



22-24
July 2026

BOOK OF ABSTRACTS

International Conference on Science, Technology and Society 2026 (iCon-STs 2026)
STI for Social Good: Adapting Policy, Society and Industries for Sustainable Development
22 - 24 July 2026

Parallel Session

Day 2 - 23 July 2026 (Thursday)

PARALLEL SESSION 1 – SCIENCE COMMUNICATION

09:00 AM – 10:30 AM [UTC +8. Malaysia Time (MYT)]

Room	Time	Presenter Name	Title	Affiliation
Smart Classroom Moderator: Dr Nurulaini Abu Shamsi Timekeeper: Duan Yating	9:00 AM – 9:15 AM	Supa Tanprasertkun	Assessing Science Literacy in Thailand: Development of A National Science and Technology Awareness Index	National Science Museum, Thailand
	9:15 AM – 9:30 AM	Hao Xin	How Organizational Intermediaries Activate Multi-Actor Collaboration in Socialized Science Communication: A Key Case from Zhejiang, China	Zhejiang University, China
	9:30 AM – 9:45 AM	Yap Chin Kein	Levelling Up Connections: How Gameful Experience Builds Social Capital among Malaysian Private University Students	University of Wollongong Malaysia, Malaysia
	9:45 AM – 10:00 AM	Ji Hei Lee	Student-Led ESG Innovation in Higher Education: Enhancing Sustainability Literacy and Employability	University of Reading Malaysia, Malaysia

PARALLEL SESSION 1 – INNOVATION ECOSYSTEMS

09:00 AM – 10:30 AM [UTC +8. Malaysia Time (MYT)]

Room	Time	Presenter Name	Title	Affiliation
Auditorium Moderator: Associate Professor Dr Zeeda Fatimah Mohamed Timekeeper: Han Xiao	9:00 AM – 9:15 AM	Suzana Ariff Azizan	Communicating Digital Skills for Inclusion: An Approach to Empowering Youth with Learning Disabilities	Universiti Malaya, Malaysia
	9:15 AM – 9:30 AM	Geetha Chandra Regan	Assessing Market Readiness, Entrepreneurial Opportunities and Systemic Barriers within the Malaysian Black Soldier Fly Industry	Universiti Malaya, Malaysia
	9:30 AM – 9:45 AM	Ng Boon Kwee	From Grassroots Innovations to Social Enterprise: A Transition Framework for Community-led Innovation	Universiti Malaya, Malaysia
	9:45 AM – 10:00 AM	Mathuri Paramasevam	Stakeholder Perspectives on Factors and Barriers of Implementation and Scaling-Up of Plant Molecular Farming in Malaysia	Universiti Malaya, Malaysia
	10:00 AM – 10:15 AM	Muhammad Rudy Khairudin Mohd Nor	A Policy Framework to Enhance Malaysia's Trade Negotiation Competency	Universiti Teknologi Malaysia, Malaysia

PARALLEL SESSION 1 – SOCIO-CULTURAL DELIBERATION 1

09:00 AM – 10:30 AM [UTC +8. Malaysia Time (MYT)]

Room	Time	Presenter Name	Title	Affiliation
Seminar Room 3 Moderator: Dr Kenneth Fung Hon Ngen Timekeeper: Tan Yun You	9:00 AM – 9:15 AM	Sakshi Virendra Katre	People's Participation and Knowledge Sharing in Frugal Housing Initiatives for Sustainable Urban Development	Jawaharlal Nehru University, India
	9:15 AM – 9:30 AM	Rifki Nurfajri Ramadhan	History of the Rise and Perceived Dominance of Molecular Biology Research Unit in the Field of Life Science	Independent Researcher
	9:30 AM – 9:45 AM	Chai Choon Lee	Seeing through Machines: AI Image Captioning as a Socio-Technical System of Cultural Interpretation	Red Deer Polytechnic, Canada
	9:45 AM – 10:00 AM	Ulul Hidayah	Assessing Social Carrying Capacity for Systemic Sustainability: Evidence from a Tourism-Dependent Coastal Community in Sambau Sub-District, Batam, Indonesia	Universitas Terbuka, Indonesia

PARALLEL SESSION 1 – SOCIO-CULTURAL DELIBERATION 2

09:00 AM – 10:30 AM [UTC +8. Malaysia Time (MYT)]

Room	Time	Presenter Name	Title	Affiliation
Seminar Room 4 Moderator: Dr Mohd Zufri Mamat Timekeeper: Zhang Zejin	9:00 AM – 9:15 AM	He Jianzhen	Robot Abuse in the Digital Era: Ethical and Regulatory Challenges of Human–Robot Interaction	Universiti Malaya, Malaysia
	9:15 AM – 9:30 AM	Mohd Ziyad Afiq Mohd Zaharim	Can Digital Mental Health Interventions in Mobile Applications Function as Generalised Resistance Resources? A Salutogenic Framework for Strengthening Sense of Coherence Among Malaysian Youth	Universiti Malaya, Malaysia
	9:30 AM – 9:45 AM	Hikmah Zikriyani	From Knowledge to Consumption: Public Perceptions of Edible Mushrooms and their Role in Sustainable Food Systems in Indonesia	Universitas Terbuka, Indonesia
	9:45 AM – 10:00 AM	Noor Munirah Isa	Ethical Governance Challenges in Human Embryo and Stem Cell-Based Embryo Models (SCBEM) Research in Malaysia	Universiti Malaya, Malaysia
	10:00 AM – 10:15 AM	Rui Li	From Privatized Pastures to Technologized Commons: Socio-Technical Responses to Ecological Uncertainty in Inner Mongolia	Harbin Engineering University, China

PARALLEL SESSION 2 – SCIENCE COMMUNICATION 1

02:00 PM – 3:30 PM [UTC +8. Malaysia Time (MYT)]

Room	Time	Presenter Name	Title	Affiliation
Smart Classroom Moderator: Dr Muhammad Aidil Roslan Timekeeper: He Jianzhen	2:00 PM – 2:15 PM	Nurulaini Abu Shamsi	Empowering Malaysian Scientists to Communicate Antarctic Research: Bridging Polar Discoveries	Universiti Malaya, Malaysia
	2:15 PM – 2:30 PM	Bhasit Hongthong	The Role of NSM Science Square as an Informal Learning Center in Thailand	National Science Museum, Thailand
	2:30 PM – 2:45 PM	Tan Yun You	Net-Zero Communication in China: Corporate Discourse and Public Mobilization by Multinational Corporations	Universiti Malaya, Malaysia
	2:45 PM – 3:00 PM	Wanwachee Sutjaritthum	Fostering Creative Ideation in Science Museums: An Immersive VR Exhibition for Environmental Robot Design	National Science Museum, Thailand
	3:00 PM – 3:15 PM	Puteri Nurdiyana Khir Annuar	Developing an Integrated Museum Exhibition Framework: A Preliminary Study	Universiti Malaya, Malaysia

PARALLEL SESSION 2 – SCIENCE COMMUNICATION 2

02:00 PM – 3:30 PM [UTC +8. Malaysia Time (MYT)]

Room	Time	Presenter Name	Title	Affiliation
Seminar Room 3 Moderator: Dr Nor Aishah Abdullah Timekeeper: Nik Luqman Hafiz Nik Mohd Faisal Idham	2:00 PM – 2:15 PM	Sarmila Muthukrishnan	Assessing Carbon Footprint Awareness: A Comprehensive Study of Knowledge, Attitudes, and Behavioral Intentions Among Universiti Malaya Students	Universiti Malaya, Malaysia
	2:15 PM – 2:30 PM	Duan Yating	Cross-Cultural Dissemination of Traditional Chinese Medicine through the Belt and Road Initiative: Exploring the Influence of Policies, Cooperation, and Communication in Southeast Asia	Universiti Malaya, Malaysia
	2:30 PM – 2:45 PM	Wu Yuze	Bridging the Technology Gap: A Pre-Service Teacher Training Intervention for Computational Thinking and Mobile App Development using MIT App Inventor	Universiti Malaya, Malaysia
	2:45 PM – 3:00 PM	Han Xiao	Science Communication through the Science Fiction Films Industry in China: Trends, Impacts, And Policies	Independent Researcher
	3:00 PM – 3:15 PM	Zhang Zejin	Measuring Environmental Literacy: A Systematic Review of Global Assessment Instruments and their Methodological Assumptions	Universiti Malaya, Malaysia

PARALLEL SESSION 2 – INNOVATION ECOSYSTEMS

02:00 PM – 3:30 PM [UTC +8. Malaysia Time (MYT)]

Room	Time	Presenter Name	Title	Affiliation
Auditorium Moderator: Dr Mohd Faizal Hamzah Timekeeper: Associate Professor Dr Zeeda Fatimah Mohamed	2:00 PM – 2:15 PM	Alessandra Nasharyna George Martin	Building a Black Soldier Fly (BSF) Industry: A Systematic Review of the Entrepreneurial Opportunities and Systemic Barriers in the Animal Feed Value Chain	Universiti Malaya, Malaysia
	2:15 PM – 2:30 PM	Nor Farzana Abd Ghani	Towards Intelligent Halal Tourism: A Comparative Stakeholder Analysis of Japan and Malaysia	Universiti Utara Malaysia, Malaysia
	2:30 PM – 2:45 PM	Nor Azlina Abd. Aziz	SustainED: Circular Waste Solutions in Composting and Community Food Growing. A Case-Study	Universiti Malaya, Malaysia
	2:45 PM – 3:00 PM	Nurzatil Sharleeza Mat Jalaluddin	Regulatory Perspectives for Plant Molecular Farming in Malaysia	Universiti Malaya, Malaysia
	3:00 PM – 3:15 PM	Lieutenant Colonel Associate Professor Dr. S. Ananthan (R)	Strategic Autonomy in Munitions: An Analysis of the Malaysian Defence Ammunition Production Landscape	Universiti Pertahanan Nasional Malaysia, Malaysia

PARALLEL SESSION 2 – SOCIO-CULTURAL DELIBERATIONS

02:00 PM – 3:30 PM [UTC +8. Malaysia Time (MYT)]

