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ICSET 2026

5th International Conference on Sustainable Education and Technological Innovation

17th–18th March 2026

Taipei, Taiwan

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Organized by

IFERP Academy
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GIMS
GNIOT Institute of Management Studies

GNIOT Institute of Management Studies, India

5th International Conference on Sustainable Education and Technological Innovation (ICSET-2026), Taipei, Taiwan

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Conference Theme:

Empowering Sustainable Futures: Quality Education and Technological Innovation

Preface

We are delighted to extend a warm welcome to all participants attending 5th International Conference on Sustainable Education and Technological Innovation (ICSET-2026) organized by IFERP Academy-Taiwan Society on March 17th-18th, 2026. This conference provides a vital platform for researchers, students, academicians, and industry professionals from all over the world to share their latest research results and development activities in the field of Sustainable Education and Technological Innovation. It offers delegates an opportunity to exchange new ideas and experiences, establish business or research relationships, and explore global collaborations.

The proceedings for ICSET-2026 contain the most up-to-date, comprehensive, and globally relevant knowledge in the field of Sustainable Education and Technological Innovation. All submitted papers were subject to rigorous peer-reviewing by 2–4 expert referees, and the papers included in these proceedings have been selected for their quality and relevance to the conference. We are confident that these proceedings will not only provide readers with a broad overview of the latest research results in Sustainable Education and Technological Innovation but also serve as a valuable summary and reference for further research in this field.

We are grateful for the support of many universities and research institutes, whose contributions were vital to the success of this conference. We extend our sincerest gratitude and highest respect to the many professors who played an important role in the review process, providing valuable feedback and suggestions to authors to improve their work. We also extend our appreciation to the external reviewers for providing additional support in the review process and to the authors for contributing their research results to the ICSET-2026.

Since October 2025, the Organizing Committees have received more than 100+ manuscript papers, covering all aspects of ICSET-2026. After review, approximately 25+ papers were selected for inclusion in the proceedings of ICSET-2026. We would like to thank all participants at the conference for their significant contribution to its success.

We express our gratitude to the keynote and individual speakers and all participating authors for their dedication and hard work. We also sincerely appreciate the efforts of the technical program committee and all reviewers, whose contributions made this conference possible. Finally, we extend our thanks to all the referees for their constructive comments on all papers, and we express our deepest gratitude to the organizing committee for their tireless work in making this conference a reality.

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About **ICSET 2026**

The 5th International Conference on Sustainable Education and Technological Innovation (ICSET 2026) will bring together leading academicians, researchers, industry experts, policymakers, and innovators to discuss how education and technology can work together to shape a sustainable future. This two-day event will feature keynote addresses, technical sessions, panel discussions, and workshops designed to foster collaboration, share knowledge, and explore solutions aligned with the UN Sustainable Development Goals (SDGs).

"Empowering Sustainable Futures: Quality Education and Technological Innovation" This theme reflects the urgent need to merge education and technology to create practical, scalable solutions for a better future. ICSET 2026 aims to be a hub for knowledge exchange, collaboration, and impactful innovation toward building a sustainable world.

Purpose of the Conference

- Facilitate the exchange of knowledge and best practices between academia, industry, and government.
- Foster innovation-driven approaches that enhance educational systems and learning environments.
- Address the challenges and opportunities in leveraging technology for inclusive, equitable, and sustainable development.
- Inspire collaborative research and partnerships that contribute to global sustainability agendas.

Objective of the Conference

- *Foster Interdisciplinary Collaboration:* Unite professionals from computer science, cybernetics, and education to encourage integrated research and innovation.
- *Advance Technology-Driven Education:* Explore how emerging technologies can enhance teaching methods, accessibility, and learning outcomes globally.
- *Translate Research into Practice:* Bridge the gap between academic research and real-world applications for societal and educational impact.
- *Promote Sustainable Development Goals (SDGs):* Align conference initiatives with the UN SDGs, focusing on inclusive, equitable, and quality education.
- *Empower Emerging Scholars and Professionals:* Provide a global platform for students, researchers, and educators to present their work, network, and grow professionally.

Scope of the Conference

- *Sustainable Education Models:* Innovative teaching methods, curriculum reforms, and inclusive learning strategies.
- *Technological Innovations:* Artificial intelligence, digital learning platforms, and emerging educational technologies.
- *Environmental & Social Impact:* Green technology, sustainable policies, and community-based education initiatives.
- *Policy & Governance:* Regulatory frameworks, educational reforms, and technology-driven policy strategies.
- *Global Collaboration:* Cross-border research, cultural exchange, and international partnerships.

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About **IFERP Academy**

The IFERP Academy is a committed professional organization that advances engineering, science, and technology. IFERP anticipates a global scientific community brought together by digital innovation. This organization puts a great emphasis on promoting research activities, communicating the newest insights, and driving industrial trends.

IFERP has built strong networks throughout Asia, the Middle East, Europe, and countries such as Iraq, Malaysia, Australia, and more. They have incorporated networking, research support, publications, and worked in other scientific areas.

IFERP excels in organizing International Conferences that connect researchers worldwide. It holds important international webinars, publishes journals and publications that are indexed by Web of Science and SCOPUS, and provides thorough research assistance and guidance. Engaging in Youth Empowerment projects and encouraging Industry-Institute Interaction are key components of IFERP's goal. The organization is committed to enabling professionals through faculty advancement, skill development, and persistent research and publication initiatives.

What IFERP Do?

- Academic Resource Accessibility: They make academic resources and support available to aspiring scholars in rural as well as urban locations.
- Diverse Educational Programs: They organize a wide range of educational events such as workshops, conferences, webinars, seminars, guest lectures, short-term training programs, and faculty development programs.
- Drive Innovation: They work hard to foster curiosity and creativity, and stay up to date on the newest trends and advancements in the dynamic field of Engineering, Science, and Technology.
- Knowledge Sharing and Collaboration: They believe in the strength of the exchange of knowledge and actively collaborate with institutions, organizations, and associations to contribute to our shared objective of a better future.
- Publication & Recognition: They also provide opportunities for research articles to be published in reputable journals and actively promote and encourage transdisciplinary research activities.

Mission

Upskilling the knowledge hub through technological innovation and excellence for the benefit of humanity.

Vision

A digitally equipped robust, dynamic & swift professional community integrating academics & industry for upgraded technical knowledge implementation.

Value

IFERP values the restoration of highlevel technological research, learning, collaboration, resource sharing & community-building traditions.

Goal

To serve as the foundation for all technological progress and advancement activities around the world.

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Director's Message, IFERP

Mr. A. Siddth Kumar Chhajer

Managing Director & Founder,
IFERP, Technoarete Group, India

On behalf of IFERP & the organizing committee, I express my hearty gratitude to the participants, keynote speakers, delegates, reviewers and researchers.

The goal of the 5th ICSET 2025 is to provide knowledge enrichment and innovative technical exchange between international researchers or scholars and practitioners from the academia and industries in various fields of sustainable education and technology. This conference creates solutions in different ways and to share innovative ideas in the field of education and technology.

ICSET-2026 provides a world class stage to the researchers, professionals, scientists, academicians, and students to engage in very challenging conversations, assess the current body of research and determine knowledge and capability gaps.

ICSET-2026 will explore the new horizons of innovations from distinguished researchers, scientists and eminent authors in academia and industry working for the advancements in sustainable education and technology from all over the world. ICSET-2026 hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in various fields of education and technology.

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Chief Executive's Message, IFERP

Mr. A. Siddth Kumar Chhajer

Chief Executive Officer & Founder,
IFERP, Technoarete Group, India

IFERP is hosting the 5th International Conference on Sustainable Education and Technological Innovation (ICSET-2026) this year in month of March. The main objective of ICSET-2026 is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points, and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions.

