ANNUAL INTERNATIONAL CONFERENCE: ICERT G-DEEP 2026

ICERT Global Digital Education & Ethics Paradigm

Education 5.0: Navigating Digital Transformation, AI Ethics, and the Future of Work

June 05–06, 2026

EDITORS:
PROF DR SANDEEP KUMAR | PROF DR SIMRAN MEHTA

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Conference Theme

"Education 5.0: Navigating Digital Transformation, AI Ethics, and the Future of Work"

A Book of Conference Proceedings

Editors:

Prof. Dr. Sandeep Kumar

Prof. Dr. Simran Mehta

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MESSAGE

From the Desk of the President

It is my great pleasure to present the proceedings of the Annual International Conference: ICERT G-DEEP 2026 (ICERT Global Digital Education & Ethics Paradigm), held on June 05-06, 2026, on the occasion of UN World Environment Day: A Global Call for Climate Action.

The conference was organized by the International Council for Education Research and Training (ICERT), Pennsylvania, USA & New Delhi, India, bringing together distinguished academicians, researchers, educators, policymakers, industry experts, and students from across the globe.

The theme, "Education 5.0: Navigating Digital Transformation, AI Ethics, and the Future of Work," reflects the urgent need to reimagine education in an era shaped by artificial intelligence, digital innovation, and rapidly evolving societal challenges. As we commemorate World Environment Day, the conference also reaffirmed our collective responsibility to integrate sustainability, ethical leadership, and climate-conscious practices into education and technological advancement.

The enthusiastic participation and scholarly contributions presented during this conference demonstrate the growing commitment of the global academic community to fostering innovative, inclusive, and ethical educational ecosystems. The diverse range of research papers, keynote addresses, panel discussions, and interactive sessions provided valuable insights into emerging trends in digital education, responsible AI, environmental sustainability, workforce readiness, and interdisciplinary collaboration.

These conference proceedings stand as a testament to the intellectual excellence, collaborative spirit, and research-driven solutions shared by our contributors. I am confident that the ideas documented herein will inspire further research, encourage meaningful dialogue, and support evidence-based policies that advance quality education and sustainable development worldwide.

On behalf of ICERT, I extend my heartfelt gratitude to our keynote speakers, session chairs, reviewers, organizing committee members, partners, and every author and participant whose dedication and expertise made this conference a remarkable success. Your unwavering commitment continues to strengthen our mission of promoting global research collaboration, educational innovation, and ethical leadership. I sincerely hope that these proceedings will serve as a valuable resource for researchers, educators, practitioners, and policymakers, inspiring continued collaboration toward building a future where technology, education, ethics, and environmental stewardship work together for the betterment of humanity.

With best wishes for continued success and impactful research.

Prof. (Dr.) Sandeep Kumar
President,
International Council for Education Research and Training (ICERT),
Pennsylvania, USA & New Delhi, India

MESSAGE

From the Desk of the Secretary

It is my privilege to present the proceedings of the Annual International Conference: ICERT G-DEEP 2026 (ICERT Global Digital Education & Ethics Paradigm), organized by the International Council for Education Research and Training (ICERT), Pennsylvania, USA & New Delhi, India, on June 05-06, 2026, in observance of UN World Environment Day: A Global Call for Climate Action.

The conference, centered on the theme "Education 5.0: Navigating Digital Transformation, AI Ethics, and the Future of Work," brought together educators, researchers, academicians, policymakers, and professionals from across the globe to exchange ideas and explore innovative solutions for the future of education.

The discussions emphasized the responsible integration of digital technologies and artificial intelligence while promoting ethical practices, sustainability, and environmental responsibility. These proceedings reflect the high quality of research presented during the conference and showcase diverse perspectives on digital transformation, AI ethics, future workforce readiness, educational innovation, and sustainable development. The contributions demonstrate the importance of interdisciplinary collaboration in addressing global challenges and advancing education for a rapidly changing world.

I extend my sincere gratitude to our keynote speakers, reviewers, session chairs, organizing committee, and all authors and participants whose dedication and scholarly contributions made this conference a resounding success. Their commitment to academic excellence and collaborative research has enriched this international platform and strengthened ICERT's mission of promoting quality education and global research partnerships.

I hope these proceedings will serve as a valuable resource for researchers, educators, practitioners, and policymakers, encouraging further innovation, collaboration, and impactful research.

Together, let us continue to harness education, technology, and ethical leadership to build a more sustainable, inclusive, and resilient future.

With warm regards,

Dr. Manisha D. Bhagoji
Secretary,
International Council for Education Research and Training (ICERT),
Pennsylvania, USA & New Delhi, India

MESSAGE

From the Desk of the Director of Research & Publications

It is a great honor to present the proceedings of the Annual International Conference: ICERT G-DEEP 2026 (ICERT Global Digital Education & Ethics Paradigm), organized by the International Council for Education Research and Training (ICERT), Pennsylvania, USA & New Delhi, India, on June 05-06, 2026, in observance of UN World Environment Day: A Global Call for Climate Action.