Room	Time	Presenter Name	Title	Affiliation
Seminar Room 4 Moderator: Dr Noor Munirah Isa Timekeeper: Ainur Fatihah	2:00 PM – 2:15 PM	Maisarah Hasbullah	Towards a Spirituality-Infused AI Ethical Framework for Human Autonomy	Universiti Malaya, Malaysia
	2:15 PM – 2:30 PM	Mohd Zufri Mamat	Empowering Communities through University-Community Engagement: Socioeconomic Empowerment of Persons with Disabilities (PWD) via Aquaponics Innovation	Universiti Malaya, Malaysia
	2:30 PM – 2:45 PM	Mohd Salim Mohamed	Developing an Instructional Design Framework for Scientific Ethics Education in Higher Education Institutions Using the ASSURE Model and the Fuzzy Delphi Method	Universiti Malaya, Malaysia
	2:45 PM – 3:00 PM	Nurulain Natasha Muhammad Aris Fadzilah	Reframing Planetary Health Education: A Maqasidic Approach	Universiti Malaya, Malaysia
	3:00 PM – 3:15 PM	Muhammad Zaid Zainuddin	Integrating Bioanthropology and Science Diplomacy: A Potential Way Forward	Universiti Teknologi MARA, Malaysia

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Day 2: 23 July 2026

Parallel Session 1: Science Communication

09.00 am – 10.30 am [UTC +8. Malaysia Time (MYT)]

Smart Classroom

Moderator: Dr Nurulaini Abu Shamsi

ASSESSING SCIENCE LITERACY IN THAILAND: DEVELOPMENT OF A NATIONAL SCIENCE AND TECHNOLOGY AWARENESS INDEX

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Abstract

Public awareness of science and technology is a vital indicator of national readiness for scientific advancement and sustainable development. Despite its importance, there is still an insufficiency of regularly updated data for Thailand to monitor public awareness in this domain; the most recent national survey was conducted in 2008. This study aims to develop a standardized framework and assessment system to evaluate science and technology awareness among the Thai population, aligned with national strategic development goals. A mixed-methods approach was employed, comprising an extensive review of established international frameworks from the United States, the United Kingdom, Canada, China, and Malaysia, an analysis of Thailand's science and technology development context, and in-depth interviews with leading international experts in civic science literacy. Based on the inputs, a Science and Technology Awareness Index for Thai citizens was developed, encompassing five key dimensions: information access, attitudes, interests, knowledge, and participation. A survey instrument was subsequently designed to operationalize this framework. To enhance the validity and efficiency of the survey instrument, a pilot study was conducted in 2021 using both face-to-face interviews and an online platform, involving 2,639 respondents from six geographic regions of Thailand and four age groups ranging from 15 to 64 years. The findings reveal that while the Thai population demonstrates positive attitudes toward science and a strong interest in participation in science-related policymaking, significant gaps in science literacy remain. The proposed index provides a robust tool for informing science communication strategies, promoting lifelong learning, and strengthening public engagement with science. It is recommended that the national survey be conducted every three years to ensure the availability of updated data for policymakers.

Keywords

Public Awareness of Science; Science and Technology Awareness Index; Civic Science Literacy; Science Literacy; Thailand

HOW ORGANIZATIONAL INTERMEDIARIES ACTIVATE MULTI-ACTOR COLLABORATION IN SOCIALIZED SCIENCE COMMUNICATION: A KEY CASE FROM ZHEJIANG, CHINA

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Abstract

Socialized science communication has been widely promoted as a key pathway for enhancing public engagement and improving the societal relevance of science. However, despite strong normative support, many science communication initiatives continue to face persistent challenges of fragmentation, unstable participation, and weak coordination among governments, social organizations, market actors, and the public. Existing studies have extensively discussed participatory models and governance frameworks, yet they have paid relatively limited attention to the organizational mechanisms through which multi-actor collaboration is practically activated and sustained. This paper addresses this gap by focusing on the role of organizational intermediaries in socialized science communication. Drawing on theories of intermediary organizations and collaborative governance, the study asks: how do organizational intermediaries facilitate and stabilize multi-actor collaboration in the context of socialized science communication? To explore this question, the paper adopts a qualitative key case study approach, examining the Zhejiang Provincial Federation for Science Popularization in China. The analysis identifies three interrelated mechanisms through which organizational intermediaries enable collaboration. First, capability-building mechanisms lower participation thresholds and cultivate stable communities of science communicators. Second, knowledge-integration mechanisms coordinate diverse scientific, cultural, and social resources, transforming fragmented content into shared agendas and communicative meanings. Third, action-embedding mechanisms institutionalize science communication practices by linking them to education systems, community initiatives, and policy-supported programs, thereby enhancing continuity and social embeddedness. The findings suggest that organizational intermediaries play a critical role in bridging structural gaps between policy intentions and grassroots participation in science communication. By highlighting how collaboration is practically organized rather than merely encouraged, this study contributes to science communication and STS scholarship by advancing a mechanism-oriented understanding of socialized science communication. The paper also offers insights for policymakers and practitioners seeking to design more sustainable and collaborative science communication systems.

Keywords

Socialized Science; Communication; Organizational Intermediaries; Multi-Actor Collaboration; Public Engagement in Science and Technology; Science Communication Governance

LEVELLING UP CONNECTIONS: HOW GAMEFUL EXPERIENCE BUILDS SOCIAL CAPITAL AMONG MALAYSIAN PRIVATE UNIVERSITY STUDENTS

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Abstract

The concept of social capital has gained increasing attention in higher education fields due to its role in forming social resource which supports student development in social networking. However, studies examining students in post COVID-19 pandemic and online classroom environments has shown disruptive effects in developing their social capital due to lack of confidence and reduced opportunities in building peer relationships among themselves and university staff. To address this, the roles of social capital can be utilized using gameful experience, a psychological state of engagement, enjoyment, and motivation that is felt when individuals participate in gamified activities. This paper investigates the effect of gameful experience on university students' social capital and to examine usage frequency of group-based gamified activities as a moderator variable of this effect by employing a quantitative cross-sectional research design. Understanding this effect allows social capital to be positioned as a relational outcome of gameful experience in higher education environments. Data is collected from undergraduate students enrolled in a Malaysian private university using purposive sampling and Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to analyse the proposed relationships between gameful experience and two dimensions of social capital: bonding and bridging. The findings indicate that gameful experience has significantly and positively influenced both social capital dimensions, thereby suggesting that well-structured gamified activities and learning environments contributes to social capital development among university students. For the moderation analysis, usage frequency did not have significant influence towards the relationship between gameful experience and social capital. Although the study was limited to a single sample population, this study contributes empirical evidence that gameful experience is capable of strengthening student social capital in higher education environments.

Keywords

Social Science; Social Capital; Gamification; Gameful Experience; Higher Education

STUDENT-LED ESG INNOVATION IN HIGHER EDUCATION: ENHANCING SUSTAINABILITY LITERACY AND EMPLOYABILITY

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Abstract

This study examines the role of student-led sustainability initiatives as a form of social innovation within higher education, focusing on their potential to enhance Environmental, Social, and Governance (ESG) literacy and graduate employability. Grounded in experiential learning theory, the research evaluates a campus-based project, Cultivating Campus Sustainability, implemented at the University of Reading Malaysia, where students engage in interdisciplinary activities such as sustainability audits, stakeholder engagement, and solution development. A survey design is employed to assess students' ESG awareness, attitudes, skills, and behaviours, alongside perceived employability outcomes including problem-solving, adaptability, and collaboration. The survey instrument captures multiple dimensions of ESG literacy and graduate attributes through structured Likert-scale measures and reflective responses. The analysis is based on a pilot sample of undergraduate students from Real Estate and Quantity Surveying programmes. Findings suggest that participation in experiential, project-based learning is associated with higher levels of ESG awareness, behavioural intention, and confidence in applying sustainability principles in real-world contexts. The study highlights the potential of universities as living laboratories for sustainability and offers practical insights for integrating ESG into curricula to support Science, Technology, and Innovation (STI) agendas for sustainable development.

Keywords

ESG Literacy; Experiential Learning; Student-led Sustainability Initiatives; Graduate Employability; Social Innovation in Higher Education; Campus Living Laboratories

Day 2: 23 July 2026

Parallel Session 1: Innovation Ecosystems

09.00 am – 10.30 am [UTC +8. Malaysia Time (MYT)]

Auditorium

Moderator: Associate Professor Dr Zeeda Fatimah Mohamed

COMMUNICATING DIGITAL SKILLS FOR INCLUSION: AN APPROACH TO EMPOWERING YOUTH WITH LEARNING DISABILITIES

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Abstract

Rapid advancements in digital technology have expanded opportunities in the global economy. However, persons with disabilities, particularly those with learning disabilities, remain marginalized due to limited digital skills, restricted access to technology, and persistent societal stigma. These barriers highlight not only issues of access but also challenges in how technological knowledge is communicated and understood by diverse communities. This study examines the role of communication in enhancing digital learning among Persons with disabilities. The study aims to explore how communication strategies can be adapted to improve comprehension and engagement, and to develop an inclusive digital marketing teaching module tailored to learners with cognitive limitations. An intervention-based approach was employed through a four-day digital entrepreneurship workshop involving 11 participants with learning disabilities in Semenyih, Selangor. The training emphasized inclusive communication strategies, including simplified language, visual representation, hands-on activities, and interactive learning environments. Findings indicate that adaptive communication approaches significantly improve participants' understanding, confidence, and ability to apply digital entrepreneurial skills. The study demonstrates that effective communication is critical in bridging the gap between technological knowledge and marginalized groups. It contributes to the development of inclusive communication models that support broader participation in the digital economy.