The sessions serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader.

I express my hearty gratitude to all my colleagues, staffs, professors, reviewers and members of organizing committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to make this conference successful.

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Director's Message, GIMS

Dr. Ruchi Rayat

Executive Director,
GNIOT Institute of Management Studies , India

Dear Distinguished Delegates, Esteemed Scholars, Industry Experts, and Dear Students,

It gives me great pleasure to extend a warm welcome to all distinguished delegates, academicians, researchers, industry professionals, and students participating in the 5th International Conference on Sustainable Education and Technological Innovation (ICSET–2026) to be held on 17–18 March 2026 in Taipei, Taiwan in hybrid mode.

The theme of the conference is a powerful, foreseeable statement. Inclusivity is an important aspect for sustaining an idea. The theme is guaranteeing that the next generation doesn't get a half picture of digital transformation and innovation. The generation is also aware of the pace at which the world is getting interconnected. I am certain that the knowledge shared through this conference will provide academic researchers with a new interdisciplinary approach to dwell upon, and the industry experts will gain insight into the correlated business expansion domains.

The Indian education system is evolving rapidly and producing intellect of high quality. The impact that Indian digital transformation and innovation has on its people and world is significant. India is undisputedly leading the world in digital transactions and payments. In 2024, the digital transactions in India accounted for 129.3 – 164 billion transactions through Unified Payments Interface (UPIs). These digital transactions curtailed the flow of fake currency, which is one of the biggest challenges for many countries as on date. The Indian Higher Education system is committed to provide upcoming generation a robust and agile knowledge platform that can be utilised by the students for building resilience and serving humanity.

At the end, I extend my warm congratulations to the organisers for their tireless effort in bringing people from various cultures and backgrounds together on this platform. I am certain that the conference will serve as a platform for sharing ideas, developing collaborations and a repository for futuristic research and development.

I wish all participants a productive conference, meaningful discussions, and an enriching academic experience.

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Dean's Message, GIMS

Dr. Shalini Sharma

Dean – Outreach and Student Welfare
GNIOT Institute of Management Studies (GIMS) Greater Noida, India

It gives me great pleasure to extend a warm welcome to all distinguished delegates, academicians, researchers, industry professionals, and students participating in the 5th International Conference on Sustainable Education and Technological Innovation (ICSET-2026) to be held on 17th–18th March 2026 in Taipei, Taiwan in hybrid mode.

In an era characterized by rapid technological transformation and global interconnectedness, the integration of quality education and technological innovation has become essential for building a sustainable and resilient future. The theme of this conference, "Empowering Sustainable Futures: Quality Education and Technological Innovation," reflects the growing need for interdisciplinary collaboration to address global challenges and advance societal progress.

International conferences such as ICSET-2026 provide a valuable platform for scholars and professionals from diverse disciplines to share research insights, exchange innovative ideas, and build meaningful global collaborations. Through keynote sessions, technical discussions, and interactive engagements, this conference will foster dialogue on emerging trends in sustainable education, digital transformation, ethical technology, and research-driven innovation.

At GNIOT Institute of Management Studies (GIMS), Greater Noida, we are committed to promoting academic excellence, industry-relevant education, and global engagement. Our institution strongly believes in nurturing future leaders who are innovative, socially responsible, and equipped to contribute positively to society. Platforms such as ICSET help strengthen our commitment to research, collaboration, and knowledge creation on an international scale.

I would like to commend the organizers for their vision and efforts in bringing together this important global forum. I sincerely hope that the conference will inspire insightful discussions, encourage interdisciplinary partnerships, and generate impactful ideas that contribute toward a more sustainable and technologically empowered future.

I wish all participants a stimulating and rewarding conference experience.

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About **Invited Keynote Speaker**

Dr. Hany Zaky

Director of Assessment and Institutional Effectiveness, Eastern International College, USA

Dr. Zaky is an internationally recognized scholar, assessment expert, and curriculum consultant. His extensive teaching and consulting experience throughout his career has enabled him to work effectively with a diverse range of linguistic learners. He is dedicated to the conviction that lifelong learning promotes human fulfillment and facilitates positive social change. Throughout most of his teaching and training career, Zaky has worked with adult learners. He taught literacy, composition, and STEM-related courses to undergraduate students at the Pennsylvania State System of Higher Education, Kean University, The American University in Cairo, Hudson County Community College, and Union County Community College. Currently, he leads the assessment and accreditation team at Eastern International College (EIC-NJ, USA), focusing on institutional effectiveness in Allied Healthcare. Outside the classroom, Dr. Zaky collaborates with faculty members from various disciplines at his own institution and nationwide to promote inclusive, equitable, and contextually relevant education, grounded in the latest research on leadership, teaching, and learning. Through his teaching and research, he aims to offer his students transformative opportunities grounded in the aesthetics of learning, truth-seeking, justice, and self-realization. Dr. Zaky received his doctorate from Indiana University of Pennsylvania (IUP), with a focus on Curriculum and Instruction. His research interests and published work encompass Teacher Reflection, Action Research, Reflective Teaching, Educational Technology, Assessment and Evaluation, Professional Development for Diversity, and Culturally Responsive Pedagogy. Dr. Zaky serves as Editor-in-Chief of the "International Journal of Interactive Communication Systems and Technologies- IJICST- IGI Global." Additionally, he is a member of the editorial review boards of "SN Social Sciences, Springer," and "Journal of International Students, JIS, Routledge."

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About **Keynote Speaker**

Dr. Balan Rathakrishnan

Associate Professor,
Universiti Malaysia Sabah,
Malaysia

Dr. Balan Rathakrishnan is an Associate Professor at the Faculty of Psychology and Social Work, University Malaysia Sabah (UMS), where he specializes in youth and community development programs. He holds a Ph.D. and an M.A. in Psychology from the National University of Malaysia (UKM), as well as a Master's in Counselling from Open University Malaysia. Dr. Balan is also a registered counselor in Malaysia. In recognition of his significant contributions to research and education in social sciences, Dr. Balan was awarded the World Inventor Award in 2013 in the field of research and education by Korea. Additionally, in 2023, he was named a Top Researcher by Scienties Malaysia (TRSM). His research interests include youth development, creativity, innovation, and developing interventions to address social issues affecting young people. Dr. Balan has published extensively on topics such as stress management, career development, mental health, youth problems, and life skills, with his work presented at both national and international forums. Dr. Balan is an active counsil member of the Malaysian Psychology Association.

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About **Keynote Speaker**

Dr. Ramakrishnan Ramanathan

Professor,
University of Sharjah,
UAE

Professor Ramakrishnan Ramanathan is a distinguished academic in the Department of Management, College of Business Administration, at the University of Sharjah, United Arab Emirates, where he holds the rank of Professor. He specializes in operations management, supply chains, sustainability, and big data analytics, contributing to both teaching and research excellence in these areas. University of Sharjah Professor Ramanathan brings extensive international academic experience, having worked and taught in multiple countries including the UAE, the United Kingdom, Finland, the Netherlands, Oman and India across a range of institutions. His scholarly interests focus on decision science, optimization, and the application of analytical tools to real-world problems in enterprise productivity and sustainable systems. University of Sharjah He has successfully led and completed numerous funded research projects worldwide and serves on the editorial boards of several international journals. Professor Ramanathan has published widely in highly regarded refereed journals and presented at many international conferences. His research excellence has been recognized through prestigious rankings, including being listed among the top business and management scientists in the UAE based on citation metrics.