The conference theme, "Education 5.0: Navigating Digital Transformation, AI Ethics, and the Future of Work," reflects the evolving landscape of education, where technological innovation, ethical responsibility, and sustainability must advance together. The conference served as a dynamic global platform for researchers, educators, innovators, and policymakers to exchange ideas, share research findings, and explore transformative approaches that prepare learners for an increasingly digital and interconnected world.

As Director of ICERT-Sapientia: Research, Innovation & Publications Division, I am pleased to present this collection of scholarly contributions, which represents the intellectual excellence and collaborative spirit of our international research community. The papers included in these proceedings address critical issues in digital education, artificial intelligence, educational leadership, sustainability, innovation, and workforce development, offering practical insights and evidence-based solutions for contemporary global challenges.

I extend my sincere appreciation to all authors, reviewers, editorial board members, keynote speakers, session chairs, and the organizing committee for their dedication to maintaining the highest standards of academic quality and research integrity. Their collective efforts have ensured the successful publication of these proceedings and strengthened ICERT's commitment to advancing impactful research and global knowledge exchange.

I trust that this volume will serve as a valuable resource for researchers, educators, practitioners, and policymakers, inspiring further collaboration, innovation, and scholarly excellence in shaping an ethical, sustainable, and technology-driven future for education.

With warm regards,

Prof. (Dr) Aruna Anchal

Director,

ICERT-Sapientia: Research, Innovation & Publications Division,

International Council for Education Research and Training (ICERT),

Pennsylvania, USA & New Delhi, India

MESSAGE

From the Desk of the Director of Finance & Secretary

It is my pleasure to present the proceedings of the Annual International Conference: ICERT G-DEEP 2026 (ICERT Global Digital Education & Ethics Paradigm), organized by the International Council for

Education Research and Training (ICERT), Pennsylvania, USA & New Delhi, India, on June 05-06, 2026, in observance of UN World Environment Day: A Global Call for Climate Action.

The conference theme, "Education 5.0: Navigating Digital Transformation, AI Ethics, and the Future of Work," highlights the growing importance of integrating technological innovation with ethical values, sustainability, and human-centered education. The conference brought together distinguished researchers, educators, policymakers, and professionals from around the world to discuss emerging trends and collaborative strategies that will shape the future of education and global development.

These proceedings showcase a diverse collection of high-quality research that reflects the commitment of the global academic community to advancing digital education, responsible artificial intelligence, environmental sustainability, and future workforce preparedness. The valuable insights presented in this volume contribute to strengthening interdisciplinary research and promoting evidence-based solutions to contemporary educational and societal challenges.

As Director of Finance & Secretary, I sincerely appreciate the dedicated efforts of our authors, reviewers, keynote speakers, session chairs, organizing committee, volunteers, and participants. Their professionalism, collaboration, and commitment to academic excellence ensured the successful organization of the conference and the publication of these proceedings. Their contributions reinforce ICERT's vision of fostering international research partnerships and promoting innovation through quality education.

I hope this volume will serve as a meaningful resource for researchers, educators, practitioners, and policymakers, encouraging continued collaboration, innovative thinking, and ethical leadership.

Together, let us continue to build an inclusive, sustainable, and digitally empowered future through research, education, and global cooperation.

With warm regards,

Dr. Simran Mehta

Director of Finance & Secretary,

International Council for Education Research and Training (ICERT),

Pennsylvania, USA & New Delhi, India

About the Conference

The Global Vision

We are entering the era of Education 5.0, where the focus shifts from "smart classrooms" to "human-centric innovation." This paradigm requires us to navigate the vast potential of Digital Transformation while maintaining a steadfast commitment to AI Ethics.

ICERT G-DEEP 2026 is a global call to action for researchers, deans, industry leaders, and policymakers. This multidisciplinary platform aims to redefine how we prepare the workforce for an AI-integrated world while ensuring sustainability and social equity remain at the core of academic progress.

The International Council for Education, Research and Training (ICER) Pennsylvania, USA, is proud to announce this premier global event. We invite researchers, academicians, industry professionals, and policymakers from across the globe to Bangkok, Thailand, to engage in a multidisciplinary dialogue that shapes the future of learning and work

Multidisciplinary Sub-Themes

To ensure a truly inclusive and holistic academic exchange, the conference welcomes contributions across the following broad tracks:

Track 1: Engineering & Applied Technology

- AI and Machine Learning in Climate Modeling.
- Green IoT: Energy-Efficient Smart Systems.
- Cybersecurity for Sustainable Infrastructure.
- Blockchain for Transparent Carbon Credit Trading.
- Robotics in Waste Management and Recycling.
- Civil Engineering for Climate-Resilient Cities.
- Electrical Vehicles (EV) and Battery Technology.
- 3D Printing in Sustainable Manufacturing.
- Quantum Computing for Environmental Optimization.
- Industry 5.0: The Human-Machine Ecological Interface.