Keywords

Learning Disabilities; Digital Skills; Inclusive Education

ASSESSING MARKET READINESS, ENTREPRENEURIAL OPPORTUNITIES AND SYSTEMIC BARRIERS WITHIN THE MALAYSIAN BLACK SOLDIER FLY INDUSTRY

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Abstract

This study assesses the Black Soldier Fly (BSF) industry in Malaysia through the lenses of market readiness, entrepreneurial opportunities and systemic barriers, and policy implications within the animal feed circular economy (CE). This research adopted a qualitative exploratory framework to conduct semi-structured interviews across a diverse group of BSF entrepreneurs, farmers, academics, and public stakeholders. The findings reveal that while BSF holds significant potential for waste valorisation, import substitution, and enhancing feed security, its adoption remains constrained. Market readiness is conditional and segmented with acceptance strongest in aquaculture and poultry, while export-oriented pet feed serves as a critical niche. Entrepreneurial activity is hampered by a fragmented regulatory landscape, ambiguous halal certification pathways, high capital expenditure, inconsistent waste substrate supply, and limited access to scale finance. The study utilises Rogers' Diffusion of Innovation (DOI) and Isenberg's Entrepreneurial Ecosystem (EE) frameworks to analyse these dynamics, concluding that the industry's progression is less inhibited by technical feasibility and more by institutional, economic, and socio-cultural barriers. Key recommendations include establishing clear regulatory and certification frameworks, introducing targeted financial incentives, developing waste logistics infrastructure, and launching multi-stakeholder awareness campaigns. For Malaysia to realise BSF's role in its circular economy transition, coordinated policy action and ecosystem-level support are imperative to transform this promising bio-innovation from a niche solution into a mainstream component of a sustainable feed system.

Keywords

Black Soldier Fly; Circular Economy; Market Readiness; Entrepreneurial Ecosystem; Sustainable Feed

FROM GRASSROOTS INNOVATIONS TO SOCIAL ENTERPRISE: A TRANSITION FRAMEWORK FOR COMMUNITY-LED INNOVATION

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Abstract

Community-led innovation has become a focal point of the social innovation landscape within the inclusive development agenda. In this respect, Grassroots Innovations (GRIs) and Social Enterprises (SEs) represent two distinctive movements. Generally, GRIs are grounded in locally embedded solutions that address context-specific socio-economic and environmental challenges, particularly in resource-constrained settings; whereas SEs are social businesses that integrate both economic and social missions within their business models. While both GRIs and SEs contribute to inclusive development, existing studies have largely examined them in isolation, with limited attention to the potential pathways connecting the two. On the one hand, GRIs often face sustainability challenges due to their informal nature and lack of organisational structure; on the other hand, there is a limited pool of SEs capable of delivering sustained and scalable inclusive development outcomes. Addressing this gap, this conceptual paper examines how GRIs—often informal, fragmented, and limited in scale—can be systematically upgraded into SEs to enable the scaling and institutionalisation of grassroots circular practices, while preserving their community-driven ethos. Building on this premise, the paper proposes a Grassroots-to-Enterprise (G2E) model that conceptualises the transition from informal innovation to structured, impact-oriented enterprise. The model identifies key transformation stages, including capability development, market integration, governance formalisation, and ecosystem support. This paper contributes to the literature by bridging GRIs, SEs, and inclusive development perspectives, and by offering a process-oriented framework for scaling inclusive and sustainable solutions. From a policy and institutional perspective, the paper highlights the importance of enabling institutional environments—comprising targeted support mechanisms, intermediary organisations, and adaptive regulatory frameworks—to facilitate the emergence of inclusive economies.

Keywords

Bottom of the Pyramid; Social Innovation; Innovation Scaling; Social Policy; Inclusive Development

STAKEHOLDER PERSPECTIVES ON FACTORS AND BARRIERS OF IMPLEMENTATION AND SCALING-UP OF PLANT MOLECULAR FARMING IN MALAYSIA

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Abstract

Plant Molecular Farming (PMF) offers a transformative approach to producing biopharmaceuticals, leveraging plant-based systems for the recombinant expression of vaccines, antibodies, enzymes, and other biologics. Globally, PMF is recognized for its sustainability, scalability, and cost-effectiveness, with a market projected to reach USD 4.39 billion by 2033. Despite Malaysia's promising agricultural and biotechnology infrastructure, the nation has yet to capitalize on the opportunities presented by PMF. However, the barriers and factors that hinder this progress and strengthen PMF implementation in Malaysia remain unclear. Thus, this study investigates the perspectives of key stakeholders on the factors and barriers influencing the implementation and scaling-up of PMF in Malaysia. To achieve its objectives, this research integrates Stakeholder Theory and the Multi-Level Perspective Theory to systematically examine how stakeholder dynamics and multi-layered contextual factors shape the trajectory of PMF adoption. Through semi-structured interviews with key informants, findings indicate that while Malaysia possesses foundational biotechnology capabilities and regulatory structures, several systemic barriers limit the transition of PMF from research to commercialization. Regulatory uncertainty, particularly surrounding field trials and approval pathways, emerged as a key constraint slowing technological progression beyond laboratory stages. Industry stakeholders emphasized the importance of establishing a viable economic case for PMF, including validated production yields, cost competitiveness, and clear market demand. Additionally, technical challenges in downstream processing and protein purification, together with persistent public misconceptions surrounding genetically modified technologies, were identified as significant barriers to adoption. These findings highlight the need for stronger cross-sector collaboration, clearer regulatory guidance, and improved science communication to support the successful implementation and scaling of PMF in Malaysia.

Keywords

Plant Molecular Farming; Stakeholder Perspectives; Commercialization; Factor; Barrier

A POLICY FRAMEWORK TO ENHANCE MALAYSIA'S TRADE NEGOTIATION COMPETENCY

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Abstract

Malaysia's trade policies emphasize Free Trade Agreements (FTA) as a tool to promote international trade. This creates a critical demand for competent trade negotiators to attain favourable trade deals and enhance Malaysia's position in the global market. However, a national strategy to secure trade negotiation competency remains unclear, leading to varying approaches among government agencies and in developing negotiators' competency. Poor talent retention due to the civil service's job rotation policy has also affected the country's trade negotiation talent pool, threatening Malaysia's negotiation capacity. This study aims to enhance Malaysia's trade negotiation competency through policy interventions. Interviews were conducted with 13 trade negotiators among the Malaysian government officials to investigate the country's approach to developing trade negotiation competency. The data were analyzed using thematic content analysis. The study identified that the absence of a governance framework for trade negotiation competency has resulted in a policy gap in the selection, competency development, and talent retention of trade negotiators. Thus, a policy framework is proposed to align the public service's human resources policies with the trade policies. The framework offered a clear process and criteria in the selection of trade negotiators, based on the identified key competencies from the trade negotiator's scope of work. It also proposed the formalization of trade negotiation competency development programmes at both the national and agency levels, by prescribing structured training on international trade knowledge, and on-the-job training on negotiation skills through mentoring and involvement in actual negotiations. Finally, the framework advocated a formal recognition of trade negotiation as a niche talent for the public service and the institutionalization of a cadre of competent trade negotiators to effectively retain them. These recommendations mirror the best practices of some leading trading nations that integrate trade negotiation competency into relevant national policies to reap the benefits of free trade.

Keywords

Policy framework; Competency; Trade Negotiation; Talent Management

Day 2: 23 July 2026

Parallel Session 1: Socio-Cultural Deliberation

09.00 am – 10.30 am [UTC +8. Malaysia Time (MYT)]

Seminar Room 3

Moderator: Dr Kenneth Fung Hon Ngen

PEOPLE'S PARTICIPATION AND KNOWLEDGE SHARING IN FRUGAL HOUSING INITIATIVES FOR SUSTAINABLE URBAN DEVELOPMENT

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Abstract

This conference paper examines people's participation in frugal housing initiatives and its implications for inclusive and sustainable urban development in resource-constrained urban contexts. Frugal housing approaches, characterised by affordability, incremental construction, use of local materials, and reduced environmental impact, are increasingly promoted in the Global South. However, the effectiveness of such initiatives often depends on how communities engage with technical housing knowledge and participate in decision-making processes. Drawing on examples from frugal and incremental housing practices, the paper examines participatory processes, including community meetings, on-site discussions, visual representations, and informal negotiations among residents, engineers, and implementing agencies. Attention is paid to communication practices through which technical and environmental aspects of housing are explained, questioned, and adapted. These practices shape residents' understanding of design choices and sustainability measures, while also revealing challenges related to power asymmetries, limited transparency, and uneven access to information. The paper argues that meaningful participation in frugal housing goes beyond formal consultation mechanisms and requires continuous interaction and knowledge exchange. In this context, science communication is understood as an enabling component of participation, supporting dialogue, mutual learning, and trust-building rather than as a standalone objective. The paper concludes by suggesting that integrating communication more consciously into participatory housing processes can strengthen the social relevance and long-term sustainability of frugal housing initiatives.

Keywords

Frugal Housing; People's Participation; Knowledge Sharing; Sustainable Development

HISTORY OF THE RISE AND PERCEIVED DOMINANCE OF MOLECULAR BIOLOGY RESEARCH UNIT IN THE FIELD OF LIFE SCIENCE

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Abstract

Molecular biology, biochemistry, as a subfield within life science along with its scientific practices has become entrenched in many life science research practices. The entrenchment is evident in the increase of scientific papers published under the category molecular biology as well as how in many of those papers molecular biology concepts and practices are used in validating further the study results. With the daily use and reliance of the concepts such as “genetics” or “DNA” in public policy processes, it can be an additional evidence of how entrenched molecular biology has been in our lives. In researching the apparent dominance of the subfield’s practices, theoretical frameworks built upon Fangerau (2013) findings on human role and their motivation in science will be used. Fangerau asserted that: As researchers from different institutions with their preexisting funding criteria in the life sciences band together in conducting their research, this may lead to inefficient competitions and overdetermined selection process among existing paradigms. This then led to the increase of the “most socially supported” paradigm instead of the fittest epistemologically. As part of the historiography study of the project, I also intend to reconstruct the social infrastructures that led to the dominance and rise of molecular biology, the method of which I will discuss in the later section.