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About **Keynote Speaker**

Dr. Corrienna Abdul Talib

Associate Professor,
Universiti Teknologi Malaysia (UTM),
Malaysia

Dr. Corrienna Abdul Talib is an Associate Professor in the Department of Innovative Science and Mathematics Education, Faculty of Educational Sciences and Technology, Universiti Teknologi Malaysia (UTM). She is also currently appointed as an Adjunct Professor at Universitas Brawijaya, Indonesia. She holds a PhD and a master's degree in chemistry education from Universiti Sains Malaysia. A UTM, she serves as the Coordinator for the postgraduate programs in Chemistry and Science Education. Dr Corrienna has been an active researcher and innovator, with numerous local and international awards recognizing her contributions to education and technology. Her community engagement projects have been rated 3 and 5-star for their impact and quality. She leads various initiatives in Computational Thinking Skills, Microscale Chemistry, Visual Programming Languages, Thinking Skills, Augmented Reality and Game based learning, and is involved in multidisciplinary and international research grants. She holds several copyrights and leads award-winning STEAM research project such as the Scratchtopia Challenge, SciBog and MYGAMBOT. Her expertise has earned her invitations as a keynote speaker, plenary speaker, guest speaker, as well as visiting professor both locally and internationally. In addition, she has conducted more than 50 training sessions and workshops. Dr Corrienna is a Design Thinking Professional Certification Program Instructor and Coordinator, a certified Computational Thinking Master Trainer, a Professional Entrepreneur Certified Trainer and a TRIZ Level 2 Certified Practitioner.

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About **Keynote Speaker**

Ts. Dr. Noor Dayana Abd Halim

Associate Professor,
Universiti Teknologi Malaysia (UTM),
Malaysia

Assoc. Prof. Ts. Noor Dayana Abd Halim is a Lecturer at School of Education, Faculty of Social Sciences and Humanities Universiti Teknologi Malaysia since 2009. At present, she holds a post as Head of Department of Advanced Learning Technology. She received a Bachelor of Science and Technology in Education degree in Chemistry from Universiti Teknologi Malaysia in 2009, and a Ph.D. in Educational Technology from the same university in 2012. Her research interests include online learning, open and distance learning, augmented and virtual reality, multimedia learning, personalized learning, and any other topics related to technology in education. She is also a member of the Young Scientists Network Academy of Sciences Malaysia (YSN-ASM) and a professional member of the Malaysian Board of Technologists (MBOT). She usually serves as a speaker and facilitator related to online learning, teaching and learning with technology including MOOCs and Micro-Credential development courses. She is the winner for AKRI 2022 under the category of Innovative Curriculum Study awarded by Malaysian Ministry of Higher Education

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About **Keynote Speaker**

Dr. Azlan Bin Abdul Latib

Associate Professor,
Universiti Teknologi Malaysia (UTM),
Malaysia

Associate Professor Dr. Azlan Bin Abdul Latib was born in Melaka, Malaysia. He obtained a Diploma in Agricultural Engineering from Universiti Pertanian Malaysia, Serdang in 1991 and later pursued a degree in Mechanical Engineering Education at Universiti Teknologi Malaysia (UTM) in 1997. He continued his studies at the Master's and PhD levels in the field of Technical and Vocational Education. He began his career at UTM in 1997 as a Tutor and was appointed as a Lecturer in 2000 at the Department of Advanced Technical and Vocational Education and Training, Faculty of Educational Sciences and Technology, Universiti Teknologi Malaysia. After completing his Doctoral Degree in 2010, he was appointed as Deputy Director of the Centre for General and Co-Curriculum Courses for four years, followed by Deputy Director of UTM Alumni Office for another four years. His interest in developing student activities, generic skills, and employability continued when he was appointed as Director of Student Activity Development under the Department of Deputy Vice Chancellor (Student Affairs and Alumni) of UTM in August 2019. Dr. Azlan is also active in associations at the school level and currently participates actively in alumni associations. He has led various community service programs both at UTM and internationally, collaborating with institutions such as Universitas Gadjah Mada, Universitas Andalas, Universitas Muhammadiyah Purwokerto and Universitas Muhammadiyah Makassar. He has also successfully organized service-learning community programs in Cambodia and Bangladesh. Dr. Azlan was appointed as an Associate Professor in 2019. He is currently focusing on lecturing in the field of Technical and Vocational Education, particularly in agriculture, pneumatics and hydraulics, design technology, and teaching methodology for both undergraduate and postgraduate programmes.

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About **Keynote Speaker**

Dr. Jon-Chao Hong

Professor, National Taiwan Normal University (NTNU) &
Director, Digital Game-based Learning Laboratory (GBL),
Taiwan

Jon-Chao Hong is currently working as a life-long research professor at National Taiwan Normal University (NTNU). As the director of Digital Game-based Learning Laboratory (GBL), his team has developed more than 20 Apps for learning domain knowledge as well as thinking skill, such as "CompputUp," "Picasso" and "AIoT games for developing imagination and thinking skills with various domain-knowledge learning collaboratively. Additionally, he leaded his team has also developed more than 10 immersive VR in skill development, such as fire escaping, earthquake escaping, Jazz drum, spatial ability development and so on. Currently, his researches have been focused on human-AI collaboration for students to learn sustainability. In addition, he has published a number of academic articles in international journals. In recent four years, he has more than 60 articles published on SSCI journals. He has received the Outstanding Research Prize from Ministry of Science and Technology in Taiwan. In 2022, 2023, 2024 and 2025, he was ranked as the top 2% scientists rated by Sandford University. In the 2025 list of GoogleGPS, he also was ranked the top 0.5% in Education area. In the academic communities, he also serves the Chairperson of International Exhibition for Young Inventors, and the Chief Executor of iSTEAM-PowerTech contest, Taiwan Exhibition for Young Inventors and GoSTEAM (i.e., intellectual manufacturing) contest. Additionally, he organizes AI workshops for exploring nature science, creating poem, knowledge mapping etc., and AI workshops for students to invention.

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About **Keynote Speaker**

Dr. Shien-Kuei Liaw

Professor,
National Taiwan University of Science and Technology,
Taiwan

Shien-Kuei Liaw is a Distinguished Professor in the Department of Electronic Engineering at National Taiwan University of Science and Technology (Taiwan Tech). He holds a Ph.D. in Photonics from National Chiao Tung University and a Ph.D. in Mechanical Engineering from National Taiwan University, reflecting a strong interdisciplinary foundation that integrates engineering education, technology innovation, and system-level thinking. Prof. Liaw is deeply committed to sustainable education and educational innovation aligned with the United Nations Sustainable Development Goals (SDGs). His academic leadership emphasizes the integration of advanced engineering technologies with problem-based learning, industry–academia collaboration, and real-world societal applications. He has led and coordinated multiple national programs that combine engineering education with intelligent infrastructure, sensing technologies, and sustainability-driven solutions. At Taiwan Tech, Prof. Liaw has played an active role in curriculum development, interdisciplinary education, and graduate training, mentoring students to become globally competent engineers and researchers. He also contributes extensively to the international academic community as an Associate Editor of SCI-indexed journals and as Program Chair and General Chair of major international conferences. Prof. Liaw has published over 350 SCI journal papers, delivered more than 40 invited and keynote talks worldwide, and is an elected Fellow of Optica and SPIE.

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About **Session Speaker**

Dr. Mohd Fadzil Bin Abdul Hanid

Universiti Teknologi Malaysia (UTM), Malaysia

Ts. Dr. Mohd Fadzil Bin Abdul Hanid is a Senior Lecturer at the Department of Advanced Learning Technology, Universiti Teknologi Malaysia (UTM). With expertise in Augmented Reality (AR), Virtual Reality (VR), and Artificial Intelligence (AI) in education, his research interests also encompass computational thinking, immersive learning, and online education. He completed his PhD in Educational Technology at UTM in 2021 and holds a Master's in the same field. Dr. Fadzil has contributed significantly to the development of innovative educational tools and methodologies, particularly through his work on AR applications in learning. His research achievements are recognized internationally, with several publications in top-tier journals and multiple awards, including gold and silver awards for innovation. He is actively involved in various academic committees and leadership roles, fostering collaborations and advancing educational technologies. Dr. Fadzil also supervises graduate students and is dedicated to advancing both research and teaching in the field of educational technology.