Track 2: Social Sciences & Humanities

- Sociology of the Digital Transition.

- Mental Health and Eco-Anxiety in the Tech-Age.
- Cultural Heritage Preservation via Digital Humanities.
- Socio-Economic Impacts of Climate Migration.
- Psychology of Human-AI Interaction.
- Gender Equality (SDG 5) in a Globalized Economy.
- Indigenous Wisdom and Modern Ecological Action.
- Media Ethics and Information Warfare.
- Urban Sociology and Sustainable Living.
- History of Science: From Industrial to Digital Eras

Track 3: Legal Studies & Jurisprudence

- International Environmental Law and Climate Action.
- Legal Frameworks for Artificial Intelligence (AI) Ethics.
- Intellectual Property Rights (IPR) for Green Innovations.
- Data Sovereignty and Personal Privacy Rights.
- Corporate Governance and ESG Compliance.
- Labor Laws in the Era of Automation and Remote Work.
- Cyber-crime Prevention and International Law.
- Bio-Ethics and the Law of Biotechnology.
- Consumer Protection in the Gig Economy.
- Legal Challenges of Virtual Universities.

Track 4: Commerce, Management & Finance

- FinTech Innovations for Green Financing.
- Circular Economy: Sustainable Business Models.
- Supply Chain Decarbonization and Logistics.
- The Future of Work: Talent Management in 2026.
- Entrepreneurship in the Renewable Energy Sector.
- E-Commerce Ethics and Sustainable Consumption.
- Behavioral Economics of Environmental Action.
- Digital Marketing and the Green Brand Paradigm.
- Global Trade Policies and Carbon Border Taxes.
- Leadership 5.0: Managing Organizational Change.

Track 5: Education & Pedagogical Innovations

- Outcome-Based Education (OBE) for Sustainability.
- Experiential Learning via AR/VR and Gamification.

- Teacher Training for the Education 5.0 Classroom.
- Inclusive Education: Breaking the Digital Divide.
- Pedagogy of Climate Action and Environmental Literacy.
- NEP 2020: Global Standards and Implementation.
- Virtual Universities: Challenges and Future Prospects.
- Student-Centric Learning and Soft Skills Development.
- Lifelong Learning in the Era of Generative AI.
- Blended Learning: Balancing Tech with Human Touch.

Track 6: Pharmaceutical & Life Sciences

- Green Chemistry and Sustainable Drug Discovery.
- Bioinformatics for Biodiversity Conservation.
- Clinical Trials and AI-driven Diagnostics.
- Pharmacovigilance in a Digital Healthcare Era.
- Biotechnology for Waste-to-Energy Solutions.
- Genetic Engineering and Food Security (SDG 2).
- Nano-Medicine: Applications and Ethical Concerns.
- Herbal Medicine and Traditional Knowledge Validation.
- Marine Biology and Ocean Conservation (SDG 14).
- Microbiology and Pandemic Preparedness.

Track 7: Medical, Paramedical & Allied Health

- Telemedicine: Reducing the Carbon Footprint of Healthcare.
- Precision Medicine: Tailoring Health via Data
- AI in Radiology and Advanced Imaging.
- Physiotherapy and Digital Rehabilitation Tools.
- Nursing Management in Global Health Crises.
- Public Health Policies for Climate Resilience.
- Nutrition and Sustainable Food Systems.
- Medical Ethics in the Era of Automation.
- Occupational Health and Safety in Digital Workspaces.
- Community Health and Preventative Medicine.

Track 8: Environment, Climate & Sustainability

- UN World Environment Day 2026: Strategic Actions.
- Climate Adaptation Strategies for Coastal Cities.
- Renewable Energy Integration: Solar, Wind, and Hydro.

- Biodiversity Loss and Ecological Restorations.
- Water Security and Sustainable Management (SDG 6).
- Soil Health and Sustainable Agriculture.
- Air Quality Monitoring and Pollution Control Tech.
- Impact of Microplastics on the Food Chain.
- Disaster Management and Early Warning Systems.
- Carbon Neutrality: The Road to Net Zero by 2050.

Track 9: Social Work & Welfare (Human-Centric)

- Technology for Social Welfare and NGOs.
- Disaster Relief and Community Rehabilitation.
- Social Work with Vulnerable and Marginalized Groups.
- Corporate Social Responsibility (CSR) and SDGs.
- Child Protection and Youth Empowerment in Digital Space.
- Geriatric Care: Tech-Assisted Living for the Elderly.
- Poverty Alleviation Strategies in a Digital Economy.
- Rural Development and Smart Villages.
- Civil Society Organizations and Global Governance.
- Conflict Resolution and Peace-building (SDG 16).