Keywords

Molecular Biology; Scientific Practice; Life Science

SEEING THROUGH MACHINES: AI IMAGE CAPTIONING AS A SOCIO-TECHNICAL SYSTEM OF CULTURAL INTERPRETATION

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Abstract

This research investigates the effectiveness of artificial intelligence (AI) systems in generating image captions, with particular emphasis on contextual richness and cultural sensitivity. Prior scholarship on algorithmic bias has demonstrated that computer vision models frequently reproduce and even amplify existing social inequalities embedded within their training data. As a result, automated image captions may not function as neutral descriptions but can instead misrepresent, oversimplify, or distort social meaning. Addressing these limitations requires moving beyond basic object detection and recognition toward a more nuanced interpretive capacity. Effective image captioning must account not only for what is visible in an image but also for how meaning is shaped by social, historical, and cultural contexts. Accordingly, this study conceptualizes image captioning as a socio-technical process in which visual meaning is co-produced through the interaction of algorithmic design, training data, and broader cultural values. To examine this, we curated a dataset of 30 images representing diverse social and cultural contexts. Five widely used, commercially available AI chatbot systems were employed to generate captions for each image. These captions were systematically evaluated using three criteria: contextual accuracy, interpretive richness, and cultural sensitivity. We introduce the Interpretive Captioning Matrix, an analytical framework consisting of four quadrants defined by varying levels of contextual richness and cultural sensitivity: Contextual Misframing, Literal Reductionism, Cautious Neutralization, and Situated Interpretation. Each generated caption was classified within this matrix and assigned a weighted score based on its performance across the evaluative dimensions. Aggregate scores were then calculated to compare performance across systems and image types. The findings highlight both the capabilities and limitations of current AI captioning systems. While some models demonstrate emerging strengths in producing context-aware and culturally sensitive descriptions, significant shortcomings persist, particularly in cases involving complex social meaning or marginalized cultural contexts. This presentation will discuss these patterns, their implications for AI design, and the broader ethical considerations surrounding automated visual interpretation.

Keywords

Artificial Intelligence, Image Caption, Cultural Sensitivity, Social-Technical System

ASSESSING SOCIAL CARRYING CAPACITY FOR SYSTEMIC SUSTAINABILITY: EVIDENCE FROM A TOURISM-DEPENDENT COASTAL COMMUNITY IN SAMBAU SUB-DISTRICT, BATAM, INDONESIA

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Abstract

The long-term sustainability of tourism villages relies on maintaining a balance between economic benefits, sociocultural well-being, and environmental conservation. While tourism can stimulate local economic development, excessive visitor pressure may reduce residents' quality of life and alter the social and cultural character of destination communities. This study examined the implementation of community-based tourism (CBT) in Sambau Subdistrict, explored local residents' perceptions of tourism impacts, and assessed daily social carrying capacity across five tourism destinations. A mixed-methods approach was employed by combining structured questionnaires with in-depth semi-structured interviews involving the leaders of five Tourism Awareness Groups (Pokdarwis). Secondary data obtained from government agencies were used to complement the primary data. The analysis integrated qualitative content analysis, descriptive statistics, and social carrying capacity assessment. The findings indicate that CBT in Sambau Subdistrict is driven by strong community participation and supported by Pokdarwis through local business partnerships, homestay management, coordinated waste handling, and transparent benefit-sharing mechanisms. Residents generally perceived tourism as economically beneficial because it improved household income and contributed to the development of village social and religious facilities. Nevertheless, concerns were raised regarding several sociocultural and environmental issues, including increasing tourist-generated waste, inappropriate visitor behavior, and pollution associated with nearby industrial development. Social carrying capacity analysis further revealed substantial differences among destinations during weekends. Kampung Tua Bakau Serip, a mangrove ecotourism site, reached the Early Warning Zone, where visitor density exceeded socially acceptable levels and began to interfere with the daily activities of local fishers. In contrast, the remaining coastal destinations continued to operate within moderate and acceptable levels of social carrying capacity. These findings emphasize the importance of incorporating social carrying capacity into tourism planning. Establishing visitor limits, implementing spatial zoning, and introducing locally adapted visitor guidelines may help maintain a balance between tourism development and community well-being while supporting the long-term sustainability of coastal tourism destinations.

Keywords: Community-Based Tourism; Coastal Resource Governance; Social Acceptance; Social Carrying Capacity; Systemic Sustainability

Day 2: 23 July 2026

**Parallel Session 1: Socio-Cultural Deliberation & Science Diplomacy
2**

09.00 am – 10.30 am [UTC +8. Malaysia Time (MYT)]

Seminar Room 4

Moderator: Dr Mohd Zufri Mamat

ROBOT ABUSE IN THE DIGITAL ERA: ETHICAL AND REGULATORY CHALLENGES OF HUMAN–ROBOT INTERACTION

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Abstract

As robots increasingly enter service, educational, domestic, and public settings, violence against robots has become an emerging ethical and governance issue in human–robot interaction. Acts such as kicking, insulting, humiliating, or deliberately damaging robots can no longer be understood solely as property damage or user misconduct. They also reflect how people negotiate power, emotion, social norms, and moral boundaries in digitally mediated environments. This paper examines the ethical implications, social causes, and governance significance of robot abuse, while also exploring how the public understands such behavior and whether they support normative protection for social robots. The study adopts a combined method of literature review and questionnaire survey. First, drawing on recent scholarship in human–robot interaction and robot ethics, it investigates how public judgment and regulatory responses shift when robots are perceived as socially expressive agents rather than mere tools. Second, the survey examines respondents' perceptions of robot abuse, moral evaluation, tolerance of such behavior, and support for legal or regulatory intervention. The findings show that anthropomorphic design does not simply increase empathy; it also reshapes moral judgment, social expectations, and governance concerns. Violence against robots may arise from frustration, service failure, entertainment, domination, jealousy, or competition, indicating that robot abuse is a multidimensional phenomenon rather than a single behavioral category. The paper argues that existing legal categories of property, safety, and liability remain necessary, but are insufficient to address the broader normative challenges raised by violence toward social robots.

Keywords

Robot abuse; Violence Against Robots; Human–Robot Interaction; Robot Ethics; Digital Governance

CAN DIGITAL MENTAL HEALTH INTERVENTIONS IN MOBILE APPLICATIONS FUNCTION AS GENERALISED RESISTANCE RESOURCES? A SALUTOGENIC FRAMEWORK FOR STRENGTHENING SENSE OF COHERENCE AMONG MALAYSIAN YOUTH

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Abstract

Mental health mobile application services for young people in Malaysia operate predominantly within a pathogenic paradigm built on symptom identification, clinical diagnosis, and professional referral. This orientation serves the minority whose distress crosses a diagnostic threshold, but it leaves a much larger population of youth with sub-nonclinical distress without a structured offer of support, and the stigma attached to nonclinical labelling actively deters them from seeking one. In this conceptual paper, we discuss how the theory of Salutogenesis, and its central construct of the Sense of Coherence (SOC), can reframe digital mental health mobile application interventions for this population. We argue that a deliberately designed digital platform can function as a Generalised Resistance Resource (GRR): an accessible asset that supports tension management and, through repeated engagement, strengthens SOC across its three dimensions of comprehensibility, manageability, and meaningfulness. We first describe the sub-nonclinical gap and the help-seeking barriers documented among Malaysian youth. We then map these barriers onto the three SOC dimensions, outline how specific digital affordances (structured psychoeducation, on-demand coping resources, anonymised peer support, and community participation) can supply coherent experiences that conventional screening-first tools cannot, and propose an evaluation agenda built on validated instruments. Last, we discuss limitations of translating an individual-level construct into platform design, and the conditions under which the framework should be tested rather than assumed.

Keywords

Sense of Coherence; Digital Mental Health Application; Generalised Resistance Resources; Youth; Malaysia; Help-Seeking; Stigma

FROM KNOWLEDGE TO CONSUMPTION: PUBLIC PERCEPTIONS OF EDIBLE MUSHROOMS AND THEIR ROLE IN SUSTAINABLE FOOD SYSTEMS IN INDONESIA

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Abstract

Developing sustainable food systems requires alternative food resources that are nutritious, environmentally sustainable, and acceptable to consumers. Edible mushrooms offer considerable potential because of their nutritional properties, cultivation feasibility, and contribution to food diversification. Nevertheless, information on how Indonesian consumers perceive edible mushrooms and whether these perceptions are reflected in consumption behavior remains limited. This study investigated public familiarity with edible mushroom species and assessed consumer perceptions in terms of knowledge, awareness, conservation attitude, and consumption practice. A cross-sectional online survey involving 61 respondents was conducted using a structured questionnaire comprising 34 four-point Likert-scale statements and two multiple-response questions. The data were analyzed using descriptive statistics. Wood ear mushroom (*Auricularia aurita*) was the most familiar species (90.5%), followed by enoki mushroom (*Flammulina filiformis*) (85.7%), oyster mushroom (*Pleurotus ostreatus*) (77.8%), and paddy straw mushroom (*Volvariella volvacea*) (57.1%). Overall, respondents expressed favorable perceptions of edible mushrooms. Conservation attitude recorded the highest mean score (3.54), followed by knowledge (3.20) and awareness (3.16). In contrast, consumption practice had the lowest mean score (2.66), indicating that positive perceptions were not consistently accompanied by regular consumption. These findings point to a gap between awareness and actual dietary behavior, suggesting that knowledge alone may be insufficient to encourage greater mushroom consumption. The findings indicate that Indonesian consumers are generally receptive to edible mushrooms as alternative food resources. Strengthening consumer education, expanding product diversity, and improving access to mushroom-based foods may help bridge the gap between knowledge and consumption while supporting food diversification and more sustainable dietary patterns.

Keywords

Edible Mushrooms; Food Diversification; Public Perception; Sustainable Food Systems; Consumer Behavior; Indonesia

ETHICAL GOVERNANCE CHALLENGES IN HUMAN EMBRYO AND STEM CELL-BASED EMBRYO MODELS (SCBEM) RESEARCH IN MALAYSIA

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Abstract

Stem cell-based embryo models (SCBEMs) are an emerging set of techniques for modelling early embryonic development that are raising complex ethical and governance challenges faster than existing frameworks can address them. This study examines those challenges within the Malaysia context - a Muslim-majority, multi-ethnic setting where scientific practice is shaped by normative pluralism and the co-existence of Islamic and secular bioethical frameworks. Drawing on twelve semi-structured interviews with Malaysian researchers, the study explores how they perceive and navigate the ethical and governance challenges of human embryo research and SCBEM. Key findings reveal substantive divergence in the moral reasoning of participants. Some advocate a precautionary approach to SCBEM, supporting regulatory alignment with existing frameworks for human embryo research; others emphasise the incomplete biological characteristics of SCBEMs and argue for a differentiated regulatory response. Across both positions, ethical reasoning reflects an interplay between scientific knowledge, Islamic bioethical principles, and the practical realities of conducting research in the Malaysian institutional context, illustrating how locally situated knowledge shapes engagement with globally contested science. While existing governance structures were generally regarded as adequate for research oversight, participants expressed significant concerns about regulatory gaps at the clinical and commercial interface. These include the proliferation of unregulated stem cell-based therapies and the marketing of scientifically unsubstantiated therapies to patients. These findings characterise Malaysia's emerging governance disposition as one of *cautious permissiveness* – permitting scientific development while tolerating meaningful oversight gaps downstream. The study underscores the need for more robust governance mechanisms that extend beyond the research setting to better safeguard public interests while encouraging responsible scientific progress.