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About **Session Speaker**

Dr. Renjith V Ravi

Rashtriya Raksha University, India

Dr Renjith V Ravi is presently working as the Head of Center for research on Cyber physical systems at School of Applied Sciences, Engineering and Technology, Rashtriya Raksha University, Gandhinagar, Gujarat. Previously he employed as Associate Professor and Head of the Department of Electronics and Communication Engineering and Institution level Academic Coordinator of the Post Graduate Programs at MEA Engineering College, Kerala, India. He possesses B.Tech. degree in Electronics and Communication Engineering in, M.E. degree in Embedded System Technology and Ph.D. in Electronics and Communication Engineering. He is a member of the panel of academic auditors of APJ Abdul Kalam Technological University, Kerala and had conducted external academic auditing in various affiliated institutions under the same University. He had published several research articles in SCIE and Scopus indexed journals, Edited books and international conferences inside and outside the country. He is an academy graduate and academy mentor in Web of Science and a certified peer reviewer from Elsevier Academy. He has been serving as a reviewer for various SCIE and Scopus indexed journals from IEEE, ACM, Springer, Elsevier, Taylor & Francis, IET, Inderscience, World Scientific, IOS Press DeGruyter and IGI Global and completed more than 1000 peer reviews in Web of Science. He has been published six edited books from renowned international publishers. He got granted one patent, one industrial design and two copyrights. He had been awarded several outstanding achievement and outstanding service awards, and several best paper awards from international Conferences. He is a Fellow of IETE and member of IE, ISTE, CRSI, IACSIT, IAENG, SDIWC and senior member of SCIEI and SAISE and a chartered engineer certified by the Institution of Engineers (India). He has been served as the Program Committee member, Session Chair as well as reviewer of several National and International conferences conducted in India and abroad. His research areas include Image Cryptography, Image Processing, Machine Learning, Internet of Things Etc. He is currently focusing his research in the area of secure image communication using image cryptography.

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About **Session Speaker**

Dr. Radha Yadav

Indian Institute of Management (IIM), Ranchi, India

Prof. Radha Yadav is a faculty member in the Organizational Behavior and Human Resource (OB-HR) area at the Indian Institute of Management (IIM) Ranchi, India. She earned her PhD from the Indian Institute of Technology (IIT) Roorkee, India, and her research spans employee relations, leadership, employee well-being, quality of work life, and psychological outcomes at work. Prof. Yadav's work has been published in internationally recognized, peer-reviewed journals across management and applied psychology. Her recent publications appear in journals such as Business Strategy and the Environment (Wiley), International Journal of Hospitality Management (Elsevier), Management Review Quarterly (Springer), Personality and Individual Differences (Elsevier), and Journal of Environmental Psychology (Elsevier), among others — reflecting strong interdisciplinary impact in organizational studies, employee relations, sustainability, work and well-being.

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About **Organizing Committee**

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Conference Convenor, India.

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Bridging MSMEs to Green Finance: A Content Analysis of Fintech-Driven Access in Philippine Rural Banking

Robert Don L. Sale
Claro M. Recto Academy of Advanced Studies, Lyceum of the Philippines University, Manila, Philippines

Allan A. Calderon
Department of Financial Management, Polytechnic University of the Philippines, Manila, Philippines

Abstract:

This study examines the impact of financial technology (fintech) innovations on the accessibility of green finance for micro, small, and medium enterprises (MSMEs) within the rural banking sector in the Philippines. Through assessing key innovations, implementation challenges, strategic opportunities, and enabling policy frameworks, the research will also provide practical insights to the following stakeholders: MSMEs, rural banks, fintech companies, regulators, and research community. Using qualitative content analysis of secondary sources, it examines the relationship between digital adoption, sustainability efforts, and MSME inclusion. As a result, findings indicate a significant uptake of mobile wallets, Quick Response payments, and Open Finance Application Programming Interfaces, enhancing financial accessibility; yet, they seldom incorporate climate-resilient financing or Environmental, Social, and Governance (ESG)-related attributes. Green fintech models like renewable energy financing platforms and ESG-linked credit systems are still underdeveloped, and fragmented policies hinder the connection between digital and green finance. Structural impediments, including inadequate ESG awareness, deficient infrastructure, and digital skepticism, further constrain MSME involvement. Opportunities are available through inclusive tools, but success depends on participatory design and policy coordination. The study concludes that closing these gaps requires unified regulatory frameworks, ESG-driven product innovation, the development of green credit models, and active MSME involvement as co-creators.

Index Terms:

Fintech, Green Finance, MSME, Rural Banking, Content Analysis, Philippines

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Navigating Curriculum Reform in Early Grade Language Education: A Phenomenological Study of Public School Teachers under the Revised K to 12 Curriculum

Ma. Rebecca A. Abayan
Associate Professor 3, Leyte Normal University

Abstract:

A curricular shift that reshaped the Philippine educational system today is the introduction of the Revised K to 12 Curriculum, which aimed to decongest the learning competencies and strengthen foundational literacy. An essential aspect of this reform places language at the forefront, where it is viewed not just as a content subject but also as a mediating tool for learning. Several studies have already been conducted showing positive feedback regarding the initial implementation of the K to 12 Curriculum in various schools in the country; however, no current investigation was conducted focusing on teachers' lived experiences as they deliver these reforms in the language classroom context. This study navigates the journey of 10 randomly selected primary-grade language teachers as they implement the mandates of the Revised K to 12 Curriculum in their respective English classes in Leyte, Philippines. Anchored in sociocultural theory, this qualitative research employs a descriptive phenomenological research design to describe how language teachers enact their roles, negotiate multilingual realities, and manage various challenges in implementing the curricular reform. Semi-structured interviews, transcripts, and field notes, based on class observations and focus group discussions, were used to extract pertinent data, which were analyzed using Braun and Clarke's thematic analysis. The findings of the study are deemed to contribute to the body of knowledge on how curricular reforms are implemented at the classroom level and provide educators, school administrators, and curriculum planners with insights and valuable inputs in crafting strategic plans for enhanced teacher support and better implementation of the language education program under the Revised K to 12 Curriculum.

Index Terms:

Revised K to 12 Curriculum, Language Education, Sociocultural Theory, Descriptive Phenomenology, Thematic Analysis, Philippines

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Perceiving the Unspoken: Indonesian Cadets' Views on Intercultural Communicative Competence in Maritime English Education

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Abstract:

In the globalized maritime industry, linguistic proficiency alone is insufficient to ensure safety and operational efficiency; Intercultural Communicative Competence (ICC) is paramount. While the International Maritime Organization (IMO) mandates standard communication protocols, the human element of cross-cultural interaction remains a complex challenge. This study investigates the perceptions of effectiveness regarding ICC among cadets in Indonesian maritime higher education institutions. Focusing on the gap between academic preparation and real-world demands, this research employs a qualitative case study approach. Data were gathered through in-depth semi-structured interviews with cadets from two prominent maritime institutions in South Sulawesi. The findings reveal a significant paradox in student perceptions. Cadets demonstrate a high awareness of ICC's critical role, explicitly linking it to onboard safety, conflict resolution, and career advancement in multinational crews. However, they perceive the current Maritime English (MarE) curriculum as heavily skewed towards technical vocabulary and grammar, often treating ICC as a "hidden curriculum" rather than a structured learning objective. Participants expressed a strong need for pedagogical innovations that integrate cultural simulations and authentic communicative scenarios. These results suggest that to empower future seafarers, Maritime English teaching must evolve from a purely linguistic focus to a more holistic approach that explicitly trains intercultural agility. This study contributes to the future direction of ESP (English for Specific Purposes) curriculum design by highlighting the learners' voice in bridging the gap between classroom instruction and the multicultural reality of life at sea.