Track 10: Philosophy, Ethics & Future Paradigms

- Philosophical Education for the AI-First Generation.
- Ethics of Transhumanism and Human Augmentation.
- Existential Risks of Advanced Artificial Intelligence.
- Values-Based Education for Sustainable Citizenship.
- The Philosophy of Work: Finding Meaning in Automation.
- Epistemology in the Age of "Deepfakes."
- Global Citizenship and the Ethics of Interconnectedness.
- Aesthetics of Sustainable Design and Architecture.
- Moral Responsibility in Climate Inaction.
- The Concept of "Happiness" in a High-Tech World.

Track 11: Languages, Literature & Linguistics

- AI and Natural Language Processing (NLP): The future of machine translation.
- Digital Humanities: Computational analysis of classical and modern literature.
- Eco-Linguistics: The role of language in shaping environmental consciousness.

- Language Pedagogy in Education 5.0: Tech-assisted multilingualism.
- Post-Colonial Literature: Identity and sustainability in a globalized world.
- Linguistic Diversity: Preserving endangered languages through digital archiving.
- Professional Communication: Evolution of business English in the AI era.
- Cognitive Linguistics: How digital transformation affects human thought patterns.
- Comparative Literature: Cross-cultural narratives on climate and technology.
- Translation Studies: Ethics of AI vs. human interpretation in global diplomacy.

Track 12: Arts, Global Politics, Defense & Disaster Management

- Digital Arts & Eco-Aesthetics: Using visual media to drive environmental activism.
- Geopolitics of Technology: The "AI Arms Race" and its impact on international relations.
- Defense Technology 5.0: Ethical implications of autonomous weapons and cybersecurity.
- Disaster Management & Resilience: AI-driven early warning systems for climate catastrophes.
- Space Governance: International law and the politics of space exploration.
- National Security in the Digital Age: Protecting critical infrastructure from cyber-warfare.
- Soft Power & Diplomacy: The role of arts and culture in global political alliances.
- Humanitarian Logistics: Strategy for resource distribution in conflict or disaster zones.
- Performing Arts & Social Change: Theater and music as tools for global peace-building.
- Post-Disaster Rehabilitation: Social and political strategies for community rebuilding

Note: Contributions are invited from all disciplines in English & Hindi languages, presentations drawing on conference themes, sub themes and related interdisciplinary concepts are encouraged.

Call for Papers (CFP)

We invite original research papers, case studies, and conceptual articles. All submissions will undergo a rigorous double-blind peer-review process.

- **Submission Categories:** Full Research Paper, Abstract Only (for presentation), or Poster Presentation.
- **Focus:** Interdisciplinary approaches that link Education 5.0 to real-world problem solving.
- Abstracts should be between 300-500 words and submitted in .doc or .docx format.
- The abstract must include the paper title, name(s) of author(s), University/Institution, and a list of keywords.

Paper Publication & Awards: A proceeding book (Souvenir) of the conference, including all accepted abstracts, will be published with an ISBN. All presenters will receive a soft copy of the proceedings, and physically present participants will also receive a print copy.

Best Paper Presentation Award: A Certificate of Best Paper Presentation will be given to two best presenters from each technical session.

Journal Publication: Authors who present their papers will be eligible to submit their research (either the presented paper or a different one) for publication in the following ICERT International Multidisciplinary Journals:

Shodh Sari - An International Multidisciplinary Journal (*ISSN: 2959-1376)*

Edumania - An International Multidisciplinary Journal (*ISSN: 2960-0006)*

To learn more about these peer-reviewed, open-access journals with DOI, please visit www.icert.org.in

International Felicitation

ICERT Trans-Atlantic Award for Global Sustainability 2026

This award celebrates the strategic partnership between Western innovation and Eastern wisdom, honoring distinguished individuals or institutions that have successfully bridged international borders to implement scalable solutions for global environmental and social sustainability

Eligibility & Selection Criteria: Include following in your CV/ Resume/ Profile

- Inter Institutional Collaboration: Evidence of a project or research partnership involving entities from at least two different institutions.
- Scalability: The initiative must demonstrate the potential to be replicated in different geographical or cultural contexts to address sustainability.
- Organizational Impact: Recognition of leadership skills in building institutional frameworks that promote "Trans-Atlantic" knowledge exchange.
- Duration of Service: Minimum of 05 years of consistent contribution to the field of global sustainable development.

ICERT G-DEEP Laureate 2026

The highest honor of the conference, the G-DEEP Laureate is conferred upon a visionary pioneer who has redefined the 'Global Digital Education & Ethics Paradigm' by harmonizing advanced technology with human-centric ethical standards.

Eligibility & Selection Criteria: Include following in your CV/ Resume/ Profile

- Innovation in Education 5.0: Demonstrated implementation of AI, Digital Transformation, or Industry 5.0 technologies in a pedagogical or professional training setting.
- Ethical Leadership: Significant contribution to the discourse on AI ethics, data privacy, or the human-centric application of emerging technologies.
- Future of Work Alignment: Evidence of work that prepares the global workforce for the transition to an automated and digitally-driven economy.
- Intellectual Contribution: Publication of high-impact research, books, or patents that influence the global digital education paradigm.