Keywords

Human Embryo Research; SCBEM; Bioethics; Governance; Malaysia

FROM PRIVATIZED PASTURES TO TECHNOLOGIZED COMMONS: SOCIO-TECHNICAL RESPONSES TO ECOLOGICAL UNCERTAINTY IN INNER MONGOLIA

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Abstract

Grassland governance in Inner Mongolia has been profoundly shaped by institutional reforms aimed at enhancing productivity and household autonomy. Under the Household Contract Responsibility System, pastures were allocated to individual herder families, effectively privatizing land use rights. Yet this arrangement proved poorly aligned with the ecological characteristics of grassland systems, where microclimates, vegetation growth, and grazing capacity vary across space and time. Fixed, household-based pasture management constrained mobility, intensified uneven grazing pressures, and generated collective-action dilemmas that undermined both ecological sustainability and herders' livelihoods. This paper presents a case study of governance innovations among herder communities in the Hailar region, examining how science, technology, and organizational arrangements have been mobilized to reassemble grassland commons under conditions of ecological uncertainty. Through cooperative-based pasture integration, collectively negotiated livestock quotas, and the use of digital ear-tag technologies to monitor herd size and grazing ranges, fragmented pastures have been transformed into a form of "technologized commons" that enables shared management without reverting to centralized control. This transformation is further reinforced by the diversification of value creation beyond grazing alone. Tourism development, differentiated livelihood roles, ecological landscaping, seasonal forage reservation, and hybrid models combining solar energy, tourism, and pastoralism collectively reframe grasslands as multifunctional socio-ecological systems. By analyzing the interaction between technological infrastructures, cooperative institutions, and new valuation regimes, this study contributes to STS debates on common-pool resource governance and innovation for social good, demonstrating that sustainability emerges through the reconfiguration of social relations, ecological knowledge, and value production rather than technological substitution alone.

Keywords

Common-Pool Resources; Grassland Governance; Socio-Technical Systems; Ecological Uncertainty; Cooperative Institutions; Innovation for Social Good

Day 2: 23 July 2026

Parallel Session 2: Science Communication 1

02.00 pm – 03.30 pm [UTC +8. Malaysia Time (MYT)]

Smart Classroom

Moderator: Dr Muhammad Aidil Roslan

EMPOWERING MALAYSIAN SCIENTISTS TO COMMUNICATE ANTARCTIC RESEARCH: BRIDGING POLAR DISCOVERIES

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Abstract

Climate change is a critical global challenge, with polar regions serving as key indicators of environmental change and planetary stability. Antarctica is experiencing accelerated ice melt, which has important implications for tropical countries such as Malaysia, including intensified flooding, disrupted fisheries, and more severe monsoon patterns. Although Malaysia contributes to Antarctic research through the Malaysian Antarctic Research Programme (MARP), public awareness of the country's polar research activities and their relevance to national sustainability remains limited, constraining the potential of Antarctic science to inform public discourse, policymaking, and climate action. This project addresses this gap by strengthening the capacity of Malaysian scientists to communicate Antarctic research in accessible, engaging, and socially relevant ways. Using a mixed-methods approach, the project will conduct structured science communication workshops focusing on storytelling, audience engagement, and socio-scientific framing. Participants apply these skills to develop multimedia communication outputs, including infographics, short videos, and interactive materials that connect polar science with Malaysian climate resilience and sustainability concerns. The project evaluates its impact through longitudinal surveys that assess participants' communication confidence and skills, alongside social media analytics that measure public engagement. Expected outcomes include a trained cohort of researchers and a curated digital repository that ultimately support collaborative climate action.

Keywords

Antarctic Research; Science Communication; Climate Action; Public Engagement; Malaysia

THE ROLE OF NSM SCIENCE SQUARE AS AN INFORMAL LEARNING CENTER IN THAILAND

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Abstract

NSM Science Square, operated by National Science Museum Thailand (NSM), serves as a small-scale science center for making science accessible, fun, and relevant to everyday life for people of all ages. By establishing branches in various regions of Thailand, it provides expanding and increasing in science learning opportunities and reaches 350,000 people a year. The center emphasizes "SCREAM" concept through educational programs and interactive exhibitions belonging to science public engagement. The results of public awareness of science surveys indicate that around 90% of the visitors achieved by knowledge and understanding, skills, enjoyment, inspiration and creativity, attitudes and values, behavior and progression after participating in the activities. In conclusion, NSM Science Square plays an important role in science and technology engagement to fulfill the lifelong learning ecosystem.

Keywords

Informal Learning; STEM Education; Science Center; NSM Science Square; Public Engagement

NET-ZERO COMMUNICATION IN CHINA: CORPORATE DISCOURSE AND PUBLIC MOBILIZATION BY MULTINATIONAL CORPORATIONS

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Abstract

China's dual carbon agenda has prompted MNCs and local enterprises to align with national targets of peaking carbon emissions by 2030 and achieving carbon neutrality by 2060. This study explores the net-zero communication strategies of leading corporations in China, focusing on how corporate discourse is designed across specific communication channels to engage stakeholders and support carbon reduction goals, and how the public perceives and responds to these messages. Using a case study approach, the research analyses four industry-leading corporations across four sectors in China, drawing on corporate documents, social media content, and public responses as units of analysis. By adopting the Two-way Symmetrical Model as its theoretical foundation, incorporating Morsing and Schultz's (2006) principles of transparency, interaction, and collaboration, this study assesses whether corporate communication moves beyond one-way information dissemination towards more dialogic and participatory engagement. Discourse analysis, supplemented by descriptive statistics, is employed to classify communication strategies and interpret the construction of meaning. Findings reveal that all four companies demonstrate relatively comprehensive governance and information disclosure for Greenhouse Gas (GHG) Protocol Scopes 1 and 2; however, Scope 3 disclosure remains variable and largely superficial. On Weibo and Douyin, corporations strategically align their net-zero communication with national "dual-carbon" goals, while each industry constructs distinct sector-specific narratives centred on technological innovation, operational efficiency, or ecosystem enablement. Public responses exhibit strong emotional support but limited rational participation and remain largely superficial, highlighting challenges in fostering in-depth supervision and meaningful co-construction in corporation's net-zero and carbon neutrality efforts.

Keywords

Net-zero; Corporate Communication; Social Media; Public Mobilization; China

FOSTERING CREATIVE IDEATION IN SCIENCE MUSEUMS: AN IMMERSIVE VR EXHIBITION FOR ENVIRONMENTAL ROBOT DESIGN

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Abstract

In the evolving context of science communication and STEM education, science museums are shifting from traditional object displays to immersive and participatory experiences. This project introduces a cutting-edge Virtual Reality (VR) exhibition designed to engage teenage visitors (aged 13–15). This age group is critical for fostering 21st-century skills and STEM innovation processes, preparing them to become future innovators and visualize potential career paths. The exhibition creates experiences that are difficult or dangerous to access in the real world through high-fidelity simulations of environmental disasters, bridging the gap between theoretical knowledge and imaginative application. Its primary goal is to enhance creative problem-solving skills, specifically focusing on the "Generating Ideas" stage of the Creative Problem Solving (CPS) framework. Employing a Research and Development (R&D) methodology, the study engaged 35 teenage participants to evaluate the effectiveness of this experiential learning environment. The core experience focused on creative brainstorming within a virtual world. Visitors stepped into the role of rescue engineers, using integrated tools to brainstorm and create diverse designs for rescue robots through hands-on VR interaction. This process eliminates the resource constraints and safety risks often found in traditional workshops. Results from the exhibition implementation revealed that the immersive nature of VR significantly stimulated divergent thinking among the target group. Observational data showed that participants successfully moved beyond conventional designs to propose various novel concepts, such as autonomous drone swarms for structural support, heat-resistant crawler bots, and shape-shifting surveillance units. The interactive visualization of hazards allowed visitors to deeply understand the problem context and propose ideas that link imagination with engineering principles. This project demonstrates that science museums can use VR as a powerful tool to transform visitors from passive observers into active creators, effectively communicating complex STEM concepts through design, creativity, and problem-solving.

Keywords

Virtual Reality Exhibition; Science Communication; Creative Problem Solving; STEM Education; Divergent Thinking

DEVELOPING AN INTEGRATED MUSEUM EXHIBITION FRAMEWORK: A PRELIMINARY STUDY OF DEVELOPING AN INTEGRATED MUSEUM EXHIBITION FRAMEWORK

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Abstract

While the research literature on the importance of museums continues to grow, a methodological void remains in translating visitor engagement into measurable learning outcomes, signifying a need for evidence-based strategies. This research addresses this by developing an integrated museum exhibition design framework that synthesises digital storytelling and spatial narratives using the Selinda Visitor Learning Model (SVLM) as a performance index. This study shall employ a longitudinal mixed-methods research and development (R&D) approach, with Muzium Seni Asia, Universiti Malaya, as the research site in three phases. Phase one involves interviewing 15 experts from Muzium Seni Asia, Universiti Malaya, Makerspace@UM, and the Malaysian Biotechnology Information Centre (MABIC) to ensure that the prototype is grounded in practitioner reality. Phase two will involve immediate data collection via visitor surveys and semi-structured interviews, utilizing follow-up questionnaires from 25 selected participants after four to six weeks. Quantitative data will undergo statistical analysis, while qualitative responses will be analysed thematically. Phase 3 will involve a dual-phase data collection strategy involving visitor surveys and expert interviews to ensure both practical and theoretical validity. The research bridges the gap between narrative theories and educational practice through the creation of a validated framework for curators and museum practitioners. Other deliverables will include extended learning models of the framework and IPs rich with empirical evidence.