Index Terms:

Intercultural Communicative Competence (ICC), Maritime English, Student Perception, ESP, Indonesian Higher Education

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Role of UAV and BIM in Effective Claim Management

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Abstract:

Disputes are unavoidable in the construction industry due to its inherent complexity, substantial financial stakes, numerous stakeholders, and lengthy project durations. Construction projects also often experience time and cost overruns that escalate into claims and disputes due to imprecise progress records, communication gaps, and loose paperwork. Construction projects in the 21st century demand on-time project delivery, cost control, and the avoidance of disputes throughout the entire project lifecycle. Conventional monitoring methods often fail to provide the prompt, reliable, and evidence-based support necessary to manage these claims effectively. This study creates a theoretical structural model that illustrates how two latent variables—Unmanned Aerial Vehicle (UAV) surveys and Building Information Modelling (BIM)—affect the claim management process. The model was analysed using the data from a questionnaire survey. The findings of the data analysis indicate that modern project management techniques influence the effective claim management process. The results of this study will facilitate a deeper understanding of the challenges faced in managing construction claims and in developing more effective solutions using the latest project management techniques.

Index Terms:

UAV; BIM; Dispute; Construction Claims Management

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The Role of Mobile Technology in Learning App Development: A Systematic Review of Practices in State Universities

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Abstract:

Background: Mobile technology has completely changed the way students and teachers connect with each other and with information. These technologies are a tremendous tool for making education more accessible around the world because they are always changing and being used more. Higher education institutions must leverage these technologies to enhance their learning processes. Mobile learning greatly helps students do better in school and learn more, with language education being the most studied area. This study aims to conduct a bibliometric analysis of the role of technology in learning app development in State Universities. It likewise aims is to identify the trends and collaboration patterns among state universities.

Methods: The study utilized a bibliometric approach. Data were derived from the Scopus database, yielding 743 publications from a two-decade period, 2004–2025. After preprocessing, we used Bibliometrix (R) and VOSviewer to do descriptive and network-based bibliometric analyses. Some of the indicators were the number of publications each year, the productivity of authors and institutions, the number of journals, the contributions from different countries, and the patterns of keyword co-occurrence.

Results: The bibliometric research provides substantial insights into the academic progression of mobile technology in the development of learning applications within state universities. The publishing trends were not consistent in the early years, with few outputs between 2004 and 2010. This shows that the discipline was still new. The results likewise revealed a significant rise in mobile technology in educational research in 2023.

Conclusion: The bibliometric evidence indicates that mobile technology in learning app development has transitioned from a marginal research interest to a swiftly growing domain with international academic involvement. The increasing number of publications, the concentration of highly prolific writers, the leadership of some institutions, and the prevalence of important pedagogical buzzwords all point to the growing importance of this field in changing higher education.

Index Terms:

App Development, Mobile, Technology, Platform, State Universities, TAM

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Psychological and Pedagogical Adaptation of Students from Families with Different Social Status to Professional Self-Determination: A Comparative Study of Kazakhstan and China

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Abstract:

Professional self-determination represents a crucial developmental task that significantly influences students' educational trajectories, psychological well-being, and future social mobility. Existing research demonstrates that family social status plays a decisive role in shaping students' access to educational resources, career guidance, and psychological support; however, comparative cross-national analyses remain limited, particularly in post-socialist and rapidly transforming societies.

This study investigates the psychological and pedagogical adaptation of students from families with different social statuses in Kazakhstan and China. Using a mixed-method research design, quantitative survey data were collected from 612 university students, complemented by semi-structured interviews with 42 participants. The results reveal that family social status significantly affects students' career self-efficacy, emotional stability, and clarity of professional goals in both countries. Nevertheless, the mechanisms of adaptation differ due to national educational structures, cultural norms, and institutional career guidance systems.

The study contributes to the literature on comparative educational psychology by proposing a contextualized model of professional self-determination that integrates psychological adaptation and pedagogical mediation. Policy and pedagogical implications for reducing social inequality in career education are discussed.

Index Terms:

Professional Self-Determination; Family Social Status; Psychological Adaptation; Pedagogical Support; Comparative Education; Kazakhstan; China

ISBN: 978-81-981425-3-5

A Holistic Review of Trends, Technologies, and Techniques in Arnis Pointing Systems

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Abstract:

Arnis, the national martial art and sport of the Philippines, is transitioning into a competitive discipline that demands objective and standardized scoring systems. Current judging remains largely manual and subjective, often leading to inconsistencies in match outcomes. This review critically assesses existing technologies in combat sports and their relevance to Arnis, identifies methodological and implementation gaps, and proposes a framework for integrating validated electronic and computer-based systems. A comprehensive literature search across IEEE Xplore, Scopus, Google Scholar, Elsevier, MDPI, and Philippine E-Journals identified studies from 2010 to 2025 focusing on wearable sensors, wireless communication, motion capture, and AI-based performance analysis. Bibliometric analysis using VOSviewer revealed that while combat sports such as Taekwondo and fencing have successfully adopted these technologies, Arnis remains underrepresented in this domain. Tools such as inertial measurement units (IMUs), force-sensing resistors (FSRs), computer vision, and wireless transmission systems exhibit high adaptability to Arnis biomechanics and match dynamics. However, key limitations persist, including the absence of validated force thresholds, real-time data synchronization, and scalable deployment strategies. To address these gaps, a modular hybrid framework is proposed that combines stick-mounted IMUs, FSR-embedded armor, and wireless communication for automated scoring and post-match analysis. This integrated system aims to improve judging accuracy, reduce bias, and provide actionable feedback for athlete development. The results of this review offer evidence-based recommendations for developing standardized, technology-enhanced scoring systems in Arnis, advancing its global competitiveness while preserving its cultural identity.

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Efficient Agricultural Trading Platform Using Blockchain and MERN Stack with MetaMask Integration

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Abstract:

The current study introduces a blockchain-centered agro-marketplace platform that would offer a decentralized, transparent, and secure way of transactions of agricultural products. The system incorporates a Solidity smart contract that is implemented on a local blockchain of Ethereum with Ganache that allows keeping information about products including name, quantity, price, owner address and sale status. Authentication and registration, as well as controlled communication with the blockchain are provided through a Flask backend, with SQLite being utilized solely in managing farmer credentials. The Web3 interface gives the interface the freedom to connect smoothly with the smart contract so that users can be able to add products and make purchases on the frontend using MetaMask to execute their payment. Frontend is written in HTML, Tailwind CSS, and JavaScript to have a convenient interface with farmers and buyers. The system removes intermediaries and minimizes the risks of product information manipulation by de-centrally storing information and authenticing operations of users. The structure maintains the records of products as immutable, transparent and effective ownership checks. This article shows that blockchain and Web3 solutions can be used to enhance efficiency, trust, and accountability in agricultural marketplaces. The solution further describes the opportunities presented by adopting the use of smart contracts along with the traditional web frameworks to solve real-life problems in agriculture supply chain.

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Predictive Power Machine Learning Models for Machine Failure Status

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Abstract:

This paper explores how machine-learning models can be effective predictors of machine failure early warning through sensor and operational data on a manufacturing testbed. We compare three trained classifiers (Logistic Regression, Random Forest and XGBoost) with 80 /20 train /test split with standard preprocessing (scaling numerical attributes and one-hot machine type). Some of the input features are air/process temperatures, rotational speed, torque and tool wear. Precision, recall and F1–score, and accuracy were used to measure model performance. XGBoost had the highest results (accuracy 0.9865, ROC-AUC 0.9699, precision 0.86, recall 0.72, F1 0.78), then Random Forest (accuracy 0.9835, ROC-AUC 0.9609), and Logistic Regression. The strongest predictors were torque, air temperature, and tool wear, as seen in the feature importance of the XGBoost. The result of the high performance proves that the ensemble tree algorithms can be successfully used to detect imminent failures using normal sensor measurements and take preventive maintenance measures. We talk about deployment concerns, trade-off tuning of recall, and preciseness, and the application of model elucidation (SHAP) and monitoring in upholding production performance over the long-term.

