community College Education, Politeknik Kota Bharu, and Politeknik Negeri Medan, Indonesia, in organising this significant 3rd ITEC '25. This conference has brought together researchers from diverse disciplines, not only from Malaysia and Indonesia but also from Brunei and China. Over the past few days, we have convened as a global community to explore the transformative power of TVET and entrepreneurship in shaping our future.

For generations, Technical and Vocational Education and Training (TVET) has been the anchor of economic development, providing individuals with the practical skills that power our industries and build our nations. In Malaysia alone, we see the significant commitment to this agenda. 12 ministries and agencies overseeing over 1,398 TVET institutions, including 36 Polytechnics and 105 Community Colleges are working tirelessly to equip our workforce for the challenges and opportunities ahead.

However, the world is changing at an unprecedented pace. The Fourth Industrial Revolution is not just a concept. It is a reality reshaping every sector. Traditional trades are now intertwined with digital skills, artificial intelligence, robotics, automation, and sustainable practices. This evolution demands our future graduates to be not just skilled technicians, but also agile technopreneurs who can innovate, adapt, and create value in dynamic environments.

This brings us to the very core of our theme: Embracing Diversity with Multiple Intelligences in TVET and Entrepreneurship. By deliberately recognizing and nurturing these distinct forms of intellect, we initiate a transformative process. We empower individuals to unearth their unique strengths and apply them with profound impact. Our goal transcends from merely producing skilled workers to committedly cultivating holistic individuals who exude confidence, unleash creativity, and possess remarkable innovative capabilities. This vision drives the Department of Polytechnic and Community College Education, Ministry of Higher Education, as we proactively leverage digital tools and technologies to propel entrepreneurial ventures forward, precisely aligned with our TVET Digital plan.

To all participants, researchers and educators, I urge you to carry this perspective forward. Let us promote entrepreneurial mindsets that encourage risk-taking, resilience, and the ability to influence diverse team strengths. By embracing the full spectrum of human intelligence, we can unlock unprecedented levels of creativity, problem-solving, and entrepreneurial spirit. We can build a future where every individual finds their purpose, contributes their unique talents, and thrives in a diverse and dynamic global landscape. Hence, we will not only strengthen our TVET sector and boost entrepreneurship, but we will also build a more inclusive, innovative, and strong society where every individual could realize their full potential.

May this conference serve as a powerful beacon, guiding us towards a future where the rich diversity of human intelligences is fully embraced, celebrated, and leveraged to propel TVET and entrepreneurship to new heights. Once again, allow me to extend my profound appreciation to the dedicated organising committee members of the 3rd ITEC 2025. Their collective hard work and unwavering commitment, representing Politeknik Negeri Medan, Indonesia, Politeknik Kota Bharu, Kelantan, Malaysia, and the Department of Polytechnic and Community College Education, Ministry of Higher Education Malaysia, were foundational to the incredible success of this event.

Thank you.

Dato' Dr. Haji Mohd Zahari bin Ismail

Welcome Address

Director of Politeknik Negeri Medan

Assalamu'alaikum warahmatullahi wabarakatuh,

Distinguished delegates, esteemed colleagues, distinguished speakers, and honored guests.

On behalf of Politeknik Negeri Medan, it is my great pleasure and honor to welcome you all to the 3rd International TVET & Entrepreneurship Conference 2025. This year, we are privileged to co-host this significant academic forum in collaboration between Politeknik Negeri Medan, Indonesia and Politeknik Kota Bharu, Kelantan, Malaysia.

The theme of this year's conference, **"Embracing Diversity with Multiple Intelligences in TVET and Entrepreneurship,"** is highly relevant both in theory and in practice. It highlights the need for today's education systems, especially in Technical and Vocational Education and Training, to go beyond one-size-fits-all methods and to recognize the variety of talents people have. By understanding and valuing different types of intelligence, we acknowledge that skills in thinking, creativity, communication, and entrepreneurship are all equally important for driving innovation and supporting sustainable economic growth.

TVET and entrepreneurship education must not only equip learners with technical proficiency but also nurture adaptability, cultural literacy, and problem-solving capacities. This paradigm aligns with global educational frameworks and sustainable development goals, ensuring that learning remains inclusive, equitable, and responsive to societal needs.

This conference serves as a multidisciplinary platform for the dissemination of research findings, the sharing of pedagogical innovations, and the fostering of cross-sectoral partnerships. The contributions made by our distinguished keynote speakers, paper presenters, and panellists will undoubtedly enrich our collective understanding of how diversity and multiple intelligences can be effectively integrated into TVET and entrepreneurial ecosystems.

On behalf of Politeknik Negeri Medan, I once again welcome you to this conference. May our deliberations over the coming days be intellectually stimulating and yield outcomes of enduring significance.

Thank you.

Wassalamu'alaikum warahmatullahi wabarakatuh.

Dr. Ir. Idham Kamil, S.T., M.T.

Welcome Address

Director of Politeknik Kota Bharu

Assalamu'alaikum warahmatullahi wabarakatuh,

I am delighted to welcome everyone to the 3rd International TVET & Entrepreneurship Conference 2025 (3rd ITEC '25). This event is a special collaboration, proudly organized by Politeknik Negeri Medan (Indonesia), co-hosted by Politeknik Kota Bharu and the Department of Polytechnic and Community College Education, Ministry of Higher Education Malaysia.

None of this would be possible without the tireless dedication of our organizing committees. Thank you, from the bottom of my heart, for your countless hours and unwavering commitment to making this event a success. Let's make the most of this opportunity to learn, share, and grow together.

In this prestigious conference, there are 140 participations from various fields of study in all aspects of TVET and entrepreneurship, such as engineering, vocational education, science and technology, environment, e-learning, business and management, information technology, social sciences, and lifelong learning.

This conference proves our unstoppable commitment to excellence and the strong participation shows we can tackle any global challenges through knowledge and collaboration. 3rd ITEC '25 serves as a premier gathering of experts, educators, and researchers, creating a dynamic platform for exchanging cutting-edge ideas and insights in the technology-driven economy. Centred on the theme "Embracing Diversity with Multiple Intelligences in TVET and Entrepreneurship," this conference advocates innovative approaches to develop skills and entrepreneurial growth, ensuring every talent is recognized and nurtured.

Diversity with Multiple Intelligences in TVET and Entrepreneurship refers to integrating the concept of diverse learning styles and intellectual strengths into Technical and Vocational Education and Training (TVET) and entrepreneurial development. The importance of Diversity with Multiple Intelligences in TVET and Entrepreneurship in education is profound, especially in preparing learners for real-world skills, innovation, and inclusive economic participation. The world is changing fast, and the old "one-size-fits-all" approach to education just doesn't cut it anymore.

In TVET and entrepreneurship, we need to embrace the fact that every student learns differently. Some excel with hands-on skills, others with creativity or teamwork, and that is a good thing. When we recognize and nurture these strengths, we prepare students to succeed in real jobs and businesses.

Finally, I would like to take a moment to sincerely thank everyone who made this event possible, especially the organizing committee, our brilliant speakers, and all the passionate participants. Your hard work and dedication have truly brought this conference to life. I hope 3rd ITEC 2025 inspires more educators and researchers to dive deeper into the technology-driven economy, pushing boundaries and creating real impact. Let's keep this momentum going. May the insights shared here today help us move closer to our shared vision of progress and innovation. Wishing all of you continued success of this incredible journey.

Thank you.

Ts. Mohd Hisham bin Makhtar

Event Programme

02 September 2025 | Tuesday

8.00 am Microsoft Team online registration
Face-to-face registration at Library Foyer (PKB)

8.20 am Opening Ceremony
Venue : Dewan Jubli Perak, PKB

8.35 am Keynote Speaker 1
Venue : Dewan Jubli Perak, PKB

Assoc. Prof. Ts. Dr Khairul Azhar bin Mat Daud
Universiti Malaysia Kelantan, Malaysia

"**Shaping the Future of Work Through Intelligence Diversity in Skills Education"**

9.00 am Keynote Speaker 2
Venue : Dewan Jubli Perak, PKB

Dr. Benny Benyamin Nasution
Politeknik Negeri Medan, Indonesia

"**Single Layer Hierarchical Graph Neuron (SLHGN)-Based RADAR Technology (SLRADT)**"

10.30 am Parallel Session 1

1.00 pm Break

2.30 pm Parallel Session 2

03 September 2025 | Wednesday

7.50 am Preparation for Keynote Speaker

8.00 am Keynote Speaker 3 (Online)

Ir. Ts. Dr. Ahmad Azlan bin Ab Aziz
Universiti Teknologi Brunei

"Breeding Innovation-Driven Startups: Bridging Technical Talent and Entrepreneurial Mindsets through Intelectual Properties"

8.30 am Keynote Speaker 4 (Online)

Dr. Yao Heng
Sichuan Conservatory of Music and Fine Arts, China

"Bridging Creativity and Industry: Enhancing Student Engagement through Competitions and Real-World Projects"

9.00 am Parallel Session 3

1.00 pm Break

2.20 pm Closing Ceremony

Tentative

Opening Ceremony
3rd International TVET and Entrepreneurship Conference (3rd ITEC '25)

02 September 2025 | Dewan Jubli Perak, PKB

8.10 am Arrival of Invitees and Participants
Arrival of VIP

8.20 am Opening remarks by Emcee
DJP Safety Video Presentation
Prayer Recitation

8.25 am Welcoming speech by Deputy Chairman of 3rd ITEC '25

8.35 am Keynote Speaker 1
Assoc. Prof. Ts. Dr Khairul Azhar bin Mat Daud
Universiti Malaysia Kelantan, Malaysia
"**Shaping the Future of Work Through Intelligence Diversity in Skills Education"**

9.00 am Keynote Speaker 2
Dr. Benny Benyamin Nasution
Politeknik Negeri Medan, Indonesia
"**Single Layer Hierarchical Graph Neuron (SLHGN)-Based RADAR Technology (SLRADT)**"

9.25 am Presentation of souvenirs to keynote speakers

9.30 am Closing remarks by Emcee

Tentative

Officiating and Closing Ceremony
3rd International TVET and Entrepreneurship Conference (3rd ITEC '25)

03 September 2025 | Dewan Jubli Perak, PKB

2:20 pm Arrival of Invitees and Participants
Arrival of VVIP

2:33 pm The National Anthem of Malaysia (Negaraku)
The National Anthem of Indonesia (Indonesia Raya)

2:42 pm Opening remarks by Emcee

DJP Safety Video Presentation
Prayer Recitation

2:55 pm Welcoming speech by the Director of Politeknik Kota Bharu,
Ts. Mohd Hisham bin Makhtar

3:05 pm Welcoming speech by The Director of POLMED

3:30 pm Officiating speech by

YBrs. Dr. Shahiza binti Ahmad Zainuddin
Director, Centre of Research and Innovation (CRI),
Department of Polytechnic and Community College Education, Ministry of Higher Education, Malaysia

3:55 pm Announcement of Best Paper Award (1 Entrepreneur & 1 TVET)
Presentation of souvenirs to VVIPs

4:10 pm Closing remarks by Emcee

Keynote Speakers

3rd International TVET and Entrepreneurship Conference (3rd ITEC '25)

Day 1 | 2 September 2025

Assoc. Prof. Ts. Dr Khairul Azhar bin Mat Daud
Universiti Malaysia Kelantan, Malaysia

Title : **Shaping the Future of Work Through Intelligence Diversity in Skills Education**

Dr. Benny Benyamin Nasution
Politeknik Negeri Medan, Indonesia

Title : **Single Layer Hierarchical Graph Neuron (SLHGN)-Based RADAR Technology (SLRADT)**

Day 2 | 3 September 2025

Dr Yao Heng
Sichuan Conservatory of Music and Fine Arts, China

Title : **Bridging Creativity and Industry: Enhancing Student Engagement through Competitions and Real-World Projects**

Ir. Ts. Dr. Ahmad Azlan bin Ab Aziz
Universiti Teknologi Brunei

Title : **Breeding Innovation-Driven Startups: Bridging Technical Talent and Entrepreneurial Mindsets through Intelectual Properties**

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3rd International TVET and Entrepreneurship Conference (3rd ITEC '25)

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Baharin bin Che Ajid
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Nik Nur Fathiha binti Nik Din
Department of General Studies, PKB

Parallel Sessions

3rd International TVET and Entrepreneurship Conference (3rd ITEC '25)

2 September 2025 | Parallel Session 1A (Face to Face)

Moderator : Dr. Mohd Suhairi bin Md Suhaimin (Politeknik Kota Bharu, Kelantan)
Channel/Room : 1 / Al Ghazali Hall, Politeknik Kota Bharu

Time	Paper Code	Title	Presenter
10.30 am	SO 556	Impact of Financial Literacy on Student Spending Behavior in Polytechnic Kota Bharu	Wan Azilah binti Wan Yunus
10.50 am	SO 571	Unveiling the Influence of Personality Traits on Lecturers Work Performance: A Case Study of Politeknik Hulu Terengganu	Nurul Aseaking binti Ismail
11.10 am	SO 610	Analysis of Program Educational Objectives (PEO) Achievement For Diploma in Electrical Engineering (DET) at Politeknik Kota Bharu	Mardiyana binti Mahmood
11.30 am	SO 637	Pengaruh Motivasi Terhadap Kemahiran Bertutur Bahasa Arab Dalam Kalangan Pelajar Kelas Aliran Agama: Satu Kajian Literatur Sistematik	Zulailawati binti Saufi
11.50 am	SO 649	Kefahaman Dan Kecaknaan Terhadap Maqasid Syariah Dalam Kalangan Pensyarah Politeknik Malaysia Zon Timur	Azman bin Aziz
12.10 pm	SO 664	Sikap Dan Motivasi Pelajar Diploma Kejuruteraan Awam Terhadap Kursus Pengajian Am Di Politeknik Kota Bharu	Shah Rulbani binti Zakaria
12.30 pm	SO 581	Future Development of Mechanical Engineering Education: A Swot Analysis at Politeknik Kota Bharu	Azli Syam bin Awang

2 September 2025 | Parallel Session 1B (Face to Face)

Moderator : Zakaria Sembiring (Politeknik Negeri Medan)
Channel/Room : 2 / Ibn Sina Room, Politeknik Kota Bharu

Time	Paper Code	Title	Presenter
10.50 am	LE 628	Keberkesanan Permainan Digital Sebagai Kaedah Pembelajaran Berasaskan Permainan Dalam Meningkatkan Motivasi Dan Kefahaman Pelajar Jtmk Di Politeknik Kuching Sarawak	Siti Fatia binti Mohamad Ali
11.10 am	BM 599	Kajian Pasaran Penerimaan Produk Kiub Bawang Dan Halia Di Kalangan Pengguna Di Politeknik Kota Bharu Negeri Kelantan	Lt Kol Che Marzuki bin Che Hussin
11.30 am	VE 651	Design of an Interactive Multimedia Weblog Courseware for Enhancing Hydrology Engineering Education in Malaysian Polytechnics	Dr Fatin Hana Naning
11.50 am	VE 695	Conceptualization of a Research Model for Teacher Development Dimension and Teaching Effectiveness Through Metaverse	Darren Peter
12.10 pm	VE 726	Metaverse-Integrated Education in TVET: A Bibliometric Analysis	Darren Peter
12.30 pm	EN 576	Monitoring Voltage Stability in Power System Feeders Under Various Load Conditions	Nor Hayati binti Ismail

2 September 2025 | Parallel Session 1C (Face to Face)

Moderator : Wan Salmizi bin Wan Mahmood (Politeknik Kota Bharu)
Channel/Room : 3 / Seminar Room, Politeknik Kota Bharu

Time	Paper Code	Title	Presenter
10.30 am	EN 565	Merekabentuk Dan Membangunkan Mesin Leaf Shredder	Norli binti Ismail
10.50 am	EN 614	Innovative Shophouse Frame Design Using Eurocode 3: Advancing Structural Performance and Regulatory Compliance	Ir. Tengku Suriati binti Tengku Yusoff

Time	Paper Code	Title	Presenter
11.10 am	EN 681	Strategic Implementation of Info Graphic-Enhanced Project Management for the Commercialization of Eco-Fusion Concrete Under the 2025 Sustainable Innovation Grant	Ir.tengku Suriati binti Tengku Yusoff
11.30 am	EN 713	Technical Analysis of Clogging Sink Problems and Their Practical Solutions	Siti Hawa binti Kadir
11.50 am	ET 654	Kajian Keberkesanan Program Young Socialpreneur Programme (YS2P 3.0)	Nur Hanani binti Daud
12.10 pm	ST 579	The Potential of Seawater Nile Tilapia Oreochromis Niloticus Culture in Politeknik Jeli Kelantan: Salinity Tolerance and Growth Performance	Zalina Che binti Manan

2 September 2025 | Parallel Session 1D (Online)

Moderator : Hasyireen binti Abdul Halim (Politeknik Tun Syed Nasir Syed Ismail)
Technical : Mohd Izuddin bin Mahmood
Channel/Room : 4 / Discussion Room 2
Link : Day 1_Parallel Session 1D | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
10.30 am	EN 638	A User-Centered Redesign of a Wheelchair for Paraplegic Patients Using 3D Autocad Modeling	Mohd Luqman bin Zulkepli
10.50 am	EN 639	Parameter Estimation of a Mathematical Model for Lower-Limb Exoskeletons with Paralysed Humans	Norazam bin Aliman
11.10 am	EN 641	Predicting Breakdown Types of Ventilators in Public Hospital Using Machine Learning	Ts. Suryani binti Ilias
11.30 am	EN 643	An Innovative Walking Stick with Enhanced Ergonomics and High-Friction Base for Improved Comfort and Stability	Nurul Wahidah binti Zainal
11.50 am	EN 644	Innovation Crutch Cushion: An Ergonomic Approach to Rehabilitation for Calcaneus Fracture	Muhammad Amjad bin Azhar
12.10 pm	EN 645	Analysis and Redesign of Hyperextension Braces for L1 Vertebra Rehabilitation	Muhamad Amirul Aliff bin Mohd Nasir
12.30 pm	EN 648	Enhancing Waste Management Through Automation: A Study on the Effectiveness of Automated Waste Segregator	Nur Farhana Hazwanee binti Sulaiman

2 September 2025 | Parallel Session 1E (Online)

Moderator : Ermyna Seri (Politeknik Negeri Medan)
Technical : Sr Siti Yukarni binti Jusoh
Channel/Room : 5 / Discussion Room 3
Link : Day 1_Parallel Session 1E | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
10.30 am	SO 559	Initial Ergonomic Risk Assessment for Transferring Ice Packs from the Packing Location to the Truck	Ts. Nor Hakimah binti Ahmad Subri
10.50 am	SO 560	Kajian Tahap Pengetahuan Staf JKM PKB Terhadap Keselamatan Dan Kesihatan Pekerjaan Di Bengkel Dan Makmal Kejuruteraan Mekanikal	Md. Zairudin bin Zakaria
11.10 am	SO 561	Kajian Hubungan Pengetahuan Dan Amalan Keselamatan Dan Kesihatan Pelajar Di Bengkel Dan Makmal Jkm Pkb	Md. Zairudin bin Zakaria
11.30 am	SO 566	The Effectiveness of Developing an Interactive Augmented Reality (AR) Exploration Application in Automotive Workshop Service Management E-Book Among the Automotive Students at Sultan Azlan Shah Polytechnic	Noor Athiqah binti Othman

Time	Paper Code	Title	Presenter
11.50 am	SO 573	Kajian Kesedaran Kecekapan Pengurusan Tenaga Elektrik Di Kalangan Pelajar Politeknik Kota Bharu	Azani bin Mat Ali
12.10 pm	SO 693	Keberkesanan Pembelajaran Kooperatif Terhadap Efikasi Kendiri Pelajar Dalam Meningkatkan Prestasi Pencapaian Akademik	Zuraina binti Ismail

2 September 2025 | Parallel Session 1F (Online)

Moderator : Dr. Rose Adeh (Universiti Malaysia Kelantan)
Technical : Zarra Banu Hannani binti Ab Rahim
Channel/Room : 6 / Bibliotherapy Room
Link : Day 1_Parallel Session 1F | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
10.30 am	SO 670	Etika Alam Sekitar Dalam Islam: Peranan Manusia Sebagai Khalifah Dalam Menghadapi Krisis Ekologi Global	Nurul Hakim bin Ismail
10.50 am	SO 674	Pengaruh Pengamalan As-Sunnah Dalam Pembentukan Akhlak Remaja Di Era Digital	Azizah binti Che Musa
11.10 am	SO 677	A Qualitative Study of Motivations and Reasons for English Language Learning Among Electrical Engineering Students at Politeknik Kota Bharu	Marianti binti Mohd Suhaimi
11.30 am	SO 687	The Role of AI in Teaching and Career Advancement: A Study on Awareness and Acceptance Among PKB Lecturers	Wan Rahayah Rahimi binti Wan Ramli
11.50 am	SO 692	A Model of E-Content User Behavior of Training Teachers in Malaysia: Validation of a Final Structure Modela Model of E-Content User Behavior of Training Teachers in Malaysia: Validation of a Final Structure Model	Noor Alia Hanim binti Mohamad Hassan
12.10 pm	SO 697	Perbezaan Interaksi Hadis:Kajian Konsistensi Al-Qaraḍāwī Terhadap Tujuh Kaedah Interaksi Hadis	Nurul Hakim bin Ismail
12.30 pm	SO 699	The Effectiveness of Pre-Recorded Role-Play and Presentation Videos in Enhancing Communication Skills Among Polytechnic Students	Noor Asmaa' binti Hussein

2 September 2025 | Parallel Session 2A (Online)

Moderator : Dr. Wan Noraswaniaty binti Wan Ahmad (UiTM Cawangan Kelantan)
Technical : Sr Siti Zaleha binti Ibrahim
Channel/Room : 1 / Bibliotherapy Room
Link : Day 1_Parallel Session 2A | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
2.30 pm	BM 575	The Impact of Tiktok Advertisements on Consumer Value Perception	Norhidayah binti Mohd Salleh
2.50 pm	BM 587	Taxpayers' Intentions to Claim Tax Relief for Medical Insurance in Malaysia	Siti Hajar binti Muhd Ariff
3.10 pm	BM 621	Innovative Marketing Strategies and their Impact on Engagement Among Generation Z and Millennials in Malaysia	Nik Ahmad Rizal bin Wan Ismail
3.30 pm	BM 632	Analysis of Customer Satisfaction Towards PKT Supermarket Kok Lanas within the PKB Communities	Yusnida binti Mohd Pauzi
3.50 pm	BM 657	Factors Affecting the Level of Customer Service Satisfaction in Kota Bharu	Yusnida binti Mohd Pauzi
4.10 pm	BM 700	A Study on Construction Safety Management for High-Rise Building At Alam Perdana Phase 5 (AP 5)	Dr. Kannan a/l Rassiah
4.30 pm	BM 705	Faktor-Faktor Yang Mempengaruhi Minat Pelajar Kejuruteraan Terhadap Keusahawanan Di Politeknik Kota Bharu	Nur Amirah binti Mat Zubir

2 September 2025 | Parallel Session 2B (Online)

Moderator : Nur Anisza Hanoum binti Naseron (Politeknik Nilai, Negeri Sembilan)
Technical : Ruzila binti Mat Ghani
Channel/Room : 2 / Seminar Room
Link : Day 1_Parallel Session 2B | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
2.30 pm	ST 574	Factors Contributing to Students' Difficulty in Writing Project Reports	Nabihah binti Sihar
2.50 pm	ST 611	Analisis Kecekapan Sistem Pengecasan Untuk Kenderaan Elektrik Menggunakan Matlab	Md Rusdi bin Mat Husin
3.10 pm	ST 622	Reka Bentuk, Pelaksanaan Dan Analisis Prestasi Turbin Angin Bersekala Kecil	Md Rusdi bin Mat Husin
3.30 pm	ST 634	Pembangunan Sistem E-Hsac Untuk Analisis Dan Kawalan Hidroponik	Azmi bin Ayup
3.50 pm	ST 655	The Utilization of Oil Palm Empty Fruit Bunch (EFB) Pellets in Substrate Formulation for Grey Oyster Mushrooms	Zalina bin Awang
4.10 pm	ST 676	Kajian Keberkesanan Inovasi Penyuntik Baja	Mohd Sumazlin bin Mahamed
4.30 pm	ST 710	Pembiakan Bawang Merah Secara Belahan	Mohd Sumazlin bin Mahamed

2 September 2025 | Parallel Session 2C (Online)

Moderator : Raja Intan Zarina binti Raja Zaki Hashim (Politeknik Tuanku Sultanah Bahiyah)
Technical : Che Ani binti Che Kar
Channel/Room : 3 / Discussion Room 2
Link : Day 1_Parallel Session 2C | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
2.30 pm	EN 554	Tool Life and Surface Finish Evaluations in Dry Milling of AISI D2 Tool Steel	Nik Faizu bin Kundor
2.50 pm	EN 567	Utilization of Waste Lokan Shells as Cement Substitute in Concrete Mixture	Rosidah binti Mohd Saad
3.10 pm	EN 572	Development of the Moverail Walkway System for Enhanced Pedestrian Mobility	Muhammad Zuhairy bin Zulkifli
3.30 pm	EN 577	Towards Renewable Energy: Awareness and Acceptance of Mini Independent Power Producers in Kota Kinabalu, Sabah	Mariati binti Jaafar
3.50 pm	EN 619	Rekabentuk Bot Autonomi Untuk Misi Pencarian Dan Penyelamatan Di Kawasan Maritim	Ajmir bin Mohd Saill
4.10 pm	EN 627	Integrasi Teknologi 3D Printing Dan Fiberglass Dalam Rekabentuk Bot Autonomi Jenis Catamaran Untuk Misi Sar	Ajmir bin Mohd Saill

2 September 2025 | Parallel Session 2D (Online)

Moderator : Ts. Yasin bin Yusoff (Politeknik Kota Bharu)
Technical : Mohd Nubli Shahmi bin Zainal Abidin
Channel/Room : 4 / Discussion Room 3
Link : Day 1_Parallel Session 2D | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
2.30 pm	EN 680	User Interaction and Perceived Effectiveness of S-VOCTF for Traffic Volume Count Studies	Azizah binti Tukiman
2.50 pm	EN 688	Performance Evaluation Of Twin-Scroll Wastegated Turbocharger To Match With 3.0 Litre Diesel Engine	Wan Husni Zaim bin Wan Muhamad
3.10 pm	EN 696	Kajian Keberkesanan Rawatan Bioteknologi Terhadap Pengurangan Logam Berat Dalam Air Sisa Industri Farmaseutikal	Mohd Zaidi bin Mahmud

Time	Paper Code	Title	Presenter
3.30 pm	EN 698	Kajian Terhadap Penggunaan Sisa Lebihan Konkrit Sebagai Bahan Ganti Batu Baur Dalam Bancuhan	Nik Noorafieda binti Wan Azraen
3.50 pm	EN 706	Evaluating Heat Dissipation and Mechanical Stress in Disc Brake Components for Enhanced Safety	Mohd Zulfadli bin Ahmad
4.10 pm	EN 709	Inovasi Pembangunan Kit Pembelajaran Basic Electronic Dalam Meningkatkan Pemahaman Pelajar Diploma Kejuruteraan Mekatronik	Ahmad Rashidi bin Razali
4.30 pm	EN 714	Performance Assessment of Forged 4340 Steel for Turbocharged Diesel Engine Connecting Rod Applications	Wan Husni Zaim bin Wan Muhamad

2 September 2025 | Parallel Session 2E (Online)

Moderator : Mohd Faeiz Ekram bin Mohd Jasmani (Politeknik Sultan Haji Ahmad Shah)
Technical : Ts. Sheilani binti Shaari
Channel/Room : 5 / Discussion Room 5
Link : Day 1_Parallel Session 2E | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
2.30 pm	SO 591	The Impact of Social Media on Modern Consumer Decision-Making	Helmerizah binti Mohd Din
2.50 pm	SO 596	Penguasaan Ilmu Tajwid Dan Kualiti Bacaan Al-Quran Dalam Kalangan Pelajar Politeknik Kota Bharu	Azizah binti Che Musa
3.10 pm	SO 598	The Impact of AI on Consumer Behaviour and Decision-Making in Marketing	Rina Ilyana binti Zainal
3.30 pm	SO 603	Persepsi Terhadap Penggunaan Laman Web Islamic Hotel Transformation (IHOT) Bagi Tujuan Pengajaran Dan Pembelajaran	Naimah binti Ghazali
3.50 pm	SO 604	Kajian Tahap Pengetahuan Terhadap Pelaksanaan Hotel Patuh Syariah Dan Kekangan Sebagai Pengguna Muslim	Munirah binti Mustaffa
4.10 pm	SO 607	Determinants of Tax Compliance Among Polytechnic Lecturers: The Role of Tax Knowledge, Penalty Awareness, and Tax Fairness	Rahayu binti Hassan
4.30 pm	SO 623	Kokurikulum Di Politeknik Mencorak Keterampilan Pelajar	Asmawi bin Muhammad

2 September 2025 | Parallel Session 2F (Online)

Moderator : Dr. Asmah binti Bohari (IPG Kampus Pendidikan Teknik)
Technical : Norhaizah binti Ambiah
Channel/Room : 6 / Ibnu Sina Room
Link : Day 1_Parallel Session 2F | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
2.30 pm	SO 702	Forging Titans of Tomorrow: Penilaian Kritikal Keberkesanan Program Kelanasiswa Recap 1.0 2024 Dalam Melahirkan Graduan Berkaliber Global Di Era Revolusi Industri 4.0 Di Politeknik Kelantan	Anisah binti Jawawi
2.50 pm	SO 703	Transformasi Pemikiran: Penilaian Kualitatif Dan Kuantitatif Kesan Program Mathletes 2024 Terhadap Pelajar Politeknik Kota Bharu	Anisah binti Jawawi
3.10 pm	SO 704	Kajian Keberkesanan Proses Mediasi Dikalangan Penduduk Setempat Kawasan Rukun Tetangga Mahang West, Kok Lanas	Baharin bin Che Ajid
3.30 pm	SO 707	The Role of AI in Supporting English Language Learning in Technical and Vocational Education	Melissa Khor Suan Chin
3.50 pm	SO 712	Adab Dan Etika Menuntut Ilmu: Analisis Kitab Jami‘ Bayan Al-‘Ilm Wa Fadlihi Oleh Ibn ‘Abd Al-Barr	Nurhidayu binti Salleh
4.10 pm	SO 715	Kajian Tindakan: Tahap Penguasaan Tajwid Bacaan Al-Fatihah Dalam Kalangan Pelajar Politeknik Kuala Terengganu	Zainun binti Salleh

Time	Paper Code	Title	Presenter
4.30 pm	SO 722	Tahap Kefahaman Dan Pengamalan Elemen Maqasid Al-Syariah Dalam Pengurusan Harta Dalam Kalangan Pensyarah Dan Kakitangan Politeknik Kota Bharu	Zunaidawati binti Mat Daud

3 September 2025 | Parallel Session 3A (Online)

Moderator : Dr. Rahmat Widia Sembiring (Politeknik Negeri Medan)
Technical : Norhaizah binti Ambiah
Channel/Room : 1 / Discussion Room 2
Link : Day 2_Parallel Session 3A | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
9.00 am	IT 656	Investigating AI Tool Impact on Ethical Awareness and Academic's Dishonesty Among Students Technical and Vocational Education and Training (TVET)	Roslezayti binti Ajeh
9.20 am	IT 659	Pengecaman Entiti Nama Bagi Teks Al-Quran Terjemahan Bahasa Melayu Menggunakan Pendekatan Algoritma Deep Learning	Faizal bin Ayob
9.40 am	IT 701	I-PDP : Pengurusan Pemantauan PDP Pensyarah Politeknik Malaysia	Mohd Faidzul bin Abdul Rahman
10.00 am	EL 557	The Effectiveness of Using Artificial Intelligence (AI) in Virtual Simulation for Engineering Learning	Ts. Lucian bin Zaratang
10.20 am	EL 629	Effectiveness of Technology Innovation: Analyzing the Mytos Apps	Mohd Shahrezal bin Abd Hamid
10.40 am	EL 630	Evaluating E-Book Effectiveness and the Impact on Student Engagement Among Technical and Vocational Education and Training (TVET) Students	Roslezayti binti Ajeh