ICERT Global SDG Impact Award 2026

Aligned with the UN World Environment Day, this award recognizes grassroots or academic excellence that directly contributes to the achievement of the United Nations Sustainable Development Goals, with a specific focus on Climate Action and Quality Education.

Eligibility & Selection Criteria: Include following in your CV/ Resume/ Profile

- Direct SDG Mapping: Your work must clearly map to one or more UN SDGs (specifically SDG 4: Quality Education or SDG 13: Climate Action).
- Measurable Outcome: Evidence of tangible impact, such as a reduction in carbon footprint, improvement in literacy rates, or successful community disaster management.
- Community Engagement: Proof of active involvement with local communities, NGOs, or students to drive environmental or social change.
- Innovation for June 5th: Preference will be given to projects or research submitted for the Special Session on World Environment Day that demonstrate "Green Innovation."

Contact & Helpline

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Abstracts

Pedagogy for Education 5.0 (Human-Centric Tech): Co-Intelligence Frameworks

Ritu Dhaliwal

PGT English, Education Department, GSSS, FP JHIRKA (0884), Nuh, Haryana

Abstract

Education 5.0 emphasizes an educational ecosystem where technological innovation is balanced with human creativity, collaborative intelligence, and ethical consciousness. Unlike previous models that viewed artificial intelligence primarily as a source of automated instruction or informational retrieval, contemporary educational paradigms increasingly recognize AI as a collaborative intellectual partner. This paper explores the emerging concept of "Co-Intelligence Frameworks," where students and AI agents engage in reciprocal, dialogic, and inquiry-based learning processes. By synthesizing theories of constructivism, connectivism, collaborative learning, and human-computer interaction, the study proposes a pedagogical model that positions AI as a cognitive partner rather than a passive instructional tool.

The paper examines how AI-supported collaboration can foster creativity, metacognitive awareness, interdisciplinary thinking, and personalized learning while the role of human judgment and ethical reasoning remains intact. It also brings forth challenges related to data ethics, algorithmic bias, teacher preparedness, and assessment reforms within AI-integrated classrooms. The study contributes to the ongoing discourse on Education 5.0 by offering theoretical insights and practical recommendations for implementing human-AI collaborative learning environments in schools and higher education institutions.

AI Ethics and Integrity in Education 5.0: ChatGPT's Role in Assessments for Nigerian Pre-Service Teachers

Adekunle Emmanuel Makanjuola, Blessing Mary Aninkan, Titilayo Omobolanle Onajide, Saheed Akanbi Sanusi & Saidat Animot Odunmbaku

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Abstract

Generative artificial intelligence tools such as ChatGPT are increasingly reshaping teaching, learning, and assessment practices in higher education. This study examines the use of ChatGPT in academic assessments among pre-service teachers in four Federal Colleges of Education in Southwest Nigeria. Adopting a qualitative research design, data were collected through semi-structured interviews with 20 pre-service teachers and 4 lecturers and analysed thematically. The findings reveal that while ChatGPT enhances learning efficiency, supports content organisation, and aids conceptual understanding, its unregulated use raises significant concerns regarding academic integrity, fairness, and assessment validity. Participants reported instances of over-reliance on AI, difficulties in defending AI-generated responses, and unequal access to digital resources, which further exacerbate existing educational inequalities. The absence of clear institutional guidelines also contributes to uncertainty and inconsistent practices among both students and lecturers. Framed within the context of Education 5.0, the study highlights the need for ethically grounded and digitally competent educators capable of integrating AI responsibly into teaching and assessment. The paper concludes by recommending the development of context-specific AI policies, the integration of ethical AI literacy into teacher education, and the redesign of assessment practices to prioritise critical thinking and learning processes. These measures are essential for maintaining academic integrity and ensuring equitable participation in AI-enhanced education.

Keywords: ChatGPT; artificial intelligence; academic integrity; Education 5.0; pre-service teachers.

Reimagining Education 5.0 Through Ayurveda: A Human-Centered Framework for AI Ethics, Digital Wellness and Future Workforce Development

Dr. Jajbir Singh

Professor & Head of Department, Department of Swasthavritta & Yoga, Lal Bahadur Shastri Mahila Ayurvedic College & Hospital, Bilaspur, District Yamuna Nagar, Haryana, India