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Integrating AI for Autism Detection and Behavioral Insight Mapping

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Abstract:

As a condition, autism spectrum disorder (ASD) should be screened at the early stage to have timely and improved development results. This paper is introducing an online Artificial Intelligence (AI) to autism based behavioural identification and insight mapping with the applications in deep learning computer vision. The system provided is a combination of an object detection model (YOLO-based) and web-application (Flask) which will analyze incoming images/video and generate confidence based an behavioral interpretations based on them. The user can safely post media and adjust the detectors and see the results of annotations through an interactive dashboard. Frame level tracking of detection is applied to video inputs in order to determine repetitive patterns of behavioural patterns and time consistency. Detection should be stored in SQLite Database to be analyzed at historical to evaluate trends in behavior using all the results of the detection like bounding box coordinates, confidence scores, and timestamps. In order to ensure the ethical deployment of the system, it is not intended to be a replacement for a diagnostic tool. Experimental assessment proves that the system is effective in the real-time detection operation, organized results visualization and multi-user access scale, which can be used to screen behavioral pattern of autism with the help of AI and provide research data.

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Player Performance in Cricket using Machine Learning

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Abstract:

Cricket generates vast amounts of player data that can be analyzed to improve performance assessment and strategic decision-making. Traditional approaches rely heavily on static statistics and human judgment, which often fail to capture complex patterns within the game. This research proposes a machine learning-based framework for predicting player performance using historical data from the Cricket World Cup 2019. The system employs Linear Regression and Decision Tree Regressor algorithms to analyze batting and bowling metrics, applying feature engineering techniques to enhance data representation. The developed model was trained and evaluated using standard metrics such as RMSE, MAE, and R^2, achieving [INSERT_METRIC] performance on the validation dataset. A Streamlit-based interface was implemented to provide real-time, user-friendly access to predictions and analytical insights. The proposed framework demonstrates how machine learning can support data-driven decision-making in cricket, enabling coaches, analysts, and enthusiasts to optimize team selection and strategy formulation through objective performance evaluation.

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Handwritten Notes Recognition using NGRAM Model and Content Generation

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Abstract:

The paper introduces a handwritten notes recognition and content-generation system which combines optical character recognition, statistical language modelling, and text enhancement by industry. With the system, handwritten note images are then processed by an OCR engine to produce raw text which is prone to spelling errors, segmentation errors and variables wording because of handwriting variability. In order to solve these problems, n-gram language model with edit-distance correction methods is used to refine the extracted text. It is a lightweight linguistic model that measures word sequences, offers likely corrections and language consistency optimally without the use of deep learning and excessive datasets. A subsequent correction step involves a text model that takes measure in the refinement of further grammar, phrasing, and readable states without any loss of sense in the acquired content. Automatic summarization and content generation is also supported by the system whereby; the users can convert handwritten notes into well-structured textual content. The general workflow is comprised of OCR extraction, statistical correction, model-based refining, and export of the final processed text. The method illustrates that some classical language modelling alongside generative enhancement can be used to enhance the usability of handwritten notes to be used in academic, professional, and personal settings. The approach also supports the idea of the importance of statistical methods in current text-processing pipelines.

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Analyzing Suspicious Web Interactions to Detect Cyber Threats Using Machine Learning Methods

Aruzhan Zhakhan
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Abstract:

The rapid proliferation of internet-connected systems has led to an exponential increase in malicious web-based activities that pose serious security risks to organizations, enterprises, and individual users. Conventional rule-based intrusion detection systems are insufficient for capturing the dynamic and evolving nature of modern cyber threats. This study presents a comprehensive machine learning-based framework for detecting cyber threats by analyzing suspicious web interaction patterns. The author independently collected a novel dataset of web traffic logs from a real operational network environment spanning six months, capturing HTTP/HTTPS request-response flows, session metadata, payload features, and behavioral indicators. The collected dataset encompasses benign traffic as well as several attack categories including SQL injection, cross-site scripting (XSS), Distributed Denial of Service (DDoS), port scanning, and brute-force attacks. A multi-stage preprocessing pipeline including feature extraction, normalization, class balancing via SMOTE, and dimensionality reduction was applied. Five machine learning classifiers — Logistic Regression, Decision Tree, Random Forest, Gradient Boosting, and a hybrid Deep Neural Network — were trained and evaluated. The proposed hybrid DNN-Random Forest ensemble achieved the highest detection accuracy of 98.7%, with a false positive rate of 0.8% and F1–score of 0.986. Results demonstrate that behavioral and statistical features extracted from HTTP traffic significantly enhance detection performance. The findings contribute a practical, scalable, and efficient approach to real-time cyber threat detection applicable to enterprise security operations centers.

Index Terms:

Cyber Threat Detection, Machine Learning, Web Traffic Analysis, Intrusion Detection System, Network Security, Deep Learning, Anomaly Detection, HTTP Traffic, Feature Engineering, Classification

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Enhancing Course Experiences in Early Pilot Implementation of Learning-Oriented Factory Digital Platforms and Explaining Class Variation Mechanisms: Evidence from a Mixed-Methods Study Combining Pre- and Post-Tests with Teacher Focus Group Interviews

Qing Xiong
Prof. Madya Dr. Azlan Bin Abdul Latib

Abstract:

For learning-oriented factory classrooms in mechatronics programs at technical colleges, this study developed and piloted a digital teaching platform supporting a minimal closed-loop cycle of "task - resource - submission - feedback - recording." It aims to address issues in practical training such as fragmented task chains, difficulty in preserving process evidence, and unstable feedback loops. Employing a parallel mixed-methods approach grounded in Design and Development Research (DDR), the pilot was conducted over one semester across five natural classes in three schools. Course Experience (CQ) was validated through pre- and post-questionnaires, while teacher focus group discussions (FGD) explained class variations and critical implementation conditions. Quantitative results indicate a significant overall increase in CQ (Time main effect: $F=36.251$, $p<.001$, biased $\Xi^2=.141$), with significant variation in improvement across classes (Time×Class: $F=4.089$, $p=.003$, biased $\Xi^2=.069$) . Descriptive statistics indicate that most classes showed a clear increase in CQ mean scores, while improvement was insignificant in a few classes. FGDs further revealed that these differences primarily stemmed from boundary conditions such as platform usability bottlenecks (login, resource access, device management), teacher implementation depth (classroom pacing and intervention timing), student readiness (self-discipline and baseline differences), and physical constraints of the training environment (oil contamination, equipment wear risks). The study suggests that early implementation of digital learning factories should adhere to an iterative strategy of "first ensuring closed-loop usability, then optimizing the experience." The key pathway to narrowing class disparities involves "technical channel assurance—supplementing instructional manuals—tiered implementation."

Index Terms:

Learning Factory; Technical Education; Curriculum Experience; Digital Platform; Action-Oriented; Mixed Research

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Hybrid VIT-CNN Model for Accurate Diabetic Retinopathy Detection using Deep Learning Integrated with Streamlit Interface

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Abstract:

This research introduces a hybrid approach of deep learning for the automated detection of Diabetic retinopathy using images of the retinal fundus. The system comprises a customized convolutional neural network and a vision transformer for learning unintended and targeted lesions and changes to the structure of the retinal at the globe-level. A straight-forward but effective ensemble technique, prediction probabilities from both models are averaged out making the ensemble effective, robust to different qualities of images. The developed application includes a full preprocessing pipeline, model inference infrastructure and a real-time Streamlit application allowing the upload of retinal images, image classification, visualization of severity and the ability to provide clinical recommendations. The ensemble is able to predict five diabetic retinopathy stages - No DR, Mild, Moderate, Severe and Proliferative using color-coded probability and explanatory outputs. This work shows that both convolutional features extraction and transformer based global reasoning combined improve classification reliability against individual models. The proposed system is aimed at being a practical decision support tool that assists doctors with early screening and help them in dealing with Diabetic Retinal disease.