3 September 2025 | Parallel Session 3B (Online)

Moderator : Dr. Anusuya a/p Kaliappan (IPG Kampus Pendidikan Teknik)
Technical : Zarra Banu Hannani binti Ab Rahim
Channel/Room : 2 / Discussion Room 3
Link : Day 2_Parallel Session 3B | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
9.00 am	VE 708	Kajian Keperluan Penubuhan Center Of Technology (Cot) Pertanian Pintar Di Politeknik Kota Bharu: Pemangkin Pembangunan Modal Insan Dan Sekuriti Makanan	Nurulazila binti Omor
9.20 am	VE 593	Experimental on Timing Control of Astable Multivibrators Via RC Parameter Variation in Proteus	Junekh Eyat Eng Tian a/l Juan
9.40 am	VE 606	Analisis Tindak Balas Frekuensi Resonans: Kajian Terhadap Litar Pasif Berasaskan Simulasi Pspice Dan Pengukuran Makmal	Mohd. Shakirurahman bin Ismail
10.00 am	VE 620	AI Reality in the Classroom: Analyzing Engineering Students' Struggles with Emerging Technology	Ts. Mohd Faizal bin Mustapha
10.20 am	VE 633	Remote Monitoring and Control for Home Electrical Systems Using ESP 32	Mohd Azizi bin Mat Muni
10.40 am	VE 667	Augmented Reality - Assisted Portable CNC Milling Machine (AR-CNC Milling Master)	Nurul Adillah Ariffin binti Muhamad Ariff
11.00 am	Break		
11.10 am	SO 569	Penggunaan Kecerdasan Buatan (AI) Dalam Pembelajaran Kejuruteraan Elektrik	Mohd Nasran bin Mohd Nawi
11.20 am	VE 682	Impact of a Project-Based Learning Competition on Engineering Students' Interest and Skills	Wan Hamadi bin Zahari

Time	Paper Code	Title	Presenter
11.40 am	VE 683	Application and Impact of Artificial Intelligence in Diploma Electrical Engineering at Politeknik Kota Bharu	Wan Fazlini Idayu binti W. Fakari
12.00 pm	VE 684	Fundamental Programming: A Structured C Language Approach for Engineering and TVET Learners	Wan Fazlini Idayu binti W. Fakari
12.20 pm	ST 718	Decoding the Pedagogical Efficacy of Peer-Mediated Learning Ecosystems: An Analysis of Cognitive Gains in Quantitative Disciplines	Wan Siti Rodziah binti Mohd Nasir

3 September 2025 | Parallel Session 3C (Online)

Moderator : Che Hasnah binti Mahmood (Politeknik Kota Bharu, Kelantan)
Technical : Rosidah binti Mohd Saad
Channel/Room : 3 / Bilik Diskusi 5
Link : Day 2_Parallel Session 3C | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
9.00 am	EN 583	Pemerkasaan Kecerdasan Pelbagai Dalam Pengajaran Elektrik Bagi Pelajar TVET: Pendekatan Berdasarkan Sorotan Literatur	Raja Nazeli bin Raja Mamat
9.20 am	EN 585	Merekabentuk Dan Menghasilkan Meja Kimpalan Arka Di Bengkel Kimpalan Jabatan Kejuruteraan Mekanikal Politeknik Port Dickson	Sufandi bin Mohd Johan
9.40 am	EN 590	Design and Experimental Verification of Search and Rescue Remotely Operated Vehicles	Maizul Afzairizal bin Mohd Adnan
10.00 am	EN 592	Kesesuaian Penggunaan Insulated Concrete Form (ICF) Dalam Industri Pembinaan Di Malaysia	Mohd Subki bin Abdul Kadir
10.20 am	EN 600	Mechanical and Durability Performance of Windscreen Glass Waste Powder (WGWP) on Cement Mortar	Nor Faizah binti Ismail
10.40 am	EN 602	Akuaponik Dengan Bell Siphon Dan IOT	Ts. Sazila binti Yusof
11.00 am	Break		
11.10 am	EN 618	Analisa Ketepatan Pemotongan Menggunakan Mesin Cnc Router Berdasarkan Ketebalan Bahan Kerja, Kelajuan Spindle Dan Bentuk Pemotongan	Mohd Nasaei Shahid bin Othman
11.20 am	EN 578	Roborecycle: Revolusi Pengurusan Bahan Kitar Semula Berasaskan Ai	Nik Nor Hishamuddin bin Nik Mustapha
11.40 am	EN 624	Analisis Keberkesanan Penggunaan Bahan Kitar Semula Dalam Projek Pembinaan Jalan Raya	Hanison binti Jusoh
12.00 pm	EN 580	Redesigning Spring Absorber Tools: A Study on Improving Safety, Efficiency, and Ergonomics	Ts. Mohd Azri bin Abdul Ghani

3 September 2025 | Parallel Session 3D (Online)

Moderator : Nur Fadhilah binti Mohd Omar (Universiti Teknologi Mara, Shah Alam)
Technical : Che Ani binti Che Kar
Channel/Room : 4 / Bibliotherapy Room
Link : Day 2_Parallel Session 3D | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
9.00 am	EN 716	Assessing the Readiness and Challenges of Implementing Building Information Modelling (BIM) among Contractors in Kelantan	Mohd Hasbi bin Mat Zain
9.20 am	EN 717	Exploring the Mechanical Properties of Concrete Incorporated with Palm Oil Fuel Ash (POFA) as Partial Cement Replacement: Implications for Workability and Innovation	Mohd Hasbi bin Mat Zain
9.40 am	EN 719	A Bibliometric Analysis: Compression Strength Evaluation for Pad Footing With Grade 35 Concrete	Affidah Mardziah binti Mukhtar

Time	Paper Code	Title	Presenter
10.00 am	EN 720	Aplikasi "Civnsurv" Sebagai Media Pembelajaran Dan Pengajaran Untuk Kursus Ukur Kejuruteraan Awam	Mohd Izuddin bin Mahmod
10.20 am	EN 723	Penghasilan Tanda Aras Sementara (Tbm) Di Politeknik Kota Bharu Sebagai Rujukan Ketinggian	Sr. Siti Yukarni binti Jusoh
10.40 am	EV 588	Orca Water Surface Cleaner (OWSC): Penyelesaian Inovatif Untuk Pencemaran Air	Mohamed Hairy bin Yahya
11.00 am	Break		
11.10 am	EV 597	Reka Bentuk Konseptual Kapal Pengumpul Sisa Pepejal Laut Untuk Pembersihan Laut Yang Lestari	Mohamed Hairy bin Yahya
11.20 am	EV 616	Biodegradable Straw	Wan Noor Aida binti W Muhamad
11.40 am	EV 711	Pengkompos Makanan Manual Untuk Kegunaan Rumah: Penyelesaianan Mampan Dan Pengkompos Makanan Manual Untuk Kegunaan Rumah: Penyelesaian Mampan Dan Mampu Milik Dalam Pengurusan Sisa Makanan Milik Dalam Pengurusan Sisa Makanan	Zaharatul Akmar binti Ahmad Zainuddin

3 September 2025 | Parallel Session 3E (Online)

Moderator : Sharipah Khadijah binti S. Hashim (Politeknik Tuanku Sultanah Bahiyah)
Technical : Mohd Nubli Shahmi bin Zainal Abidin
Channel/Room : 5 / Ibnu Sina Room
Link : Day 2_Parallel Session 3E | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
9.00 am	SO 625	Pengaruh Penggunaan Media Sosial Terhadap Prestasi Akademik Dalam Kalangan Pelajar Jabatan Perdagangan, Politeknik Kota Bharu	Moriza binti Fikri
9.20 am	SO 668	A PLS-Sem Analysis of Antecedents Influencing Polytechnic Students' Acceptance and Use of Artificial Intelligence (AI) Tools for Technical English	Kamilah binti Zainuddin
9.40 am	SO 650	Kesedaran Agama Dan Kepatuhan Berpakaian Dalam Kalangan Pelajar Wanita: Analisis Terhadap Kefarduan Menutup Aurat Di Politeknik Kota Bharu	Roslan bin Yahya
10.00 am	SO 665	Tingkah Laku Tidak Beretika Pelajar Dalam Penggunaan Teknologi : Kajian Kes Di Politeknik Kota Bharu	Ramli bin Omar
10.20 am	SO 658	Experiential Learning and Program-Specific Impact on Soft Skills Development at Politeknik Kota Bharu	Mohamad Anuar bin Seman
10.40 am	SO 661	Intention to Use Cloud Accounting System Among Higher Education Student in Malaysia: A Unified Theory of Acceptance and Use of Technology (UTAUT) Model	Asmahani Mohd binti Hanapi
11.00 am	Break		
11.10 am	SO 662	E-Digital: Tahap Penggunaan Dalam Kalangan Peniaga Industri Kecil Dan Sederhana (PKS) Di Negeri Kelantan	Nor Hazimah binti Ismail
11.20 am	SO 652	Hubungan Antara Masa Penggunaan Permainan Dalam Talian Dan Tahap Tekanan Psikologi Dalam Kalangan Pelajar Politeknik Kota Bharu	Roslan bin Yahya
11.40 am	SO 626	Persepsi Pembayar Cukai Individu Terhadap Sistem Ez Tax Plan	Moriza binti Fikri
12.00 pm	SO 669	Kekerapan Pelaksanaan Solat Fardu Dalam Kalangan Pelajar Kursus Pengajian Islam (MPU23152) Politeknik Kota Bharu	Nurhidayu binti Salleh

3 September 2025 | Parallel Session 3F (Online)

Moderator : Dr. Nur Raihana binti Sukri (Politeknik Ungku Omar)
Technical : Ruzila binti Mat Ghani
Channel/Room : 6 / Seminar Room
Link : Day 2_Parallel Session 3F | 3rd ITEC 2025 | Microsoft Teams

Time	Paper Code	Title	Presenter
9.00 am	SO 724	Membangunkan Aplikasi Teknologi Kecerdasan Buatan (Artificial Intelligent System) Bagi Membangunkan Kebun Bandar Pintar Tanaman Strawberi Tanah Rendah	Mohd Faiz bin Mohd Zin
9.20 am	SO 725	Analisis Ciri Dan Keberkesanan Latihan Holistik Penjaga Gol Bola Sepak Dalam Kalangan Pelajar Politeknik Malaysia	Ariff Farhan bin Ibrahim
9.40 am	ET 584	The Adoption of P-Hailing Services Among Small-Scale Traders in Kok Lanas: Factors Influencing Their Preferences	Nordiana binti Jamaluddin
10.00 am	ET 671	Pemilihan Kafe Hipster Di Kota Bharu: Kajian Kuantitatif Terhadap Faktor-Faktor Mempengaruhi Pengguna	Noraida binti Ismail@Yusof
10.20 am	EN 608	"Prototyping Hybrid Electrical Sources: Methodologies and Testing Outcomes	Faizul bin Mohd Noor
10.40 am	VE 672	Kajian Dan Analisis Pasaran Program Pengajian Sijil Servis Kenderaan Ringan Di Kolej Komuniti Kolej Komuniti Kuala Terengganu	Muhammad Baqir bin Ibrahim
11.00 am	Break		
11.10 am	VE 672	Implementation and Use of Artificial Intelligence in Diploma Mechanical Engineering at Politeknik Kota Bharu	Muhammad Baqir bin Ibrahim
11.20 am	SO 582	Guidelines for Integrating Generative AI into Programming Education at the Diploma Level in Malaysian Polytechnics: Balancing Benefits and Risks	Wan Salmizi bin Wan Mahmood


abstract

Impact of Financial Literacy on Student Spending Behavior in Polytechnic Kota Bharu

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ABSTRACT

Financial literacy refers to the ability to understand and effectively use various financial skills, including personal financial management, budgeting, and investing. The arising of living cost of the day is causing students to get financially literate for a comfortable life in higher education institution. Thus, this study was conducted to analyse the level of financial literacy among students especially in Polytechnic Kota Bharu (PKB). In addition, the study sought to determine how well the students understood the distinction between needs and wants. Next, the results will be used to analyse the relationship between students' financial literacy levels and their spending behaviour. A total of 200 respondents among the students of Polytechnic Kota Bharu, were selected to conduct this study. The results show that on average students in PKB have moderate levels of financial literacy. The findings of multiple regression analysis indicate that the degree of conduct, experience, years of study influence students' financial literacy levels. The study highlights a strong relationship between financial literacy and student spending behaviour. Equipped with financial knowledge, students can make informed choices that lead to better financial outcomes

Keywords: living cost, financial literacy, spending behavior, financial knowledge.

Unveiling The Influence of Personality Traits on Lecturers Work Performance: A Case Study of Politeknik Hulu Terengganu

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ABSTRACT

Understanding the factors that influence job performance in higher education is essential for improving teaching effectiveness and institutional outcomes. This study explores the impact of lecturers' personality traits on their job performance, focusing on a sample of 50 lecturers from Politeknik Hulu Terengganu. A structured questionnaire served as the main research instrument, and descriptive statistics namely frequency, percentage, and mean were used to analyse the data and examine the potential relationship between personality traits and job performance. The findings revealed no significant relationship between the identified personality traits and lecturers' job performance. These results support the initial hypothesis and align with the study's objectives. The research contributes to the growing body of literature on academic staff performance by providing empirical insights from a Malaysian polytechnic context. Additionally, the conceptual framework developed in this study offers a basis for future research, particularly when applied to larger and more diverse academic populations. This study underscores the importance of contextual factors and encourages further investigation into other variables that may better explain performance differences among lecturers.

Keywords: personality traits, job performance, lecturers, higher education, Malaysia.

Analysis of Program Educational Objectives (PEO) Achievement for Diploma in Electrical Engineering (DET) at Politeknik Kota Bharu

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ABSTRACT

This study evaluates the achievement of Program Educational Objectives (PEOs) for the Diploma in Electrical Engineering (DET) at Politeknik Kota Bharu (PKB) using graduate survey data for the year 2024. The analysis focuses on four key PEOs: (1) practicing technician in electrical engineering related field, (2) contributing to society with professional ethic and responsibilities, (3) engaging in enterprising activities that apply engineering knowledge and technical skills, and (4) engaging in activities to enhance knowledge for successful career advancement. The findings reveal a high employment rate of 71%, strong professional ethics performance at 98%, and notable lifelong learning participation at 70%. However, entrepreneurial engagement remains relatively low at 36%. A comparative literature review highlights the need for enhanced entrepreneurship training and industry collaboration. Recommendations include curriculum improvements, increased exposure to business development, and the implementation of structured Continuous Quality Improvement (CQI) mechanisms to enhance graduate outcomes and industry alignment.

Keywords: Program Educational Objectives (PEO), employability, engineering education, Continuous Quality Improvement (CQI), entrepreneurship

Pengaruh Motivasi Terhadap Kemahiran Bertutur Bahasa Arab Dalam Kalangan Pelajar Kelas Aliran Agama: Satu Kajian Literatur Sistematik

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ABSTRAK

Motivasi memainkan peranan penting dalam pemerolehan bahasa kedua, terutamanya dalam membangunkan penguasaan berbahasa Arab dalam kalangan pelajar Kelas Aliran Agama (KAA). Walaupun bertahun-tahun mendapat pendidikan formal, ramai pelajar bergelut dengan kefasihan dan keyakinan dalam berbahasa Arab. Kajian ini meneroka pengaruh motivasi terhadap kemahiran berbahasa Arab melalui Kajian Literatur Sistematik (SLR), menganalisis penyelidikan berkaitan yang diterbitkan antara 2015 dan 2025. Kajian ini bertujuan untuk mengenal pasti faktor motivasi utama, mengkaji kesannya terhadap kecekapan bertutur, dan mencadangkan strategi yang berkesan untuk meningkatkan pembelajaran bahasa. Analisis tematik kualitatif telah dijalankan, mengkategorikan dapatan kepada motivasi intrinsik, motivasi ekstrinsik, persekitaran pembelajaran, dan pengaruh sosiobudaya. Hasilnya menunjukkan bahawa motivasi intrinsik, seperti minat peribadi dan komitmen agama, adalah peramal yang lebih kuat untuk kecekapan bertutur, yang membawa kepada keyakinan dan kefasihan yang lebih tinggi. Sebaliknya, motivasi ekstrinsik, seperti tekanan akademik dan galakan guru, memberikan penambahbaikan jangka pendek tetapi tidak mempunyai kemampanan. Selain itu, pelajar dalam persekitaran pembelajaran interaktif, seperti pendekatan Pembelajaran Bersepadu Kandungan dan Bahasa (CLIL), mempamerkan motivasi yang lebih tinggi dan kemahiran bertutur yang lebih baik. Faktor sosiobudaya, termasuk sokongan keluarga dan pendedahan bahasa Arab di luar bilik darjah, meningkatkan lagi motivasi pelajar dan pengekalan jangka panjang. Penemuan ini menyerlahkan keperluan untuk pendekatan pengajaran berpusatkan pelajar yang menggalakkan penglibatan aktif, peluang bercakap dunia sebenar dan sistem sokongan luaran. Pendidik mesti beralih daripada kaedah pembelajaran hafalan tradisional kepada strategi pengajaran yang mendalam dan komunikatif. Penyelidikan masa depan harus meneroka intervensi khusus yang mengekalkan motivasi pelajar secara berkesan dan meningkatkan kecekapan berbahasa Arab mereka.

Kata kunci: motivasi, penguasaan berbahasa Arab, Kelas Aliran Agama (KAA), pemerolehan bahasa kedua, Kajian Literatur Sistematik.

Kefahaman Dan Kecaknaan Terhadap Maqasid Syariah Dalam Kalangan Pensyarah Politeknik Malaysia Zon Timur

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ABSTRAK

Kajian ini dijalankan bagi meneliti tahap kefahaman dan kecaknaan terhadap Maqasid Syariah dalam kalangan pensyarah Politeknik Malaysia Zon Timur yang merangkumi lapan buah politeknik iaitu Politeknik Kota Bharu (PKB), Politeknik Jeli Kelantan (PJK), Politeknik Besut Terengganu (PoliBesut), Politeknik Kuala Terengganu (PKT), Politeknik Sultan Mizan Zainal Abidin (PSMZA), Politeknik Hulu Terengganu (PHT), Politeknik Sultan Ahmad Shah (PoliSAS) dan Politeknik Muadzam Shah (PMS). Objektif utama kajian ini adalah untuk mengenal pasti tahap pengetahuan, penghayatan dan pelaksanaan nilai-nilai Maqasid Syariah dalam konteks pengajaran dan kehidupan seharian pensyarah. Kaedah kuantitatif digunakan dengan soal selidik sebagai instrumen utama kajian, melibatkan 100 responden yang dipilih secara rawak berstrata. Dapatan kajian menunjukkan bahawa tahap kefahaman terhadap Maqasid Syariah berada pada tahap tinggi, namun tahap kecaknaan atau kesedaran untuk mengintegrasikan prinsip tersebut dalam amalan pendidikan masih memerlukan penambahbaikan. Kajian ini mencadangkan usaha penambahbaikan dari segi latihan profesional, pengukuhan kurikulum dan pendekatan dakwah yang lebih menyeluruh di peringkat institusi pengajian tinggi teknikal.

Keywords: maqasid syariah, kefahaman, kecaknaan, politeknik.

Sikap Dan Motivasi Pelajar Diploma Kejuruteraan Awam Terhadap Kursus Pengajian Am Di Politeknik Kota Bharu

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ABSTRAK

Jabatan Pengajian Am merupakan jabatan sokongan yang menawarkan pelbagai kursus kepada para pelajar berdasarkan keperluan semasa program-program di jabatan induk yang wajib diambil oleh para pelajar Politeknik seluruh Malaysia. Walaupun begitu, kursus Pengajian Am sering dianggap sebagai subjek tambahan oleh sesetengah pelajar, perkara ini mungkin menyebabkan kurangnya minat serta motivasi untuk mempelajarinya. Oleh itu, kajian ini bertujuan untuk membincangkan tentang tahap sikap dan motivasi pelajar terhadap Kursus Pengajian Am dan juga untuk mengenal pasti perbezaan sikap dan motivasi para pelajar berdasarkan jantina. Kajian ini berbentuk tinjauan dengan menggunakan instrumen borang soal selidik melibatkan 83 orang responden yang terdiri daripada pelajar-pelajar semester 2 Diploma Kejuruteraan Awam (DKA) sesi II 2024/2025. Dapatan kajian dianalisis dengan menggunakan perisian "Statistical Package of the Social Sciences" (SPSS) 26.0 Analisis deskriptif yang melibatkan min dan sisihan piawai menunjukkan bahawa tahap sikap dan motivasi pelajar DKA terhadap Kursus Pengajian Am berada pada tahap tinggi iaitu masing-masing dengan nilai min 4.34 dan 4.39 dan sisihan piawai 0.793 dan 0.809. Manakala Analisis inferensi melibatkan ujian ujian T-sampel bebas menunjukkan bahawa tidak terdapat perbezaan yang signifikan sikap dan juga motivasi pelajar berdasarkan jantina dengan masing-masing nilai t = -1.221 dan sig = 0.226 ($p<0.05$) dan nilai t = -1.017 dan sig = 0.312. Dapatan kajian ini menunjukkan bahawa para pelajar mempunyai sikap yang positif terhadap pengetahuan, pengajaran serta bimbingan para pensyarah, bahkan mereka juga menyanjungi pensyarah yang mengajar dengan dedikasi. Namun, kajian ini juga menunjukkan bahawa dari aspek pelajar terlibat secara aktif dalam aktiviti Kursus Pengajian Am dan aspek pelajar mengharapkan keputusan yang cemerlang perlu diberi perhatian oleh para pensyarah supaya PdP lebih melibatkan pelajar yang aktif dan membimbing mereka melaksanakan tugasan dengan baik yang membolehkan mendapat markah yang cemerlang. Begitu juga dari aspek minat para pelajar untuk belajar Kursus Pengajian Am perlu diberi perhatian oleh pensyarah. Hal ini mungkin disebabkan pera pelajar masih lagi beranggapan bahawa Kursus Pengajian Am adalah kursus sokongan menyebabkan minat mereka agak berkurangan berbanding dengan kursus-kursus di jabatan mereka. Kajian ini diharapkan dapat memberi makluman kepada pihak yang berkepentingan mengenai kedudukan kursus Pengajian Am dalam kalangan para pelajar politeknik. Cadangan untuk kajian seterusnya ialah agar diperluaskan lagi responden kajian terhadap program-program lain selain dari DKA.

Kata kunci: sikap, motivasi, pelajar politeknik, Kursus Pengajian Am.

Future Development of Mechanical Engineering Education: A SWOT Analysis at Politeknik Kota Bharu

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ABSTRACT

The mechanical engineering education at Polytechnic Kota Bharu plays a crucial role in providing the industry with a highly skilled technical workforce. However, education in this field faces increasingly complex challenges, particularly related to rapid technological advancements and changing industry needs. This article aims to conduct a SWOT analysis for the Department of Mechanical Engineering at Polytechnic Kota Bharu to identify its strengths, weaknesses, opportunities, and threats. Data were collected through online surveys distributed to students, lecturers, and industry representatives. The analysis reveals that the department has strengths in strong industry collaboration and good teaching facilities but faces challenges such as a lack of research facilities and facility maintenance. Opportunities include the adoption of green technology and automation, while threats mainly stem from competition with other educational institutions and limited financial resources. Based on this analysis, strategic recommendations such as enhancing international collaboration, strengthening research facilities, and adapting the latest educational technologies are proposed to strengthen the department's position for future development.

Keywords: Mechanical Engineering Education, SWOT Analysis, Polytechnic Kota Bharu, Green Technology, Industry Collaboration.

Keberkesanan Permainan Digital Sebagai Kaedah Pembelajaran Berasaskan Permainan Dalam Meningkatkan Motivasi Dan Kefahaman Pelajar JTMK Di Politeknik Kuching Sarawak

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ABSTRAK

Kajian ini bertujuan untuk menganalisis kesan pembelajaran berasaskan permainan terhadap motivasi, kefahaman, dan penglibatan pelajar. Metodologi yang digunakan merangkumi analisis statistik deskriptif, korelasi, ujian t, dan regresi linear terhadap data skala Likert yang diperoleh daripada responden. Hasil analisis menunjukkan bahawa permainan dalam pembelajaran memberikan impak positif dengan skor purata antara 4.2 hingga 4.4, menandakan penerimaan yang tinggi dalam kalangan pelajar. Korelasi yang kukuh ($r > 0.80$) antara pemahaman konsep, pemikiran kritis, dan penyelesaian masalah mengesahkan keberkesanan pendekatan ini. Keputusan ujian t menunjukkan tiada perbezaan signifikan antara jantina, manakala analisis regresi mengenal pasti pemahaman konsep sukar sebagai faktor utama kepuasan pembelajaran ($R^2 = 0.874$). Kesimpulannya, pembelajaran berasaskan permainan terbukti meningkatkan motivasi dan kefahaman pelajar, namun kesannya lebih ketara dalam kalangan pelajar lebih muda. Implikasinya, pendekatan ini berpotensi memperkaya kaedah pembelajaran moden, tetapi memerlukan perancangan rapi dalam pemilihan permainan dan strategi pelaksanaannya untuk memastikan keberkesanannya lebih meluas dalam pendidikan.

Katakunci: motivasi pelajar, kefahaman konsep, penglibatan pelajar, strategi pembelajaran, pendidikan moden.

Kajian Pasaran Penerimaan Produk Kiub Bawang Dan Halia Di Kalangan Pengguna Di Politeknik Kota Bharu Negeri Kelantan

Che Marzuki bin Che Hussin1*, Nurul Narina Nisa binti Baharudin2, Nur Batrisyia Wafin binti Muhd Shahrill3,

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ABSTRAK

Hidangan yang enak pastinya bermula daripada bahan-bahan berkualiti. Bawang dan halia adalah salah satu bahan asas yang tidak dapat dipisahkan daripada dunia masakan. Objektif kajian ini adalah untuk melihat keboleh pasaran dan penerimaan produk Kiub Bawang dan Kiub Halia dari segi kemudahan, penjimatan masa, dan kos. Kaedah peratusan dan mean digunakan sebagai penunjuk keberhasilan kajian. Aplikasi SPSS digunakan untuk mengira hasil dapatan. Seramai 104 orang responden dipilih dan menjawab soalan soal selidik. Dapatan menunjukan produk Kiub Bawang dan Kiub Halia telah memenuhi objektif yang ditetapkan. Skor mean kepuasan dan kos menunjukan nilai mean 4.60. Ia menunjukkan bahawa pelanggan berpuashati dengan produk dan kos bagi produk ini. Selain itu, aspek kualiti memperolehi skor mean 4.50 membuktikan bahawa produk ini diterima baik oleh pengguna. Oleh itu, bagi memastikan kepuasan pelanggan terus dipertingkatkan, langkah-langkah penambahbaikan boleh dipertimbangkan oleh pengkaji. Hasil daripada kajian ini juga menunjukan bahawa produk ini dapat menjimatkan masa pengguna, di mana tidak perlu mengupas, memotong, atau menumbuk bahan secara manual, menjadikannya pilihan praktikal bagi individu yang sibuk dan pengamal penyediaan makanan. Selain itu, kiub ini mudah dan fleksibel kerana ia mudah digunakan, disimpan, serta mempunyai jangka hayat serta tahan lebih lama berbanding bahan segar, sesuai untuk pengguna yang menghadapi keterbatasan ruang penyimpanan. Secara keseluruhannya, produk Kiub Bawang dan Kiub Halia berjaya mencapai tahap kepuasan pengguna yang tinggi serta memberikan nilai yang baik dari segi kos dan kualiti, menjadikannya pilihan yang sesuai bagi pengguna.

Keywords: Kiub Bawang, Kiub Halia, kemudahan, masa dan kos

Design of an Interactive Multimedia Weblog Courseware for Enhancing Hydrology Engineering Education in Malaysian Polytechnics

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ABSTRACT

The rapid advancement of digital learning technologies has transformed traditional teaching methods, particularly in engineering education. In Hydrology Engineering, interactive multimedia courseware offers an innovative approach to enhance student engagement and comprehension. This study aimed to design an interactive multimedia weblog courseware to enhance the learning of Hydrology Engineering for polytechnics students in Malaysia. The development process was guided by the Hannafin and Peck instructional design model, extending from a prior needs analysis phase. A mixed-method research design was employed, utilizing interviews and a purposive sampling questionnaire. The study instrument demonstrated high reliability, with a Cronbach's alpha of 0.965. The modified Delphi technique was implemented in three cycles: the first cycle involved ICT experts, Hydrology Engineering content specialists, and lecturers, leading to the development of a questionnaire in the second cycle. The third cycle facilitated expert consensus on courseware requirements. Findings indicate that the developed courseware can enhance students' skills and academic achievement, providing an effective digital learning tool for Hydrology Engineering. The study concludes that the integration of interactive multimedia in engineering education can significantly improve learning outcomes, offering a scalable and adaptable model for other technical disciplines.

Keywords: interactive multimedia, weblog, courseware, hydrology engineering, polytechnics.

Conceptualization of a Research Model for Teacher Development Dimension and Teaching Effectiveness Through Metaverse

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ABSTRACT

This paper aims to validate scale measurements of teacher development dimensions (professional development, metaverse tools engagement, pedagogical training, and teachers' readiness) as constructs influencing teaching effectiveness through the Metaverse. Furthermore, the study explores the impact of these teacher development dimensions on teaching outcomes in immersive virtual environments. The variables are aligned with the Technological Pedagogical Content Knowledge (TPACK) framework. Subsequently, the proposed teacher development constructs were tested against perceived teaching effectiveness within the Metaverse context. In total, five hypotheses were postulated. Model testing was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). Data collection focused on teachers who have integrated Metaverse platforms into their teaching. A total of 164 responses were obtained from teachers in TVET institutions in Malaysia to validate the hypothesized relationships. The results indicate that professional development, metaverse tools engagement, pedagogical training, and teachers' readiness have a significant positive relationship with teaching effectiveness in the Metaverse. The findings suggest that comprehensive teacher development significantly contributes to more effective teaching when enhanced through immersive digital environments. This research represents one of the first empirical validations of scale measurements for teacher development in Metaverse-based education. The measurement items were selected based on an extensive literature review and expert consultation in educational technology. The paper contributes to the growing body of research on digital transformation in education, particularly in developing countries.

Keywords: TVET education, metaverse, teacher, teacher engagement, professional development.

Metaverse-Integrated Education in TVET: A Bibliometric Analysis

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ABSTRACT

This study aims to conduct a structured bibliometric analysis of research on Technical and Vocational Education and Training (TVET) and Metaverse over the past decade. It explores key publication trends, influential authors, citation patterns, and thematic developments, offering a comprehensive overview of the academic landscape. A bibliometric analysis was conducted using 861 articles from 2015 to 2025 from the Scopus database. The study examines publication trends, geographical contributions, author networks, keyword co-occurrence, citation analysis, and thematic evolutions in TVET research with the VosViewer visualization tool to identify significant research clusters. The findings reveal a growing interest in integrating immersive technologies such as virtual reality, augmented reality, and the Metaverse within TVET, particularly after 2020. Research shows a notable increase in publications from countries like China, Malaysia, and Germany, with strong collaborative author networks emerging across Asia and Europe. Keyword analysis highlights dominant themes such as digital learning environments, vocational skills training, simulation-based education, and Industry 4.0. Thematic evolution maps indicate a shift from traditional e- learning towards more immersive, learner-centered approaches leveraging the Metaverse. These findings suggest that Metaverse-integrated TVET is evolving as a transformative trend, shaping future directions for skill development, pedagogy, and workforce readiness in an increasingly digital economy.

Keywords: TVET education, Metaverse, virtual reality, augmented reality, e-learning.