Abstract

The emergence of Education 5.0 has transformed the educational ecosystem through artificial intelligence (AI), digital innovation, immersive learning technologies, and interdisciplinary approaches. However, excessive technological dependence, declining mental well-being, ethical dilemmas in AI usage, cognitive overload, lifestyle disorders, and loss of human values have become major concerns globally. Ayurveda, India's ancient holistic knowledge system, offers a sustainable and human-centered framework that aligns remarkably with the principles of Education 5.0. The present study explores the integration of Ayurvedic wisdom into digitally transformed educational systems to promote ethical AI practices, emotional intelligence, cognitive resilience, sustainable learning, and future workforce preparedness. The research adopts a mixed-methods approach involving literature review, conceptual analysis, institutional observations, survey-based assessment, and statistical interpretation. Data were collected from students, teachers, researchers, and healthcare professionals associated with higher educational institutions. Statistical tools including percentage analysis, mean score analysis, chi-square test, and correlation analysis were used to evaluate the impact of Ayurvedic lifestyle practices, yoga, meditation, and digital wellness awareness on academic performance and psychological well-being. The findings reveal that Ayurvedic educational interventions significantly improve concentration, emotional stability, stress management, ethical decision-making, productivity, and adaptive learning behavior. The study proposes an "Ayurveda Education 5.0 Model" integrating AI ethics, digital wellness, yogic cognition, sustainability, preventive healthcare, and value-based learning. The research further emphasizes the importance of integrating Ayurveda, yoga, mindfulness, and indigenous health sciences into future educational policies, digital curricula, and workplace training models. The study concludes that Ayurveda can play a transformative role in developing balanced, ethical, innovative and emotionally intelligent future generations capable of navigating the rapidly evolving AI-driven world.

Keywords: Intelligence, Ethics, Cognitive, Transformation, Sustainable, Innovative, Holistic.

IoT-Driven Parking Management: Enhancing Efficiency and Reducing Congestion

Lalita Yadav

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Dr. Banita

Professor, Department of Computer Science and Engineering, Baba Mastnath University, Rohtak, Haryana

Abstract

The research paper focused on the design and implementation of a smart parking management system using Internet of Things (IoT) technologies. The study was motivated by the increasing challenges of urban traffic congestion and inefficient parking utilization. An experimental research design was adopted, where MATLAB served as the primary simulation and modeling tool to evaluate system performance. IoT-enabled sensors, data acquisition modules, and communication protocols were modeled to detect parking space availability and transmit real-time information to users. The methodology integrated sensor- based data collection with MATLAB simulations to analyze parking occupancy, vehicle flow, and congestion reduction. Algorithms were employed to optimize parking allocation and minimize search time for available slots. Findings from survey revealed that the IoT-driven system significantly improved parking efficiency, reduced vehicle idle time, and lowered congestion levels in urban areas. The conclusion emphasized that IoT-based smart parking systems provided a scalable and sustainable solution for modern cities. The integration of MATLAB modeling validated the effectiveness of IoT in optimizing parking infrastructure. The study suggested that future work could incorporate machine learning algorithms for predictive analytics, integration with mobile applications for user interaction, and expansion to multi-level parking facilities to further enhance system efficiency and adaptability.

Keywords: Internet of Things, Smart Parking, MATLAB Simulation, Urban Congestion, Real-Time Monitoring, Parking Optimization etc.

A Comprehensive Review of the Phytochemical Profile, Therapeutic Potential, and Industrial Applications of *Garcinia indica Choisy*

Srusti S Moger, Ananya S, Pallavi V N, Wathsala Sripali Kumarasinghe and Rajeshwari Ullagaddi *

Department of Life Sciences, Sri Sathya Sai University for Human Excellence, Kalaburagi, 585313, Karnataka.

Abstract

Garcinia indica, usually called kokum, is becoming increasingly known as a multifunctional bioactive powerhouse to suit both 21st-century wellness and clean-label industrial solutions. The present review combines scientific evidence on the phytochemical profile and therapeutic potential of kokum, outlining its main bioactive ingredients: hydroxycitric acid (HCA), a strong anti-obesity agent; garcinol, a polyisoprenylated benzophenone having very strong anti-inflammatory and anti-cancer activities; and anthocyanins, which convey the high antioxidant capacity and natural pigmentation. Besides its use in the kitchen as a natural acidulant and a digestive aid kokum is showing a pharmaceutically diverse range of applications, including cardioprotective, neuroprotective, and hepatoprotective effects. In the food sector, it is used as a functional beverage base and a natural substitute for synthetic colorants, whereas the seed-derived kokum butter is garnering popularity as a high-stability cocoa butter improver and a top-notch cosmetic emollient. Despite the great potential, worldwide adoption of kokum-based products is still limited because the pigments are very sensitive and fresh fruit has a very short shelf life in storage after harvest. This paper reviews different new technology treatments such as microencapsulation, copigmentation, and highly efficient extraction processes, aiming at retaining bio-efficacy. It is predicted that the global market for Garcinia species will be worth USD 2.11 billion by 2033, and therefore, through the fusion of old ethnobotanical knowledge and modern green technology, kokum has great potential to become a sustainable source for creating innovative nutraceuticals, natural eco-friendly cosmetics, and smart food packaging.

Keywords: *Garcinia indica*, Hydroxycitric Acid, Garcinol, Nutraceuticals, Functional Foods, Kokum Butter, Antioxidants.