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Transformational Leadership and Change Management: Mediating Role of Organizational Culture

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Abstract:

This paper focuses on the relationship between Organizational Culture (OC), Transformational Leadership (TFL) and Change Management (CM) in Indian Higher Education Institutions (HEIs). Higher education institutions (HEIs) require a powerful leadership with the capability to be adaptable and open-minded to handle the transformations that transpire new digital technologies. Transformative leadership has been proved by many researchers to inspire and drive other people. It has assisted groups to improve and is perceived to be one of the key principles in change management. Transformational leadership may not be effective too in case the organization is not operating well or its mind is not disposed to change. This research, therefore, tries to comprehend the importance of organizational culture in the connection between transformational leaders and change management in institutions of higher learning. The expert adopted a scientific method of obtaining data among academic leaders and faculty in HEI's in India. The SEM method was used to investigate the relationships between the TFL, CM and OC. The researchers found that Transformational Leaders are an important aspect of a healthy organizational culture that results in an effective change management. This research indicates that organizational culture plays the key role in the association of transformational leadership and change management. Without the right mindset, the institutions of higher learning will be unable to employ new techniques of leading or managing change in the digital world. Hence, the culture of open, creative, and collaborative at the workplace need to be encouraged by leaders in higher education institutions to promote the digital changes. This study provides higher education institution (HEI) leaders with useful academic and practical information on how to successfully manage change in the institutions by focusing on their leadership styles and the organizational culture.

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Navigating Structural and Societal Obstacles: A Case Analysis of Women's Leadership Challenges in Indian Policing

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Abstract:

A curricular shift that reshaped the Philippine educational system today is the introduction of the Revised K to 12 Curriculum, which aimed to decongest the learning competencies and strengthen foundational literacy. An essential aspect of this reform places language at the forefront, where it is viewed not just as a content subject but also as a mediating tool for learning. Several studies have already been conducted showing positive feedback regarding the initial implementation of the K to 12 Curriculum in various schools in the country; however, no current investigation was conducted focusing on teachers' lived experiences as they deliver these reforms in the language classroom context. This study navigates the journey of 10 randomly selected primary-grade language teachers as they implement the mandates of the Revised K to 12 Curriculum in their respective English classes in Leyte, Philippines. Anchored in sociocultural theory, this qualitative research employs a descriptive phenomenological research design to describe how language teachers enact their roles, negotiate multilingual realities, and manage various challenges in implementing the curricular reform. Semi-structured interviews, transcripts, and field notes, based on class observations and focus group discussions, were used to extract pertinent data, which were analyzed using Braun and Clarke's thematic analysis. The findings of the study are deemed to contribute to the body of knowledge on how curricular reforms are implemented at the classroom level and provide educators, school administrators, and curriculum planners with insights and valuable inputs in crafting strategic plans for enhanced teacher support and better implementation of the language education program under the Revised K to 12 Curriculum.

Index Terms:

Revised K to 12 Curriculum, Language Education, Sociocultural Theory, Descriptive Phenomenology, Thematic Analysis, Philippines

ISBN: 978-81-981425-3-5

From Pedagogical Design to Sustainable Learning: The Role of Technology in Management Education

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Abstract:

The rapid proliferation of internet-connected systems has led to an exponential increase in malicious web-based activities that pose serious security risks to organizations, enterprises, and individual users. Conventional rule-based intrusion detection systems are insufficient for capturing the dynamic and evolving nature of modern cyber threats. This study presents a comprehensive machine learning-based framework for detecting cyber threats by analyzing suspicious web interaction patterns. The author independently collected a novel dataset of web traffic logs from a real operational network environment spanning six months, capturing HTTP/HTTPS request-response flows, session metadata, payload features, and behavioral indicators. The collected dataset encompasses benign traffic as well as several attack categories including SQL injection, cross-site scripting (XSS), Distributed Denial of Service (DDoS), port scanning, and brute-force attacks. A multi-stage preprocessing pipeline including feature extraction, normalization, class balancing via SMOTE, and dimensionality reduction was applied. Five machine learning classifiers — Logistic Regression, Decision Tree, Random Forest, Gradient Boosting, and a hybrid Deep Neural Network — were trained and evaluated. The proposed hybrid DNN-Random Forest ensemble achieved the highest detection accuracy of 98.7%, with a false positive rate of 0.8% and F1–score of 0.986. Results demonstrate that behavioral and statistical features extracted from HTTP traffic significantly enhance detection performance. The findings contribute a practical, scalable, and efficient approach to real-time cyber threat detection applicable to enterprise security operations centers.

Index Terms:

Cyber Threat Detection, Machine Learning, Web Traffic Analysis, Intrusion Detection System, Network Security, Deep Learning, Anomaly Detection, HTTP Traffic, Feature Engineering, Classification

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Deep Learning Forest Species Recognition System with Resnet18 Architecture for Hardwood Classification using Macroscopic Image Analysis

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Abstract:

This paper offered a deep learning model of identifying hardwood species using ResNet18 convolutional neural network. It was directed at the appropriate identification of 75 wood species of various hardwoods using the assistance of macroscopic photos of wood. This section of the methodology involved preprocessing input images to an image size of 224 224 pixels and ImageNet normalization is carried out and this ensures that data is well prepared to be used with the model. A ResNet18 model was modified and obtained a new output layer, which is particular to the number of categories (75) and the classification was performed with the help of softmax activation, the values of the output are the probability of each species with a confidence level. To make sure that it was compatible with all types of devices, the application was implemented with PyTorch and could be run on the CPU and CUDA environment. The system was also equipped with effective checkpoint loading systems that operated on shape-conscious parameter filtering in order to eliminate architecture mismatch that might occur during implementation. It was developed as a web interface using help of Streamlit, and it was not difficult to upload live images and to give requests connected with classification. The data set included 2, 942 high-resolution images of various families of hardwood including Fabaceae, Lauraceae, Myrtaceae, and Meliaceae as indicated in Paula Filho et al. (2014). The anticipated outcome was the increased accuracy at the species level that will make the forestry management and identification of wood products useful.

Index Terms:

Deep Learning, Resnet18, Hardwood Classification, Macroscopic Wood Images, Pytorch, Streamlit, Species Identification

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Assessing Workforce Competencies in a Sustainable and Technology-Oriented Economy: Evaluating Education Policy Outcomes for Quality Education in India

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Abstract:

The global economy is currently experiencing a "twin transition" towards digital intelligence and environmental sustainability; however, India encounters a distinct structural barrier. This study is undertaken due to India's substantial demographic dividend, with 62% of its population in the working-age category (Bishnoi & Kumar, 2022), yet its industrial sector predominantly exists in a "post-electrification" phase, trailing the global Industry 4.0 benchmark (Javeed, 2023). This industrial lag, along with a persistent mismatch between education and the world of work, makes it very hard to get quality education and long-term economic growth (Gills et al., 2023). Traditional "Education 1.0" systems, which are based on memorisation, don't do a good job of teaching the cognitive flexibility and functional tech-fluency needed for modern smart manufacturing (Sharma & Garg, 2021). India is aiming for net-zero emissions by 2070, so it's important to formalise "green skills" that are now scattered and not connected in the vocational framework (Ham et al., 2025; Maclean et al., 2017). This study employs an evaluation model to analyse the National Education Policy 2020, evaluating whether its strategic "Inputs" can surmount implementation "Process" challenges such as the digital divide and inadequacies in teacher training (Kanungo, 2024; Kulal et al., 2024; Lee et al., 2019). This study is necessary to create a plan for moving the Indian workforce from being ready for the industrial age to meeting the needs of Education 4.0, which is based on innovation. The results serve as a driving force for aligning national human capital development with the UN Sustainable Development Goals for Decent Work and Quality Education (Kanungo, 2024).