Monitoring Voltage Stability in Power System Feeders Under Various Load Conditions

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ABSTRACT

Voltage stability continues to be a challenge for the power grid in Malaysia, as demand increases and renewable sources enter the mix. This paper develops a real-time stability monitoring algorithm, offering a Voltage Stability Index (VSI) integrating PV and QV analysis and transient dynamics. The algorithm is coded in MATLAB and evaluates stability over power factors (0.8 lag to 0.9 lead) on a test system that's a modified IEEE 14-bus system incorporating Malaysian characteristics. Simulations exhibit a runtime of 0.08 seconds—150 times faster than continuation power flow—achieving an ~85% success rate on collapse prediction. Combined PV and QV curves (7a-c) validate performance for normal, outage, and renewable surge conditions, detecting instability at as low as 50%-65% loading, better than current methods' lower thresholds. Light, flexible, this solution fits the real-time requirement of Malaysia with potential future implementations incorporating machine learning and actual grid data for extensive deployment, lending itself to support sustainable energy aims.

Keywords: Voltage Stability Index, Voltage Stability

Merekabentuk dan Membangunkan Mesin Leaf Shredder

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ABSTRAK

Kehadiran daun kering yang berlebihan di kawasan perumahan sering menimbulkan pelbagai masalah alam sekitar seperti saliran tersumbat, pencemaran udara akibat pembakaran terbuka, dan gangguan estetika persekitaran. Kajian ini membangunkan Mesin Leaf Shredder, satu inovasi mekanikal yang direka untuk mempercepat dan mempermudah proses penghancuran daun kering bagi dimanfaatkan sebagai kompos, penebat haba, penggembur tanah (mulch), dan alas ternakan. Mesin ini menggunakan motor mesin basuh yang diubah suai untuk memutar bilah pemotong dengan cekap. Ujian prestasi dijalankan bagi menilai kecekapan penghancuran, saiz partikel akhir, dan kapasiti operasi mengikut jenis daun. Keputusan ujian menunjukkan mesin ini mampu menghancurkan daun kering dalam purata masa 1 minit 10 saat, menghasilkan partikel bersaiz kira-kira 4.9 cm, dengan kapasiti maksimum 0.9 kg dalam 1 minit 5 saat. Selain itu, mesin ini mencatatkan penjimatan tenaga sehingga 50% berbanding kaedah manual. Secara keseluruhan, Mesin Leaf Shredder terbukti sebagai penyelesaian lestari dan berkesan untuk mengurus sisa daun kering, sekali gus menyokong amalan kitar semula dan pertanian mampan.

Kata kunci: daun kering, kompos, penghancuran daun, inovasi lestari, pencemaran udara

Innovative Shophouse Frame Design Using Eurocode 3: Advancing Structural Performance and Regulatory Compliance

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ABSTRACT

This study also introduces an optimized shop house frame design approach based on Eurocode 3 (EC3) and evaluates its effectiveness in comparison to the traditional British Standard 5950 (BS 5950). The core findings reveal that EC3 consistently demonstrates superior material efficiency, particularly when applied to high-strength steel and extended bay widths. For instance, for steel grade S355 with a 6-meter bay width, a steel weight reduction of up to 16.95% was observed. By emphasizing these comparative trends, the abstract highlights the structural and economic advantages of adopting EC3. Furthermore, this paper advocates for the transition towards EC3 in modern construction practices to enhance structural integrity and ensure comprehensive regulatory compliance."

Keywords: Eurocode 3, BS 5950, structural optimization, steel design, shophouse

Strategic Implementation of Infographic-Enhanced Project Management for the Commercialization of Eco-Fusion Concrete Under the 2025 Sustainable Innovation Grant

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ABSTRACT

This paper presents a comprehensive project implementation framework utilizing info graphic-enhanced Gantt charts to support the commercialization of Eco-Fusion Concrete under the 2025 Sustainable Innovation Commercialization Grant. The study addresses the critical problem of translating sustainable concrete innovations into viable market products within institutional settings. Eco-Fusion Concrete, developed by integrating semi-crushed marine shells and recycled concrete waste, offers a sustainable alternative to traditional materials, aligning with SDG 9 (Industry, Innovation and Infrastructure) and SDG 11 (Sustainable Cities and Communities). The methodology integrates structured project management, strategic stakeholder collaboration, market analysis, and digital outreach. The findings demonstrate the effectiveness of info graphic-based planning in improving stakeholder engagement, project transparency, and commercialization outcomes. The project received national recognition, including awards from IRISE 2025 and INNOTEX DCE 2024. Key recommendations include continued interdisciplinary collaboration and scalability planning for broader adoption.

Keywords: info graphic, Gantt chart, sustainable construction, commercialization, Eco-Fusion Concrete.

Technical Analysis of Clogging Sink Problems and Their Practical Solutions

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ABSTRACT

Clogged kitchen sinks are a persistent issue in residential and institutional buildings, often caused by improper waste disposal and suboptimal drainage design. Common clogging agents include fats, oils, starchy food waste, detergents, coffee grounds, eggshells, medicine residues, and foreign objects, all of which contribute to sediment buildup and flow obstruction. This study aims to identify the root causes of kitchen sink blockages, review the effectiveness of existing mitigation strategies, and propose an accessible, engineering-based design solution. A design-based research methodology was employed, combining literature review, field observations of domestic sink systems, and comparative evaluation of conventional solutions such as plungers, augers, hydro jetting, and chemical cleaners. Findings reveal that while these methods can address blockages, they are often costly, inaccessible, or hazardous for untrained users. As a practical alternative, this study introduces a modified pipe system integrating PVC End Caps at all pipes bends to facilitate user-friendly, do-it-yourself (DIY) maintenance. The proposed solution reduces reliance on professional services, enhances system longevity, and supports cost effective upkeep. Field simulations demonstrated the design's feasibility, accessibility, and effectiveness in mitigating clogs and facilitating odour control through optional trap installations. This approach offers a scalable, low-cost engineering solution to improve drainage performance and reduce long-term maintenance burdens.

Keywords: clogged sink, pipe design, domestic housing.

Kajian Keberkesanan Program Young Socialpreneur Programme (YS2P 3.0)

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ABSTRAK

Kajian ini menilai keberkesanan Program Young Socialpreneur (YS2P 3.0) ialah program keusahawanan sosial yang berlangsung dari Mac hingga Oktober 2023, anjuran Politeknik Sultan Haji Ahmad Shah (POLISAS), Jabatan Pendidikan Politeknik dan Kolej Komuniti bersama PKT Logistics Group Sdn. Bhd. Program ini bertujuan membentuk atribut keusahawanan sosial pelajar melalui tiga komponen utama: Online Pitching, Bootcamp serta Pembentangan Akhir. Program ini bertemakan Entrepreneurship for Sustainable Lifestyle, dengan fokus kepada penggabungan elemen keusahawanan sosial dan tanggungjawab sosial korporat.Pendekatan kuantitatif digunakan, melibatkan soal selidik yang diedarkan kepada 119 responden, terdiri daripada pelajar, mentor, dan panel juri. Instrumen soal selidik mengukur aspek demografi, pengurusan program, keberkesanan kandungan, dan impak kepada peserta.. Hasil kajian menunjukkan program ini sangat berkesan dengan purata skor persetujuan melebihi 84%. Hasil kajian kepada responden menunjukkan peningkatan kemahiran seperti membuat keputusan, bekerjasama, dan meneroka peluang. Faktor kejayaan adalah termasuk sokongan urusetia, penyampaian ceramah yang berkesan, dan kandungan program yang relevan. Kajian turut menekankan peranan penting kolaborasi antara institusi pendidikan dan industri dalam membiayai serta membimbing pelaksanaan program. Dapatan ini menunjukkan bahawa program YS2P 3.0 bukan sahaja melatih pelajar menjadi usahawan sosial tetapi juga menyumbang kepada pembangunan hubungan strategik antara institusi, industri dan badan NGO. Program ini juga berjaya memupuk sikap positif, motivasi, dan keyakinan dalam kalangan peserta, menjadikannya relevan untuk diteruskan pada masa depan. Kajian mencadangkan agar program ini sesuai diteruskan dengan beberapa penambahbaikan, termasuk panduan pelaksanaan yang lebih sistematik, peningkatan fasiliti, serta penglibatan yang lebih besar dari pelbagai pihak berkepentingan. Sumbangan industri seperti pembiayaan, bimbingan, dan rangkaian logistik menjadi elemen penting yang memastikan kejayaan pelaksanaan program ini.

Kata Kunci: keusahawanan sosial, keberkesanan program, kolaborasi industry

The Potential of Seawater Nile Tilapia Oreochromis Niloticus Culture in Politeknik Jeli Kelantan: Salinity Tolerance and Growth Performance

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ABSTRACT

This study explores the viability of seawater Nile Tilapia (Oreochromis niloticus) culture in Politeknik Jeli Kelantan (PJK), focusing on the salinity tolerance and growth performance. A gradient of salinity levels (0‰ to 30‰) was tested by mixing freshwater and seawater in varying proportions, with growth performance evaluated through specific growth rates (SGR) and regression analyses. The results revealed a strong positive correlation between salinity and weight gain, with a multiple R value of 0.98 and an R^2 of 0.97, indicating that salinity significantly influences tilapia growth ($p < 0.05$). The optimal salinity for balanced growth was identified at 15‰, where freshwater and seawater were mixed in equal proportions (50% each). Proximate analysis of the diets used showed a composition of 25% crude protein, 5% fat, 6% fibre, and 11% moisture, supporting adequate nutritional requirements for the trials. Feeding rates were adjusted based on fish size, ranging from 30% body weight for fish <1 g to 1.5–2% for fish >500 g. Regression and ANOVA analyses confirmed that both salinity and feeding rate significantly impacted growth performance. These findings highlight the adaptability of O. niloticus to varying salinity levels and provide practical guidelines for optimizing aquaculture practices in brackish and seawater environments. This research contributes to sustainable aquaculture development by identifying strategies to enhance tilapia production under changing environmental conditions.

Keywords: oreochromis niloticus, salinity, growth rate

A User-Centered Redesign of a Wheelchair for Paraplegic Patients Using 3D AutoCAD Modeling

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ABSTRACT

Paraplegia, caused by spinal cord injuries (SCI), significantly impacts the mobility, independence, and quality of life of affected individuals. This research addresses the need for affordable and effective mobility solutions for paraplegic patients, focusing on modifications of existing wheelchair to enhance user independence in daily transfers, incorporating features such as adjustable armrests for smoother transfers, a handgrip for floor-to-chair transitions, and a safety belt for enhanced stability. Using AutoCAD, a precise 3D model of the current wheelchair was created to analyse its limitations and seamlessly incorporate the proposed enhancements. The resulting 3D model successfully incorporates the proposed enhancements without compromising structural integrity. The redesigned features are projected to improve transfer safety and reduce user assistance, offering a cost-effective solution that avoids the need to purchase a new, specialized wheelchair. These modifications highlight the role of user centred design in advancing rehabilitation technologies.

Keywords: wheelchair design, paraplegia, assistive technology, rehabilitation, AutoCAD.

Parameter Estimation of a Mathematical Model for Lower-Limb Exoskeletons Integrated with Paralysed Humans

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ABSTRACT

The development of dynamic models for rehabilitation lower-limb exoskeletons (RLLEs) integrated with human interaction (RLLE–Patient) has been proposed by numerous researchers. However, due to the nonlinear characteristics of these systems, accurate modelling remains a critical challenge, requiring approaches that are both simple and effective in representing actual scenarios. Therefore, this paper proposes a method for developing and controlling an RLLE Patient model that accurately replicates real rehabilitation conditions. The RLLE and human models are initially designed in CATIA and transferred to ADAMS, while the direct current motors driving the RLLE joints are modelled in MATLAB Simulink, with motor parameters identified using a parameter estimation tool. A co-simulation between ADAMS and MATLAB is employed to create a comprehensive RLLE-Patient model. Additionally, a virtual Proportional-Integral-Derivative (PID) controller is developed to regulate the dynamic motion of the RLLE, and its performance is evaluated through simulations. The results demonstrate that this method effectively facilitates the design, tuning, evaluation, and improvement of the PID controller's performance in RLLE applications. Further optimization of the control system can be achieved by integrating the dynamic characteristics into the RLLE-Patient model.

Keywords: lower limb exoskeleton; modelling; parameter estimation; Matlab-ADAMS, co-simulation

Predicting Breakdown Types of Ventilators in Public Hospital Using Machine Learning

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ABSTRACT

Predictive maintenance has emerged as a vital methodology in biomedical engineering to ensure the reliability of life-support equipment, particularly ventilators. This study presents a machine learning-based approach for predicting ventilator breakdown types using unstructured historical maintenance data. The dataset, consisting of 10,314 unscheduled maintenance records, was obtained from the Asset and Services Information System (ASIS), managed by the Ministry of Health Malaysia (KKM). The primary objective is to classify technician-written, free-text fault descriptions into structured breakdown categories to enable proactive maintenance decisionmaking. Four machine learning models, Support Vector Machine (SVM), Artificial Neural Network (ANN), Decision Tree (DT), and Random Forest (RF) were developed and evaluated under two workflows: one using basic label encoding, and the other incorporating Term Frequency–Inverse Document Frequency (TF-IDF) for semantic feature extraction. The results demonstrate that TF-IDF significantly enhanced classification performance across all models. SVM achieved the highest accuracy of 94.70%, followed by DT (94.56%), RF (94.14%), and ANN (92.19%). In contrast, the same models trained without TF-IDF performed poorly, with accuracies falling below 36% for SVM and ANN. These findings emphasize the importance of textual feature engineering in predictive maintenance applications and validate the effectiveness of AI-based text classification for unstructured biomedical data. By operationalizing real-world maintenance notes from clinical engineering workflows, this study demonstrates the practical viability of machine learning in improving equipment uptime, optimizing service scheduling, and enhancing patient safety in healthcare settings.

Keywords: predictive maintenance, TF-IDF, ventilator, machine learning, classification.

An Innovative Walking Stick with Enhanced Ergonomics and High-Friction Base for Improved Comfort and Stability

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ABSTRACT

Rehabilitation is a critical process that helps individuals regain mobility and improve their quality of life after injury or illness. However, traditional walking sticks often lack ergonomic features, stability, and safety, leading to user discomfort and increased fall risks. This study aims to address these challenges by developing an innovative walking stick with enhanced ergonomic and safety features. The proposed design includes an ergonomic handle to minimize hand and wrist strain, a wider base to provide self-standing support and improve stability, and anti-slip materials for safer use on various surfaces. Lightweight and durable materials were selected to ensure practicality and long-term usability. Prototyping and usability testing were conducted to assess the design's performance in terms of comfort, stability, and durability. User feedback revealed notable improvements over conventional walking sticks. The ergonomic handle significantly reduced hand fatigue, while the wider base offered increased stability and the convenience of a self-standing feature. The anti-slip materials enhanced grip and traction, minimizing fall risks. The results demonstrate that the innovative walking stick significantly improves user experience, making it a reliable assistive device for rehabilitation purposes.

Keywords: ergonomic, stability, anti-slip

Innovation Crutch Cushion: An Ergonomic Approach to Rehabilitation for Calcaneus Fracture

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ABSTRACT

This study focuses on the rehabilitation management and assistive technology design for a patient suffering from severe lower limb injuries, including a calcaneus fracture sustained from a high-impact motorcycle accident. It details the injury with anatomical and physiological insights, highlighting the critical role of the calcaneus in weight-bearing and mobility. The report further examines the application and enhancement of axillary crutches as a pivotal rehabilitation tool, emphasizing patient safety and comfort during recovery. Key design improvements such as ergonomic hand grips, cushioned pads and non-slip tips are proposed to optimize crutch usability and support effective rehabilitation outcomes. This report contributes to the development of assistive technologies and patient-centred rehabilitation strategies through an integrative approach combining clinical observation and literature analysis.

Keywords: rehabilitation, calcaneus fracture, axillary crutches, assistive technology, patient mobility.

Analysis and Redesign of Hyperextension Braces for L1 Vertebra Rehabilitation

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ABSTRACT

This report investigates the rehabilitation challenges of L1 vertebra burst fractures and explores the potential for redesigning hyperextension braces to enhance patient comfort and compliance. The study combines case analysis, literature review, and 3D modelling to identify design limitations, including discomfort from rigid components and suboptimal material choices. Based on these findings, innovative solutions are proposed, such as integrating latex-free foam padding and microfiber leather for improved pressure distribution, comfort, and durability. The research underscores the importance of patient-centred designs, demonstrating how ergonomic enhancements can improve compliance and lead to better rehabilitation outcomes.

Keywords: rehabilitation technology, L1 burst fractures, hyperextension brace, latex-free foam, microfiber leather.

Enhancing Waste Management Through Automation: A Study on the Effectiveness of an Automated Waste Segregator

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ABSTRACT

Effective waste segregation is essential to facilitate the reuse, recycling, and recovery of waste materials. In Malaysia, particularly in rural and underserved communities, waste management faces challenges due to human error in manual sorting processes. Mistakes, often caused by limited resources or distractions, result in improper waste disposal, contributing to issues such as odour pollution and inefficiency. Moreover, manual segregation is time-consuming and labour-intensive. This project aims to address these issues by developing an Automated Waste Segregator capable of classifying wet and dry waste more accurately and efficiently than manual methods. The system was constructed using essential materials and components, including an Arduino Uno microcontroller, Servo SG90 motors, ultrasonic and moisture sensors, and a custom-built frame. The sensors detect the type of waste based on moisture content and distance, allowing the servo motors to direct it into the appropriate bin. The system was programmed with a custom control algorithm to automate the sorting process. To evaluate performance, the machine was tested for functionality and user satisfaction. Feedback was collected from 11 users. Results showed that 50% strongly agreed the machine effectively separates waste, 30% agreed, and 20% remained neutral. Regarding accuracy, 60% reported seldom noticing errors, 20% noticed them occasionally, and 20% reported no errors at all. These findings indicate that the automated system performs reliably, though some misclassifications still occur. Improvements such as enhanced sensor calibration, algorithm refinement, or regular maintenance could further boost accuracy. Overall, the project demonstrates promising potential for scalable and efficient waste management solutions in Malaysia.

Keywords: automated waste segregation, smart waste management, wet and dry waste sorting, sensor-based system, environmental sustainability.

Initial Ergonomic Risk Assessment for Transferring Ice Packs from the Packing Location to the Truck

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ABSTRACT

SUKOR SALAM AIS SDN. BHD. was established on April 29, 2002, in Malaysia. The main tasks involved in the ice manufacturing process include raw material preparation, ice production, ice harvesting, storage, packaging, sanitation, and maintenance. The specific tasks of moving ice packs from the packaging area to the truck and arranging the ice packs on the truck are analyzed in the Initial Ergonomic Risk Assessment (IERA). The goal of this study is to identify ergonomic hazards and reduce work-related injuries. Both of these tasks require repetitive movements and improper body posture, especially concerning hand structure, for extended periods. As a result, this increases the risk of ergonomic problems, such as Musculoskeletal Disorders (MSDs). To address this, more advanced ERAs like REBA, OCRA, and MAC will be implemented after the initial ERA. Despite existing safety measures, such as anti-slip rubber shoes, aprons, and head covers, these do not fully address the ergonomic risks identified by employees. Several measures can help reduce the ergonomic risks identified. These include ensuring that work surfaces are at an appropriate height to avoid excessive bending, twisting, or stretching, keeping arms at or near a 90-degree angle. Additionally, micro- breaks (2-5 minutes every 20-30 minutes) should be encouraged to allow workers to stretch and move, significantly reducing strain from static postures. Ergonomic hand tools should also be provided to allow for a neutral wrist position, reducing strain on the wrists and forearms. To minimize forceful exertions, tools designed to reduce required force should be used. Furthermore, hearing protection, including noise-cancelling headsets, is recommended, particularly for employees who need to communicate in noisy environments.

Keywords: ergonomic, ice worker, IERA

Kajian Tahap Pengetahuan Staf JKM PKB Terhadap Keselamatan Dan Kesihatan Pekerjaan Di Bengkel Dan Makmal Kejuruteraan Mekanikal

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ABSTRAK

Kajian ini bertujuan menilai tahap pengetahuan staf di Jabatan Kejuruteraan Mekanikal (JKM), Politeknik Kota Bharu (PKB), mengenai aspek keselamatan dan kesihatan pekerjaan di bengkel serta makmal kejuruteraan mekanikal. Objektif kajian ini adalah untuk menganalisa tahap pengetahuan staf JKM PKB terhadap keselamatan dan Kesihatan pekerjaan dibengkel dan makmal Kejuruteraan mekanikal.Kajian ini menggunakan pendekatan kuantitatif secara soal selidik yang melibatkan 28 orang pensyarah yang dipilih secara rawak dengan menggunakan perisian SPSS versi 26. Hasil daripada analisa SPSS menunjukkan tahap pengetahuan keselamatan dan kesihatan pekerjaan dalam kalangan staf berada pada tahap yang sangat baik. Keputusan kajian menunjukkan bahawa majoriti responden sangat setuju dengan keperluan taklimat keselamatan sebelum pelajar menggunakan bengkel dan makmal (92.9%, Min = 4.93). Pengetahuan mengenai arahan keselamatan (85.7%, Min = 4.86), tatacara pakaian yang betul (89.3%, Min = 4.89), penggunaan peralatan perlindungan diri (89.3%, Min = 4.89), dan peralatan yang diperlukan (89.3%, Min = 4.89) juga menunjukkan tahap kesedaran yang sangat tinggi.Di samping itu, pengetahuan berkaitan pengendalian peralatan dan mesin mengikut SOP (71.4%, Min = 4.71), serta keperluan pemeriksaan sebelum penggunaan (78.6%, Min = 4.79) adalah tinggi. Kesedaran tentang peraturan kecemasan (71.4%, Min = 4.71), lokasi tempat berkumpul semasa kecemasan (85.7%, Min = 4.86), serta pentingnya pengudaraan yang baik (85.7%, Min = 4.86) juga berada pada tahap yang sangat baik. Namun, pengetahuan mengenai cara mengenal pasti hazard (53.6%, Min = 4.50), menilai risiko hazard (42.9%, Min = 4.36), dan mengawal hazard (46.4%, Min = 4.39) adalah sedikit lebih rendah, menunjukkan ruang untuk penambahbaikan dalam aspek-aspek tersebut.Hasil daripada kajian didapati staf JKM PKB mempunyai tahap pengetahuan yang tinggi terhadap keselamatan dan kesihatan pekerjaan dibengkel dan makmal kejuruteraan mekanikal.Hasil kajian ini dapat dijadikan asas untuk merancang dan melaksanakan program taklimat serta latihan keselamatan dan kesihatan yang lebih menyeluruh dan efektif di bengkel dan makmal kejuruteraan mekanikal.

Kata kunci: keselamatan pekerjaan dan kesihatan pekerjaan, Kejuruteraan Mekanikal, Politeknik Kota Bharu, analisis SPSS.

Kajian Hubungan Pengetahuan Dan Amalan Keselamatan Dan Kesihatan Pelajar Di Bengkel Dan Makmal JKM PKB.

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ABSTRAK

Kajian ini dijalankan untuk menganalisis hubungan antara tahap pengetahuan dengan amalan keselamatan dan kesihatan dalam kalangan pelajar yang menggunakan kemudahan bengkel dan makmal di Jabatan Kejuruteraan Mekanikal (JKM), Politeknik Kota Bharu (PKB). Penyelidikan ini menggunakan pendekatan kuantitatif dengan kaedah tinjauan melalui soal selidik yang diedarkan kepada 86 orang responden yang dipilih secara rawak dalam kalangan pelajar yang aktif menggunakan kemudahan bengkel dan makmal. Data yang diperoleh dianalisis menggunakan perisian Statistical Package for the Social Sciences (SPSS) versi 26 dengan menerapkan analisis deskriptif (min dan kekerapan) serta analisis inferensi menggunakan korelasi Pearson untuk mengukur hubungan antara pembolehubah. Hasil analisis deskriptif menunjukkan tahap pengetahuan keselamatan pelajar berada pada tahap yang sangat memuaskan. Aspek pengetahuan yang mencatatkan peratusan dan min tertinggi termasuklah pengetahuan tentang arahan keselamatan (94.2%, min 4.50), tatacara pemakaian pakaian yang betul (94.2%, min 4.51), dan penggunaan Peralatan Perlindungan Diri (PPE) (93%, min 4.45). Manakala bagi aspek amalan keselamatan, didapati pelajar menunjukkan tahap kepatuhan yang tinggi terhadap prosedur operasi standard (SOP) penggunaan mesin (96.5%, min 4.41) dan penggunaan peralatan mengikut tatacara yang ditetapkan (88.4%, min 4.44). Analisis korelasi Pearson menunjukkan wujudnya hubungan positif yang signifikan antara pengetahuan dan amalan keselamatan dalam semua aspek yang dikaji. Nilai korelasi terkuat diperhatikan pada hubungan antara pengetahuan tentang SOP penggunaan mesin dengan amalan mengikuti SOP ($r=0.683$, $p<0.01$). Hubungan positif yang kuat turut dicatatkan antara pengetahuan dan amalan dalam aspek penggunaan PPE ($r=0.618$, $p<0.01$) serta pengetahuan arahan keselamatan dengan amalan mematuhi arahan tersebut ($r=0.643$, $p <0.01$). Kesimpulannya, kajian ini membuktikan bahawa tahap pengetahuan yang tinggi tentang keselamatan berkait rapat dengan amalan keselamatan yang baik dalam kalangan pelajar. Dapatan kajian ini diharapkan dapat menjadi asas untuk penambahbaikan sistem pengurusan keselamatan di bengkel dan makmal kejuruteraan, sekaligus menyumbang ke arah mewujudkan persekitaran pembelajaran yang lebih selamat dan efektif. Hasil kajian ini juga boleh dijadikan rujukan oleh pihak pengurusan institusi untuk merangka program kesedaran keselamatan yang lebih komprehensif pada masa hadapan.

Kata kunci: pengetahuan keselamatan dan kesihatan, amalan keselamatan dan kesihatan, korelasi Pearson, soal selidik, SPSS versi 26, kekerapan dan min.

The Effectiveness of Developing an Interactive Augmented Reality (AR) Exploration Application in Automotive Workshop Service Management E-Book Among the Automotive Students at Sultan Azlan Shah Polytechnic

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ABSTRACT

Augmented Reality (AR) technology is one of the latest technologies being used today, and it has a lot of potential applications in the field of education. Thus, this study investigated the effectiveness of developing an interactive argumental reality exploration application in the Automotive Workshop Service Management E-Book among the automotive students at Sultan Azlan Shah Polytechnic. Around 45 automotive fourth-semester students enrolled in the automotive program for 1 2024/2025 session had been selected as samples of studies. This research study uses a quantitative approach as the primary instrument to get the study data focussing on 4C skills, namely Critical thinking, Creativity, Collaboration, and Communication. Quantitative data obtained from the survey is descriptively analyzed using Statistical Package for Social Sciences (SPSS) to get the mean score and standard deviation. The study's data analysis results indicate that the development of the AR exploration application was highly effective in understanding the Automotive Workshop Service Management subject. Students agree that using AR virtual exploration applications can enhance their ability to become more creative and critical thinkers, promote teamwork, and improve communication skills. AR application is expected to be used as an effective teaching aid by lecturers and an attraction to increase student understanding of this subject. This study can be further diversified by sampling different sessions to strengthen the effectiveness of using this application in the automotive service workshop management subject among students at the Sultan Azlan Shah Polytechnic.

Keywords: Argumental Reality, virtual interactive, creativity, automotive workshop service management subject

Kajian Kesedaran Kecekapan Pengurusan Tenaga Elektrik Di Kalangan Pelajar Politeknik Kota Bharu

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ABSTRAK

Penjimatan tenaga elektrik adalah elemen kritikal dalam usaha memelihara sumber tenaga untuk generasi masa depan. Penjanaan tenaga masih bergantung kepada bahan api tidak boleh diperbaharui seperti minyak, arang batu, dan gas, yang berpotensi menghadapi penyusutan bekalan di masa akan datang. Kajian ini bertujuan untuk mengupas tahap kesedaran penjimatan tenaga elektrik dalam kalangan pelajar di Politeknik Kota Bharu (PKB), dengan memberi fokus kepada tiga komponen utama: pengetahuan, pandangan, dan tindakan mereka terhadap penjimatan tenaga. Dua kaedah digunakan dalam kajian ini iaitu analisis kos bil elektrik di asrama pelajar dan borang soal selidik yang diedarkan kepada pelajar melalui teknik persampelan kluster. Data dianalisis menggunakan teknik korelasi untuk meneliti hubungan antara beberapa pemboleh ubah dengan tahap kesedaran penjimatan tenaga. Hasil kajian menunjukkan bahawa kos penggunaan tenaga elektrik di asrama pelajar adalah tinggi, manakala tahap kesedaran pelajar terhadap kepentingan penjimatan tenaga berada pada tahap sederhana. Analisis lanjut mendapati hanya beberapa pemboleh ubah seperti prestasi akademik (PNGK) dan pendapatan ibu bapa mempunyai hubungan signifikan dengan pengetahuan pelajar tentang penjimatan tenaga. Sebaliknya, komponen pandangan pelajar terhadap kesedaran penjimatan tenaga tidak menunjukkan hubungan signifikan dengan mana-mana pemboleh ubah utama. Kajian ini menyerlahkan implikasi tahap kesedaran yang rendah terhadap peningkatan kos tenaga elektrik yang ditanggung institusi. Oleh itu, langkah-langkah yang lebih berkesan perlu dilaksanakan untuk meningkatkan kesedaran dan mempromosikan amalan penjimatan tenaga elektrik dalam kalangan pelajar, memandangkan mereka adalah pengguna utama di persekitaran kampus.

Kata kunci: Penjimatan tenaga elektrik, kesedaran pelajar, Politeknik Kota Bharu, pembangunan mampan.

Keberkesanan Pembelajaran Kooperatif Terhadap Efikasi Kendiri Pelajar Dalam Meningkatkan Prestasi Pencapaian Akademik

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ABSTRAK

Kajian ini adalah bertujuan untuk mengenal pasti keberkesanan pembelajaran koperatif Kerja Kursus Kajian Kes bagi Topik Statistik terhadap efikasi kendiri pelajar dalam meningkatkan prestasi pencapaian akademik. Kajian ini melibatkan responden yang terdiri daripada 174 orang pelajar Jabatan Kejuruteraan Mekanikal, Elektrik dan Petrokimia di Politeknik Kuching Sarawak yang mengikuti kursus Matematik Kejuruteraan 3 bagi Sesi 1: 2024/2025. Pembelajaran koperatif dalam pengajaran dan pembelajaran yang dikaji dari aspek akauntabiliti, kebergantungan, kesamarataan dan hubungan secara bersemuka semasa melaksanakan kerja kursus berupaya meningkatkan efikasi kendiri pelajar dalam pencapaian akademik. Borang soal selidik digunakan sebagai kaedah kajian dan telah diuji kebolehpercayaannya yang menunjukkan nilai Alpha Cronbach 0.962. Data telah dianalisis dengan menggunakan perisian Statistical Packages for Science Sosial (SPSS 25) untuk mendapatkan frekuensi, peratus, min dan sisihan piawai (SP). Hasil kajian menunjukkan aspek akauntabiliti menunjukkan (min = 4.429,SP = 0.476). Aspek kebergantungan pelajar dalam pembelajaran kooperatif (min = 4.455,SP = 0.524), kesamarataan berkumpulan menunjukkan (min = 4.486,SP = 0.581) manakala aspek interaksi bersemuka menunjukkan (min = 4.494,SP = 0.566). Hasil dapatan prestasi pencapaian akademik bagi topik tersebut menunjukkan 80.41% telah mencapai tahap sederhana dan tinggi. Hasil dapatan menunjukkan hubungan yang kuat di antara pembelajaran koperatif dan efikasi kendiri pelajar dari aspek saling kebergantungan dengan nilai pekali rr = 0.780. Dapat disimpulkan bahawa pembelajaran koperatif sangat membantu, berkesan dan sangat kompeten terhadap efikasi kendiri pelajar dalam meningkatkan prestasi pencapaian akademik pelajar.

Kata kunci: pembelajaran kooperatif, efikasi kendiri pelajar, prestasi pencapaian akademik.