Tertiary Institutions Challenges and its Implications in the integration and Implementation of E-Learning Technology in Nigeria

Akubugwo, Ijeoma Ginikanwa

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Abstract

The integration of e-learning technologies in Nigerian tertiary education has gained significant momentum, particularly following the COVID-19 pandemic's disruption of traditional educational delivery. Though, the e-learning system implementation and integration faces complex challenges that threaten to worsen educational inequalities and also limit the transformative possible of digital education. This study examines the precarious barriers to e-learning implementation in higher educational institutions in Nigeria, as well as infrastructure shortfalls, institutional capacity limits, faculty readiness gaps including socio-economic differences amongst students. Again, this paper reasons that the successful of integration of e-learning necessitates a holistic approach that addresses technological, pedagogical, as well as policy dimensions concurrently. The implications extend beyond educational delivery to encompass national competitiveness, digital inclusion, and the future of higher education in Nigeria. Without strategic interventions targeting infrastructure development, capacity building, and equity considerations, e-learning risks creating a two-tier educational system that marginalizes vulnerable populations while failing to deliver on its promise of democratizing access to a quality education.

Leveraging Green Skills for Biodiversity Gains and Ecological Restoration in the Built Environment: A Study of Oyo Town, Nigeria

Rasheed Sekore Busari

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Abstract

The increasing rate of environmental degradation, biodiversity depletion, urban sprawl, and ecosystem fragmentation within rapidly urbanizing settlements has intensified the need for sustainable strategies capable of restoring ecological balance in the built environment. In many Nigerian towns, including Oyo Town, urban development has significantly altered natural ecosystems through deforestation, uncontrolled land conversion, poor waste management, excessive exploitation of natural resources, and unsustainable construction practices. Consequently, the integration of green skills into built environment practices has emerged as a critical pathway toward biodiversity enhancement and ecological restoration. This study investigates how green skills can be leveraged for biodiversity gains and ecological restoration in the built environment of Oyo Town, Nigeria. The study adopts a mixed-method approach involving questionnaires, field observations, interviews, and spatial analysis. The target population comprises architects, builders, planners, engineers, environmental officers, artisans, and residents within selected districts of Oyo Town. Data are analyzed using descriptive and inferential statistics. Findings reveal that green skills such as sustainable landscaping, ecological construction practices, green infrastructure development, waste recycling, rainwater harvesting, urban forestry, sustainable drainage systems, and biodiversity-sensitive site planning significantly contribute to ecological restoration within urban settlements. The study further identifies inadequate environmental awareness, weak policy enforcement, lack of technical expertise, poor institutional coordination, and insufficient green infrastructure investment as major barriers limiting ecological restoration efforts in Oyo Town. The research establishes that integrating green competencies into architectural and construction processes can improve ecosystem services, reduce urban heat effects, restore degraded landscapes, enhance urban biodiversity, and support climate resilience. The study recommends the institutionalization of green skills training within construction industries, urban planning agencies, tertiary institutions, and local communities. It also advocates for stronger environmental policies, biodiversity-inclusive planning frameworks, ecological restoration programs, and sustainable development initiatives aligned with the United Nations Sustainable Development Goals (SDGs), especially SDG 11, SDG 13, and SDG 15. The study contributes to emerging knowledge on sustainable built environment management and provides a framework for integrating ecological restoration principles into urban development practices in medium-sized Nigerian towns.

Keywords: Green skills, biodiversity conservation, ecological restoration, sustainable built environment, green infrastructure, urban sustainability.

Integrating Generative AI into Metalwork Technology Education for Lifelong Skills Development in Nigerian Technical Colleges

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Abstract

The emergence of Generative Artificial Intelligence (Generative AI) has significantly transformed global educational systems, workforce development, and industrial production processes. In Technical and Vocational Education and Training (TVET), particularly Metalwork Technology Education, the integration of Generative AI offers new opportunities for lifelong learning, skills acquisition, personalized instruction, industrial simulation, and competency-based training. However, Nigerian technical colleges continue to face challenges related to outdated instructional methods, inadequate digital infrastructure, limited teacher preparedness, and insufficient integration of emerging technologies into vocational curricula. This paper examines the integration of Generative AI into Metalwork Technology Education for lifelong skills development in Nigerian technical colleges. The study adopts a conceptual and analytical approach through extensive review of related literature, policy documents, and contemporary scholarly discussions on AI, TVET, Industry 4.0/5.0, and lifelong learning. The paper discusses the concept of Generative AI, the nature of Metalwork Technology Education, and the relevance of lifelong learning in modern industrial society. It further explores the potential applications of Generative AI in metalwork instruction, including intelligent tutoring systems, virtual workshop simulations, automated design generation, adaptive assessment, and digital content development. The paper identifies major challenges hindering implementation such as infrastructural deficits, digital illiteracy, ethical concerns, curriculum rigidity, and inadequate policy support. Strategies for effective integration are proposed, including teacher capacity building, curriculum modernization, investment in digital infrastructure, industry collaboration, and development of AI governance frameworks for education. The study concludes that integrating Generative AI into Metalwork Technology Education can improve employability, innovation, entrepreneurship, and sustainable lifelong learning among technical college graduates in Nigeria.