Keywords

Museum Studies; Experiential learning; Immersive Media; Digital Storytelling; Science Communication

Day 2: 23 July 2026

Parallel Session 2: Science Communication 2

02.00 pm – 03.30 pm [UTC +8. Malaysia Time (MYT)]

Seminar Room 3

Moderator: Dr Nor Aishah Abdullah

ASSESSING CARBON FOOTPRINT AWARENESS: A COMPREHENSIVE STUDY OF KNOWLEDGE, ATTITUDES, AND BEHAVIORAL INTENTIONS AMONG

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Abstract

This study integrates the Knowledge-Attitude-Practice (KAP) framework with the Theory of Planned Behavior (TPB) to examine how carbon footprint knowledge translates into sustainable practices among university students. A cross-sectional survey of 676 Universiti Malaya students was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with 5,000 bootstrap samples and then a Multi-Group Analysis (MGA) was conducted to compare the path coefficients between the two groups (students with environmental academic background and non-environmental academic background). The model explained 25.1% of variance in sustainable practice. Knowledge significantly predicted attitudes ($\beta = 0.365$), perceived behavioral control (PBC, $\beta = 0.358$), and subjective norms ($\beta = 0.300$). Attitudes ($\beta = 0.231$), PBC ($\beta = 0.255$), and subjective norms ($\beta = 0.192$) all significantly influenced intention, which in turn predicted practice ($\beta = 0.354$, all $p < 0.001$). Multi-group analysis revealed substantially stronger path coefficients among students from non-environmental academic backgrounds (Intention→Practice $\beta = 0.487$) compared to those from environmental academic backgrounds ($\beta = 0.314$), suggesting an implementation deficit. Interestingly, the findings also indicate that knowledge alone is insufficient, attitudes, social norms, and perceived control are essential mediators. Therefore, universities should implement accessible, skill-based sustainability programs that will not only build the knowledge but foster positive attitudes, strengthen social norms, and provide easy opportunities for action to students from all backgrounds.

Keywords

Carbon Footprint Awareness; KAP model; Theory of Planned Behavior; PLS-SEM, MGA

CROSS-CULTURAL DISSEMINATION OF TRADITIONAL CHINESE MEDICINE THROUGH THE BELT AND ROAD INITIATIVE: EXPLORING THE INFLUENCE OF POLICIES, COOPERATION, AND COMMUNICATION IN SOUTHEAST ASIA

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Abstract

Traditional Chinese Medicine (TCM) is currently receiving strong policy support in China and has gained increasing recognition worldwide, especially after the launch of the Belt and the Road Initiative (BRI). Among various regions, Southeast Asia demonstrates particularly strong demand and receptiveness toward TCM. This study adopts a qualitative research approach to examine how the BRI influences the cross-cultural dissemination of TCM in Singapore, Malaysia, and Thailand. Guided by the Theory of Change and the Logic Model, the study analyzes the causal mechanisms through which BRI-related policies shape TCM-related national policies, cooperation, and communication, and how these processes collectively affect cross-cultural dissemination. The research aims to develop an analytical model to elucidate the mechanism underlying the cross-cultural dissemination of TCM under the BRI, thereby providing a systematic framework for understanding the relationship between policy initiatives and dissemination practices in international contexts.

Keywords

Cross-Cultural Dissemination; Belt and Road Initiative; Traditional Chinese Medicine; Southeast Asia; Theory of Change; Logic Model

BRIDGING THE TECHNOLOGY GAP: A PRE-SERVICE TEACHER TRAINING INTERVENTION FOR COMPUTATIONAL THINKING AND MOBILE APP DEVELOPMENT USING MIT APP INVENTOR

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Abstract

This paper presents a comprehensive evaluation of a pre-service teacher training workshop designed to address the technology competency gap in teacher preparation programs. The study examined 35 pre-service teachers across diverse academic disciplines who participated in a hands-on workshop focused on computational thinking and mobile app development using MIT app inventor. A mixed-methods evaluation approach, combining quantitative survey responses (n=36) and qualitative observations, was employed to assess learning outcomes, participant satisfaction, and perceived educational value. Results indicate that 66.7% of participants achieved significantly improved understanding of app inventor and related coding concepts, with 90%+ completion rates for foundational tasks. Survey data revealed that 52.8% of participants rated the workshop's utility to teaching practice as 9–10 out of 10, and 80% believed app development would enhance student engagement. However, challenges with advanced coding concepts, instruction pacing, and technical scaffolding were identified, suggesting the need for extended workshop duration and differentiated instruction. This study contributes to the literature on technology integration in teacher development and provides evidence-based recommendations for improving computational thinking curricula in pre-service teacher programs.

Keywords

Computational Thinking; Teacher Education; Technology Integration; App Development; Instructional Design; Mobile Learning

SCIENCE COMMUNICATION THROUGH THE SCIENCE FICTION FILMS INDUSTRY IN CHINA: TRENDS, IMPACTS, AND POLICIES

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Abstract

This study explores how science fiction films function as policy-driven instruments of science communication in China. Although national policies promote science fiction films as a tool for enhancing scientific literacy, the pathway linking policy intention, film production, and audience outcomes remains underexplored. To address this gap, the study integrates the Theory of Change and the Logical Framework to examine how policy inputs shape narrative construction and relate to public engagement with science. Using a mixed-methods approach, including policy analysis, filmmaker interviews, content analysis, and audience surveys, the research investigates how scientific knowledge is embedded in film narratives and how audiences respond in terms of interest, understanding, and attitudes. By conceptualizing science fiction films as a policy-embedded communication mechanism, the study contributes a structured analytical framework for examining science communication within state-led cultural systems.

Keywords

Science Communication; Science Fiction Films; Cultural Policy; Scientific Literacy; Audience Response

MEASURING ENVIRONMENTAL LITERACY: A SYSTEMATIC REVIEW OF GLOBAL ASSESSMENT INSTRUMENTS AND THEIR METHODOLOGICAL ASSUMPTIONS

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Abstract

The urgency of environmental challenges and the central role of public participation in sustainable development governance have led to growing global attention on environmental literacy (EL). A scientifically literate public is essential for evidence-based environmental policymaking, participation, and the success of science communication efforts. This paper aims to explore how EL is conceptualized, measured, and assessed among the general public in current research, synthesizing existing assessment instruments across diverse populations and geographical contexts. Environmental literacy encompasses dimensions such as knowledge, attitudes, behaviors, and skills, and is a core ability for environmental public participation. This study followed the PRISMA 2020-guided systematic literature review to analyze EL assessment methodologies across current studies from 17 countries during 2021 to 2026, evaluating their construct coverage, measurement approaches, and applicability across target populations. A structured coding matrix combining deductive and inductive approaches was applied to extract and synthesize instrument characteristics. The study found that nearly half of the included studies employed a dual-tool design combining objective knowledge tests with self-assessment questionnaires. This methodologically significant approach has been systematically overlooked in previous reviews. Although skills are positioned as a core dimension within the EL theoretical framework, they appeared in less than one-third of the studies. The lack of validated and multidimensional EL assessment tools for the general public (particularly in non-Western contexts) highlights a critical gap in both research and policy practice. This study maps the methodological weaknesses and coverage gaps of existing EL assessment tools. It advances that researchers clearly define the dimensions of EL for their specific population and context before designing the measurement items. By integrating measurement theory with the practical needs of science communication and environmental policy, this review lays the foundation for developing more rigorous and globally applicable environmental literacy assessment practices.

Keywords

Environmental Literacy; Assessment Instruments; Systematic Review; Environmental Policy; Public Participation

Day 2: 23 July 2026

Parallel Session 2: Innovation Ecosystems

02.00 pm – 03.30 pm [UTC +8. Malaysia Time (MYT)]

Auditorium

Moderator: Dr Mohd Faizal Hamzah

BUILDING A BLACK SOLDIER FLY (BSF) INDUSTRY: A SYSTEMATIC REVIEW OF THE ENTREPRENEURIAL OPPORTUNITIES AND SYSTEMIC BARRIERS IN THE ANIMAL FEED VALUE CHAIN

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Abstract

The global animal feed sector's reliance on unsustainable protein sources like fishmeal and soybean meal necessitates circular economy (CE) alternatives. The Black Soldier Fly (*Hermetia illucens*) (BSF) can convert organic waste into nutrient-rich larvae which offers a dual solution for waste management and sustainable feed production. Despite its potential, the entrepreneurial ecosystem surrounding BSF faces significant systemic barriers with a few inferred opportunities. This systematic literature review (SLR) identifies and synthesises the entrepreneurial opportunities and systemic barriers for BSF enterprises operating within the global animal feed value chain. Following the PRISMA 2020 guidelines, a systematic search was conducted in Scopus and Google Scholar for peer-reviewed and open-access articles published between 2015 and 2025. From 171 identified records, a total of 17 studies met the inclusion criteria after a rigorous process using questions developed specifically for this study based on the Mixed Methods Appraisal Tool (MMAT) and the list adapted from Abouzahra et al. (2020). A deductive thematic synthesis approach was employed to analyse the data. The analysis revealed six interrelated themes: (1) BSF's emergence as a CE business model, (2) Feed industry through insect-based nutrition innovation, (3) Economic viability and market formation of insect-based feed enterprises, (4) Regulatory uncertainty and institutional misalignment, (5) Technology and knowledge as a road to scaling or the Valley of Death, and (6) Social acceptance and cultural fit in insect-based food systems. While opportunities exist in waste valorisation, multi-product revenue streams, and alignment with sustainability goals, there are pervasive systemic barriers including high capital costs, fragmented regulations (particularly regarding Halal certification), substrate variability, and consumer scepticism. BSF presents a viable entrepreneurial pathway for sustainable feed production but is embedded in a complex socio-technical system. Its scalability depends less on biological feasibility and more on overcoming institutional, financial, and social barriers.