Index Terms:

NEP 2020; Industry 4.0; Workforce Readiness; Quality Education; Sustainability

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Sign-Based Storytelling Platform for Hearing-Impaired Children with ASL Animation and Audio Narration Support

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Abstract:

The communication system using sign language is critical in enhancing accessibility to the people with hearing disabilities. Nonetheless, most digital storytelling and classroom tools continue to be based predominantly on textual and audio content, and do not offer inclusive access. This paper describes an Interactive Story-Based Sign Language Video Generation System, the purpose of which is to transform multilingual textual stories into video-based sign language generated by alphabets with synthesized speech. The system is developed based on the use of the web-based application, and the following libraries are used: Streamlit, OpenCV, Python Imaging Library (PIL), Google Text-to-Speech (gTTS), Google Translator, and FFmpeg to process multimedia. The proposed system gives the user the ability to key in predefined stories or custom text. The input may be chosen between various international languages which are subsequently translated into English using a translation module before processing. The translated story is divided into separate sentences and further on valid words. All the words are broken down into characters and the sign alphabet pictures are dynamically organized in a composite visual frame which depicts the finger-spelled form of the word. These frames are then converted into sentence level videos with a fixed frame rate. At the same time, the audio of the speech is produced on each sentence with text-to-speech synthesis and aligned with the corresponding video. The system facilitates the sequential playback of sentence-level videos that have navigation controls and facilitates the creation of full-story videos by concatenating all sentence videos and all audio tracks into a single downloadable media file. Other features are the user interface themes being light and dark, real-time video rendering, multi-language and strong session-oriented navigation. The suggested platform is a cheap, extensible, and convenient approach towards transforming written texts into visual sign-based texts. This system shows great possibilities in application in inclusive education, assistive communication devices, and digital platforms of access by the hearing-impaired community.

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AI-Powered Learning Support Systems and Academic Performance: The Mediating Role of Behavioral Intention and Student Satisfaction

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Abstract:

The rapid development of artificial intelligence (AI) technologies is transforming teaching and learning practices in higher education. AI-based academic support tools enable students to access learning assistance anytime and anywhere, improving their academic understanding and skill development. This study examines the use of AI-powered academic support tools among management students in Indian Higher Education Institutions (HEIs) and investigates their influence on student satisfaction and academic performance. The research is grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) framework to identify key determinants influencing students' adoption of AI tools for academic support.

A survey-based research design was adopted, and data were collected from management students. The proposed research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) through SmartPLS. The findings indicate that factors such as performance expectancy, effort expectancy, and perceived usefulness of AI tools significantly influence students' acceptance and usage. Furthermore, the use of AI-based academic support positively affects student satisfaction and academic performance. The study contributes to the growing understanding of AI integration in Indian higher education and highlights the role of AI tools in enhancing students' learning experiences and academic outcomes.

Index Terms:

Artificial Intelligence, AI in Education, UTAUT, Higher Education Institutions, Student Satisfaction, Academic Performance, PLS-SEM

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Integrated Digital Assistant for Telegram

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Abstract:

Integrated Digital Assistant to Telegram is a multidimensional application that aims to drive the digital communication by bringing together various services into one smart interface within Telegram. As compared to the traditional systems where one will be required to switch on different applications in order to do different assignments, this bot offers a single platform that is capable of addressing the different needs of different users. This has several main functions; real-time news feeds, personalized movie, book, and restaurant suggestions, workout scheduling, setting of alarms, text translations, and solving mathematical problems with the sympy library. It also allows interactive general knowledge conversations whereby the user can converse with the bot. Written in Python and the python-telegram-bot library, the bot depends on a variety of modules, including requests, json, and translate to achieve a smooth process of content creation and active user interaction. The intuitive nature of the bot and its integration into the Telegram ecosystem ensure a good and responsive user experience. Its practicality is also enhanced by real-time processing and personal alerts, making it a strong supporting tool of all users irrespective of their age. The integration of different utilities into a single system which lowers the use of multiple applications is an example of innovation. Being interactive and allowing to simplify everyday activities, it encourages convenience and intelligent automation, as well as higher levels of user engagement, to make Integrated Digital Assistant to Telegram a helpful resource in the hectic digital landscape.

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Spatial Suitability Assessment of Calamansi (*Citrus microcarpa*) using GIS-Based Land Evaluation Methods

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Abstract:

This study evaluates the crop suitability of calamansi in the municipality of Burgos, Isabela, Philippines. Spatial datasets of biophysical factors including soil, climate, topography, land use/land cover and bioclimatic variables were analyzed through the FAO Framework (FAO-LEF), Analytic Hierarchy Process (AHP), and Maximum Entropy (MaxEnt) models. Results from integrated analysis showed that climate and bioclimatic factors are the most influential factors, followed by soil and topography while land use and irrigation infrastructure serve as secondary spatial constraints. Comparatively, AHP and MaxEnt have greater sensitivity in transitional areas whereas FAO-LEF ensures environmental safeguards. Overall, the integration of these methods support effectiveness of GIS-based multi-model approach in identifying suitable areas for calamansi cultivation. Findings shall support land-use management, agricultural zoning and calamansi crop expansion.

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Exploring Customer Insights on AI- Agent Based Facade Technologies: A Study of Quality, Design and Functional Expectations

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Abstract:

Purpose: This research paper explores customer awareness, perceptions and expectations of AI-agent-based facade technologies with emphasis on quality, design and functional features. Although the technological innovation of adaptive facades has been adopted to a small extent, this can be explained by the factors associated with the users. The research aims to fill this gap by considering information about stakeholders when developing user-centric facade systems.

Methods: A combined survey was performed on a sample of n=250. They conducted a semi-structured interview with 3 stakeholder groups (architects, developers and end-users). Descriptive statistics, factor analysis, exploratory factor analysis, regression analysis and thematic coding were used to analyse the data. The parameters of measurement were, in some cases, quality (durability, performance), design (aesthetics, integration) functionality (efficiency, comfort, automation) and cost.

Findings: The findings showed an average level of awareness (62%), and higher awareness was observed among professionals than end-users. Durability (4.3/5) and material performance (4.2/5) were rated higher than aesthetics (3.8/5). The focus of design expectations was on customization (4.1/5) and integration with architecture (4.0/5). Energy efficiency (4.5/5) and thermal comfort (4.3/5) were the dominant functional priorities, with the lower scores of automations (3.9/5) and cost-efficiency (3.6/5). The regression analysis proved that the strongest impact on the adoption intention was made by the functional expectations (β=0.41, $p<0.01$) and quality attributes (β=0.32, $p<0.05$).

Practical Implications: This research highlights the need to have performance-based, credible and explicable facade systems. Manufacturers must concentrate on longevity and performance, architects on the design portfolio and policymakers on consciousness and incentive systems.

Originality/Value: The study builds on adoption theories (TAM, UTAUT2, DoI) and introduces the facade-specific measures and offers practical suggestions about the transition of AI-enabled facades beyond prototypes to more sustainable solutions.

Index Terms:

AI-enabled Facade Systems, Adaptive Building Envelopes, Agent-Based Modelling, Technology Adoption, Customer Perceptions, Smart Building Technologies, Energy Efficiency, Sustainable Architecture

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