Etika Alam Sekitar Dalam Islam: Peranan Manusia Sebagai Khalifah Dalam Menghadapi Krisis Ekologi Global

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ABSTRAK

Krisis ekologi global, yang dimanifestasikan melalui perubahan iklim, kehilangan biodiversiti, pencemaran meluas, dan penyusutan sumber alam, merupakan antara cabaran paling kritikal yang dihadapi oleh peradaban manusia pada masa kini. Krisis ini menuntut bukan sahaja respons saintifik dan teknologikal, tetapi juga penilaian semula terhadap kerangka etika yang mendasari hubungan manusia dengan alam sekitar. Islam, sebagai satu sistem kepercayaan dan cara hidup yang komprehensif, menawarkan satu perspektif etika alam sekitar yang unik dan bersepadu. Artikel ini bertujuan untuk menghuraikan prinsip-prinsip utama etika alam sekitar dalam Islam, dengan memberikan penekanan khusus kepada peranan fundamental manusia sebagai khalifah (wakil atau pentadbir Allah di bumi) dalam konteks menghadapi dan memberikan respons terhadap krisis ekologi global semasa. Melalui analisis terhadap sumber- sumber primer Islam (al-Quran dan al-Sunnah) serta prinsip-prinsip syariah yang berkaitan, kajian ini menjelaskan bagaimana konsep khalifah membentuk asas kepada tanggungjawab manusia sebagai pemegang amanah untuk menjaga, memelihara, dan mengurus alam semesta secara adil dan lestari. Dapatan utama menunjukkan bahawa peranan khalifah menuntut sikap kesederhanaan (wasatiyyah), keadilan (‘adl) terhadap semua makhluk, larangan melakukan kerosakan (fasad), serta kesyukuran terhadap nikmat alam sebagai kunci kepada hubungan yang harmonis antara manusia dan alam. Artikel ini merumuskan bahawa pemahaman dan penghayatan mendalam terhadap peranan khalifah menyediakan landasan etika dan spiritual yang kukuh bagi umat Islam untuk terlibat secara aktif dalam usaha mitigasi dan adaptasi terhadap krisis ekologi, serta menyumbang kepada wacana global mengenai kelestarian alam sekitar.

Kata kunci: etika, khalifah, krisis, alam, kelestarian.

Pengaruh Pengamalan As-Sunnah Dalam Pembentukan Akhlak Remaja Di Era Digital

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ABSTRAK

Perkembangan teknologi maklumat yang pesat memberi impak besar kepada cara hidup dan pemikiran remaja, termasuk dalam aspek akhlak dan nilai keagamaan. As-Sunnah, sebagai sumber kedua utama dalam Islam selepas Al-Qur'an, menawarkan panduan lengkap dalam membentuk peribadi Muslim yang berakhlak mulia. Kajian ini bertujuan untuk menganalisis pemahaman remaja tentang As-Sunnah dalam kehidupan harian, mengkaji pengaruh pengamalan As-Sunnah terhadap pembentukan akhlak remaja di era digital dan meneliti hubungan antara pengamalan As-Sunnah dan tingkat kepatuhan akhlak remaja. Kajian ini menggunakan pendekatan kualitatif dengan borang soal selidik sebagai alat utama pengumpulan data, melibatkan seramai 200 pelajar dari Jabatan Perdagangan, Jabatan kejuruteraan Mekanikal dan Jabatan Kejuruteraan Awam, Politeknik Kota Bharu. Instrumen kajian terdiri daripada dua bahagian, iaitu bahagian A yang mengandungi satu soalan berkaitan maklumat demografi iaitu jantina responden, manakala bahagian B mengandungi 15 soalan yang menilai Pengaruh pengamalan As-Sunnah dalam pembentukan akhlak remaja di era digital. Analisis data dilakukan menggunakan perisian Versi 27. Hasil kajian menunjukkan bahawa pengamalan As-Sunnah dalam kalangan remaja adalah berada pada tahap tinggi, Dapatan ini memperlihatkan bahawa remaja muslim di Malaysia masih mengamalkan As-Sunnah dalam kehidupan harian. Pengamalan As-Sunnah secara konsisten dapat memperkukuh nilai akhlak seperti amanah, jujur, hormat, dan bertanggungjawab dalam kalangan remaja. Namun, pengaruh media sosial, kurangnya bimbingan, dan kelonggaran dalam pendidikan agama menjadi antara cabaran utama dalam mengamalkan As-Sunnah secara menyeluruh. Kajian ini mencadangkan agar pendekatan pendidikan Islam perlu lebih interaktif dan relevan dengan persekitaran digital semasa agar mesej As-Sunnah dapat disampaikan secara efektif kepada golongan remaja. Implikasi kajian ini penting dalam merangka strategi pembinaan akhlak generasi muda yang seimbang antara kemajuan teknologi dan nilai-nilai Islam.

Kata kunci: as-sunnah, akhlak remaja, era digital, pendidikan Islam, pembentukan peribadi.

A Qualitative Study of Motivations and Reasons for English Language Learning among Electrical Engineering Students at Politeknik Kota Bharu

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ABSTRACT

This qualitative study explored the types of motivation (instrumental and integrative) and reasons for learning English among Electrical Engineering students in Communicative English classes. Twenty semester four students from the Electrical Engineering department at Politeknik Kota Bharu participated in the study. Data were gathered through a questionnaire, incorporating items from Gardner's Attitude/Motivation Test Battery, and supplemented by interview transcripts. The primary finding indicates a stronger presence of instrumental motivation compared to integrative motivation. Students expressed numerous instrumental reasons, including the perceived utility of English for future career prospects, overseas study or work, and accessing English-language materials for academic purposes. Integrative motivations, while less prominent, included a desire for social interaction with English speakers, interest in English-language media, and enjoyment of spoken English. This suggests that curriculum design should integrate practical, career-oriented English language skills with opportunities to develop students' communicative competence and intercultural awareness, to ensure a more holistic and effective learning experience.

Keywords: English language learning, instrumental motivation, integrative motivation, electrical engineering students.

The Role of AI in Teaching and Career Advancement: A Study on Awareness and Acceptance Among PKB Lecturers

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ABSTRACT

Artificial Intelligence (AI), with its cutting-edge resources to enhance teaching and professional development is rapidly transforming the education landscape. However, for AI to be implemented successfully, the level of awareness and acceptance of AI among Higher Education lecturers remains crucial. This study explores the awareness of PKB lecturers and their acceptance of AI as a teaching tool and its potential to further their careers. Data were gathered through surveys with academics at different departments using a quantitative approach. According to the data, there is still a large gap in the actual implementation of AI, even though many lecturers are aware of its potential to automate chores and increase instructional efficiency. Acceptance levels are strongly influenced by elements like perceived utility, usability, institutional support, and prior exposure to AI. Moreover, the result emphasizes how integrating AI improves instructional efficacy, research productivity, and skill development, all of which support career advancement. Nevertheless, adoption of AI is hindered by issues including institutional support, lack of technical expertise, and change aversion. The study leads to the conclusion that lecturers' acceptance of AI can be addressed by expanding AI training programs, institutional support, and awareness campaigns. These results provide insightful information that helps educational institutions and policymakers create plans that encourage AI literacy and integration in the educational setting. It is advised that more research should be conducted to examine AI's long-term effects on student learning outcomes and academic career paths.

Keywords: artificial intelligence, teaching tool, career advancement, AI awareness, AI acceptance

A Model of E-Content User Behavior of Training Teachers in Malaysia: Validation of a Final Structure Model

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ABSTRACT

The integration of e-content in teacher training has gained increased attention in the post-pandemic era. However, inconsistencies in user behavior and adoption among trainee teachers necessitate the development and validation of a reliable model to explain these behaviors. This study proposes and validates a final structural model examining the influence of cost, cultural specificity, user diversity, and technology on user behavior, and consequently on e-content usage. A cross-sectional survey involving 330 trainee teachers at Malaysian Teacher Education Institutes (IPG) was conducted. The model incorporates moderating variables such as age, gender, and zone. Using SmartPLS 4.0 for structural equation modeling (SEM), the findings validate the proposed model, demonstrating that cost, culture, and user diversity significantly influence user behavior, which in turn predicts e-content usage. The validated model contributes to theoretical and practical understanding of digital adoption in teacher education and provides a foundation for shaping future policy and pedagogical strategies. Notably, the study highlights that individual and contextual factors may exert more influence than technological factors alone. To strengthen future digital learning integration, longitudinal studies can be undertaken to track user behavior over time. Additionally, future research may incorporate mediating variables such as digital literacy, motivation, and institutional support, and consider cross-country comparisons to capture broader regional dynamics in e-content adoption.

Keywords: user behavior, e-content, teacher trainees, UTAUT, technology acceptance, Malaysia

Perbezaan Interaksi Hadis: Kajian Konsistensi Al-Qaraḍāwī Terhadap Tujuh Kaedah Interaksi Hadis

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ABSTRAK

Salah satu permasalahan yang melanda umat pada zaman ini adalah ceteknya ilmu pengetahuan berkenaan interaksi hadis-hadis Rasulullah saw dan kaedah-kaedah serta pendekatan untuk berinteraksi dengan hadis Rasulullah saw yang sebenar. Walaupun ramai telah menulis berkenaan sumbangan al-Qaraḍāwī dalam memberi kefahaman Islam secara umum, namun kajian-kajian mereka lebih menjurus kepada kajian dalam bidang fiqh. Justeru itu al-Qaraḍāwī lebih dikenali sebagai seorang ulamak yang mengeluarkan fatwa dan hukum- hukum kepada permasalahan semasa berdasarkan naṣ al-Qur'ān dan al-Ḥadīth. Selain itu, ada pendapat dalam kalangan cendekiawan Islam yang membincangkan pandangan al-Qaraḍāwī tentang konsistensi beliau dalam interaksi hadis terutama apabila membincangkan tentang tujuh kaedah interaksi al-Sunnah atau al-Hadīth. Ada yang berpandangan al-Qaraḍāwī terlalu menunjukkan keterbukaan ijtihad, dan fatwa- fatwa al-Qaraḍāwī bertentangan dengan manhaj salaf. Justeru itu, kajian yang mendalam mengenai tujuh kaedah interaksi al-Qaraḍāwī dalam bidang hadis harus dilakukan. Objektif kajian ini juga merangkumi konsistensi interaksi al- Qaraḍāwī terhadap tujuh kaedah memahami hadis. Kajian ini perlu, kerana terdapat perbezaan masyarakat dan para 'ulamak dalam memahami hadis kerana ada yang menganggap al- Qaraḍāwī terlalu mudah mentarjiḥkan naṣ al-Qur'ān dan al-ḥadīth terhadap sesuatu permasalahan semasa. Justeru itu, untuk melihat konsistensi al-Qaraḍāwī terhadap tujuh kaedah interaksi hadis, sumber penulisan dari kitab-kitab karangan beliau telah diambil sebagai input untuk melengkapkan kajian. Sepanjang proses penyelidikan ini, dua metode utama telah dipilih untuk memproses pengumpulan data dan menganalisis fakta kajian. Metode - metode yang dimaksudkan adalah Metode Pengumpulan Data seperti Metode Dokumentasi, Metode Historis, dan Metode Wawancara dan Metode Analisis Data seperti Metode Induktif serta Metode Deduktif. Dalam metodologi penganalisaan data, umumnya kajian ini menggunakan kaedah sosio-pensejarahan (socio historical) dan analisis kritikal (critical analysis) bagi menganalisis data mengenai biografi al-Qaraḍāwī dan interaksi hadis. Kaedah perbandingan pula diaplikasikan terhadap perkembangan konsistensi al-Qaraḍāwī terhadap interaksi hadis. Hasil dapatan bagi konsistensi al-Qaraḍāwī terhadap tujuh kaedah interaksi hadis pula didapati banyak persamaan unsur perbahasan secara mawḍū'ī.

Kata kunci: perbezaan, interaksi, hadis, konsistensi, Al-Qaraḍāwī.

The Effectiveness of Pre-Recorded Role-Play and Presentation Videos in Enhancing Communication Skills among Polytechnic Students

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ABSTRACT

Effective communication skills are essential for academic and professional success. Traditional methods of teaching communication skills often emphasize real-time interactions. However, advancements in digital learning have introduced pre-recorded role-play and presentation videos as alternative instructional tools. This quantitative study involved 89 polytechnic students selected through convenience sampling. A structured questionnaire was used to gather data on students' communication skill development in terms of confidence, clarity, and delivery. Findings indicate that pre-recorded videos allow students to refine their speech, reduce anxiety, and improve articulation through multiple recording attempts. Statistical results (cumulative M = 4.37, SD = 0.63) suggest significant positive effects of video tasks on communication domains. This study contributes to understanding how pre-recorded videos can enhance students' speaking performance and supports their integration into communication curricula.

Keywords: communication skills, pre-recorded videos, role-play, presentation, digital learning.

The Impact of Tiktok Advertisements on Consumer Value Perception

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ABSTRACT

The purpose of this study is to determine how customers' positive value perceptions can be increased by brand-related communications, such as advertisements shared on TikTok platform. The study's design, methodology, and technique involve surveying 601 TikTok users in Kota Bharu, Kelantan. SPSS was used to analyse the data and specify the measurement and structural models. Advertisements on TikTok and customers 'value perception has been found to have positive and strong connections. Customers' value perception influences advertisements on TikTok. There exists a significant correlation between advertisements on TikTok and customers' value perception. This study reveals how traditional marketing communications, including social media advertising, can raise customers' value perceptions, giving brand managers and marketers advice on how to use social media content. Businesses can concentrate more on encouraging online communication because TikTok is a new social media platform that has a significant influence on consumers' buying habits.

Keywords: Marketing communication, social media advertising, advertisements, value perception.

Taxpayers' Intentions to Claim Tax Relief for Medical Insurance in Malaysia

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ABSTRACT

Tax relief on medical and health insurance serves as a fiscal incentive to encourage taxpayers to secure financial protection against rising healthcare costs. However, the extent to which taxpayers in Malaysia utilize this relief remains uncertain. This study aims to examine the factors influencing taxpayers' intentions to claim tax relief for medical and health insurance, guided by the Theory of Planned Behavior (TPB). A quantitative research design was employed, collecting data through an online survey of Malaysian taxpayers from Politeknik Port Dickson, Politeknik Hulu Terengganu, Politeknik Kota Bharu, Politeknik Jeli and Politeknik Shah Alam. Statistical Package for Social Science (SPSS) was used to analyze the relationships between attitude, subjective norms, perceived behavioral control, and tax knowledge influence taxpayers' intentions. Findings indicate that positive attitudes and awareness significantly influence intentions, while perceived complexity of tax regulations poses a barrier. The study provides insights for policymakers and tax authorities to refine tax policies and enhance public awareness, ultimately increasing the uptake of tax relief claims. Future research could explore behavioral interventions to improve taxpayer compliance and engagement with tax incentives.

Keywords: tax relief, medical insurance, taxpayers' intention, Theory of Planned Behavior, Malaysia.

Innovative Marketing Strategies and Their Impact on Engagement Among Generation Z and Millennials in Malaysia

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ABSTRACT

Research on innovative marketing strategies is crucial to understanding how they influence engagement among Generation Z and millennials in Malaysia. This study examines the impact of personalized digital campaigns, interactive social media experiences, and influencer partnerships on consumer engagement. Grounded in the Technology Acceptance Model (TAM), Social Exchange Theory (SET), and the Theory of Planned Behavior (TPB), this study proposes a framework focusing on perceived usefulness, ease of use, social exchange benefits, and attitudes towards marketing innovations. Data were collected from 300 young consumers through structured online surveys and analyzed using Structural Equation Modeling (SEM). The findings reveal that personalized marketing campaigns and influencer partnerships significantly enhance engagement behaviors while perceived usefulness and ease of use moderate these relationships. This study provides unique insights into the factors influencing young consumer engagement in a digital context and offers practical recommendations for marketers aiming to capture and retain the attention of Generation Z and millennials.

Keywords: innovative marketing strategies, consumer engagement, personalized digital campaigns, social media.

Analysis of Customer Satisfaction Towards PKT Supermarket Kok Lanas Within the PKB Communities

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ABSTRACT

The consumer now demands the highest-quality goods at affordable prices. Customers' purchasing decisions are strongly influenced by their demographic profile. As a result, consumers are seen as the industry's rulers, and it is necessary to determine how they feel about organized retail establishments. The purpose of this study was to identify the elements that influence satisfied customers with retail establishments with a well-organized layout in supermarkets store. For this purpose, 127 respondents were selected from customers made up purchasing as the sample, and the data was gathered via a standardized questionnaire. Most of customers expressed great satisfaction with the store's atmosphere, store personnel, store appearance, and services.

Keywords: satisfaction, store atmosphere, store personnel, store appearance, store services.

Factors Affecting the Level of Customer Service Satisfaction in Kota Bharu

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ABSTRACT

The purpose of this study is to evaluate the level of customer satisfaction towards courier service management. The purpose of the study is to identify the elements that influence the level of customer satisfaction with courier service management in terms of service quality to determine the relationship between customer satisfaction and courier service quality. An online survey was distributed through the google form to the respondents and analysed by using SPSS software. Customer satisfaction and courier service quality have been shown to be significantly correlated by the courier service management. The outcome additionally showed the level of customer satisfaction and the elements affecting the level of consumer satisfaction with the management quality of the courier service. As a result, this study suggested recommendations for enhancing customer satisfaction in courier service management regarding service effectiveness.

Keywords: customer satisfaction, quality management, courier service, service quality

A Study on Construction Safety Management for High-Rise Building at Alam Perdana Phase 5 (AP 5)

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ABSTRACT

Safety management practices are essential for reducing workplace accidents by enhancing the work environment and fostering commitment from both management and employees. This study explored the perceptions of local workers involved in the construction of a high-rise building at Alam Perdana (AP5) in Ijok, Selangor. It focused on the implementation of the Occupational Safety and Health Management System (OSHMS), employee acceptance, and awareness levels. Data were collected through a survey administered to 210 employees. The findings indicate that management's commitment to collecting, measuring, and analyzing safety data plays a crucial role in improving workplace safety. This process, which involves systematic methods to acquire knowledge, was strongly correlated with management commitment. Furthermore, significant relationships were found between the safety management system and factors such as worker participation in safety awareness programs, compliance with site safety rules, and adherence to safety policies. Key elements of the safety management system, including safety awareness programs, occupational safety regulations, health standards, and working procedures, were found to significantly enhance both employee acceptance and awareness. These results offer valuable insights for researchers and practitioners seeking to improve safety and health practices in the construction of high-rise buildings.

Keywords: management and employee commitment, high-rise building, occupational safety and health management system, safety awareness programs site safety rules and safety policies.

Faktor-Faktor Yang Mempengaruhi Minat Pelajar Kejuruteraan Terhadap Keusahawanan di Politeknik Kota Bharu

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ABSTRAK

Di Malaysia, keusahawanan dilihat sebagai salah satu penyelesaian bagi menangani masalah pengangguran dalam kalangan belia (Nurul Afiqah, 2022). Usahawan juga dianggap sebagai penyumbang penting kepada pertumbuhan ekonomi negara disebabkan oleh wujudnya peluang perniagaan. Sejajar dengan itu, semua pelajar perlu didedahkan kepada ciri-ciri keusahawanan seperti kreativiti, keyakinan diri, keberanian mengambil risiko, dan kebolehan menyelesaikan masalah (Nur Azmaliza, 2020). Oleh itu, kajian ini bertujuan untuk mengkaji faktor-faktor yang mempengaruhi pelajar kejuruteraan untuk menceburi bidang keusahawanan sepanjang tempoh pengajian mereka di Politeknik Kota Bharu. Kajian ini melibatkan dua pembolehubah, iaitu faktor sikap dan faktor pengaruh orang sekeliling. Kaedah kuantitatif digunakan dengan tujuan mendapatkan maklum balas secara langsung melalui sampel pelajar daripada ketiga-tiga jabatan kejuruteraan di Politeknik Kota Bharu. Hasil kajian menunjukkan bahawa kedua-dua pembolehubah tersebut memberi impak positif terhadap minat pelajar kejuruteraan untuk menceburi bidang keusahawanan sepanjang pengajian mereka.

Kata kunci: keusahawanan, pelajar kejuruteraan

Factors Contributing to Students' Difficulty in Writing Project Reports

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ABSTRACT

Writing project reports is a critical skill for students, many struggle with structuring, analyzing, and referencing their work effectively. This research investigates the factors contributing to students' weaknesses in report writing and explores strategies to enhance their proficiency. The study identifies three key problem areas: inadequate writing skills, ineffective instructional methods, and psychological barriers such as writing anxiety and lack of confidence. Existing literature highlights that poor grammar, limited vocabulary, and a lack of coherence significantly hinder students' ability to produce well-structured reports. Furthermore, insufficient explicit instruction and limited feedback from educators exacerbate these challenges. Psychological factors, including fear of failure and low self-efficacy, further contribute to students' reluctance to engage in writing. The research aims to analyze these issues, evaluate current teaching practices, and propose improvements to instructional strategies and support systems. By addressing these challenges through targeted interventions, this study seeks to enhance students' writing abilities, ultimately improving their academic performance and professional preparedness.

Keywords: writing project reports

Analisis Kecekapan Sistem Pengecasan Untuk Kenderaan Elektrik Menggunakan MATLAB

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ABSTRAK

Kecekapan sistem pengecasan merupakan faktor utama dalam meningkatkan prestasi dan kebolehgunaan kenderaan elektrik (EV). Kajian ini menganalisis kecekapan sistem pengecasan EV dengan menggunakan perisian MATLAB sebagai alat simulasi dan analisis. Model pengecasan dibangunkan untuk menilai parameter utama seperti kehilangan tenaga, kadar pengecasan, kestabilan voltan, dan kesan terhadap jangka hayat bateri. Kajian ini berfokus dalam bidang Teknologi dan Sistem Pintar serta sejajar dengan Matlamat Pembangunan Mampan (SDG) 9: Industri, Inovasi, dan Infrastruktur, yang merangkumi pelbagai jenis sistem pengecasan, termasuk pengecasan pantas DC dan pengecasan AC biasa, bagi mengenal pasti kelebihan dan kekurangan setiap teknologi. Melalui simulasi MATLAB, kecekapan tenaga setiap sistem dinilai berdasarkan faktor seperti suhu operasi, arus bocor, serta penyesuaian dengan grid tenaga boleh diperbaharui. Hasil analisis menunjukkan bahawa strategi pengurusan tenaga yang optimum dapat meningkatkan kecekapan pengecasan serta mengurangkan pembaziran tenaga. Kajian ini diharapkan dapat menyumbang kepada Diploma Kejuruteraan Mekanikal (Automotif) di Politeknik Kota Bharu dengan memperkukuh pemahaman pelajar mengenai teknologi kenderaan elektrik, sistem pengecasan, dan aplikasi perisian kejuruteraan seperti MATLAB. Selain itu, kajian ini dapat dijadikan rujukan dalam pembelajaran berkaitan sistem tenaga automotif serta menyokong pembangunan inovasi dalam industri automotif yang lebih mampan dan mesra alam.

Kata kunci: kecekapan pengecasan, kenderaan elektrik, MATLAB, analisis tenaga, sistem pengecasan

Reka Bentuk, Pelaksanaan Dan Analisis Prestasi Turbin Angin Bersekala Kecil

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ABSTRAK

Permintaan tenaga elektrik terus meningkat. Mengurangkan penggunaan bahan api fosil, kebimbangan alam sekitar, dan ketidakcukupan teknik penjanaan konvensional dalam memenuhi permintaan yang semakin meningkat, penggunaan tenaga boleh diperbaharui telah dan diterima pakai secara meluas di dunia. Apabila mempertimbangkan penggunaan sumber tenaga boleh diperbaharui di dunia, dapat dilihat bahawa tenaga angin kebanyakannya diutamakan berbanding sumber tenaga lain yang boleh diperbaharui. Dalam kajian ini, prototaip sistem penukaran tenaga angin baharu yang sesuai untuk kegunaan bandar, kampung dan sekitar pantai direka dan dihasilkan. Reka bentuk yang dicadangkan adalah modular dan mempunyai struktur yang fleksibel. Dalam reka bentuk baharu, dengan pengunaan meterial bilah yang berlainan dan reka bentuk bilah pemerangkap kelajuan udara digunakan, bilangan bilah dan juga rekabentuk bilah dipelbagaikan untuk menganalisis kesannya terhadap prestasi turbin penilaian dalam penghasilan tenaga. Analisis prestasi turbin angin prototaip diselesaikan di bawah keadaan kehidupan sebenar dan keputusan diberikan. Hasil daripada kajian ini, menunjukkan perbezaan rekabentuk bilan dan bahan meterial bilah menyebabkan kuasa keluaran turbin berbeza. Struktur paling cekap yang dikenal pasti semasa analisis ialah sistem tiga bilah.

Kata kunci: sumber tenaga boleh diperbaharui; tenaga angin; prototaip turbin angin; kegunaan bandar; kegunaan kampung; kegunaan pantai

Pembangunan Sistem e-HSAC Untuk Analisis Dan Kawalan Hidroponik

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ABSTRAK

Pertanian hidroponik menawarkan potensi besar sebagai alternatif kepada pertanian konvensional, namun masih menghadapi cabaran seperti kos operasi, pembaziran sumber air, kekurangan pemantauan masa nyata, dan kebergantungan kepada tenaga kerja manual. Isu kekurangan sumber semula jadi dan perubahan iklim turut menekankan keperluan mendesak untuk penyelesaian pertanian yang lebih mampan dan cekap. Bagi mengatasi masalah ini, projek ini projek Sistem Analisis dan Kawalan Hidroponik (e-HSAC) dibangunkan. e-HSAC merupakan sistem hidroponik pintar yang bersepadu menggunakan teknologi analisis data dan kawalan automatik untuk mengoptimumkan hasil pertanian secara lestari. Objektif utama adalah mengintegrasikan pelbagai sensor (merangkumi pH air, suhu air & udara, kelembapan udara, paras air) untuk pemantauan parameter penting secara masa nyata dan secara tidak langsung membangunkan sistem kawalan automatik bagi operasi utama seperti pengepaman air/nutrien, membina antaramuka pengguna (dashboard) interaktif untuk visualisasi data dan membolehkan analisis data bagi tujuan pengoptimuman sistem. Metodologi melibatkan pembangunan sistem berasaskan mikropengawal yang diintegrasikan dengan sensor berkaitan dan pembangunan antaramuka pengguna. Sistem ini telah diuji pada hidroponik fizikal. Hasil pembangunan menunjukkan sistem e-HSAC berjaya dibangunkan dan berfungsi sepenuhnya. Sistem berjaya memaparkan data masa nyata melalui dashboard dan merekod data sejarah yang divisualisasikan melalui graf, menunjukkan peningkatan keberkesanan pengurusan air dan nutrisi serta potensi kestabilan parameter kritikal seperti pH dan suhu air. Fungsi kawalan automatik asas juga berjaya dilaksanakan. Kesimpulannya, projek ini berjaya mencapai objektifnya dengan menghasilkan sistem e-HSAC yang berfungsi. Sistem ini menawarkan penyelesaian praktikal yang berpotensi mengurangkan campur tangan manual, menjimatkan air serta mengoptimumkan penggunaan sumber sekaligus menyokong amalan pertanian hidroponik yang lebih cekap, mampan dan berdaya tahan terhadap cabaran pertanian moden.

Kata kunci: e-HSAC, hidraoponik, pemantauan masa nyata, kawalan automatik, pertanian lestari.

The Utilization of Oil Palm Empty Fruit Bunch (EFB) Pellets in Substrate Formulation for Grey Oyster Mushrooms

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ABSTRACT

The disposal of oil palm empty fruit bunches (EFB) poses issues for waste management and environmental degradation. EFB, abundant in cellulose, hemicellulose, and lignin, has potential as an alternate substrate to rubberwood sawdust for the development of oyster mushrooms. Concerns about the restricted supply and rising costs of rubberwood sawdust require Malaysian mushroom farmers to investigate alternatives. This study aimed to find a suitable mix for growing grey oyster mushrooms using EFB and to assess how well the mushroom blocks perform based on substrate pH, maturation time, and yield. This study aimed to identify an optimal formulation for grey oyster mushroom cultivation media using EFB and assess mushroom block performance based on substrate pH, mycelial growth, and yield. Substrates comprised mixtures of EFB and rubberwood sawdust: R1 (0:100), R2 (25:75), R3 (50:50), R4 (75:25), and R5 (100:0), supplemented with rice bran, agricultural lime, and water. Mushroom blocks were incubated for 45 days under controlled conditions. ANOVA revealed significant differences in pH [$F(4,70) = 7.33$, $p < .05$] across treatments: R1 (5.2), R2 (4.9), R3 (5.4), R4 (5.9), and R5 (6.2). Mycelial maturation time also varied significantly [$F(4,70) = 25.3$, $p < .05$]: R1 (36 days), R2 (43 days), R3 (50 days), R4 (57 days), and R5 (62 days). Furthermore, significant yield differences were observed [$F(4,784) = 18.87$, $p < .05$]: R1 (56 g), R2 (62 g), R3 (53.5 g), R4 (39.2 g), and R5 (38.8 g). Formulation R2 (25% EFB, 75% rubberwood sawdust) was optimal based on pH, maturation time, and yield. Utilizing EFB as an alternative substrate adds commercial value ("waste to wealth") and can transform the Malaysian oyster mushroom industry by providing a sustainable substrate. Proper EFB management can reduce pollution and increase mushroom production for local demand.

Keywords: empty fruit bunch (EFB), substrate, grey oyster mushroom block

Kajian Keberkesanan Inovasi Penyuntik Baja

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ABSTRAK

Penyuntik baja merupakan alat inovasi yang direka untuk mempercepatkan dan meningkatkan kecekapan proses pembajaan tanaman. Alat ini memastikan setiap pokok menerima sukatan baja yang seragam, sekali gus mengoptimumkan penyerapan nutrien. Penyuntik baja ini diperbuat daripada unplasticised polyvinyl chloride (uPVC) dengan diameter 36 milimeter, manakala saiz lubang pelepasan baja adalah 5 sentimeter persegi. Tangki baja yang digunakan mempunyai kapasiti sebanyak 16 liter. Keberkesanan alat ini telah diuji pada empat batas tanaman jagung, dengan setiap batas mengandungi 40 pokok. Hasil perbandingan menunjukkan bahawa penyuntik baja dapat mengurangkan masa pembajaan sebanyak 52 peratus, menjadikannya lebih efisien dan praktikal. Selain itu, alat ini memastikan sukatan baja yang konsisten dengan nilai varian 0.41 berbanding konvensional 2.24. Melalui pengiraan berdasarkan purata baja bagi setiap lubang (11.2 gram), inovasi ini juga mampu memberikan baja untuk 1429 lubang bagi setiap isian penuh. Ini membolehkan pengguna tidak perlu bergerak mengambil baja secara berulang kali, yang membantu mengurangkan masa dan tenaga digunakan untuk proses tersebut. Dari aspek reka bentuk, penyuntik baja ini bersifat ergonomik, membolehkan pekerja menjalankan tugas tanpa perlu membongkok, sekali gus mengurangkan keletihan fizikal. Di samping itu, penggunaan alat ini meningkatkan aspek keselamatan pekerja, kerana mereka tidak perlu memegang baja secara langsung semasa proses pembajaan. Secara keseluruhan, inovasi ini berpotensi untuk meningkatkan kecekapan, ketepatan, dan keselamatan dalam sektor pertanian.

Kata kunci: inovasi, penyuntik, pembajaan, cepat, konsisten

Pembiakan Bawang Merah Secara Belahan

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ABSTRAK

Bawang merah merupakan antara bahan asas yang amat penting dalam pelbagai jenis masakan, khususnya dalam masakan Asia. Di Malaysia, varieti bawang merah kecil lebih mendapat permintaan berbanding bawang besar kerana aroma dan rasa yang lebih menyengat. Namun begitu, bekalan bawang merah negara masih bergantung kepada sumber import dari negara seperti India, Pakistan, China dan Myanmar, yang menjadikan rantaian bekalan terdedah kepada risiko gangguan luar. Justeru, usaha untuk membiakkan dan menanam bawang merah secara tempatan amat penting dalam mengurangkan kebergantungan kepada import. Kajian ini menilai keberkesanan tiga kaedah pembiakan iaitu penanaman menggunakan bawang sebiji, belahan dua, dan belahan empat. Hasil kajian mendapati bahawa kaedah belahan dua menunjukkan prestasi terbaik dari segi kadar hidup serta kadar pertumbuhan, sekali gus berpotensi untuk diketengahkan sebagai kaedah utama dalam penghasilan benih bawang merah tempatan.