Keywords

Black Soldier Fly; Insect-Based Feed; Circular Economy; Entrepreneurship; Systemic Barriers; Animal Feed Value Chain

TOWARDS INTELLIGENT HALAL TOURISM: A COMPARATIVE STAKEHOLDER ANALYSIS OF JAPAN AND MALAYSIA

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Abstract

The rapid growth of the Muslim travel market has prompted non-Muslim majority destinations to explore more inclusive and culturally responsive tourism strategies. This study examines the development of Intelligent Halal (i-Halal) tourism within the Japan–ASEAN context, focusing on stakeholder perceptions, challenges, and opportunities in operationalising Muslim-friendly tourism through digital and service innovation. Using a qualitative approach, data were collected through a series of focus group discussions (FGDs) conducted in Kuala Lumpur, Malaysia, and Kanagawa, Japan, involving representatives from four key stakeholder groups: community, government, ICT industry, and academia. Preliminary findings reveal a clear divergence in how halal tourism is conceptualised and implemented across the two contexts. Malaysian stakeholders demonstrated a structured, policy-driven approach grounded in established halal ecosystems, while Japanese stakeholders emphasised flexibility, cultural sensitivity, and a gradual adaptation model aligned with a minority-based context. Across both settings, participants highlighted the critical role of trust, clarity of halal information, and user-friendly digital platforms in shaping Muslim travel experiences. Furthermore, the integration of smart tourism technologies—such as mobile applications, location-based services, and multilingual interfaces—was identified as a key enabler, though inconsistencies in data accuracy and standardisation remain significant challenges. The study also identifies a shift towards a broader “diversity approach” in Japan, where Muslim-friendly services are embedded within wider inclusivity strategies rather than treated as standalone offerings. This paper contributes to the emerging discourse on halal tourism by proposing a context-sensitive i-Halal framework that integrates governance, technology, and cultural adaptation. The findings offer practical insights for policymakers and industry stakeholders aiming to enhance Muslim-friendly tourism in non-Muslim majority destinations.

Keywords

Halal Tourism; Smart Tourism; Muslim-Friendly Services; Stakeholder Perception; Japan–ASEAN Collaboration

SUSTAINED: CIRCULAR WASTE SOLUTIONS IN COMPOSTING AND COMMUNITY FOOD GROWING. A CASE-STUDY

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Abstract

The rapid growth of the Muslim travel market has prompted non-Muslim majority destinations to explore more inclusive and culturally responsive tourism strategies. This study examines the development of Intelligent Halal (i-Halal) tourism within the Japan–ASEAN context, focusing on stakeholder perceptions, challenges, and opportunities in operationalising Muslim-friendly tourism through digital and service innovation. Using a qualitative approach, data were collected through a series of focus group discussions (FGDs) conducted in Kuala Lumpur, Malaysia, and Kanagawa, Japan, involving representatives from four key stakeholder groups: community, government, ICT industry, and academia. Preliminary findings reveal a clear divergence in how halal tourism is conceptualised and implemented across the two contexts. Malaysian stakeholders demonstrated a structured, policy-driven approach grounded in established halal ecosystems, while Japanese stakeholders emphasised flexibility, cultural sensitivity, and a gradual adaptation model aligned with a minority-based context. Across both settings, participants highlighted the critical role of trust, clarity of halal information, and user-friendly digital platforms in shaping Muslim travel experiences. Furthermore, the integration of smart tourism technologies—such as mobile applications, location-based services, and multilingual interfaces—was identified as a key enabler, though inconsistencies in data accuracy and standardisation remain significant challenges. The study also identifies a shift towards a broader “diversity approach” in Japan, where Muslim-friendly services are embedded within wider inclusivity strategies rather than treated as standalone offerings. This paper contributes to the emerging discourse on halal tourism by proposing a context-sensitive i-Halal framework that integrates governance, technology, and cultural adaptation. The findings offer practical insights for policymakers and industry stakeholders aiming to enhance Muslim-friendly tourism in non-Muslim majority destinations.

Keywords

Food Waste Diversion; Composting; Community Engagement; Early Childhood Education; Sustainable Food Growing

REGULATORY PERSPECTIVES FOR PLANT MOLECULAR FARMING IN MALAYSIA

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Abstract

Plant Molecular Farming (PMF) is widely perceived as an emerging biotechnological application, yet its regulatory complexity remains unaddressed in national frameworks. Malaysia is one of emerging nations with vested interests in the technology, but industry expressed concerns with regulatory complexity that may delay the speed of technological development. This is because PMF regulation falls under the ambit of Biosafety Act 2007 and relevant guidelines (such as Good Manufacturing Practice and clinical trial dossiers) for healthcare applications, both of which are regulated by different regulatory authorities. This study examines the strengths and limitations of existing regulatory mechanisms and how regulation can be improved to facilitate PMF commercialisation. Drawing on Risk Governance Theory and adaptive governance principles, a qualitative study was designed by integrating desktop research that analysed relevant Malaysia's policy documents for PMF, and semi-structured interviews with key stakeholders to elicit their opinions on strengths and weaknesses of current regulatory systems, and proposed recommendations to improve PMF regulation. Comparative analysis of document outputs and stakeholder insights revealed four important themes: (1) Regulatory mechanisms are 'precautionary', scientific and risk-based in nature, (2) Weak institutional readiness and industry leadership, (3) Cross-agency communication and administrative gaps (4) Insufficient Regulatory Capacity. Stakeholder narratives proposed several recommendations such as improvements in the final dossier approval checklist of PMF products, and improving expertise and skills for regulators to be more well-versed in PMF regulatory requirements.

Keywords

Plant Molecular Farming; Risk Governance Theory; Adaptive Governance; Regulations

Day 2: 23 July 2026

Parallel Session 2: Socio-Cultural Deliberation & Science Diplomacy

02.00 pm – 03.30 pm [UTC +8. Malaysia Time (MYT)]

Seminar Room 4

Moderator: Dr Noor Munirah Isa

TOWARDS A SPIRITUALITY-INFUSED AI ETHICAL FRAMEWORK FOR HUMAN AUTONOMY

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Abstract

As artificial intelligence (AI) becomes more embedded in daily life, concerns about its impact on core human values like dignity and autonomy are growing. This study examines how AI ethical principles are aligned with human autonomy, focusing on frameworks that prioritise protection for human autonomy. A systematic literature review of 14 journal articles is conducted to identify the content and examine ethical principles that address the impact of AI on human autonomy. Based on these findings, an ethical framework is developed for each article. The 14 frameworks are then summarised and synthesised into a new main framework which uncovers links between human autonomy, the foundations of personhood, and key AI ethical principles. While these frameworks provide a strong foundation, a more human-centred approach is needed to engage people on a deeper spiritual and moral level. Given the close relationship between autonomy and personhood, incorporating spirituality values into these frameworks could enhance the relationship. Integrating spiritual elements into the AI ethical frameworks can cultivate more virtuous and ethically conscious societies as AI technologies advance to more sophisticated spheres. The findings call for developing spirituality-based ethical framework that accommodates and supports human autonomy.

Keywords

Artificial Intelligence; Ethical Framework; Spirituality Values; Human Autonomy; Personhood; Ethics

EMPOWERING COMMUNITIES THROUGH UNIVERSITY- COMMUNITY ENGAGEMENT: SOCIOECONOMIC EMPOWERMENT OF PERSONS WITH DISABILITIES (PWD) VIA AQUAPONICS INNOVATION

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Abstract

This paper explores the evolving role of universities as catalysts for social change through practical community implementation. The primary focus is on the socioeconomic empowerment of Persons with Disabilities (PWD) through a collaborative and innovative Aquaponics project. The initiative moves away from a traditional "charity model" toward a partnership model built on reciprocity. At its heart is the concept of co-creation, where academic expertise and community wisdom merge to develop a sustainable socioeconomic ecosystem. By employing Participatory Action Research (PAR) and Service Learning, the university ensures that the community is an active driver of the project rather than a passive recipient. The empowerment framework is structured around four essential pillars that drive the project forward. First, the project prioritizes capacity building by developing specific technical competencies in PWDs to effectively manage and maintain modern agricultural systems. Second, it facilitates a robust knowledge transfer through structured training programs that bridge the gap between academic theory and practical field application. Third, the model emphasizes local participation by ensuring that the PWD community is deeply involved in every stage of the decision-making process to reflect their true needs. Finally, the initiative is committed to sustainable development by establishing a resilient model that secures long-term food security and financial independence for all participants. As a form of Social Innovation, the Aquaponics project functions as a vehicle for Social Entrepreneurship. It provides PWDs with the tools to become self-reliant, fostering a sense of agency and improving overall community wellbeing. The success of the project is measured through social impact assessment, focusing on the long-term sustainability of the economic model and the tangible benefits to the participants' quality of life. Finally, this paper addresses critical challenges in university–community engagement, such as maintaining funding, building authentic community trust, and avoiding "top-down" approaches that ignore local realities. Ultimately, this project serves as a roadmap for universities to engage in meaningful, transformative partnerships that leave a lasting legacy of empowerment.

Keywords

University-Community Engagement; PWD Empowerment; Aquaponics; Social Innovation; Knowledge Transfer; Sustainable Development

DEVELOPING AN INSTRUCTIONAL DESIGN FRAMEWORK FOR SCIENTIFIC ETHICS EDUCATION IN HIGHER EDUCATION INSTITUTIONS USING THE ASSURE MODEL AND THE FUZZY DELPHI METHOD

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Abstract

The significance of ethics education for students pursuing scientific studies is broadly recognised. Nevertheless, the conventional philosophical underpinnings of ethics present difficulties in ensuring the instructional methods and content are pertinent to science students. This lack of alignment between ethics education and the specific needs of scientific students often impedes the attainment of learning objectives in this critical area of study. To address this gap, this study aims to develop a new instructional design framework for teaching scientific ethics education (SEE), using the established ASSURE model and the Fuzzy Delphi method (FDM). The ASSURE model provides a systematic approach to instructional design, emphasising learner engagement and achievement of specific learning objectives. By incorporating the FDM, which allows for the consideration of diverse perspectives and uncertainties in the decision-making process, this study aims to create a comprehensive and adaptable framework for teaching scientific ethics. The research methodology involves a multi- stage process, beginning with the identification of key instructional methods for scientific ethics education through consultation with 23 educators using the FDM. Subsequently, these findings are integrated into the ASSURE model to create a structured instructional design framework, which includes specific strategies for lesson planning, implementation, and evaluation. This research endeavours to augment the efficacy and pertinence of SEE within academic and professional contexts by integrating the ASSURE model with the FDM. The framework presented herein is designed to furnish educators with a pragmatic resource for the development of captivating and influential learning environments, thereby fostering ethical judgement and responsible behaviour among individuals within the scientific domain.

Keywords

Instructional Design; Scientific Ethics Education; ASSURE Model; Fuzzy Delphi Method; Malaysian Universities

REFRAMING PLANETARY HEALTH EDUCATION: A MAQASIDIC APPROACH

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Abstract

Planetary Health Education (PHE) emphasizes the interdependence between human well-being and the Earth's natural systems. However, current PHE approaches are largely framed within scientific knowledge, such as medical, nursing, and bio-health, often overlooking spiritual, ethical, and religious dimensions that are critical for socio-cultural engagement. Addressing this gap, this study argues that strengthening PHE in Malaysia's Muslim-majority context requires the meaningful integration of Islamic perspectives to enhance ethical reflection and societal relevance, particularly in the era of the Anthropocene. This study examines how *Maqasid al-Shariah* (the objectives of Islamic law) can serve as an educational paradigm for reframing PHE in Malaysia, in line with the country's ethical and societal values. Employing a qualitative methodology, data were drawn from primary Islamic sources (the Qur'an and Hadith), classical and contemporary scholarly works, and relevant policy documents, for example, the National Planetary Health Action Plan and the Malaysia Education Plan (RPM) 2026-2035. Through conceptual and thematic textual analysis, core Maqasidic principles were identified, and an integrative framework was developed to align PHE with Islamic legal and ethical guidance. The findings indicate that the Maqasidic framework provides a robust and coherent foundation for faith-based PHE. Its normative structure offers strong ethical and spiritual grounding, particularly through the incorporation of three primary objectives: *hifz al-din* (protection of religion), *hifz al-nafs* (protection of life), and *hifz al-'aql* (protection of intellect). Furthermore, the study provides practical guidance for curriculum design and interdisciplinary integration in PHE, supporting the realization of the goals and aspirations of Malaysia's National Education Philosophy.

Keywords

Planetary Health Education; *Maqasid al-Shariah*; Religious Ethics; Spiritual Values; Malaysia

INTEGRATING BIOANTHROPOLOGY AND SCIENCE DIPLOMACY: A POTENTIAL WAY FORWARD

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Abstract

Bioanthropology has potential in serving as a human-centric catalyst for science diplomacy by using the "neutral language" of human remains to bridge political and cultural divides. Bones could become a non-partisan medium for scientific dialogue that would provide an objective, fact-based record of a person's life, death, and identity that exists independently of political rhetoric or national narratives. This conceptual framework operates across the three established pillars of science diplomacy; Science on Diplomacy, Diplomacy for Science, and Science for Diplomacy. Bioanthropology provides a scientific platform for international law and humanitarian action as forensic anthropologists collaborate with organizations to identify victims of conflict and migration, ensuring legal accountability and humanitarian closure while instigating cross-border research protocols. Crucial diplomatic efforts would facilitate the repatriation of ancestral remains and establish global ethical guidelines for international forensic anthropology efforts. Bioanthropology could also act as "bridge-builders" in contested regions in terms of collaborative excavations to foster trust and shared human identity even when formal political channels are frozen. Furthermore, the field informs health diplomacy through paleopathology, providing a perspective on pathogen evolution and environmental resilience that supports the modern "One Health" framework. In a world currently fractured by discrimination and war, the biological evidence of our shared past remains a universal constant. This presentation discusses the potential bioanthropology has as a critical tool for modern science diplomacy, transforming the study of human remains into a vehicle for restorative justice and a primary agent of unity across diverse and conflicting populations.

Keywords

Bioanthropology; Conceptual Framework; Justice; Science Diplomacy

**International Conference on Science, Technology and Society 2026
(iCon-STS 2026)**

**STI for Social Good: Adapting Policy, Society and Industries for
Sustainable Development**

22 - 24 July 2026

Poster Presentation Abstract

MARINE NATURALISTS: CONNECTING THE SEA WITH THAI YOUTH

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Abstract

More than seventy percent of Earth is covered by the sea, making it the largest natural resource on the planet. The ocean not only affects global food resources but also plays a critical role in regulating the climate. However, it is currently being severely impacted by environmental problems caused by human activities such as overfishing and marine pollution. These issues are leading to rapid changes in marine biodiversity and ecosystems. Marine naturalists play an essential role in monitoring these impacts through research projects focused on marine biodiversity and environmental change. The knowledge gained from these studies not only reveals the current state of our ocean but also highlights how human behavior contributes to these problems. Therefore, it is crucial to communicate this knowledge to public, especially children, to raise awareness that our everyday actions can help protect and sustain the sea, as well as to show them how marine science research benefits our lives and the world. In order to address these challenges, The Natural History Museum, National Science Museum Thailand has developed a program called the "Research Show by Naturalist." This project provides marine naturalists with opportunities to communicate their research by creating hands-on learning experiences for children. Through various media, including videos, marine specimens, preserved samples, and reference collections, the program stimulates learning, fosters marine conservation awareness, and inspires children to change their behavior to help protect the sea. It also aims to encourage children to pursue future careers in marine science.

Keywords

Marine Naturalists; Thai Youth; Science Communication

ASSESSING QUORUM QUENCHING EFFICACY OF BERMUDA GRASS EXTRACT AGAINST MASTITIS – CAUSING BACTERIA ISOLATED FROM CATTLE (PRELIMINARY)

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Abstract

Bovine mastitis remains a major economic and welfare issue in the dairy industry, exacerbated by the emergence of antimicrobial resistance among pathogenic bacteria like *Escherichia coli*. This study aimed to isolate, characterize, and evaluate the biofilm formation of *E. coli* obtained from mastitis-infected cattle, and to assess the antimicrobial activity of *Cynodon dactylon* (Bermuda grass) extracts as a potential therapy. Bacterial isolates were done on MacConkey agar and confirmed through 16S rRNA gene sequencing. Phylogenetic analysis revealed 97-100% similarity between the isolates and known pathogenic *E. coli* mastitis strains. Biofilm formation was assessed quantitatively and showed that the isolates developed a strong biofilm formation with a mean optical density (OD₆₀₀) value increasing from 2.98 ± 0.33 at 24 hours to $3.60 \pm$ at 48 hours. Crude extracts of *C. dactylon* were prepared using chloroform, methanol, and ethyl acetate solvents. Antimicrobial was tested at concentrations of 200, 500, 700, and 1000 ppm, and the results revealed that ethyl acetate extracts exhibited the strongest inhibitory effect with a mean inhibition zone of 15.8 ± 0.30 mm at 1000 ppm, outperforming the methanol and chloroform at 7.9 ± 0.55 mm and 8.0 ± 0.76 mm. These findings suggest that *C. dactylon* contains bioactive compounds that carry quorum quenching properties, which can disrupt bacterial growth and potentially interfering with quorum-sensing pathways. This study highlights *C. dactylon* as a promising natural source for developing quorum-quenching agents against biofilm-forming mastitis pathogens, offering an eco-friendly and sustainable alternative to conventional antibiotics.

Keywords

Bovine Mastitis; *Escherichia Coli*; Antimicrobial Resistance; Antimicrobial Activity; Quorum Quenching; Quorum Sensing

CHALLENGES IN CROSS-CULTURAL DATA COLLECTION: A COMPARATIVE STUDY OF I-HALAL TOURISM RESEARCH IN MALAYSIA AND JAPAN

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Abstract

Halal tourism is a significant niche of the global travel industry, especially for Japan, where the number of Indonesian and Malaysian tourists has been steadily rising due to visa-free travel. Japan has great potential but is still lacking in Halal-oriented facilities and certification systems. Focus Group Discussions (FGDs) and Interviews were conducted in Malaysia and Japan to examine the challenges and opportunities of “iHalal” tourism. The study deals with the specific problems and cultural barriers faced during data collection in these two different national contexts. The main data collection tool used in this study was FGDs. In Malaysia, 21 participants were classified into four stakeholder groups: Government, Industry, Community, and Academics. In Japan, a similar structure was attempted but had to be combined and adjusted for the local participants, who were much fewer in number. The data collection process revealed a significant distinction in the successful outcome of recruitment. Institutional experts (e.g., JAKIM, ITC, and JNTO) in Malaysia were reached through existing professional networks and referrals from other researchers. In contrast, the Japan phase was characterized by communication difficulties, with the initial emails largely ignored and the first scheduled session having to be canceled. To address this lack of local networking, the research team made an approach to work with a third-party (KEMEJA) and reorganized the participant pool to include the Malaysian expats in Japan. The collaborative approach has also resulted in valuable interviews with a local Japanese Halal Wagyu business owner and a revert Japanese Muslim leader in Chiba Prefecture. These experiences suggest that cross-cultural research needs more than standardized protocols; it requires high cultural adaptability. The study concludes that researchers should undertake a “Cultural Risk Assessment” before fieldwork and be prepared to utilize third-party collaborators to break through “out-group” barriers in high-context societies like Japan.

Keywords

Cross-Cultural Research; I-Halal Tourism; Qualitative Data Collection; Fieldwork Challenges; Malaysia-Japan Comparison

ASSEMBLING DIGITAL HALAL TOURISM: AN ACTOR-NETWORK PERSPECTIVE IN MALAYSIA

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Abstract

The growth of halal tourism has been supported by digital technologies, yet many initiatives still treat technology as a simple tool and overlook the wider system in which it operates. This study examines digital halal tourism in Malaysia using Actor-Network Theory to understand how tourism experiences are shaped through interactions among different actors. These actors include policymakers, tourism industry players, Muslim travellers, and digital platforms such as mobile applications and online content. This paper presents a preliminary qualitative study based on stakeholder engagements, including workshops and informal consultations. The analysis focuses on early stages of translation; problematization, interessement, and initial enrolment to explore how a digital halal tourism platform starts to take shape within a network of actors. The findings suggest that digital platforms do more than provide information. They act as mediators that influence trust, coordination, and user decisions in the tourism experience. At the same time, this study recognises some limitations of ANT. While ANT is useful in tracing relationships between actors, it gives less attention to issues such as power differences, institutional roles, and normative questions about inclusivity. These factors are important in Malaysia, where governance structures and halal authorities play a strong role. In conclusion, this study shows that digital halal tourism should be understood as a socio-technical system, not just a technological solution. It offers early insights for developing more integrated and inclusive halal tourism systems.

Keywords

Actor-Network Theory; Socio-Technical Systems; Tourism Innovation; Digital Tourism