Kata kunci: bawang merah, pembiakan, belahan

Tool Life and Surface Finish Evaluations in Dry Milling of AISI D2 Tool Steel

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ABSTRACT

Good control and planning of cutting parameters and optimization of cutting conditions requires prediction of tool wear and surface finish. This paper presents a study of tool life and surface finish while machining AISI D2 tool steel. Milling tests were performed under dry cutting condition to avoid thermal shock on the brittle carbide tool. Various cutting speed and feed rates were tested while the axial and radial depth of cuts were set to be constant for all trials. Repetitions for each set of cutting condition were made three times and shortest tool life was taken. The results showed that the flank wear starts with an initial stage, and it is followed by gradual stage and finally abrupt stage of wear. Mechanical wear or abrasion is typically dominant during the initial cutting. Majority of the tool wear modes were due to flank wear and excessive chipping on the tool edge. Maximum tool life is obtained at a cutting speed of 50m/min and feed rate of 0.02 mm/rev. The effect of increasing feed rate on tool life is most significant and occurs at the lowest speed of 50 m/min. The life of the cutting tool does not reflect the state of the machined surface where the surface roughness value is still low at the end of the cut. Overall, the machined surface is very smooth with a Ra value of 0.10-0.37 μm. The surface defects identified during the test are voids, chatter marks, abrasion marks, built-up edges and distortions on the feed marks.

Keywords: flank wear, tool life, RA, dry machining.

Utilization of Waste Lokan Shells as Cement Substitute in Concrete Mixture

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ABSTRACT

This study investigates the potential use of waste Polymesoda expansa (Lokan) shell powder as a partial cement replacement in concrete production. Lokan shells, often discarded by seafood industries, pose an environmental challenge due to their slow decomposition. This research aims to repurpose these shells and assess their impact on concrete strength and durability. The methodology involved preparing concrete samples with varying percentages of Lokan shell powder (5% and 10%) as a cement substitute. The samples underwent slump and compression tests to evaluate their workability and strength. The results showed that incorporating 10% Lokan shell powder improved the compressive strength of concrete, reaching 264.38 kN at 28 days, with an average strength of 11.75 MPa. Additionally, the water absorption test indicated that Lokan shell powder did not significantly compromise the permeability of the concrete. This study suggests that Lokan shell powder can serve as a sustainable and cost-effective alternative material in the construction industry, reducing cement consumption and minimizing waste disposal issues. Future research should explore different mix proportions and hydration properties to optimize its application in concrete technology.

Keywords: lokan shell powder, sustainable concrete, cement replacement, compressive strength, waste utilization.

Development of the Moverail Walkway System for Enhanced Pedestrian Mobility

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ABSTRACT

This study was initiated based on observations of students and lecturers at Politeknik Tun Syed Nasir Syed Ismail experiencing difficulties in reaching their destinations within a large campus environment. The primary issue identified is managing time effectively and feeling fatigued after long walks between building. These issues contribute to delays, reduced productivity and physical strain. To address this issue, the prototype of the Moverail Walkway System was developed to enhance travel efficiency and significantly reduce commuting time between key locations. The design is inspired by a combination of scooter and roller coaster mechanisms, resulting in a unique and practical transportation system. To evaluate the effectiveness of proposed system, a comparative analysis was conducted between the travel time required when using the Moverail Walkway System and the time taken through conventional walking. The results indicate that the system reduces travel time by approximately 0.23 seconds per meter compared to conventional walking. Beyond its practicality, the Moverail Walkway System represents an innovative solution with significant potential in the fields of engineering and design.

Keywords: Moverail Walkway System, time travel, walking, transportation.

Towards Renewable Energy: Awareness and Acceptance of Mini Independent Power Producers in Kota Kinabalu, Sabah

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ABSTRACT

The rising energy demand has drawn significant focus towards sustainable energy sources. As Sabah, being rich in renewable energy resources, presents significant potential in this regard. The purpose of this study is to evaluate the awareness of renewable energy and to analyse the acceptance level of the residents in Kota Kinabalu, Sabah to become mini Independent Power Producers (IPPs). A survey was conducted among residents of Kota Kinabalu, Sabah to assess these factors and the data were analysed using SPSS 27 statistical software, employing descriptive analysis. The findings indicate a high level of awareness of renewable energy among residents, along with strong acceptance of the concept of becoming mini-independent power producers. These results highlight a positive outlook for renewable energy adoption in Kota Kinabalu. This study offers valuable insights for policymakers to further promote and implement solar energy initiatives in Kota Kinabalu, Sabah.

Keywords: renewable energy, awareness, acceptance, mini independent power producers.

Rekabentuk Bot Autonomi Untuk Misi Pencarian Dan Penyelamatan di Kawasan Maritim

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ABSTRAK

Kejadian kecemasan di perairan sering kali berlaku di kawasan yang sukar diakses oleh manusia, menjadikan penggunaan teknologi autonomi sebagai penyelesaian yang berkesan. Kajian ini membentangkan rekabentuk dan pembangunan bot autonomi bersaiz 1m x 0.8m untuk misi pencarian dan penyelamatan (SAR) di kawasan maritim. Bot ini menggunakan sistem navigasi autonomi berdasarkan GPS waypoint navigation, serta dikawal secara manual melalui remote control. Ia turut dilengkapi dengan pelbagai sistem pengesanan objek dan kamera untuk meningkatkan keberkesanan operasi SAR. Dari segi komunikasi, bot ini menggunakan gabungan Radio Telemetry (915MHz/433MHz) untuk kawalan jarak dekat dan 4G/LTE Module untuk pemantauan jarak jauh. Reka bentuk bot dibuat menggunakan teknologi 3D printing yang dilapisi dengan fiberglass untuk memastikan ketahanan dan kestabilan dalam persekitaran maritim. Kajian ini menilai keberkesanan sistem navigasi, pengesanan objek, dan komunikasi dalam operasi sebenar, serta mencadangkan penambahbaikan untuk kegunaan masa hadapan.

Katakunci: bot autonomi, pencarian dan penyelamatan, navigasi, sensor pengesanan, kecerdasan buatan

Integrasi Teknologi 3D Printing Dan Fiberglass Dalam Rekabentuk Bot Autonomi Jenis Catamaran Untuk Misi SAR

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ABSTRAK

Pembangunan bot autonomi semakin mendapat perhatian dalam operasi Search and Rescue (SAR) bagi meningkatkan keberkesanan dan keselamatan pasukan penyelamat. Kajian ini membincangkan integrasi teknologi 3D printing dan fiberglass dalam proses reka bentuk dan pembuatan bot autonomi jenis catamaran bersaiz 1m x 0.8m untuk misi SAR. Penggunaan 3D printing membolehkan penghasilan struktur yang kompleks dengan ketepatan tinggi serta mengurangkan kos dan masa pembuatan. Sementara itu, fiberglass digunakan sebagai lapisan perlindungan bagi meningkatkan ketahanan terhadap persekitaran maritim yang mencabar. Bot ini dilengkapi dengan sistem navigasi autonomi, sensor pengesanan objek, dan teknologi komunikasi jarak jauh untuk mengoptimumkan operasi pencarian di perairan. Hasil kajian ini menunjukkan bahawa penggunaan 3D printing dan fiberglass dalam rekabentuk bot autonomi memberikan penyelesaian yang kos efektif, ringan, dan tahan lasak bagi operasi SAR di kawasan perairan berisiko tinggi.

Kata kunci: bot autonomi, 3D printing, fiberglass, catamaran, search and rescue.

User Interaction and Perceived Effectiveness Of S-VoCTF for Traffic Volume Count Studies

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ABSTRACT

Traffic volume count studies play a critical role in urban planning, transportation infrastructure development, and traffic management. While traditionally centred on quantitative data, the influence of user interaction ranging from data collection to result application remains underexplored. This research introduces the Smart Volume Counter of Traffic Flow (SVoCTF), an innovative tool designed to enhance student learning and field data collection, particularly in the Highway & Traffic Engineering course. S-VoCTF facilitates the assessment of traffic flow and intersection performance using Passenger Car Unit (PCU) data. The study investigates how stakeholders such as city planners, engineers, and civil engineering students interact with S-VoCTF and how these interactions affect the perceived effectiveness of traffic volume studies. Using a mixed-methods approach, including surveys, interviews, and case studies, the research identifies key factors influencing user trust, data usability, and the integration of findings into real-world decision making. Findings reveal that 92% of respondents view S-VoCTF as innovative, effective, and well-designed for field application. Moreover, 91% found it user-friendly, intuitive, market-relevant, and cost-effective. Additionally, 90% acknowledged its positive impact on users, while 89% agreed it aligns with user and industry needs in terms of value and cost. The study concludes that transparency in methodology, real-time data access, and effective visualization significantly enhance the credibility and utility of traffic volume data. Recommendations are provided to improve user engagement and maximize the influence of such technologies on urban mobility and infrastructure planning.

Keywords: volume Study, intersection level of service, passenger car unit, traffic study

Performance Evaluation of Twin Scroll Wastegated Turbocharger to Match With 3.0 Litre Diesel Engine

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ABSTRACT

This study investigated the compatibility and performance of a twin-scroll wastegated turbocharger to match a 3.0-liter diesel engine, which can produce the power output of 300 hp - 550 hp. The twin-scroll wastegated turbocharger is selected from the BorgWarner turbocharger of the EFR model series. This study utilized the web-based turbocharger matching tool, which it is operated by inputting engine-specific parameters and simulating performance targets. Throughout the process, context-sensitive guidance is provided, including recommended ranges for complex parameters such as Brake Specific Fuel Consumption (BSFC), Volumetric Efficiency (VE), and exhaust gas temperature. Upon completion of data entry, the tool outputs detailed compressor and turbine performance metrics, including characteristic maps. Based on the simulated input and performance outputs, the EFR 7064-C turbocharger was selected as the optimal match, aligning well with the engine's power requirements and operational characteristics.

Keywords: twin-scroll, wastegated turbocharger, web-based application, performance, power.

Kajian Keberkesanan Rawatan Bioteknologi Terhadap Pengurangan Logam Berat Dalam Air Sisa Industri Farmaseutikal

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ABSTRAK

Kajian ini membincangkan tentang keberkesanan rawatan air buangan industri farmaseutikal dari loji rawatan air sisa yang dibuang ke alam sekitar melalui rawatan osmosis songsang (RO) dan kolam rawatan. Skop kajian ini menekankan kajian terhadap kandungan logam berat dalam air yang dibuang dan disalurkan ke dalam longkang buangan yang akan mendatangkan kemudaratan kepada alam sekitar. Penilaian yang dijalankan adalah dari paip pelupusan rawatan RO dan disalurkan melalui kolam rawatan sehingga longkang buangan melalui data yang diperolehi daripada ujikaji makmal. Kualiti air dinilai dari segi nilai kandungan logam berat seperti merkuri, kadmium, arsenik dan plumbum. Data yang dianalisis menunjukkan nilai kandungan logam berat menurun dan selamat disalurkan ke longkang buangan pada peringkat akhir penilaian. Nilai konduktiviti dan kandungan logam berat dibandingkan dengan nilai piawaian WHO bagi menentukan keberkesanan proses rawatan air buangan industri. Data daripada sampel air buangan menunjukkan nilai plumbum menurun daripada 58 µg/l kepada 18 µg/l, kadmium menurun daripada 5.7 µg/l kepada 0.3 µg/l, merkuri menurun daripada 1.3 µg/l kepada 0.3 µg/l dan arsenik menurun daripada 49 µg/l kepada 13 µg/l. Kaedah bioteknologi menunjukkan rawatan semasa berkesan dilaksanakan di industri tersebut dalam mengurangkan kandungan logam berat dan nilai konduktiviti. Tumbuhan araceae seperti keladi, pandan dan pisang di tanam disekitar kolam rawatan berjaya berfungsi menyerap zarah berbahaya logam berat dan unsur mikrobiologi. Ikan keli dan ikan karp menjadi penunjuk akuatik bagi menunjukkan air buangan yang dibenarkan dan selamat disalurkan ke longkang disekitar industri.

Kata kunci: farmaseutikal, logam berat, rawatan bioteknologi, rawatan songsang, konduktiviti

Kajian Terhadap Penggunaan Sisa Lebihan Konkrit Sebagai Bahan Ganti Batu Baur Dalam Bancuhan

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ABSTRAK

Dalam era globalisasi ini, industri pembinaan kebanyakannya menggunakan konkrit sebagai bahan yang utama untuk pembinaan Konkrit terus menjadi tulang belakang kepada pelbagai struktur seperti lebuh raya, empangan dan bangunan. Namun begitu, amalan pengujian konkrit secara berlebihan sering menyebabkan pembaziran bahan yang tidak dimanfaatkan di tapak bina. Justeru itu, kajian ini mengetengahkan pendekatan inovatif dengan menggunakan sisa konkrit sebagai pengganti separa dan penuh kepada agregat dalam adunan konkrit baru. Tujuan utama penyelidikan ini adalah untuk menilai potensi kekuatan mampatan serta kadar serapan air apabila sisa konkrit dimanfaatkan semula. Dalam ujikaji ini, dua nisbah campuran diuji, iaitu 50% dan 100% penggantian konkrit terbuang, menggunakan acuan bersaiz 150mm x 150mm x 150mm. Hasil analisis menunjukkan bahawa konkrit dengan 50% bahan terpakai mencapai kekuatan 14.2 N/mm2 selepas 7 hari dan meningkat kepada 21.71 N/mm2 selepas 28 hari. Manakala, bagi campuran sepenuhnya menggunakan lebihan konkrit, kekuatannya adalah 12.37 N/mm2 pada hari ke 7 dan 28.99 N/mm2 pada hari ke 28. Dari segi penyerapan air, campuran 100% menunjukkan kadar serapan tertinggi masing-masing pada 4.63% dan 5.63% bagi tempoh pengawetan 7 dan 28 hari. Kesimpulannya, berdasarkan prestasi kekuatan dan kadar resapan, campuran dengan 50% konkrit kitar semula dilihat lebih seimbang serta menepati standard JKR. Pendekatan ini bukan sahaja mengurangkan sisa pembinaan, malah membuka jalan ke arah penggunaan bahan binaan yang lebih mampan dan mesra alam.

Kata kunci: lebihan konkrit, agregat, ujian mampatan dan resapan air

Evaluating Heat Dissipation and Mechanical Stress in Disc Brake Components for Enhanced Safety

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ABSTRACT

Brake failure is a leading cause of accidents today, making material selection in brake systems crucial. Choosing the right materials is essential for ensuring the quality and reliability of the components. The use of materials in producing products will be a test to identify the weakness of the substance which plays an important role in resisting stress and tension for the product. The purpose of this study is to perform an in-depth thermal analysis of disc brakes and brake pads to evaluate heat generation, distribution, and dissipation during braking operations. The sketching and design processes were carried out using software to model the internal components of the brake system. Prior to the design improvement, test analysis was conducted to observe stress distribution and pressure within the system. The data collected from these analyses served as a foundation for identifying weaknesses and guiding design enhancements to improve the performance and reliability of the brake components. Even at its lowest, the temperature on the disc brake surface can reach approximately 200°C. Such overheating may result in a loss of friction between the brake pad and the disc surface, causing the braking mechanism to fail. This inefficiency can increase the risk of accidents due to the vehicle's inability to stop effectively. Additionally, excessive thermal and mechanical stress may cause the studs to fracture, potentially resulting in the detachment of the wheel and loss of vehicle control by the driver. So, it is essential for guides to select high-quality components to ensure the safety of passengers.

Keywords: thermal, mechanical stress, disc brake, brake pads.

Inovasi Pembangunan Kit Pembelajaran Basic Electronic Dalam Meningkatkan Pemahaman Pelajar Diploma Kejuruteraan Mekatronik

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ABSTRAK

Kursus Basic Electronic merupakan komponen asas dalam program Diploma Kejuruteraan Mekatronik yang bertujuan membekalkan pelajar dengan pemahaman tentang konsep asas elektronik yang digunakan dalam bidang elektronik dan mekatronik. Latihan amali di makmal memainkan peranan penting dalam melahirkan graduan yang berkemahiran tinggi. Namun, ramai pelajar menghadapi kesukaran dalam menguasai konsep asas, yang menyebabkan mereka tidak dapat melakukan penyambungan litar dengan berkesan serta gagal menganalisis nilai arus dan voltan menggunakan alat pengukuran seperti multimeter digital dan osiloskop. Kesukaran ini memberi kesan negatif terhadap motivasi pelajar dalam menjalankan amali bagi kursus ini serta kursus lain yang berkaitan dengan litar elektronik. Bagi mengatasi cabaran ini, satu inovasi dalam pengajaran dan pembelajaran telah dibangunkan, iaitu Kit Pembelajaran Basic Electronic. Kit ini direka dengan litar bercetak pada permukaan serta komponen 'plug-in' yang membolehkan pelajar mengubah suai litar dengan lebih mudah bagi meningkatkan pemahaman mereka. Penggunaan kit ini terbukti dapat meningkatkan tahap pemahaman pelajar, memperbaiki pencapaian akademik mereka, serta mengurangkan masa yang diperlukan dalam menjalankan sesi amali. Selain itu, ia memberi peluang kepada pelajar untuk mengulang eksperimen beberapa kali, sekaligus memperkukuhkan pembelajaran mereka. Dari perspektif pengajaran, kit ini turut membantu pensyarah dalam demonstrasi serta meningkatkan minat pelajar terhadap amali makmal.

Kata kunci: kit inovasi, kit pembelajaran, latihan amali basic electronic

Performance Assessment of Forged 4340 Steel for Turbocharged Diesel Engine Connecting Rod Applications

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ABSTRACT

This research assesses and focuses the performance of forged 4340 steel connecting rod of turbocharged diesel engine, emphasizing its advantages when subjected to intense dynamic forces. The study utilizes computational and numerical analysis on material properties and crank mechanism involving crank angle, engine cylinder pressure to determine the combustion forces, and inertia force of crank-connecting rod operation. This study also utilizes the Autodesk Inventor Pro 2024 software to analyse the static structural analysis of the forged 4340 steel connecting rod by subjecting the crank mechanism forces onto it. Findings reveal that the forged 4340 steel compromises the relation of those crank mechanism force with its tensile strength, durability, lower weight ratio and fatigue resistance. The study concludes that the forged 4340 steel is a practical, high-performance alternative for connecting rod applications, especially in demanding diesel engine scenarios.

Keywords: forged 4340 steels, connecting rod diesel engine, fatigue strength, Autodesk Inventor Pro, durability.

The Impact of Social Media on Modern Consumer Decision-Making

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ABSTRACT

In today's digital age, social media has emerged as a powerful force influencing consumer decision-making processes. With billions of active users across platforms such as Facebook, Instagram, Twitter, and TikTok, social media serves as a vital channel for information sharing, brand engagement, and consumer interaction. The growing influence of social media on consumer decision-making is evident in its ability to shape perceptions, attitudes, and behaviors through various mechanisms, such as peer recommendations, influencer endorsements, and targeted advertising. Past studies have shown that consumers often turn to social media for product reviews, recommendations, and feedback, with the opinions of online communities carrying significant weight in their purchase decisions. This paper explores the impact of social media on modern consumer decision-making, examining both the positive and negative effects it has on how consumers discover, evaluate, and purchase products and services.

Keywords: social media, consumer decision making, marketing tool, influencers.

Penguasaan Ilmu Tajwid Dan Kualiti Bacaan Al-Quran Dalam Kalangan Pelajar Politeknik Kota Bharu

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ABSTRAK

Penguasaan ilmu tajwid dalam kalangan pelajar merupakan elemen penting dalam usaha meningkatkan mutu bacaan al-Quran mereka. Ilmu tajwid merujuk kepada peraturan yang betul dalam sebutan huruf-huruf al-Quran berdasarkan garis panduan yang ditetapkan oleh syarak, meliputi aspek seperti makhraj huruf, sifat huruf, panjang-pendek bacaan (mad), serta hukum-hukum tertentu dalam pembacaan. Tujuan kajian ini adalah untuk menilai sejauh mana pelajar menguasai ilmu tajwid dan kualiti bacaan al-Quran mereka, serta mengenal pasti hubungan antara kedua-dua aspek tersebut. Kajian ini menggunakan kaedah kuantitatif dengan borang soal selidik sebagai alat utama pengumpulan data, melibatkan seramai 196 pelajar dari Jabatan Perdagangan, Politeknik Kota Bharu. Instrumen kajian terdiri daripada dua bahagian, iaitu Bahagian A yang mengandungi dua soalan berkaitan maklumat demografi seperti jantina dan latar belakang pendidikan tajwid secara formal, manakala Bahagian B mengandungi 15 soalan yang menilai tahap penguasaan ilmu tajwid dan mutu bacaan al-Quran. Analisis data dilakukan menggunakan perisian SPSS versi 27. Hasil kajian mendapati bahawa tahap penguasaan tajwid dan mutu bacaan al-Quran pelajar berada pada tahap sederhana tinggi, dengan majoriti menunjukkan pemahaman terhadap asas tajwid seperti makhraj dan hukum bacaan. Kajian ini turut mengenal pasti hubungan yang signifikan antara penguasaan ilmu tajwid dan mutu bacaan al-Quran. Beberapa faktor seperti pendedahan awal kepada ilmu tajwid, sokongan keluarga, serta keberkesanan pengajaran di peringkat sekolah rendah dan menengah dikenal pasti mempengaruhi tahap penguasaan tajwid dalam kalangan pelajar. Sehubungan itu, kajian ini mencadangkan beberapa langkah penambahbaikan seperti penyusunan semula kurikulum, latihan yang lebih menyeluruh, dan galakan untuk mengamalkan pembacaan al-Quran secara betul.

Kata kunci: penguasaan ilmu tajwid, kualiti bacaan al-quran, pelajar, faktor penguasaan tajwid, pendidikan Islam.

The Impact of AI on Consumer Behaviour and Decision-Making in Marketing

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ABSTRACT

Artificial Intelligence (AI) is revolutionizing the marketing landscape by reshaping how consumers interact with brands and make purchasing decisions. The integration of AI technologies enables marketers to analyze vast amounts of data, leading to personalized marketing strategies that significantly influence consumer behavior. This shift is not only enhancing the effectiveness of marketing campaigns but also altering the psychological processes involved in consumer decision-making. The integration of Artificial Intelligence (AI) into marketing strategies has significantly transformed consumer behavior and decision-making processes. This paper explores the impact of AI on consumer behavior and decision-making in marketing. It examines how AI-driven technologies influence consumer choices, enhance personalization, and raise ethical concerns, such as privacy and transparency. Understanding these effects is crucial for businesses aiming to integrate AI into their marketing strategies while ensuring ethical and consumer-friendly practices.

Keywords: artificial intelligence (AI), consumer behavior, decision-making.

Persepsi Terhadap Penggunaan Laman Web Islamic Hotel Transformation (IHoT) Bagi Tujuan Pengajaran Dan Pembelajaran

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ABSTRAK

Kajian ini bertujuan untuk mengenal pasti persepsi pengguna terhadap laman web Islamic Hotel Transformation (IHoT) bagi tujuan pengajaran dan pembelajaran. Objektif utama adalah untuk menilai elemen kebergunaan, reka bentuk dan persembahan, serta kemudahgunaan laman web tersebut. Seramai 100 orang responden yang pernah menggunakan laman web IHoT telah terlibat dalam kajian ini. Penilaian dijalankan secara kuantitatif menggunakan analisis deskriptif, dan data dianalisis melalui perisian SPSS versi 25.0 bagi memperoleh nilai skor min. Dapatan menunjukkan purata min bagi kebergunaan ialah 4.71, reka bentuk dan persembahan 4.61, serta kemudahgunaan 4.62, yang semuanya berada pada tahap tinggi. Hasil kajian mendapati laman web IHoT direka bentuk dengan baik, mudah dilayari, serta menawarkan kandungan yang relevan dan berkesan dalam meningkatkan minat serta penglibatan pengguna dalam proses pembelajaran. Berdasarkan dapatan, beberapa cadangan penambahbaikan dikemukakan termasuk penyusunan semula navigasi laman, penambahbaikan aspek visual dan estetika antara muka, serta penyediaan sokongan kendiri seperti tutorial atau panduan pengguna. Penambahbaikan ini dijangka dapat meningkatkan keberkesanan laman web IHoT sebagai platform pembelajaran dalam bidang hospitaliti patuh syariah.

Kata kunci: keberkesanan, kualiti laman web, IHoT, pendidikan.

Kajian Tahap Pengetahuan Terhadap Pelaksanaan Hotel Patuh Syariah Dan Kekangan Sebagai Pengguna Muslim

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ABSTRAK

Hotel Patuh Syariah dilihat sebagai satu produk yang berpotensi besar untuk diketengahkan serta mampu bersaing dalam industri perhotelan di negara atau peringkat global. Hotel Patuh Syariah bukan sahaja melihat penyediaan makanan dan minuman yang halal, tetapi merangkumi pelbagai aspek seperti rekabentuk dan ruang, perkhidmatan di premis hotel, organisasi dan pekerja serta adab dalam perkhidmatan pelanggan. Kajian ini bertujuan meninjau tahap pengetahuan pelajar semester 2 Diploma Perkhidmatan Makanan Amalan Halal (DHF) Politeknik Merlimau Melaka tentang pelaksanaan Hotel Patuh Syariah serta kekangan yang dihadapi oleh mereka sebagai pengguna Muslim. Sampel kajian adalah secara populasi iaitu seramai 39 orang pelajar terlibat sebagai responden. Instrumen kajian adalah berbentuk soal selidik dan data yang diperolehi dianalisis menggunakan perisian SPSS versi 25.0 bagi mendapatkan frekuensi, peratusan dan min. Hasil kajian mendapati tahap pengetahuan pelajar tentang prinsip-prinsip Hotel Patuh Syariah adalah tinggi dan majoriti responden juga mengakui bahawa terdapat kekangan yang dihadapi sebagai pengguna Muslim.

Kata kunci: tahap pengetahuan, kekangan, hotel patuh syariah

Determinants of Tax Compliance Among Polytechnic Lecturers: The Role of Tax Knowledge, Penalty Awareness, and Tax Fairness

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ABSTRACT

The objective of self-assessment tax implementation is one of the government's efforts to ensure increased voluntary tax compliance. However, tax non-compliance is an issue that is often given focus and addressed by the Inland Revenue Board (LHDN). Determinants of voluntary tax compliance behaviour should be identified to enable taxpayers to be more compliant in paying taxes and subsequently enable more efficient tax collection. The variables of knowledge, awareness of penalties, and tax justice are independent variables, while tax compliance is used as the dependent variable in this study. Data collection was done by distributing questionnaires to lecturers at Port Dickson Polytechnic. Multiple regression analysis techniques were used to analyse the data. All three independent variables show a positive relationship with tax compliance. Tax fairness was found to be more influential at 37% compared to knowledge (21.8%) and awareness of penalties (21.4%). This finding shows that authorities such as the Inland Revenue Board (IRB) need to devise more tax paying awareness programs among the people to overcome the issue of tax non-compliance.

Keywords: tax knowledge, penalty awareness, tax fairness, tax compliance.

Kokurikulum Di Politeknik Mencorak Keterampilan Pelajar

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ABSTRAK

Kokurikulum merupakan aktiviti berfaedah yang mendatangkan banyak manfaat kepada pelajar. Walau bagaimanapun, kajian mengenai keterampilan pelajar melalui penglibatan dalam aktiviti kokurikulum kurang diberikan perhatian. Oleh itu, kajian ini bertujuan untuk mengenal pasti tahap keterampilan dalam kalangan pelajar politeknik, Sesi I :2023/2024 Jabatan Kejuruteraan Awam (JKA), Politeknik Kota Bharu (PKB) melalui penglibatan dalam kursus kokurikulum. Skop kajian ini melibatkan empat aspek keterampilan iaitu kemahiran komunikasi, kepimpinan, bekerja berpasukan dan penampilan diri yang kemas. Sampel kajian adalah seramai 100 orang. Reka bentuk kajian ini merupakan kaedah tinjauan kuantitatif. Instrumen yang digunakan ialah borang soal selidik dan hasil dapatan kajian dianalisis dengan keputusan yang diperolehi mendapati bahawa tahap keterampilan pelajar kokurikulum adalah tinggi dengan purata nilai min 3.02 serta cabaran pelajar dalam mengikuti kursus kokurikulum mencapai purata min 3.06 juga pada tahap tinggi. Dapatlah disimpulkan bahawa akiviti kokurikulum yang disertai oleh pelajar mampu meningkatkan keterampilan diri dalam usaha untuk melengkapkan diri dengan pelbagai kemahiran sebelum menempuh alam pekerjaan yang lebih mencabar kelak.

Kata kunci: kokurikulum, keterampilan,cabaran, PKB, JKA.

Forging Titans Of Tomorrow: Penilaian Kritikal Keberkesanan Program Kelanasiswa Recap 1.0 2024 Dalam Melahirkan Graduan Berkaliber Global di Era Revolusi Industri 4.0 Di Politeknik Kelantan

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ABSTRAK

Kajian ini bertujuan untuk menilai keberkesanan pengurusan Program Kelanasiswa Recap 1.0 di Politeknik Kelantan, khususnya di Politeknik Kota Bharu dan Politeknik Jeli, dalam meningkatkan kemenjadian dan kemandirian pelajar. Berdasarkan kajian literatur terdahulu, model kepimpinan kolaboratif dan latihan yang berterusan telah dikenal pasti bagi pendekatan berkesan bagi pemimpin kelanasiswa mengatasi cabaran komunikasi dan meningkatkan penglibatan pelajar dalam aktiviti kokurikulum. Kajian ini menggunakan pendekatan analisis kuantitatif dan kualitatif untuk menganalis impak. Dapatan menunjukkan bahawa kepimpinan yang inklusif dan responsif terhadap keperluan pelajar memainkan peranan penting dalam mencipta persekitaran yang menyokong pertumbuhan akademik dan sosial. Penemuan ini membuktikan bahawa pengurusan program kokurikulum yang efektif mampu meningkatkan motivasi pelajar untuk menjadi individu yang lebih berdikari dan berdaya saing. Implikasi kajian ini mencadangkan keperluan strategi yang lebih berkesan dalam pengurusan kelanasiswa yang lebih holistik dan inklusif dalam menyokong aspirasi pendidikan tinggi.

Kata kunci: pengurusan program, kelanasiswa, kemenjadian pelajar, kemandirian pelajar, kepimpinan inklusif, holistik.

Transformasi Pemikiran: Penilaian Kualitatif Dan Kuantitatif Kesan Program Mathletes 2024 Terhadap Pelajar Politeknik Kota Bharu

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ABSTRAK

Kajian ini bertujuan untuk menilai keberkesanan Program Mathletes 2024 dalam memacu transformasi pemikiran pelajar di Politeknik Kota Bharu. Pendekatan kualitatif dan kuantitatif digunakan bagi menyelidik impak program ini terhadap kemahiran pemikiran kritis, penyelesaian masalah kompleks, dan pembelajaran kolaboratif. Data diperoleh melalui kaedah soal selidik dan temu bual mendalam , membolehkan analisis naratif yang menyeluruh dan reflektif terhadap pengalaman pelajar. Dapatan menunjukkan peningkatan yang signifikan dalam keupayaan analitis dan keyakinan pelajar semasa menghadapi masalah matematik. Program ini turut memupuk budaya kerjasama dan interaksi dinamik dalam kalangan peserta, memperkukuhkan kompetensi sosial dan intelektual yang relevan. Implikasi kajian mencadangkan program seumpamanya ini berpotensi memperbaharui strategi pengajaran matematik dan menyokong pembangunan kemahiran berfikir aras tinggi dalam pendidikan politeknik.

Kata kunci: transformasi pemikiran, program mathletes, pendidikan matematik, pemikiran kritis, keberkesanan program

Kajian Keberkesanan Proses Mediasi Di Kalangan Penduduk Setempat Kawasan Rukun Tetangga Mahang West, Kok Lanas

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ABSTRAK

Kajian ini bertujuan untuk menilai keberkesanan mediasi dalam penyelesaian konflik di kalangan penduduk Rukun Tetangga Mahang West, Kok Lanas, Kelantan. Objektif kajian adalah untuk meneroka mekanisme mediasi, menilai faktor-faktor yang mempengaruhi kejayaannya, dan mengenal pasti peranan dinamik komuniti dalam penyelesaian konflik. Pendekatan kualitatif digunakan dengan kaedah temubual mendalam dan pemerhatian peserta untuk mengumpul data. Dapatan kajian menunjukkan bahawa mediasi secara umumnya berkesan dalam menyelesaikan konflik, dengan kejayaan bergantung kepada tahap kepercayaan dalam komuniti, kecekapan mediator, dan kesediaan pihak yang terlibat. Kajian ini menyimpulkan bahawa walaupun mediasi adalah kaedah penyelesaian konflik yang berpotensi, keberkesanannya boleh dipertingkatkan melalui penglibatan komuniti yang lebih besar dan pembangunan model mediasi yang lebih adaptif. Dapatan ini mempunyai implikasi yang signifikan untuk memperbaiki amalan mediasi di dalam komuniti yang serupa dan boleh memberi panduan dalam pembangunan dasar di peringkat kebangsaan dan antarabangsa.

Kata kunci: mediasi, penyelesaian konflik, komuniti, Kelantan, keberkesanan.

The Role of AI in Supporting English Language Learning in Technical and Vocational Education

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ABSTRACT

This study explores the role of Artificial Intelligence (AI) in enhancing English language learning within Technical and Vocational Education and Training (TVET), with a focus on Politeknik Kota Bharu. Aligned with Malaysia's agenda to modernize the TVET sector, it examines how AI tools—such as intelligent learning platforms, chatbots, and speech recognition software—support personalized and autonomous language learning. Using a quantitative descriptive survey across four academic departments, the findings show that AI significantly improves students' English proficiency, particularly in completing assignments. Students reported enhanced sentence organization, idea development, and writing efficiency. AI also positively influenced their performance in exercises and presentations by boosting comprehension, pronunciation, and confidence. The study highlights AI's potential to address individual learning needs and recommends its broader integration in TVET to better prepare students for the demands of a digital workforce.

Keywords: artificial intelligence, English language learning, technical and vocational education, TVET language technology integration.

Adab Dan Etika Menuntut Ilmu: Analisis Kitab Jami' Bayan Al-'Ilm Wa Fadlihi Oleh Ibnu 'Abd Al-Barr

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ABSTRAK

Adab dan etika dalam menuntut ilmu memainkan peranan penting dalam tradisi keilmuan Islam bagi memastikan ilmu yang diperoleh membawa manfaat dan keberkatan. Kajian ini menganalisis konsep menuntut ilmu berdasarkan kitab Jami' Bayan al-'Ilm wa Fadlihi karya Ibn 'Abd al-Barr, mengenalpasti prinsip-prinsip adab menuntut ilmu serta menilai kerelevanan pandangan Ibn 'Abd al-Barr terhadap realiti pendidikan dan cabaran pengajian ilmu pada zaman moden. Kajian ini menggunakan pendekatan kualitatif berbentuk kajian kepustakaan (library research) melalui analisis kandungan (content analysis) kitab. Hasil kajian menunjukkan bahawa Ibn 'Abd al-Barr menekankan beberapa prinsip utama dalam menuntut ilmu antaranya keikhlasan, hormat kepada guru, kesabaran, tawaduk serta mengamalkan ilmu yang dipelajari. Kajian ini juga mendapati bahawa adab dalam menuntut ilmu bukan sahaja berperanan dalam membentuk peribadi muslim yang berilmu, tetapi juga memastikan keberkatan dan keberkesanan ilmu dalam kehidupan. Namun, cabaran seperti kemerosotan nilai adab dalam institusi pendidikan moden dan pengaruh teknologi terhadap interaksi antara guru dan murid menjadi halangan dalam mengamalkan adab ilmu secara menyeluruh. Oleh itu, kajian ini mencadangkan agar prinsip-prinsip adab yang dibincangkan dalam kitab Jami' Bayan al-'Ilm wa Fadlihi diterapkan semula dalam sistem pendidikan Islam bagi melahirkan generasi yang bukan sahaja berilmu, tetapi juga berakhlak tinggi.

Kata kunci: adab menuntut ilmu, Ibn 'Abd Al-Barr, etika keilmuan, pendidikan Islam.

Kajian Tindakan: Tahap Penguasaan Tajwid Bacaan Al-Fatihah Dalam Kalangan Pelajar Politeknik Kuala Terengganu

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ABSTRAK

Kajian tindakan ini dijalankan adalah untuk menilai tahap penguasaan tajwid bacaan surah al-Fatihah dalam kalangan pelajar semester dua seramai 28 orang daripada Jabatan Kejuruteraan Elektrik (DEE) Politeknik Kuala Terengganu. Surah al-Fatihah merupakan surah yang wajib dibaca di dalam solat dengan betul dan bertajwid. Ia juga merupakan rukun qauli dalam solat. Pengabaian hukum tajwid dalam surah al Fatihah menyebabkan solat menjadi kurang sempurna. Hasil pemerhatian awal mendapati bahawa keseluruhan pelajar tidak dapat melantunkan tajwid mad lazim kalimi musaqqal dengan betul pada perkataan waladdolin. Pelajar juga tidak dapat memenuhi tajwid mad aridh lissukun pada setiap ayat al Fatihah, manakala hukum tajwid yang lain seperti mad asli, mad lin, izhar halqi, dan izhar syafawi pelajar dapat membacanya dengan betul. Pendekatan kaedah kualitatif digunakan melalui borang pemerhatian senarai semak aspek tajwid. Pemerhatian bacaan pelajar di dalam kelas dijalankan sebanyak tiga kali iaitu bacaan sebelum dan selepas intervensi. Intervensi dijalankan dalam tempoh 3 bulan iaitu Program Tahsin al- Fatihah, dan Program Pemantapan Tajwid untuk memperbaiki tajwid pelajar. Hasil daripada intervensi ini menunjukkan peningkatan yang ketara dalam bacaan pelajar. Kajian ini mencadangkan agar program seumpama bimbingan bacaan al-Quran dijalankan secara berkala dan sistematik dalam institusi pengajian tinggi bagi memastikan kualiti bacaan al-Quran pelajar ditahap yang terbaik.

Kata kunci: Surah al-Fatihah, tajwid, pelajar politeknik, intervensi.

Tahap Kefahaman dan Pengamalan Elemen Maqasid Al- Syariah dalam Pengurusan Harta dalam Kalangan Pensyarah dan Kakitangan Politeknik Kota Bharu

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ABSTRAK

Kajian ini bertujuan untuk menilai tahap kefahaman dan pengamalan elemen Maqasid al- Syariah dalam pengurusan harta dalam kalangan pensyarah dan kakitangan politeknik. Maqasid al-Syariah. Elemen hifz al-mal (penjagaan harta), merupakan prinsip penting dalam memastikan harta diurus secara adil, terancang dan selari dengan kehendak syarak. Objektif kajian merangkumi pengukuran tahap kefahaman, penilaian pengamalan, serta mengenal pasti hubungan antara kedua-duanya. Kaedah kuantitatif digunakan melalui soal selidik terhadap 100 responden, dan data dianalisis secara deskriptif dan inferensi. Hasil kajian menunjukkan tahap kefahaman berada pada paras sederhana tinggi, manakala pengamalan pada tahap sederhana. Terdapat hubungan signifikan antara kefahaman dan pengamalan elemen Maqasid al-Syariah. Kesimpulannya, wujudnya kesedaran terhadap kepentingan pengurusan harta Islam, namun masih terdapat kekangan dari segi kefahaman dan pelaksanaan instrumen seperti wasiat, hibah, dan faraid. Kajian ini mencadangkan agar lebih banyak program kesedaran dan bimbingan ditawarkan kepada warga institusi agar prinsip Maqasid al-Syariah dapat diterapkan secara menyeluruh dalam aspek pengurusan harta.

Kata kunci: Maqasid al-Syariah, pengurusan harta, kefahaman, pengamalan, politeknik.

Investigating AI Tool Impact on Ethical Awareness and Academic's Dishonesty Among Students Technical and Vocational Education and Training (TVET).

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ABSTRACT

The rise of AI tools, such as ChatGPT, has led to concerns about academic dishonesty. Students may use these technologies to complete assignments without proper understanding, undermining the learning process. This study investigates the relationship between AI tool dependence, ethical awareness, student attitudes, and academic dishonesty among polytechnic students. It also explores the moderating effects of demographic factors. Survey data from college students were analysed using Statistical Package for the Social Sciences (SPSS) for a thorough examination of the complex interplay between the variables while considering the moderating influence of age, gender, type of institution, and technological proficiency. The study reveals that AI tool dependence is prevalent among Polytechnic students. While students generally hold positive attitudes toward academic integrity, there is variability in the intensity and nature of these attitudes. Moreover, ethical awareness appears limited, highlighting a potential gap between ethical beliefs and behavior. These findings are not explored in-depth in this study. Importantly, neither ethical awareness nor student attitudes significantly mediate the relationship between AI tool dependence and academic dishonesty. Demographic factors do not appear to significantly moderate these relationships.

Keywords: academic dishonesty, AI tool dependence, ethical awareness, student attitudes.

Pengecaman Entiti Nama Bagi Teks Al-Quran Terjemahan Bahasa Melayu Menggunakan Pendekatan Algoritma Deep Learning

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ABSTRAK

Setiap anutan dan agama masing-masing pasti mempunyai kitab sebagai rujukan dan panduan untuk para penganutnya. Al-Quran merupakan kitab suci bagi umat Islam di mana ianya merupakan mukjizat yang diturunkan kepada Nabi Muhammad S.A.W.; yang ditulis, dimashafkan dan diriwayatkan dengan mutawatir dan membacanya adalah ibadah. Al-Quran juga adalah kitab suci yang wajib dipelajari oleh seluruh umat islam di dunia ini. Perkembangan teknologi digital tentunya akan mempengaruhi disiplin ilmu, salah satunya adalah sains agama. Al-Quran merupakan teks klasik yang mempunyai ciri-ciri yang unik dan berbeza dari dokumen biasa di mana terdapat entiti yang pastinya berbeza dari teks biasa.. Pengecaman Entiti Nama telah digunakan secara meluas dan memainkan peranan penting dalam bidang yang berkaitan Pemprosesan Bahasa Tabii. Kajian ini bertujuan untuk mengenalpasti dan mengekstrak entiti nama menggunakan pendekatan algoritma deep learning bagi dokumen teks Al-Quran terjemahan Bahasa Melayu. Dataset yang digunakan adalah surah An-Anbiyaa, 122 ayat. Kajian ini melibatkan penyediaan data, pra-pemprosesan data, penganotasian entiti nama, melatih model PEN dan pengujian yang dirangkumkan dalam rekabentuk metodologi kajian. Hasil rumusan kajian menunjukkan bahawa objektif kajian ini telah berjaya dicapai dalam skop yang ditentukan apabila hasil kajian serta pengujian terhadap model PEN yang telah dilatih dalam domain Islam menunjukkan keputusan yang positif. Kekangan kajian dibentang bagi membolehkan para penyelidik menambahbaik kajian ini dari semasa ke semasa. Cadangan kajian bagi penyelidikan pada masa akan datang telah dihuraikan agar kajian ini menjadi lebih bermanfaat dan lebih diperluaskan bagi menjadi panduan kepada para penyelidik yang lain seterusnya umat Islam.

Katakunci: Al-Quran, deep learning, pengecaman entity nama dan pemprosesan bahasa tabii.

i-PdP : Pengurusan Pemantauan PdP Pensyarah Politeknik Malaysia

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ABSTRAK

Sistem i-PdP merupakan sistem pengurusan pemantauan Pengajaran dan Pembelajaran (PDP) pensyarah melalui platform dalam talian. Sistem ini bertujuan untuk meningkatkan proses pemantauan pengajaran dan pembelajaran pensyarah seterusnya memperbaiki keberkesanan pengajaran dan pembelajaran di institusi pendidikan tinggi. Sistem yang dibangunkan akan memantau prestasi pensyarah melalui pelbagai mekanisme penilaian, termasuk pengumpulan data interaksi pelajar dan pengawasan kualiti pengajaran oleh pensyarah pemantau. Sistem ini direka untuk memberikan pemantauan yang lebih sistematik dan tepat, serta menyediakan maklum balas yang membina untuk pensyarah dalam usaha memperbaiki kaedah pengajaran mereka. Proses pembangunan sistem melibatkan reka bentuk antaramuka yang mesra pengguna dan mudah diakses, integrasi teknologi untuk menganalisis data, penyediaan laporan berkala dan capaian yang cepat kepada pihak pengurusan institusi. Kaedah pembangunan yang digunakan adalah model pengembangan perisian interaktif, di mana penambahbaikan dilakukan berdasarkan maklum balas pengguna. Hasil daripada pembangunan ini diharapkan dapat membantu pentadbir politeknik dalam menguruskan kualiti pengajaran pensyarah secara lebih teratur dan efisien, seterusnya meningkatkan mutu pembelajaran pelajar.

Keywords: pemantauan PdP, pengurusan KPI, ICT-based System, teknologi web.

The Effectiveness of Using Artificial Intelligence (AI) in Virtual Simulation for Engineering Learning

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ABSTRACT

AI or artificial intelligence enables computers and machines to simulate human learning, comprehension, problem solving, decision making and autonomy. Ai also widely used in education as a toll to facilitate the learning. This study aimed to identify the level of effectiveness of the use of AI in virtual simulation for learning electrical engineering courses. As such, 67 students from Politeknik Kota Kinabalu were sampled. The research instrument used is a questionnaire using 5 Likert scales. The item reliability test was conducted using Cronbach's Alpha value, which showed a value of 0.974 which indicates an excellent level of consistency. The result shows that AI virtual simulation helps students understand basic concepts in electrical engineering. AI virtual simulation also helping students understand difficult topics in electrical engineering. These results showed that AI in virtual simulation help students in both basic concept and difficult topics in electrical engineering. This study suggests that the use of AI in virtual simulations should be continuously applied through all electrical engineering courses to create good and effective learning platform.

Keywords: AI, electrical engineering, virtual simulation

Effectiveness of Technology Innovation: Analyzing the Mytos Apps

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ABSTRACT

myTOS is an Android-based Teaching Aid Tool (ABM) innovation developed for the Theory of Structures (DCC40163) course using Andromo. This innovation was specifically designed to help students prepare for each learning session of the course and to assist them in better preparation for the final exam. This innovation also aims to address the significant difference in scores between Continuous Assessment (CA) and Final Examination (FE). The development of this innovation aligns with the advancement of technology in education, which requires more creative and innovative teaching techniques. This Android application is equipped with topic and subtopic breakdowns, comprehensive lecture notes for all topics, and example solution videos for each topic. This innovation has been used by students taking the Theory of Structures (DCC40163) course at Polytechnic Sultan Mizan Zainal Abidin (PSMZA). The use of this innovation has helped students to be more prepared for learning sessions. It has proven that an interesting Teaching Aid Tool can positively impact students' learning processes.

Keywords: DCC40163, Theory of Structures, Teaching Aid Tool, Android, Andromo.

Evaluating E-Book Effectiveness and The Impact on Student Engagement Among Technical and Vocational Educationa and Training (TVET) Students

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ABSTRACT

The replacement of print textbooks by e-books and other electronic educational materials is used widely in learning and education. This study explores how students perceive e-books versus paper textbooks. Specifically, the study focuses on the perceived effectiveness of e-books and the impact on student engagement. The respondents of the study are 91 students in the second semester, Diploma Polytechnic, that used e-books in the teaching and learning process. The results show a diverse impact of effectiveness of textbook and e-books performances on student engagement. The results showed that e-books have a strong positive relationship towards student engagement. These findings shed light on the current situation and provide a foundation for additional research to further our understanding about e-book effectiveness and its relationship to student engagement.

Keywords: e-books, digital disruption, online education, student engagement.

Kajian Keperluan Penubuhan Center of Technology (CoT) Pertanian Pintar di Politeknik Kota Bharu: Pemangkin Pembangunan Modal Insan Dan Sekuriti Makanan

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ABSTRAK

Kajian ini dijalankan bagi menilai keperluan penubuhan sebuah Center of Technology (CoT) dalam bidang pertanian pintar (smart farming) di Politeknik Kota Bharu. Tujuan utama kajian ini adalah untuk mengenal pasti peranan teknologi pintar dalam menyokong Agenda Keterjaminan Makanan Negara seperti yang digariskan dalam Dasar Agromakanan Negara 2021–2030 (DAN 2.0), serta menilai potensi CoT sebagai pusat latihan, penyelidikan dan inovasi pertanian mampan. Kajian ini menggunakan pendekatan kualitatif melalui analisis kandungan terhadap dokumen dasar, termasuk DAN 2.0, Perangkaan Agromakanan 2023, dan RMK-12. Selain itu, satu kajian kuantitatif turut dijalankan melalui soal selidik yang diedarkan kepada pelajar, pensyarah, petani, dan agensi luar. Hasil kajian menunjukkan wujudnya jurang yang signifikan dalam penyediaan latihan teknologi pertanian moden, serta keperluan mendesak terhadap pusat rujukan teknologi hijau dan automasi ladang. Majoriti responden menyatakan minat tinggi terhadap pembangunan CoT sebagai hab Pendidikan dan Latihan Teknikal dan Vokasional (TVET), penyelidikan, dan pemindahan teknologi. Implikasinya, penubuhan CoT dapat meningkatkan kapasiti tenaga kerja mahir, memperkukuh jaringan akademik-industri, serta menyumbang secara langsung kepada sekuriti makanan dan pembangunan ekonomi negara. Justeru, pelaksanaan CoT ini perlu disokong melalui perancangan strategik, kolaborasi agensi, dan pelaburan jangka panjang.

Kata kunci: pertanian pintar, center of technology, keterjaminan makanan.

Experimental on Timing Control of Astable Multivibrators Via RC Parameter Variation in Proteus

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ABSTRACT

Astable multivibrators play a crucial role in pulse generation, timing control, and waveform synthesis in electronic circuits. This study investigates the time control characteristics of an astable multivibrator using Proteus simulation. The research focuses on analyzing the impact of resistor-capacitor (RC) values on the oscillation frequency, duty cycle, and waveform stability. By varying RC components, the simulation provides insights into optimizing timing parameters for specific applications. The results demonstrate the correlation between component selection and output characteristics, ensuring precise time control in circuit design. Additionally, Proteus simulation proves to be an effective tool for evaluating and refining multivibrator circuits before practical implementation, reducing design errors and development costs. The findings contribute to the improvement of multivibrator-based systems in various electronic applications, including communication, signal processing, and embedded systems.

Keywords: Astable multivibrator, Proteus simulation, timing control, oscillator circuit, RC components, waveform analysis.

Analisis Tindak Balas Frekuensi Resonans: Kajian Terhadap Litar Pasif Berasaskan Simulasi Pspice Dan Pengukuran Makmal

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ABSTRAK

Kajian ini menumpukan kepada penerokaan fenomena resonans dalam litar RLC dengan menggunakan perisian simulasi PSpice bagi menganalisis tindak balas frekuensi dalam sistem elektrik pasif. Kajian ini didorong oleh isu kurangnya pemahaman mendalam dalam kalangan pelajar dan penyelidik terhadap hubungan dinamik antara komponen pasif dan parameter resonans seperti frekuensi semula jadi, arus puncak, dan faktor kualiti (Q). Keterbatasan dalam menjalankan eksperimen sebenar akibat kekangan masa, kos dan kebarangkalian ralat pengukuran turut mengukuhkan keperluan kepada kaedah simulasi yang lebih efisien dan selamat.Dalam konteks kejuruteraan elektronik, litar resonans memainkan peranan utama dalam aplikasi seperti penapisan isyarat, pemindahan tenaga yang cekap, serta sistem talaan dalam rangkaian komunikasi. Justeru, kajian ini dijalankan bagi mengenal pasti dan menilai tindak balas arus, voltan serta Q-factor dalam litar RLC siri melalui pendekatan simulasi frekuensi. Model litar direka bentuk dalam perisian PSpice dan diuji dalam julat frekuensi yang sesuai untuk memperoleh profil prestasi litar secara menyeluruh.Kajian ini juga mengemukakan persoalan tentang kaedah terbaik untuk menilai keberkesanan litar dari sudut kejuruteraan melalui pendekatan simulasi, antaranya termasuk analisis terhadap ketajaman puncak resonans, pencapaian arus maksimum, dan pengiraan nilai Q. Hasil simulasi menunjukkan bahawa litar RLC siri mencapai frekuensi resonans pada 73.41 kHz dengan arus maksimum sebanyak 24.965 mA. Nilai faktor Q pula ialah 1.08 dan lebar jalur (BW) berdasarkan graf yang diplot ialah 67.73 kHz. Perbandingan dengan hasil pengujian litar di makmal menunjukkan dapatan data yang hampir menyamai nilai simulasi, sekali gus mengesahkan ketepatan model yang digunakan. Penilaian terhadap nilai Q turut memberikan petunjuk terhadap keberkesanan penapisan dan kecekapan penghantaran kuasa dalam litar tersebut.Kesimpulannya, kajian ini menyerlahkan peranan penting simulasi berasaskan PSpice sebagai medium pedagogi dan penyelidikan dalam kejuruteraan elektrik, yang berupaya menjelaskan konsep resonans secara menyeluruh, meningkatkan keberkesanan proses pembelajaran serta menyokong reka bentuk litar sebelum pelaksanaan eksperimen makmal sebenar.

Kata kunci: litar RLC, Perisian Pspice, Resonans

AI Reality in the Classroom: Analyzing Engineering Students' Struggles with Emerging Technology

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ABSTRACT

The use of artificial intelligence (AI) technology is becoming increasingly important in the field of engineering and modern industries. However, students may face limitations and challenges in applying this technology in their learning. These challenges include difficulty in understanding AI concepts, lack of technical support, absence of practical training, high equipment costs, and insufficient reference materials. If these challenges are not identified and addressed, they may affect students' ability to compete in a job market that is increasingly reliant on AI technology. Therefore, the objective of this study is to assess the level of challenges faced in the use of AI technology in final year projects among Diploma in Electrical Engineering students. The study sample consisted of students enrolled in the Final Year Project course from the Diploma Kejuruteraan Elektrik, Diploma Kejuruteraan Elektrik & Elektronik, and Diploma Kejuruteraan Elektronik (Komunikasi) programme at Politeknik Kota Bharu. A total of 65 students participated in this study by completing an online questionnaire. SPSS is used for data analysis in this study, employing statistical methods such as descriptive statistics, t-tests (Two-Sample Assuming Unequal Variances) and ANOVA Single Factor to compare means across 2 and 3 independents groups. Based on data analysis, there is no statistically significant evidence to conclude that there is a difference in the average scores among different gender and different programmes. Although the findings indicate that the overall average mean scores for challenges are relatively low (2.19 and 2.43), several key issues remain. These include students' difficulty in understanding AI concepts, limited technical support from lecturers, the lack of workshops or training opportunities, and the high cost of equipment. Therefore, it is still essential to strengthen support systems to help students gain a better mastery of AI technology.

Keywords: Artificial Intelligence (AI), learning challenges, final year project.

Remote Monitoring and Control for Home Electrical Systems Using ESP32

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ABSTRACT

The rapid advancement of the Internet of Things (IoT) has enabled innovative solutions for remote control and automation of electrical appliances. This study explores the implementation of an IoT-based relay control system utilizing the ESP32 microcontroller and the Blynk mobile application. The proposed system integrates relay module to manage power outlets and lighting circuits, allowing users to remotely control and monitor their devices via a user-friendly mobile interface. The research focuses on system design, software development, and performance evaluation to assess reliability, response time, and energy efficiency. The ESP32, with its built-in Wi-Fi capability, establishes seamless communication with the Blynk cloud platform, enabling real-time device control, scheduling, and automation. The use of relays ensures safe switching of high-voltage electrical loads while isolating the microcontroller from potential damage. Through hardware implementation and software integration, this study evaluates the effectiveness of the system in providing a cost-effective and efficient solution for home applications. Experimental testing and analysis are conducted to measure system performance in terms of response time, relay switching accuracy, and user experience. Findings from this research highlight the advantages of IoT-based automation in improving energy management and user convenience. The results contribute to the growing field of IoT automation by demonstrating the feasibility of integrating ESP32 and Blynk for real-world applications.

Keywords: monitoring and control, ESP32 microcontroller.

Remote Monitoring and Control for Home Electrical Systems Using ESP32

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ABSTRACT

The rapid advancement of the Internet of Things (IoT) has enabled innovative solutions for remote control and automation of electrical appliances. This study explores the implementation of an IoT-based relay control system utilizing the ESP32 microcontroller and the Blynk mobile application. The proposed system integrates relay module to manage power outlets and lighting circuits, allowing users to remotely control and monitor their devices via a user-friendly mobile interface. The research focuses on system design, software development, and performance evaluation to assess reliability, response time, and energy efficiency. The ESP32, with its built-in Wi-Fi capability, establishes seamless communication with the Blynk cloud platform, enabling real-time device control, scheduling, and automation. The use of relays ensures safe switching of high-voltage electrical loads while isolating the microcontroller from potential damage. Through hardware implementation and software integration, this study evaluates the effectiveness of the system in providing a cost-effective and efficient solution for home applications. Experimental testing and analysis are conducted to measure system performance in terms of response time, relay switching accuracy, and user experience. Findings from this research highlight the advantages of IoT-based automation in improving energy management and user convenience. The results contribute to the growing field of IoT automation by demonstrating the feasibility of integrating ESP32 and Blynk for real-world applications.

Keywords: monitoring and control, ESP32 microcontroller.

Penggunaan Kecerdasan Buatan (AI) Dalam Pembelajaran Kejuruteraan Elektrik

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ABSTRAK

Kecerdasan Buatan (AI) semakin berkembang dan memberi impak besar dalam dunia pendidikan, terutama untuk para pelajar. Ia dapat membantu pelajar dengan pembelajaran secara peribadi, penilaian automatik, dan bantuan 24/7 melalui aplikasi atau chatbot yang responsif. Kecerdasan Buatan (AI) juga memudahkan pencarian sumber pembelajaran, pengurusan masa, dan memberi pengalaman pembelajaran interaktif seperti simulasi atau permainan. Justeru kajian ini dijalankan untuk melihat pendedahan teknologi AI pada pembelajaran pelajar dan juga untuk mengenalpasti kekerapan penggunaan AI serta kesannya dalam pembelajaran terutama dikalangan pelajar Jabatan Kejuruteraan Elektrik di Politeknik Kota Bharu. Sampel kajian adalah seramai 101 pelajar dari semua semester termasuk pelajar yang sedang menjalani latihan industri. Kajian ini menggunakan instrumen soal selidik dan data dianalisis dengan menggunakan kaedah deskriptif, analisis regresi linear dan ujian-t. Hasil kajian mendapati bahawa aplikasi AI memberi impak positif yang signifikan dalam meningkatkan kefahaman dan kecekapan pelajar dalam bidang kejuruteraan elektrik, menjadikannya alat yang berkesan dalam proses pembelajaran. Implikasinya, kajian ini dapat membantu memberi panduan kepada pendidik dan pembuat dasar dalam merancang dan mengimplementasikan AI sebagai alat sokongan pendidikan yang berkesan serta menjadikan proses pengajaran lebih efektif, kreatif dan berkesan.

Kata kunci: kesan, kekerapan, kecerdasan buatan, AI.

Impact of a Project-Based Learning Competition on Engineering Students' Interest and Skills

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ABSTRACT

Engaging first-semester engineering students in foundational science courses and bridging the theory-practice gap remains a significant challenge in polytechnic education. This paper evaluates the impact of a Project-Based Learning (PBL), Solariz Idea Competition (SIC), an initiative implemented within the Engineering Science course at Politeknik Kota Bharu (PKB), Malaysia. The competition aimed to enhance student interest, motivation, practical skills, and understanding of concepts related to Work, Energy, and Power. First semester students from Mechanical, Civil, and Electrical Engineering departments worked collaboratively in groups to design and build a mini-project, produce a presentation video, and participate in a final exhibition and judging session. A post-event survey was administered to assess student perceptions. The results indicated significantly positive student feedback, demonstrating increased interest and motivation towards Engineering Science. Qualitative reports further highlighted improvements in teamwork, confidence, and practical understanding. This study concludes that the SIC model represents an effective application of PBL for enhancing student engagement and skill development in the early stages of engineering education within the Malaysian polytechnic context, supporting its continued implementation.

Keywords: Project-Based Learning (PBL), engineering science, engineering education, TVET.

Application and Impact Of Artificial Intelligence in Diploma Electrical Engineering at Politeknik Kota Baharu

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ABSTRACT

Artificial Intelligence (AI) is a transformative technology in engineering, especially electrical engineering. This study investigated the awareness, utilisation, and effects of AI among Electrical Engineering diploma students at Politeknik Kota Bharu, aiming to understand how AI can improve teaching, project quality, and student readiness for the evolving field. A comprehensive questionnaire gathered insights on students' exposure to AI concepts, tools, and applications, analysing challenges and benefits in circuit design, project development, and power systems. Findings indicate that despite strong enthusiasm for AI, students face significant challenges, including limited practical experience and insufficient programming knowledge. The study highlights the importance of integrating AI through specialised workshops and hands-on training to enhance educational experiences, improve project outcomes, and better prepare students for the demands of the engineering sector.

Keywords: artificial intelligence, electrical engineering, diploma programme, AI integration, student awareness.

Fundamental Programming: A Structured C Language Approach for Engineering and TVET Learners

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ABSTRACT

This textbook aims to introduce the fundamentals of computer programming with an emphasis on structured programming using the C language. The objective of the study is to provide a comprehensive educational resource that supports the development of programming knowledge among engineering and computing students. The methodology employed includes the use of case-based examples, input-process-output (IPO) analysis, and a variety of lab exercises that guide students through procedural problem-solving. The book is structured into key chapters covering algorithm development, control structures, functions, arrays, and flowchart and pseudocode representation. The result of this educational approach demonstrates increased student engagement and improved proficiency in writing, debugging, and optimizing C programs. The implication of this work is the promotion of computational thinking and structured problem-solving skills essential for technical and vocational education and training (TVET) contexts.

Keywords: programming fundamentals, C language, structured programming, TVET, algorithm.

Decoding the Pedagogical Efficacy of Peer-Mediated Learning Ecosystems: An Analysis of Cognitive Gains in Quantitative Disciplines

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ABSTRACT

This study examines the pedagogical effectiveness of peer-mediated learning ecosystems in enhancing cognitive gains within quantitative disciplines, such as mathematics and engineering. The aim is to explore how peer-mediated learning interventions influence academic performance and cognitive development among students enrolled in rigorous quantitative courses. Using multivariate analysis, the study assesses the relationship between participation in peer-mediated learning and students' cognitive growth, with a particular focus on their academic performance before and after the intervention. The objective is to evaluate whether peer-mediated learning ecosystems lead to measurable improvements in cognitive abilities, as evidenced by performance data from engineering mathematics courses. The methodology involves the use of quantitative data derived from student performance records, emphasizing the correlation between peer-assisted learning activities and academic achievement. The results show a significant positive correlation between involvement in peer-mediated learning and cognitive improvements, with students demonstrating enhanced problem-solving skills and increased academic performance in their quantitative subjects. These findings suggest that peer mentoring interventions are highly effective in fostering cognitive gains, improving academic outcomes, and promoting a deeper understanding of complex topics in quantitative disciplines. In conclusion, this study underscores the pedagogical value of peer-mediated learning ecosystems in higher education, particularly within quantitative fields. The implications of this research suggest that peer-assisted learning programs can be a critical tool for boosting student engagement, promoting collaborative problem-solving, and enhancing academic achievement. The findings contribute to the broader discourse on innovative teaching methods and provide valuable insights for developing future educational strategies in STEM education.

Keywords: peer-mediated, quantitative, collaborative problem-solving.

Pemerkasaan Kecerdasan Pelbagai Dalam Pengajaran Elektrik Bagi Pelajar TVET: Pendekatan Berdasarkan Sorotan Literatur

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ABSTRAK

Kajian ini merupakan satu sorotan literatur naratif yang bertujuan untuk meneroka bagaimana teori Kecerdasan Pelbagai (Multiple Intelligences, MI) dapat diaplikasikan dalam pengajaran bidang elektrik di institusi Pendidikan dan Latihan Teknikal dan Vokasional (TVET). Pendekatan ini tidak melibatkan sebarang kajian lapangan atau analisis statistik, sebaliknya memberi tumpuan kepada analisis kritikal terhadap kajian-kajian terdahulu yang relevan. Bahan rujukan utama terdiri daripada jurnal-jurnal akademik yang diindeks serta laporan-laporan institusi pendidikan berkaitan MI, TVET, keusahawanan dan pedagogi elektrik. Dapatan utama menunjukkan bahawa pengajaran elektrik yang mengintegrasikan MI seperti kecerdasan logik-matematik, kinestetik, visual-spatial dan interpersonal dapat meningkatkan motivasi, penglibatan aktif, dan pemahaman konsep dalam kalangan pelajar TVET. Kaedah seperti pembelajaran berasaskan projek (Project-Based Learning) dan pembelajaran berasaskan pengalaman (Experiential Learning) dilihat sebagai saluran utama untuk menyokong pelaksanaan MI dalam konteks pendidikan elektrik. Selain itu, dapatan turut menunjukkan potensi besar pelajar untuk menghasilkan inovasi produk elektrik yang boleh dikomersialkan apabila aspek keusahawanan turut disepadukan dalam pengajaran. Implikasi kajian ini menunjukkan keperluan mendesak untuk pendidik TVET, terutamanya dalam bidang elektrik, agar mengadaptasi pendekatan yang lebih pelbagai dan berpusatkan pelajar. Selain itu, pembinaan modul pengajaran yang menyokong kecerdasan pelbagai serta latihan kepada tenaga pengajar perlu diberi perhatian oleh pihak institusi dan pembuat dasar. Kajian ini juga mencadangkan agar lebih banyak kajian empirikal dilakukan untuk mengukur keberkesanan sebenar pendekatan MI dalam konteks TVET elektrik di Malaysia.

Kata kunci: kecerdasan pelbagai, TVET, pendidikan elektrik, pembelajaran berasaskan projek, keusahawanan, pedagogi, sorotan literatur

Merekabentuk dan Menghasilkan Meja Kimpalan Arka di Bengkel Kimpalan Jabatan Kejuruteraan Mekanikal Politeknik Port Dickson

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ABSTRAK

Kimpalan arka adalah salah satu proses penyambungan logam yang penting merentasi pelbagai industri pembuatan di Malaysia. Kepentingan membangunkan sektor industri pembuatan menerusi keupayaan berkemahiran tinggi jurukimpal yang terlatih yang perlu dilahirkan dari institusi kemahiran tinggi khususnya Jabatan Kejuruteraan Mekanikal Politeknik Port Dickson. Ketika ini jurukimpal memerlukan latihan tuntas serta pemilihan teknik, keselamatan, peralatan tambahan supaya tahap kimpalan sempurna dan berkualiti. Teknik kimpalan menjadi satu faktor meningkatkan produktiviti sejajar matlamat kemampanan dari aspek sosial, manusia dan kesihatan jurukimpal. Objektif utama penyelidikan ini adalah untuk menghasilkan rekabentuk meja kimpalan arka untuk kegunaan pelajar dan pensyarah di bengkel kimpalan arka Jabatan Kejuruteraan Mekanikal. Kaedah pembangunan rekabentuk meja kimpalan arka dibina menggunakan metodologi pembangunan model ADDIE. Pendekatan model ADDIE adalah dengan melaksanakan analisis, rekabentuk, pembangunan, pelaksanaan, penilaian yang mewakili fasa penting untuk merekabentuk, merancang dan menghasilkan meja kimpalan arka dengan mengambil faktor rekabentuk produk dan faktor manusia. Hasil penilaian rekabentuk meja kimpalan arka telah melalui kaedah PDS (spesifikasi rekabentuk poduk) dalam konteks pemilihan rekabentuk Pugh iaitu proses rekabentuk berstruktur merujuk kepada keperluan, kekangan dan kriteria yang dipenuhi oleh konsep 1. Rekabentuk meja kimpalan arka menunjukkan hasil bermanfaat yang signifikan bagi pengimpal dan maklumbalas pakar dengan tujuan meningkatkan ketepatan dan kestabilan semasa proses kimpalan, sekali gus memperbaiki kualiti akhir produk yang dikimpal. Secara keseluruhan penyelidikan ini, boleh dirumuskan bahawa penyelidikan ini memfokuskan kepada strategi pengurangan kos dan kesan sampingan untuk meja kimpalan arka yang sedia ada dibengkel kimpalan arka bagi menjadikan kaedah ini lebih ekonomik kepada pembangunan kemahiran pelajar.

Kata kunci: rekabentuk, ergonomik, faktor manusia, addie model, spesifikasi produk, Pugh Design Selection

Design and Experimental Verification of Search and Rescue Remotely Operated Vehicles

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ABSTRACT

Malaysia experiences annual monsoon seasons that often result in severe flooding, particularly along the east coast and in low-lying inland regions. These floods pose significant threats to human life, damage infrastructure, and disrupt rescue efforts due to strong currents, limited visibility, and inaccessible terrain. Traditional search and rescue operations during such disasters are frequently hindered by environmental hazards and a lack of appropriate technological support. In response to these challenges, this project presents the development of an innovative and sustainable Remotely Operated Vehicle (ROV) system designed to support underwater search and rescue operations during flood emergencies. The ROV integrates smart technologies with eco-friendly materials to provide a cost-effective yet efficient solution. The primary objective is to create a robust underwater system capable of detecting, identifying, and retrieving critical objects or assisting in the recovery of victims in flooded areas. The system is constructed using recycled aluminum and medium- to heavy-duty PVC pipes, offering structural durability, adequate buoyancy, and reduced production costs. Despite challenges such as the high price of advanced sensors, the project implements creative solutions, including a modified water pump as a thruster to improve propulsion and a multifunctional manipulator assembled from repurposed robotic components and 3D-printed recycled polymer parts for effective underwater gripping. Equipped with artificial intelligence (AI) and image processing capabilities, the ROV can operate autonomously during search and rescue missions, enabling real-time object detection and tracking. This initiative also supports Sustainable Development Goal (SDG) 9, which promotes resilient infrastructure, inclusive and sustainable industrialization, and innovation. The use of recycled materials not only reduces waste but also transforms discarded resources into valuable assets. The integration of smart technologies contributes to advancements in marine engineering and life-saving operations. Tests conducted in both pool and river environments have demonstrated the ROV's reliability and stability, positioning it as a promising low-cost solution for real-world flood rescue operations in Malaysia and beyond.

Keywords: remotely operated vehicles, search and rescue, underwater object detection and tracking.

Kesesuaian Penggunaan Insulated Concrete Form (ICF) Dalam Industri Pembinaan Di Malaysia

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ABSTRAK

Bangunan teknologi hijau di negara membangun seperti malaysia di anggap masih baru. Namun usaha ke arah mengembangkan teknologi itu secara menyeluruh sedang giat dijalankan untuk memastikan penyediaannya lebih bermutu, murah dan mampu dimiliki pelbagai golongan masyarakat. Fenomena perubahan cuaca dunia yang turut memberi kesan kepada alam seperti kejadian banjir, taufan, kecairan ais di kutub utara dan selatan, kenaikan paras dan suhu laut serta kemusnahan flora dan fauna menjadikan agenda menyerapkan inovasi pembangunan teknologi hijau dalam setiap aspek kehidupan amat dituntut. Justeru, antara kaedah mengaplikasikan ciri teknologi hijau itu boleh diserapkan dalam pembinaan bangunan bagi menjadikan suasana sesebuah premis yang dihuni lebih mesra alam, menjimatkan tenaga dan kos pembinaan. Kesesuaian penggunaan *Insulated Concrete Form (ICF)* dalam industri pembinaan di Malaysia merupakan salah satu kajian tentang bahan yang mengaplikasikan teknologi hijau dalam pembinaannya. Objektif kajian ini adalah untuk mengenalpasti ciri-ciri teknologi hijau dalam ICF, mengenalpasti kesesuaian ICF dalam pembinaan bangunan serta mengkaji kos per unit item bagi bahan ini. Bagi memastikan objektif ini tercapai maka skop kajian telah dikenalpasti iaitu melalui responden iaitu kontraktor ICF sendiri. Bagi memastikan kajian ini dilakukan secara teratur, metodologi kajian telah dikenalpasti bermula daripada pemilihan tajuk sehinggalah pengumpulan data secara temubual berstruktur dan kajian literatur dan seterusnya sehingga kajian lengkap sepenuhnya. Melalui temubual berstruktur, soalan dirangka dan maklumat yang diperlukan dianalisis dalam bentuk yang sesuai. Kemuncaknya, penyelidikan ini mencadangkan teknologi baru yang boleh digunakan oleh pihak yang terlibat dalam aktiviti pembinaan bagi mengurangkan kesan rumah hijau.

Kata kunci: bangunan teknologi hijau, '*insulated concrete form*', mesra alam dan jimat tenaga.

Mechanical and Durability Performance of Windscreen Glass Waste Powder (WGWP) on Cement Mortar

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ABSTRACT

Cement is produced and manufactured on a large scale from the silicate industry and used mostly in building homes, industrial buildings and other structures. Cements are produced from raw naturally occurring materials and the production involved both mining and manufacturing components, and it is a major source of greenhouse gas emission. For sustainability, and to reduce the greenhouse gas emission cause by cement production, therefore it is highly time to investigate the other possibility of replacing this cementitious material. This paper highlighted the possibility of using windscreen glass waste powder (WGWP) as cement replacement for sustainability in making mortar. The strength and durability tests will conduct to validate the possibility of it uses. The mortar prepared by incorporating several compositions of WGWP (5%, 10%, 15% and 20% by weight of cement) and cement to sand (C:S) ratio of 1:3 was employed. Fix water to cement (w/c) ratio of 0.5 was used for this study. The samples were cured water and tested of compressive strength and water absorption of mortar cubes were carried out at 7, 28, 60, 90 and 120 days. Studies conducted have shown that (WGWP) has the pozzolanic properties, achieved the target strength and improved its water absorption. Thus, not only give technical advantage to the resulting mortar but it also reduces cement consumption and on top of that the conservation of resources.

Keywords: cement replacement material, windscreen glass waste powder, pozzolanic, compressive strength, durability.

Akuaponik Dengan Bell Siphon Dan IOT

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ABSTRAK

Akuaponik merupakan teknologi pertanian inovatif yang menggabungkan dua sistempengeluaran makanan secara bersepadu, iaitu akuakultur dan hidroponik. Dalamsistemini, air dari tangki ternakan ikan yang mengandungi sisa metabolik digunakan sebagai sumbernutrien untuk tanaman, manakala akar tanaman berperanan sebagai penapis semula jadi yangmembantu membersihkan air sebelum ia dikembalikan semula ke dalamtangki ikan. Kaedahini bukan sahaja mengitar semula air secara efisien tetapi juga mengurangkan keperluanpenggunaan baja sintetik dalam pertanian. Dalam kajian ini, sistem akuaponik telahdirekabentuk dan dibangunkan menggunakan teknik pasang surut (Bell Siphon) yang berfungsi untuk mengawal aliran air secara automatik dalam kitaran yang berulang. Tambahanpula, sistem ini telah ditingkatkan dengan integrasi teknologi Internet of Things (IoT) bagi mengawal dan memantau paras air secara masa nyata. Sensor tahap air dan kualiti air telahdipasang untuk memastikan parameter seperti ketinggian air, pH, dan suhu berada dalamjulat optimum. Data daripada sensor dihantar ke platform IoT yang membolehkan penggunamemantau dan mengawal sistem dari jauh menggunakan aplikasi mudah alih. Percubaantelahdijalankan dengan memelihara ikan tilapia (Oreochromis niloticus) bersama tanamanyangdipilih berdasarkan kesesuaian dengan sistem ini. Penilaian terhadap keberkesanansistemdibuat berdasarkan kadar pertumbuhan ikan, perkembangan tanaman, kualiti air, sertakestabilan sistem dalam menyokong kedua-dua komponen biologi ini. Di samping itu, jumlahkos untuk menghasilkan unit sistem akuaponik berskala kecil ini telah dikira bagi menilai aspek kecekapan kos dan daya maju teknologi ini untuk aplikasi domestik atau komersial berskala kecil. Hasil kajian menunjukkan bahawa sistem ini mampu berfungsi denganbaikdalam menyediakan persekitaran yang sesuai bagi pertumbuhan ikan dan tanaman, dengankelebihan tambahan kawalan automatik yang meningkatkan kecekapan operasi danmengurangkan intervensi manual. Walau bagaimanapun, terdapat beberapa cabaranteknikal yang dikenal pasti, termasuk kestabilan sambungan IoT dan pemantauan data yang berterusan. Akuaponik berasaskan IoT menawarkan potensi sebagai alternatif mampan kepada sistempertanian konvensional, terutamanya di kawasan yang menghadapi masalah kekurangantanahpertanian dan sumber air. Selain itu, sistem ini berpotensi untuk diterapkan dalamskalalebihbesar dengan pengoptimuman reka bentuk dan pemantauan yang lebih sistematik. Kajianini diharapkan dapat memberikan panduan asas kepada individu atau pihak yang berminat dalammembangunkan sistem akuaponik pintar bagi kegunaan sendiri atau sebagai sumberpendapatan.

Kata kunci: akuaponik, kaedah pasang surut, IoT, kitaran air, hidroponik

Analisa Ketepatan Pemotongan Menggunakan Mesin CNC Router Berdasarkan Ketebalan Bahan Kerja, Kelajuan Spindle dan Bentuk Pemotongan

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ABSTRAK

Penggunaan mesin CNC Router sering mendapat tempat di kalangan penggiat seni kreatif. Penggunaan mesin ini dapat mempercepatkan proses penghasilan sesebuah produk. Namun, kajian berkenaan ketepatan sesebuah produk yang dihasilkan menggunakan mesin CNC Router kurang dititikberatkan oleh penggiat seni kreatif. Kajian ini bertujuan untuk menganalisa ketepatan sesebuah produk yang dihasilkan menggunakan mesin CNC Router. Mesin CNC Roter berukuran 8 kaki panjang dan 4 kaki lebar telah digunakan untuk mengkaji hubungan antara kelajuan spindle, ketebalan bahan kerja dan pemotongan segiempat sama dan bulat dengan ketepatan pemotongan. Hasil kajian menunjukkan perbezaan ukuran yang tinggi pada paksi Y dan perbezaan yang rendah pada paksi X. Bagi pemotongan bentuk bulat pula, hasil kajain menujukkan bacaan yang hampir sekata.

Keywords: CNC Router, kelajuan spindle, ketebalan bahan kerja, bentuk pemotongan, ukuran.

ROBORECYCLE: Revolusi Pengurusan Bahan Kitar Semula Berasaskan AI

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ABSTRAK

Teknologi Kecerdasan Buatan (AI) telah merevolusikan pelbagai industri dengan membolehkan sistem meniru kebijaksanaan manusia dalam membuat keputusan dan pembelajaran. Dalam konteks pengurusan sisa, AI berpotensi untuk mengautomasikan proses pengasingan bahan buangan, sekaligus meningkatkan kecekapan kitar semula dan mengurangkan kesan negatif terhadap alam sekitar. Kertas kerja ini membentangkan ROBORECYCLE, iaitu robot kitar semula berasaskan AI yang direka untuk mengenal pasti dan mengasingkan bahan kitar semula seperti plastik, kertas dan tin aluminium secara automatik. Sistem ini menggabungkan sensor pengesan garisan, sensor ultrasonik dan kamera web yang disambungkan kepada mini komputer NUC yang menjalankan model pembelajaran mesin menggunakan platform Google Teachable Machine. Setelah objek dikesan, sistem mengklasifikasikan imej menggunakan pengaturcaraan Python dan mengaktifkan motor servo untuk membuka penutup tong sampah yang sesuai. Data klasifikasi disimpan dalam pangkalan data MySQL dan dipaparkan dalam bentuk statistik melalui papan pemuka laman web. Hasil kajian menunjukkan bahawa ROBORECYCLE dapat meningkatkan ketepatan pengasingan, mengurangkan kesilapan manusia dan mempertingkatkan tahap automasi dalam proses kitar semula. Inovasi ini berpotensi menyumbang ke arah pengurusan sisa yang lebih lestari serta meningkatkan kesedaran masyarakat terhadap amalan kitar semula yang betul. Kata kunci: Kecerdasan Buatan (AI), Kitar Semula, Robotik, Sistem Python, MySQL Teknologi Kecerdasan Buatan (AI) telah merevolusikan pelbagai industri dengan membolehkan sistem meniru kebijaksanaan manusia dalam membuat keputusan dan pembelajaran. Dalam konteks pengurusan sisa, AI berpotensi untuk mengautomasikan proses pengasingan bahan buangan, sekaligus meningkatkan kecekapan kitar semula dan mengurangkan kesan negatif terhadap alam sekitar. Kertas kerja ini membentangkan ROBORECYCLE, iaitu robot kitar semula berasaskan AI yang direka untuk mengenal pasti dan mengasingkan bahan kitar semula seperti plastik, kertas dan tin aluminium secara automatik. Sistem ini menggabungkan sensor pengesan garisan, sensor ultrasonik dan kamera web yang disambungkan kepada mini komputer NUC yang menjalankan model pembelajaran mesin menggunakan platform Google Teachable Machine. Setelah objek dikesan, sistem mengklasifikasikan imej menggunakan pengaturcaraan Python dan mengaktifkan motor servo untuk membuka penutup tong sampah yang sesuai. Data klasifikasi disimpan dalam pangkalan data MySQL dan dipaparkan dalam bentuk statistik melalui papan pemuka laman web. Hasil kajian menunjukkan bahawa ROBORECYCLE dapat meningkatkan ketepatan pengasingan, mengurangkan kesilapan manusia dan mempertingkatkan tahap automasi dalam proses kitar semula. Inovasi ini berpotensi menyumbang ke arah pengurusan sisa yang lebih lestari serta meningkatkan kesedaran masyarakat terhadap amalan kitar semula yang betul.

Kata kunci: kecerdasan buatan (AI), kitar semula, robotik, Sistem Python, MySQL

Analisis Keberkesanan Penggunaan Bahan Kitar Semula Dalam Projek Pembinaan Jalan Raya

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ABSTRAK

Peningkatan kos bahan mentah dan tekanan terhadap alam sekitar akibat aktiviti pembinaan telah mendorong kepada pencarian alternatif bahan binaan yang lebih lestari dan efisien. Salah satu pendekatan yang semakin mendapat perhatian ialah penggunaan bahan kitar semula dalam projek pembinaan jalan raya. Kajian ini dijalankan bagi menilai keberkesanan penggunaan bahan kitar semula dalam sektor ini, dengan memberi tumpuan kepada tiga aspek utama iaitu kos, ketahanan struktur, dan kelestarian alam sekitar. Kajian ini menggunakan kaedah kualitatif melalui analisis kandungan terhadap 11 artikel jurnal, tesis, dan laporan teknikal yang diterbitkan antara tahun 2020 hingga 2024. Pemilihan sumber dibuat berdasarkan kaitan langsung dengan penggunaan bahan seperti sisa konkrit, abu terbang, dan getah terpakai dalam pembinaan jalan raya di Malaysia dan luar negara. Dapatan kajian menunjukkan bahawa penggunaan sisa konkrit mampu mengurangkan kos pembinaan sehingga 20%, manakala getah terpakai meningkatkan ketahanan jalan terhadap trafik berat sebanyak 15%. Di samping itu, penggunaan abu terbang sebagai bahan tambahan dalam campuran asfalt dapat mengurangkan pelepasan karbon sebanyak 30%. Hasil kajian juga menunjukkan bahawa sebanyak 80% responden daripada kalangan industri menyokong penggunaan bahan binaan kitar semula. Penemuan ini membuktikan bahawa bahan kitar semula bukan sahaja dapat meningkatkan kecekapan kos dan prestasi teknikal, malah menyumbang kepada kelestarian alam sekitar. Implikasi kajian ini penting dalam membantu industri pembinaan, pembuat dasar, dan penyelidik untuk mengadaptasi strategi pembinaan mampan bagi pembangunan infrastruktur masa depan.

Kata Kunci: bahan kitar semula, pembinaan jalan raya, keberkesanan kos, ketahanan struktur, kelestarian.

Redesigning Spring Absorber Tools: A Study on Improving Safety, Efficiency, and Ergonomics

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ABSTRACT

The spring absorber, a critical component of a vehicle's suspension system, plays a key role in enhancing ride comfort, stability, and safety by damping vibrations and impacts from the road. Despite its significance, the process of installing and removing spring absorbers remains challenging, often involving traditional tools that are time-consuming and hazardous. This study aims to redesign the tool used for spring absorber maintenance to improve safety, efficiency, and ergonomics. The research began with a comprehensive literature review to identify limitations in existing tools, followed by defining design requirements that address safety features, ergonomic considerations, and efficiency improvements. A prototype of the redesigned tool was developed and rigorously tested. The results indicated that the new tool reduced maintenance time by approximately 30% and alleviated user fatigue through its ergonomic design. Safety features, such as automatic locking mechanisms and pressure release valves, were effective in preventing accidents. User feedback was overwhelmingly positive, highlighting improvements in comfort, safety, and ease of use compared to traditional tools. The study recommends further refinements, including the integration of smart technology and additional ergonomic adjustments, to enhance functionality and user experience. Overall, the redesigned tool represents a significant advancement in automotive maintenance technology, setting a new standard for future developments in this field.

Keywords: word, lowercase except name, not more than five keywords.

Assessing the Readiness and Challenges of Implementing Building Information Modelling (BIM) Among Contractors in Kelantan

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ABSTRACT

Building Information Modelling (BIM) is a digital approach that is growing in the global construction industry, including in Malaysia. This study aims to explore the level of awareness, understanding and challenges of implementing BIM among G6 and G7 grade contractors in Kelantan. A qualitative approach was used through semi-structured interviews involving eight (8) experienced respondents in the local construction industry. Thematic analysis was used after data was obtained from the interviews conducted to identify themes that emerged from the research questions. The study found that the level of awareness of BIM in construction projects is high. However, the understanding of the importance and benefits of BIM in Kelantan is at a low level. The study also found that among the challenges faced by the construction industry in Kelantan in implementing BIM include high implementation costs, lack of local expertise, negative perceptions of new technologies, and market demand constraints. In addition, the lack of more comprehensive infrastructure and policies was also identified as a major challenge.

Keywords: Building Information Modelling (BIM), contractor awareness, Kelantan construction industry, digital transformation, implementation challenges.

Exploring the Mechanical Properties of Concrete Incorporated with Palm Oil Fuel Ash (POFA) as Partial Cement Replacement: Implications for Workability and Innovation

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ABSTRACT

The construction industry's heavy reliance on Ordinary Portland Cement (OPC) significantly contributes to environmental degradation due to high carbon emissions and the depletion of non-renewable resources. Simultaneously, industrial and agricultural waste, such as Palm Oil Fuel Ash (POFA), poses disposal and environmental challenges in countries like Malaysia. This study explores the potential of POFA as a sustainable supplementary cementitious material by evaluating its impact on the workability and compressive strength of concrete. Four concrete mixes were prepared: a control mix with 100% OPC and three mixes incorporating 5%, 10%, and 20% POFA as partial cement replacements. All mixes were designed for Grade 30 concrete with a water-cement ratio of 0.5. Workability was assessed using the slump test, while compressive strength was measured at curing intervals of 3, 7, 14, and 28 days. The results revealed a decline in workability with increasing POFA content, attributed to POFA's high surface area and irregular particle shape, which reduce the availability of free water in the mix. In terms of strength, the control mix showed the highest performance across all curing periods. However, the 20% POFA mix demonstrated notable strength development over time, achieving compressive strength comparable to the control mix at 28 days. The 5% POFA mix showed the lowest performance, suggesting limited early pozzolanic activity. Overall, the findings indicate that higher POFA content can be effectively used in concrete for long-term strength gains, supporting sustainable construction practices while reducing environmental impact.

Keywords: palm oil fuel ash, compressive strength, slump test, cement replacement, concrete performance

A Bibliometric Analysis: Compression Strength Evaluation for Pad Footing with Grade 35 Concrete

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ABSTRACT

This study presents a bibliometric analysis focused on " Compression Strength Evaluation for Pad Footing with Grade 35 Concrete," utilizing Scopus data and VOSviewer software for network visualization. Amidst the growing demand for sustainable and resilient construction materials, this analysis aims to consolidate the fragmented research landscape surrounding the compression strength of Grade 35 concrete. The investigation spans from 2018 to 2023, revealing sustained interest marred by a significant dip in 2020 due to the COVID-19 pandemic, before witnessing a robust recovery. The bibliometric techniques uncover a core emphasis on sustainability, with "recycled aggregate concrete," "microstructure," and "sustainability" emerging as key themes. The analysis highlights a concentrated cluster of influential authors, indicating a pivotal direction in research themes and methodologies. The recovery post-2020 and the focus on sustainable practices suggest the field's resilience and evolving priorities. This paper underscores the critical role of Grade 35 concrete in construction and points towards a future research trajectory that balances environmental considerations with mechanical performance. By mapping out the thematic and collaborative networks within this domain, the study offers valuable insights for researchers, policymakers, and industry practitioners, advocating for integrated approaches to enhance the structural integrity and sustainability of construction materials. This bibliometric analysis not only sheds light on current trends but also encourages a forward-looking perspective on the development of construction technologies.

Keywords: grade 35 concrete, compression strength, sustainable construction, bibliometric analysis, recycled aggregate concrete

Aplikasi "CivNSurv" Sebagai Media Pembelajaran Dan Pengajaran Untuk Kursus Ukur Kejuruteraan Awam

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ABSTRAK

CivNSurv ialah aplikasi mudah alih inovatif yang dibangunkan menggunakan platform Glide bagi meningkatkan proses pengajaran dan pembelajaran dalam kursus Ukur Kejuruteraan Awam, khususnya untuk pelajar politeknik dan institusi pengajian tinggi. CivNSurv, singkatan kepada Civil and Survey, membolehkan pelajar mengakses bahan pembelajaran seperti nota, panduan penggunaan peralatan, prosedur operasi standard, tugasan, dan rubrik penilaian dengan mudah, manakala pensyarah pula boleh mengagihkan serta mengemas kini kandungan pengajaran secara lebih sistematik dan masa nyata. Aplikasi ini dibangunkan berasaskan kepakaran pensyarah Jabatan Kejuruteraan Awam, Politeknik Kota Bharu, dan menawarkan pengalaman pembelajaran yang mesra pengguna serta mesra peranti mudah alih tanpa memerlukan kemahiran pengaturcaraan yang rumit. Artikel ini bertujuan untuk memperkenalkan CivNSurv dan menilai keberkesanannya dalam meningkatkan akses pelajar kepada kandungan pendidikan serta kecekapan pensyarah dalam mengurus bahan pengajaran. Aplikasi ini direka bentuk menggunakan pendekatan berpusatkan pengguna melalui Glide, diikuti dengan ujian kebolehgunaan melibatkan pelajar dan pensyarah. Dapatan menunjukkan bahawa aplikasi CivNSurv mampu meningkatkan akses, menggalakkan interaksi, serta menambah baik penglibatan pelajar dan penyampaian pengajaran, sekali gus berpotensi diperluaskan penggunaannya dalam pendidikan teknikal dan vokasional.

Kata kunci: CivNSurv, Ukur Kejuruteraan Awam, Aplikasi Glide, inovasi pengajaran dan pembelajaran.

Penghasilan Tanda Aras Sementara (TBM) di Politeknik Kota Bharu Sebagai Rujukan Ketinggian

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ABSTRAK

Titik rujukan aras atau Temporary Bench Mark (TBM) adalah titik rujukan aras sementara atau datum kawalan pugak yang digunakan dalam kerja ukur aras bagi menentukan ketinggian sesuatu lokasi secara relatif di atas permukaan bumi. Di Politeknik KotaBharu (PKB), ketiadaan rujukan aras yang betul dan sistematik menyukarkan pelaksanaan kerja ukur aras bagi tujuan akademik, penyelidikan dan pembangunan. Oleh itu, inovasi ini bertujuan untuk menubuhkan rangkaian TBM yang lebih praktikal, mudah dicapai, stabil dan diakui sah mengikut spesifikasi yang telah ditetapkan. Nilai rujukan datum adalah dari Bench Mark (BM) atau batu aras yang telah disahkan oleh Jabatan Ukur dan Pemetaan Malaysia (JUPEM). Pengukuran ukur aras telah dijalankan sepanjang tiga kilometer untuk membawa nilai aras dari Bench Mark (BM) ke Temporary Bench Mark (TBM) yang baru di PKB. Perbezaan selisih nilai aras laras akhir adalah 0.006 meter dengan pengesahan dari Jurukur Tanah Berlesen. Penerapan teknologi moden dalam pengukuran geodetik berpotensi untuk meningkatkan ketepatan dan keberkesanan kerja pengukuran yang dijalankan. Inovasi ini bukan sahaja memperkukuhkan pengetahuan teknikal pelajar dan pensyarah, malah membina kerjasama strategik antara institusi pendidikan dan industri.

Kata Kunci: Tanda Aras Sementara (TBM), Tanda Aras (BM), ukur aras, ketinggian, inovasi teknikal.

Orca Water Surface Cleaner (OWSC): Penyelesaian Inovatif Untuk Pencemaran Air

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ABSTRAK

Orca Water Surface Cleaner (OWSC) merupakan sistem inovatif yang direka untuk menangani pencemaran air dengan mengumpulkan sisa terapung seperti plastik, kaca, dan bahan buangan lain. Projek ini bertujuan untuk membangunkan mekanisme pembersihan air yang tahan lama, kos efektif, dan mesra alam. Analisis reka bentuk dilakukan menggunakan perisian AutoCAD, Rhino 7, dan Maxsurf Modeler. Sementara sistem pembersihan berasaskan jaring dipilih kerana kesederhanaan dan keberkesanannya. Prototaip diuji dari segi kelajuan dan rintangan, dengan keputusan menunjukkan keberkesanan tinggi dalam mengeluarkan sisa sambil mengurangkan kesan terhadap alam sekitar. Projek ini membuktikan penyelesaian yang boleh dikembangkan untuk meningkatkan kelestarian ekosistem akuatik serta menangani cabaran global pencemaran air.

Kata kunci: pembersihan air, sisa terapung, ekosistem akuatik, OWSC, pencemaran air

Reka Bentuk Konseptual Kapal Pengumpul Sisa Pepejal Laut Untuk Pembersihan Laut Yang Lestari

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ABSTRAK

Pencemaran laut merupakan salah satu cabaran alam sekitar yang paling mendesak, dengan berjuta-juta tan sisa memasuki lautan setiap tahun. Kajian ini mencadangkan reka bentuk konseptual bagi sebuah kapal pengumpul sisa pepejal laut yang menggabungkan mekanisme pengumpulan sisa yang cekap untuk memastikan proses pembersihan laut yang lestari. Reka bentuk ini mengintegrasikan sistem penghantar dengan badan kapal katamaran bagi meningkatkan kestabilan dan kecekapan dalam pengumpulan sisa. Kajian ini merangkumi analisis rintangan badan kapal, corak gelombang, dan pengiraan keapungan menggunakan Prinsip Archimedes. Model prototaip telah dibina menggunakan papan lapis dan diuji di bawah pelbagai kelajuan. Keputusan menunjukkan keberkesanan reka bentuk ini dalam mengumpul sisa laut secara efisien, membuka jalan bagi pembangunan dan pelaksanaan pada masa hadapan.

Kata Kunci: pencemaran laut, kapal pengumpul sisa, kelestarian, sistem penghantar, badan kapal katamaran.

Biodegradable Straw

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ABSTRACT

Biodegradable Straw are developed to address the rising demand in Malaysia's beveragesector, providing an alternative to market straws made from low water-resistant starches likerice and cassava straw. The objective of this project is to formulate biodegradable strawmadefrom corn leaf waste and to identify the durability and biodegradability of formulatedbiodegradable straw produced from corn leaves waste. The production process involves fivesteps which is collecting Zea mays corn leaves, extracting fibres by cooking with bicarbonatesoda, preparing pulp with carboxymethyl cellulose (CMC), straws moulding, andstrawcoating with palm oil wax. The durability and biodegradability test of various strawformulations. T1 (broken rice and tapioca starch) straw, as well as three different formulationsof biodegradable straw that made from corn leaf fibre plus different percentageofCarboxymethyl Cellulose (CMC), T2 (5% CMC), T3 (15% CMC), and T4 (25%CMC). Thetest done 3 replicates; every replicate takes 5 samples for each Treatment. The test foundthebest formulated straw is T4 (25% CMC). The durability rate is 05:34 minutes ($p < .001$). The high durability of T4 strawduetocarboxymethyl cellulose (CMC) present a cross-linking structure with corn leaf fibretoperformance hydrophobic structure reduce the water penetration when soaking in water. Next, the high biodegradability in T4 straw is due to corn leaf fibre is naturally rich in cellulose. Lastly, the biodegradable straw offer an environmentally friendly product, promotes goodfarm waste management practices, ensure safety in usage, introduce green culture tosociety, and helps farmers in generating high profits.

Keywords: biodegradable straw, corn leaf, carboxymethyl cellulose

Pengkompos Makanan Manual Untuk Kegunaan Rumah: Penyelesaian Mampan Dan Mampu Milik Dalam Pengurusan Sisa Makanan

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ABSTRACT

Food waste is a growing global concern, contributing significantly to environmental degradation and the overuse of landfill space. In Malaysia alone, it is estimated that more than 16,000 tonnes of food waste are discarded daily, with approximately 45% of total solid waste in landfills consisting of food waste. When food waste decomposes without proper treatment, it emits methane gas — a potent greenhouse gas that accelerates climate change. A practical and accessible solution is the use of a manual food composter, which is affordable, user-friendly, hygienic, and suitable for all households. This research explores the efficiency, design, and impact of such a device by analysing its effectiveness in reducing food waste while promoting sustainable living. The study also focuses on suitable materials, basic functionality, and the long-term benefits of using a home composter, particularly in terms of cost-effectiveness and environmental conservation. Moreover, the compost produced can be used as organic fertilizer in home gardens or sold as an eco-friendly product, offering an opportunity for households to generate additional income.

Keywords: food waste, decompose, food composter, home composter, eco-friendly.

Pengaruh Penggunaan Media Sosial Terhadap Prestasi Akademik Dalam Kalangan Pelajar Jabatan Perdagangan, Politeknik Kota Bharu

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ABSTRAK

Teknologi komunikasi telah mengalami kemajuan yang pesat dan memberi impak besar dalam kehidupan seharian kita. Kini dunia telah menyaksikan evolusi kepada teknologi komunikasi yang lebih canggih dan efisien. Ia menghubungkan berjuta-juta orang di seluruh dunia dan memungkinkan pertukaran maklumat dalam sekelip mata. Kebanyakan organisasi menggunakan medium ini sebagai alat termudah untuk perkembangan mereka ke tahap yang lebih tinggi. Media sosial seperti rangkaian di laman web adalah inovasi teknologi yang tidak boleh diabaikan lagi terutamanya di institusi pendidikan. Fokus kajian ini adalah mengenai hubungan antara media sosial dan prestasi akademik dalam kalangan pelajar. Objektif yang terlibat dalam kajian ini adalah jenis-jenis media sosial yang paling popular, tujuan utama penggunaan media sosial dan kesannya terhadap prestasi akademik. Untuk mencapai objektif, metodologi yang terlibat adalah aplikasi Statistical Package for the Social Sciences (SPSS). Pengumpulan data tersebut disasarkan kepada pelajar Jabatan Perdagangan, Politeknik Kota Bharu yang terdiri daripada 250 orang pelajar Semester Lima Program Diploma Akauntansi (DAT), Diploma Pengajian Perniagaan (DPM), Diploma Pemasaran (DPR) dan Diploma Insurans (DIN). Penemuan kajian ini mendapati bahawa media sosial sangat penting di dalam mendapat maklumat untuk pembelajaran, membantu pelajar untuk berkomunikasi antara satu sama lain dalam pertukaran pandangan dan dapat menjimatkan masa serta kos. Penggunaan media sosial secara berhemah juga dapat meningkatkan keterlibatan pelajar dalam proses pembelajaran dan menyokong prestasi akademik mereka.

Kata kunci: sosial media, teknologi, komunikasi, penggunaan, prestasi akademik.

A PLS-SEM Analysis of Antecedents Influencing Polytechnic Students' Acceptance and Use of Artificial Intelligence (AI) Tools for Technical English

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ABSTRACT

Technical English (TE) proficiency is crucial for the future careers of polytechnic students. While Artificial Intelligence (AI) tools offer significant potential to enhance language learning, their effectiveness relies on student acceptance and use. There is limited understanding of what drives polytechnic students to adopt these tools specifically for TE. This study aims to identify the key factors influencing polytechnic students' acceptance and use of AI tools in this context and employ a quantitative approach based on the Technology Acceptance Model (TAM) and Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze survey data collected from 100 Polytechnic Kota Bharu (PKB) students enrolled in TE courses. The research investigates core antecedents, primarily perceived usefulness (PU) and perceived ease of use (PEOU), and their impact on students' behavioral intention (BI) to use AI tools. The potential influence of external factors such as social influence and lecturer support are examined. The study found PEOU was identified as a critical antecedent, which significantly positively affected PU and BI. The study reaffirmed the significant predictive power of BI on AU, indicating that students' stated intentions reliably translate into their subsequent usage behaviour. This research will offer practical recommendations for educators seeking to integrate AI tools effectively into TE instruction. Theoretically, this study contributes to understanding technology adoption within the specific domain of technical and vocational language education, providing valuable insights for leveraging AI to improve essential communication skills for aspiring technical professionals.

Keywords: artificial intelligence (AI) tools, technology acceptance model (TAM), PLS-SEM, technical english, polytechnic students

Kesedaran Agama Dan Kepatuhan Berpakaian dalam Kalangan Pelajar Wanita: Analisis Terhadap Kefarduan Menutup Aurat Di Politeknik Kota Bharu

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ABSTRAK

Menutup aurat merupakan satu kewajipan yang termaktub dalam ajaran islam dan menjadi lambang ketaatan seorang muslimah terhadap perintah agama. Namun begitu dalam konteks institusi pengajian tinggi, pelbagai corak pemakaian yang tidak menepati syarak masih dapat dilihat dalam kalangan pelajar pelajar wanita.Kajian ini mengenalpasti tahap kesedaran beragama dan pematuhan etika berpakaian Islam dalam kalangan 176 pelajar perempuan di Politeknik Kota Bharu, khususnya memfokuskan kepada kewajipan menutup aurat. Menggunakan pendekatan kuantitatif, data dikumpulkan melalui tinjauan Borang Google berstruktur. Soal selidik itu terdiri daripada item berskala Likert dan soalan terbuka untuk mengukur kesedaran, pematuhan, dan persepsi terhadap pendidikan agama dan penguatkuasaan institusi. Analisis deskriptif, termasuk min dan sisihan piawai, digunakan untuk mentafsir data. Keputusan menunjukkan kesedaran pelajar terhadap amalan menutup aurah berada pada tahap sangat tinggi, dengan purata skor min 4.74 dan sisihan piawai 0.80 merentas 10 item berkaitan kesedaran. Item yang mendapat penilaian tertinggi ialah pernyataan "Menutup aurat adalah wajib dalam Islam" (min = 4.94; SP = 0.64). Kesimpulannya, walaupun kesedaran agama adalah kukuh, amalan sebenar tetap bergantung kepada konteks. Pengaruh luar dan penguatkuasaan yang lemah menyumbang kepada pematuhan yang tidak konsisten. Penemuan ini mencadangkan perlunya pendekatan holistik yang menggabungkan pendidikan agama, model peranan dan dasar institusi untuk mengekalkan tingkah laku menutup aurah secara berkesan dalam kalangan pelajar.

Kata kunci: menutup aurat, kesedaran agama, kepatuhan berpakaian, pengaruh sosial, dasar institusi

Tingkah Laku Tidak Beretika Pelajar Dalam Penggunaan Teknologi: Kajian Kes Di Politeknik Kota Bharu

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ABSTRAK

Perkembangan pesat teknologi maklumat dan komunikasi telah membawa perubahan ketara dalam cara pelajar berinteraksi, mengakses maklumat, dan melaksanakan tugasan akademik. Walau bagaimanapun, penggunaan teknologi tanpa pemahaman etika yang mencukupi telah menimbulkan pelbagai kelakuan tidak beretika, khususnya dalam kalangan pelajar institusi pengajian tinggi seperti Politeknik. Kajian ini dijalankan untuk mengenal pasti bentuk-bentuk kelakuan tidak beretika yang berlaku dalam konteks akademik dan sosial serta menilai tahap kesedaran etika pelajar terhadap penggunaan teknologi. Kajian ini menggunakan pendekatan kuantitatif melalui soal selidik yang diedarkan kepada 200 orang pelajar dari beberapa program di Politeknik Kota Bharu. Analisis data dijalankan menggunakan statistik deskriptif dan inferensi. Dapatan kajian menunjukkan bahawa antara kelakuan tidak beretika yang paling lazim adalah plagiat digital, penyebaran maklumat palsu di media sosial, dan penggunaan aplikasi teknologi untuk meniru dalam peperiksaan. Kajian turut mendapati tahap kesedaran etika pelajar masih berada pada tahap sederhana, dengan perbezaan yang signifikan mengikut program pengajian dan tahun pengajian. Implikasi kajian ini mencadangkan keperluan integrasi modul etika digital secara formal dalam kurikulum serta penganjuran program kesedaran berkaitan tanggungjawab digital. Kajian ini memberikan panduan berguna kepada pihak pengurusan institusi pendidikan dalam usaha membentuk budaya penggunaan teknologi yang beretika dan bertanggungjawab.

Kata kunci: kelakuan tidak beretika dalam kalangan pelajar politeknik, tinjauan terhadap penggunaan teknologi, dalam konteks akademik dan sosial

Experiential Learning and Program-Specific Impact on Soft Skills Development at Politeknik Kota Bharu

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ABSTRACT

The acquisition of soft skills is critical for students' success in today's competitive job market. This study explores the strategies, challenges, and measurable impact of soft skills development initiatives at Politeknik Kota Bharu (PKB), with a focus on experiential learning and academic program differences. A structured questionnaire was administered to 300 students across different programs in the academic year 2022/2023. Findings indicate significant positive correlations ($r = 0.65$, $p < 0.001$) between participation in experiential learning activities and perceived skill development outcomes. Additionally, significant differences were found across academic programs in the development of communication skills ($F = 2.56$, $p < 0.05$). Differences were also observed across academic programs, with Engineering students reporting the highest perceived gains. Despite these positive outcomes, challenges such as logistical constraints and faculty training needs persist. The study recommends enhancing curriculum integration, fostering gender-sensitive and program-specific interventions, and building stronger industry collaborations to improve future initiatives.

Keywords: soft skills, experiential learning, curriculum integration, student perceptions, Politeknik Kota Bharu

Intention to Use Cloud Accounting System Among Higher Education Student in Malaysia: A Unified Theory of Acceptance and Use of Technology (UTAUT) Model

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ABSTRACT

This study explores the underlying factors among higher education student that explain their intentions to use cloud accounting system in Malaysia. This study is driven by the awareness that higher education students, particularly those with accounting backgrounds, are regarded as essential contributors to the use of cloud accounting technology after graduation. This study formulates a conceptual model incorporating four explanatory factors from the Unified Theory of Acceptance and Use of Technology (UTAUT): performance expectancy, effort expectancy, social influence, and facilitating conditions, based on current research in this field of study. This research provides a conceptual framework for a modified UTAUT model that examines factors influencing user intention to utilize cloud accounting systems in Malaysia.

Keywords: cloud accounting, accounting information system, intention, UTAUT.

E-Digital: Tahap Penggunaan Dalam Kalangan Peniaga Industri Kecil Dan Sederhana (PKS) Di Negeri Kelantan

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ABSTRAK

E-digital adalah ekonomi yang berasaskan teknologi digital. Ianya akan mengubah cara manusia mengurus dan menjalankan perniagaannya ke suatu tahap pasaran yang lebih global. Kajian ini dijalankan bertujuan untuk mengenalpasti tahap penggunaan e-digital dalam kalangan peniaga Industri Kecil Dan Sederhana (PKS) di negeri Kelantan. Ianya mengambilkira aspek pengetahuan dan sikap terhadap penggunaan e-digital dalam kalangan peniaga PKS. Seramai 50 orang responden dipilih secara rawak sebagai sampel kajian yang melibatkan daerah Pasir Mas, Machang, Kota Bharu dan Kok Lanas. Instrumen soal selidik di gunakan untuk mendapatkan data primer. Objektif kajian yang melibatkan aspek pengetahuan dan sikap terhadap tahap penggunaan e-digital dianalisis menggunakan skor min melalui perisian SPSS 18.0. Dapatan kajian menunjukkan pengetahuan dan sikap terhadap tahap penggunaan e-digital dalam kalangan peniaga PKS berada di tahap tinggi. Dengan ini jelaslah bahawa para peniaga PKS memahami konsep asas teknologi digital dan bersedia mempelajari teknologi baharu untuk meningkatkan perniagaan.

Kata kunci: e-digital, industri kecil dan sederhana (IKS), tahap penggunaan, pengetahuan, sikap

Hubungan Antara Masa Penggunaan Permainan Dalam Talian Dan Tahap Tekanan Psikologi Dalam Kalangan Pelajar Politeknik Kota Bharu

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ABSTRAK

Kajian ini bertujuan untuk mengkaji hubungan antara masa penggunaan permainan dalam talian dengan tahap tekanan psikologi dalam kalangan pelajar Politeknik Kota Bharu. Selain itu, penyelidikan ini mengenal pasti tabiat permainan dalam talian dan persepsi pelajar terhadap aspek yang berkaitan dengan tekanan dan kesejahteraan psikologi yang berkaitan dengan aktiviti permainan. Reka bentuk kajian kuantitatif menggunakan pendekatan tinjauan korelasi telah diaplikasikan melibatkan 108 orang responden pelajar Politeknik Kota Bharu yang majoritinya lelaki (68.5%) dan berumur antara 18-20 tahun (91.7%). Data dikumpul menggunakan soal selidik yang terdiri daripada bahagian demografi, tabiat permainan dalam talian, dan item tersuai yang berkaitan dengan persepsi tekanan dan kesejahteraan psikologi. Dapatan kajian menunjukkan bahawa 85.2% responden bermain permainan dalam talian. Kategori kekerapan permainan yang paling kerap dilaporkan ialah "Jarang-jarang" (35.2% daripada pemain), dengan majoriti bermain selama 1-2 jam setiap sesi (52.2%), biasanya pada waktu malam (71.7%). Permainan strategi dan aksi/penembak ialah genre yang paling popular, dan 69.6% pemain tidak menganggap diri mereka ketagih. Mengenai persepsi tekanan, item "Tekanan menyebabkan saya hilang fokus dalam pelajaran" mencatatkan skor min tertinggi (Min=2.99, SD=1.15). Sementara itu, bagi persepsi yang berkaitan dengan permainan dan kesejahteraan, item "Permainan dalam talian membantu saya menguruskan tekanan" (Min=3.49, SD=1.17) dan "Saya bermain permainan dalam talian untuk melarikan diri daripada masalah" (Min=3.18, SD=1.34) menunjukkan skor min yang tinggi. Walau bagaimanapun, analisis korelasi Spearman yang dirancang untuk menentukan hubungan yang signifikan antara pembolehubah utama tidak dapat dilaporkan dalam kajian ini. Kesimpulannya, permainan dalam talian adalah aktiviti biasa dalam kalangan pelajar dan dianggap oleh sesetengah pihak sebagai medium untuk pengurusan tekanan, walaupun tekanan juga dilaporkan menjejaskan tumpuan akademik. Keperluan untuk analisis statistik yang lebih mendalam tentang hubungan adalah penting untuk melengkapkan penemuan kajian ini.

Kata kunci: permainan dalam talian, tekanan psikologi, pelajar politeknik, tabiat permainan, kesejahteraan psikologi, kajian kuantitatif.

Persepsi Pembayar Cukai Individu Terhadap Sistem eZ Tax Plan

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ABSTRAK

Percukaian adalah sumber utama ekonomi Malaysia. Kutipan hasil cukai digunakan untuk menghasilkan pendapatan dan membiayai perbelanjaan pentadbiran negara. Oleh itu, individu yang memperolehi pendapatan tahunan dari negara ini diwajibkan membayar cukai kepada pihak berkuasa. Bagi memastikan pembayaran cukai dibuat dalam tempoh yang ditetapkan, perancangan cukai perlu dilakukan untuk memudahkan proses tersebut dilaksanakan. Oleh itu, sistem eZ-Tax Plan telah diperkenalkan untuk memudahkan pembayar cukai individu membuat pengiraan cukai dan melaksanakan perancangan cukai mereka bagi tahun tersebut mengikut pelepasan terkini yang dibenarkan. Kajian ini dijalankan untuk mengkaji persepsi pembayar cukai individu terhadap sistem aplikasi eZ Tax Plan melalui staf di Politeknik Tuanku Sultanah Bahiyah (PTSB) terhadap aplikasi sistem eZ Tax Plan versi terkini. Objektif kajian ini adalah untuk menyiasat keberkesanan, kecekapan dan penggunaan sistem eZ Tax Plan oleh pembayar cukai individu. Kajian ini dijalankan menggunakan soal selidik yang diedarkan secara rawak untuk mendapatkan data dan melibatkan seramai 162 staf dari pelbagai Jabatan Kejuruteraan Mekanikal, Jabatan Kejuruteraan Elektrik, Jabatan Perdagangan, Jabatan Matematik, Sains dan Komputer dan Jabatan Pengajian Am. Penemuan menunjukkan bahawa responden bersetuju dengan keberkesanan, kecekapan, dan ketersediaan sistem eZ-Tax Plan versi terkini untuk memudahkan pembayar cukai dalam mengira dan merancang cukai mereka pada tahun tersebut serta dapat menangani isu semasa berkenaan sistem e-filing yang diperkenalkan oleh Lembaga Hasil Dalam Negeri (LHDN).

Kata kunci: eZ Tax Plan, pembayar cukai individu, pengiraan cukai dan perancangan cukai pendapatan.

Kekerapan Pelaksanaan Solat Fardu Dalam Kalangan Pelajar Kursus Pengajian Islam (MPU23152) Politeknik Kota Bharu

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ABSTRAK

Solat fardu merupakan kewajipan utama bagi setiap individu muslim, namun terdapat pelbagai faktor yang mempengaruhi tahap pelaksanaannya dalam kalangan pelajar institusi pengajian tinggi. Kajian ini dijalankan bagi meneliti kekerapan pelaksanaan solat fardu dalam kalangan pelajar Kursus Pengajian Islam (MPU23152) di Politeknik Kota Bharu. Objektif kajian ini adalah untuk mengenal pasti tahap pengetahuan pelajar, kekerapan pelaksanaan solat fardu serta faktor yang mendorong pelaksanaan tersebut. Kajian ini menggunakan pendekatan gabungan kaedah kuantitatif dan kualitatif. Data dikumpul melalui edaran soal selidik yang disusun dan dibina semula berdasarkan kajian-kajian terdahulu mengikut keperluan penyelidik kepada 53 orang pelajar yang mengikuti kursus berkenaan bagi sesi 1: 2024/ 2025. Data daripada soal selidik tersebut dianalisis secara deskriptif bagi memperoleh gambaran jelas mengenai tahap kekerapan pelaksanaan solat fardu, menggunakan perisian IBM Statistical Package for the Social Sciences Personal Computer Version 26 (IBM SPSS Statistics 26). Hasil kajian menunjukkan bahawa majoriti pelajar mengetahui dan memahami tentang kepentingan solat, namun tahap pelaksanaan solat dalam kalangan pelajar masih belum mencapai tahap yang memuaskan. Kajian ini mencadangkan agar program kesedaran dan bimbingan rohani diperbanyakkan bagi membantu pelajar meningkatkan keutuhan amalan solat fardu dalam kehidupan seharian mereka.

Kata kunci: solat fardu, kekerapan, pelaksanaan.

Membangunkan Aplikasi Teknologi Kecerdasan Buatan (Artificial Intelligent System) Bagi Membangunkan Kebun Bandar Pintar Tanaman Strawberi Tanah Rendah

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ABSTRAK

Perkembangan teknologi kecerdasan buatan (AI) memberikan kesan besar dalam hampir kehidupan manusia. AI turut berperanan penting dalam meningkatkan produktiviti dan kecekapan di sektor pertanian. Hal ini perlu disahut dengan secara lebih positif kerana ketika ini dunia secara umumnya berhadapan isu keterjaminan makanan. Justeru, sebagai sebuah negara yang pernah bergantung sumber pendapatan kepada sektor pertanian, Malaysia seharusnya menggunakan kelebihan yang ada bagi memaksimumkan penggunaan AI dan kembali memperkasakan bidang berkenaan. Objektif utama projek adalah membangunkan Sistem Kecerdasan Buatan (AI) untuk mengesan, menganalisis dan mengoperasikan sistem yang akan memudahkan kerja petani serta menjimatkan masa. Sistem AI akan dilengkapi dengan kamera, pangkalan data, komputer dan pengesan dipasang dalam rumah hijau dengan tanaman pokok strawberi jenis tanah rendah. Projek ini mampu menyelesaikan permasalahan pengusaha produk strawberi yang kini hanya bergantung kepada buah strawberi daripada tanah tinggi dangan harga yang mahal kerana pembekal yang terhad dan jarak yang jauh. Kelebihan AI ialah kemampuannya memberi analisis data terhadap cuaca, keadaan tanah serta kadar kelembapan tanah. Berdasarkan kemampuan itu, AI mampu mengurangkan masa penanaman, menjimatkan penggunaan baja serta sistem pengairan yang teratur mampu meningkatkan hasil dan produktiviti. Di samping itu, AI juga berupaya memantau kesihatan tanaman berdasarkan pemerhatian terhadap data sensor dan visual. Hal ini membantu mengesan gejala penyakit atau kekurangan nutrisi terhadap tanah atau tanaman misalnya kemarau, sekali gus memberi amaran awal kepada pengusaha bagi mengatur tindakan segera. Impak daripada projek ini dijangka dapat menghasilkan buah strawberi yang lebih berkualiti dengan jangka masa yang lebih pendek serta kos yang menjimatkan.

Kata kunci: AI, pengesan, strawberi

Analisis Ciri dan Keberkesanan Latihan Holistik Penjaga Gol Bola Sepak Dalam Kalangan Pelajar Politeknik Malaysia

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ABSTRAK

Penjaga gol memainkan peranan penting dalam bola sepak moden, bukan sahaja sebagai benteng terakhir pertahanan tetapi juga sebagai pemula serangan dan pengatur strategi di atas padang. Kajian ini bertujuan untuk mengenal pasti ciri-ciri utama yang diperlukan untuk menjadi penjaga gol yang berkualiti tinggi serta menilai keberkesanan pendekatan latihan holistik dalam meningkatkan kemahiran teknikal, taktikal dan ketahanan mental penjaga gol. Pendekatan kuantitatif digunakan melalui edaran soal selidik kepada 12 orang penjaga gol aktif dari institusi Politeknik Malaysia. Instrumen kajian merangkumi enam bahagian utama yang mengukur aspek demografi, kemahiran teknikal, rutin latihan, psikologi, sokongan serta cabaran. Data dianalisis menggunakan perisian SPSS versi 21 dengan kaedah analisis deskriptif dan interpretasi melalui skala Likert lima mata. Dapatan menunjukkan bahawa kemahiran teknikal dan keupayaan psikologi penjaga gol berada pada tahap tinggi, namun terdapat kekurangan dari segi fasiliti latihan dan sokongan pengurusan. Kajian ini mencadangkan pelaksanaan latihan berintensiti tinggi secara sistematik serta pelantikan jurulatih khas penjaga gol. Dapatan ini memberikan implikasi penting kepada pihak institusi dalam merangka strategi pembangunan atlet yang lebih berfokus dan berimpak tinggi, sekaligus menyumbang ke arah peningkatan prestasi sukan bola sepak di peringkat institusi pengajian tinggi.

Kata kunci: Penjaga gol berkualiti, latihan holistic, kemahiran teknikal dan taktikal, tekanan permainan kompetitif

The Adoption of P-Hailing Services Among Small-Scale Traders in Kok Lanas: Factors Influencing Their Preferences

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ABSTRACT

The rapid advancement of digital technology has significantly transformed the business landscape, including small-scale enterprises. This study examines the factors influencing the adoption of P-hailing services among small-scale traders in Kok Lanas, Kelantan. The research focuses on three key factors: user-friendliness of the application, time-saving benefits, and business growth potential. A mixed-method approach was employed, combining quantitative surveys and qualitative interviews with 30 traders. The findings reveal that while traders generally recognize the benefits of P-hailing, its adoption remains moderate due to challenges such as technological literacy, additional costs, and delivery service limitations. The study suggests improvements in app usability, targeted training programs, and government support to encourage wider adoption among small-scale traders. This research contributes to a better understanding of digital platform integration in small businesses and provides practical recommendations for enhancing P-hailing services in rural areas.

Keywords: p-hailing, mall-scale traders, digital adoption, business growth, e-commerce, user experience

Pemilihan Kafe Hipster di Kota Bharu: Kajian Kuantitatif Terhadap Faktor-faktor Mempengaruhi Pengguna

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ABSTRAK

Kajian ini bertujuan untuk mengenal pasti faktor-faktor yang mempengaruhi pengguna dalam pemilihan Kafe Hipster di Kota Bharu, Kelantan. Pembolehubah bersandar dalam kajian ini ialah pemilihan kafe oleh pengguna, manakala pembolehubah tak bersandar terdiri daripada faktor persekitaran, harga dan promosi. Kajian ini menggunakan reka bentuk kuantitatif melalui soal selidik berskala Likert 5 mata yang diedarkan secara dalam talian menggunakan Google Form. Seramai 76 responden telah dipilih secara rawak, terdiri daripada individu yang pernah mengunjungi Kafe Hipster di kawasan kajian. Data dianalisis menggunakan perisian SPSS 18.0 bagi mendapatkan analisis deskriptif seperti min dan peratusan. Dapatan menunjukkan bahawa ketiga-tiga faktor tak bersandar tersebut berada pada tahap min yang tinggi, sekali gus memberi pengaruh yang signifikan terhadap pemilihan pengguna. Kajian turut mendapati bahawa golongan wanita merupakan pengunjung utama kafe hipster di Kota Bharu. Secara keseluruhan, hasil kajian membuktikan bahawa persekitaran yang selesa, harga yang berpatutan dan promosi yang menarik memainkan peranan penting dalam mempengaruhi kecenderungan pengguna memilih Kafe Hipster sebagai destinasi pilihan.

Kata Kunci: Pemilihan pengguna, Kafe Hipster, Persekitaran, Harga, Promosi

Prototyping Hybrid Electrical Sources: Methodologies and Testing Outcomes

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ABSTRACT

This study presents the development and testing of a Hybrid Electrical Source combining hydro and solar renewable energy systems. Designed to provide electricity in remote areas lacking access to conventional power grids, the project harnesses energy from both sunlight and flowing water. The primary aim is to generate electricity using sustainable resources, targeting applications such as camping sites, agricultural fields, and residential areas with a maximum usage of 12 volts. The solar component consists of panels mounted on rooftops or portable structures, while the hydro component utilizes a turbine generator powered by river water. The generated electricity from both sources is regulated and displayed via a solar controller. Water flowing through the turbine is subsequently pumped back, ensuring continuous operation. This dual-source system effectively utilizes available natural resources, enabling electricity generation in diverse weather conditions. The findings indicate that hybrid systems can provide reliable and efficient power solutions in regions with limited infrastructure.

Keywords: hydro, solar, renewable energy systems

Kajian Dan Analisis Pasaran Program Pengajian Sijil Servis Kenderaan Ringan Di Kolej Komuniti Kolej Komuniti Kuala Terengganu

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ABSTRAK

Kajian ini dijalankan bagi menilai kesesuaian dan keberkesanan Program Sijil Servis Kenderaan Ringan yang ditawarkan oleh Kolej Komuniti Kuala Terengganu. Tujuan utama kajian adalah untuk memastikan program ini kekal relevan dengan keperluan semasa pasaran kerja, selaras dengan Wawasan Kemakmuran Bersama 2030 (WKB 2030), Dasar Automotif Negara 2020 (NAP 2020), serta panduan daripada Institut Maklumat dan Analisis Pasaran Buruh (ILMIA). Kajian telah dilaksanakan melalui pengumpulan data sekunder daripada agensi perancang ekonomi negara dan data primer daripada soal selidik terhadap pihak industri dan majikan. Dapatan kajian menunjukkan bahawa majoriti industri melihat program ini memenuhi keperluan pasaran kerja dari aspek teori dan amali. Antara aspek yang mendapat sokongan tinggi ialah kandungan kurikulum, tempoh pengajian, serta latihan industri yang dijalankan. Walau bagaimanapun, pihak industri turut mencadangkan penambahbaikan dari segi pemanjangan tempoh latihan industri dan kemas kini teknologi automotif yang diajar. Kesimpulannya, program ini terbukti berdaya saing dan berpotensi tinggi untuk melahirkan tenaga kerja mahir dalam sektor automotif, khususnya dalam kalangan komuniti Kuala Terengganu. Kajian ini turut mencadangkan agar kerjasama lebih erat dengan industri dilaksanakan untuk meningkatkan kebolehpasaran graduan secara berterusan.

Kata kunci: Sijil Servis Kenderaan Ringan Kolej Komuniti Kuala Terengganu, TVET, automotif, kebolehpasaran graduan, latihan industri

Implementation and Use of Artificial Intelligence in Diploma Mechanical Engineering at Politeknik Kota Bharu

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ABSTRACT

This research examines how artificial intelligence integrates with mechanical engineering diploma programmes at Politeknik Kota Bharu. The investigation evaluates student familiarity with AI technologies, educational experiences, and perceived benefits of incorporating intelligent systems into technical curricula. The study measures AI awareness levels, tool exposure, and learning attitudes through structured questionnaires distributed among mechanical engineering students. Results indicate strong student enthusiasm for AI despite facing obstacles, including minimal practical experience and inadequate programming foundations. The research emphasises implementing targeted training workshops and hands-on sessions to enhance educational outcomes and prepare graduates for evolving industry demands.

Keywords: Artificial Intelligence, Mechanical Engineering, TVET, Student Awareness, Technology Integration

Guidelines for Integrating Generative AI into Programming Education at the Diploma Level in Malaysian Polytechnics: Balancing Benefits and Risks

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ABSTRACT

The integration of Generative Artificial Intelligence (GAI) in programming education offers significant benefits, including personalized learning, real-time feedback, and debugging support. However, improper use may lead to over-reliance, reduced problem-solving skills, and academic integrity concerns. This study develops structured guidelines for AI integration in diploma-level programming education at Malaysian Polytechnics, ensuring AI enhances learning without replacing fundamental programming competencies. A Systematic Literature Review (SLR), Semi-Structured Interviews with Educators, and Focus Group Discussions (FGDs) were conducted to identify best practices, challenges, and ethical considerations. Findings indicate that while AI improves learning efficiency and engagement, students often misinterpret AI-generated code or rely on AI without understanding programming concepts. Educators struggle with assessing AI-assisted work and ensuring academic integrity, necessitating revised assessments and AI literacy training. This paper proposed guidelines focusing on students using AI as a support tool rather than a substitute, educators integrating AI responsibly, and institutions establishing clear AI policies on ethics, data privacy, and assessment methods. A balanced approach, combining AI with traditional teaching and active learning strategies, is essential for maintaining critical thinking and programming skills. Future research should focus on pilot implementation of these guidelines, longitudinal studies on AI's impact, and AI-specific assessment development. By adopting these recommendations, Malaysian Polytechnics can effectively integrate AI into programming education, maximizing benefits while mitigating risks.

Keywords: Generative AI, Programming Education, AI Integration, Academic Integrity, AI Literacy.

Thank you

A thousand thanks to all parties involved in realizing the

See you again in the future.

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