Keywords: Generative AI, Metalwork Technology Education, TVET, Lifelong Learning, Technical Colleges, Industry 5.0, Nigeria.

Time-Dependent HPLC Investigation of Anthocyanin in Fresh Extracts of Some Justicia Leaf Species

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Abstract

Anthocyanins are bioactive flavonoid pigments responsible for the red, purple, and blue coloration of many plants and are increasingly recognized for their nutritional and therapeutic benefits. This study investigated the anthocyanin composition, temporal stability, and potential structural transformations of fresh leaf extracts from two medicinal plant species, Justicia carnea and Justicia secunda, using High-Performance Liquid Chromatography (HPLC). Fresh leaf samples were subjected to maceration, extraction, and chromatographic analysis, and anthocyanin profiles were monitored at zero and one hour after extraction. Six anthocyanins were identified in both species, namely Delphinidin-3-O-Galactose, Delphinidin-3-O-Glucoside, Cyanidin-3-O-Galactose, Delphinidin-3-O-Arabinose, Cyanidin-3-O-Glucoside, and Cyanidin-3-O-Arabinose. The results revealed similar anthocyanin profiles in the two species; however, notable differences were observed in their stability over time. In J. carnea, Cyanidin-3-O-Glucoside and Cyanidin-3-O-Arabinose disappeared after one hour, suggesting possible degradation or structural conversion, whereas these compounds persisted in J. secunda. Delphinidin-3-O-Glucoside was detected in both species and exhibited relatively greater stability in J. carnea. Quantitative analysis further showed that Cyanidin-3-O-Arabinose constituted the highest proportion of anthocyanins in J. carnea (36.25%), while Delphinidin-3-O-Glucoside and Cyanidin-3-O-Glucoside were predominant in J. secunda. The study established the presence of diverse anthocyanins in the leaves of both Justicia species and demonstrated species-dependent differences in anthocyanin stability, highlighting their potential value as natural colorants and sources of health-promoting phytochemicals.

Keywords: Anthocyanins, *Justicia carnea*, *Justicia second,* phytochemicals, HPLC.

अंतरिक्ष मलबा एवं अन्तर्राष्ट्रीय राजनीति: अन्तर्राष्ट्रीय कानून की भूमिका एवं चुनौतियाँ

कर्ण

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Abstract

अंतरिक्ष मलबे (Space Debris) की समस्या आज केवल एक तकनीकी चुनौती नहीं रही, बल्कि यह एक गंभीर पर्यावरणीय संकट, एक जटिल कानूनी शून्यता और एक तीव्र भू-राजनीतिक प्रतिस्पर्धा का प्रतीक बन चुकी है। यूरोपीय अंतरिक्ष एजेंसी (ESA) की Space Environment Report 2023 के अनुसार, पृथ्वी की कक्षाओं में 30,000 से अधिक ट्रैक किए जाने योग्य मलबे के टुकड़े और 13.8 करोड़ से अधिक सूक्ष्म-टुकड़े परिक्रमा कर रहे हैं। ये टुकड़े न केवल सक्रिय उपग्रहों के लिए, बल्कि मानव अंतरिक्ष अभियानों और भविष्य की अंतरिक्ष अर्थव्यवस्था के लिए भी गंभीर खतरा उत्पन्न करते हैं।

वर्तमान अंतर्राष्ट्रीय कानूनी ढाँचा — जिसकी आधारशिला 1967 की Outer Space Treaty है — आज की जटिल अंतरिक्ष वास्तविकताओं के लिए अपर्याप्त सिद्ध हो रहा है। ASAT (Anti-Satellite) परीक्षण, मेगा-कॉन्स्टेलेशन परियोजनाएँ जैसे Starlink और OneWeb, तथा सक्रिय मलबा हटाने (Active Debris Removal - ADR) की प्रौद्योगिकियाँ — ये सभी एसे क्षेत्र हैं जहाँ अंतर्राष्ट्रीय कानून स्पष्ट नियमों और बाध्यकारी दायित्वों के बिना मूलतः खामोश है। इस कानूनी शून्यता का सबसे बड़ा खतरा केस्लर सिंड्रोम (Kessler Syndrome) है — एक एसी स्थिति जिसमें मलबे की टकराहट एक श्ृंखला प्रतिक्रिया को जन्म दे सकती है और कुछ कक्षाओं को दशकों तक अनुपयोगी बना सकती है।

यह शोधपत्र doctrinal legal research और तुलनात्मक नीति-विश्लेषण पद्धतियों का उपयोग करते हुए तीन मूल अनुसंधान प्रश्नों का उत्तर देता है: प्रथम, वर्तमान कानूनी ढाँचे की संरचनात्मक कमियाँ क्या हैं? द्वितीय, अमेरिका, चीन और भारत की राष्ट्रीय नीतियाँ किस प्रकार वैश्विक सहयोग को बाधित अथवा प्रोत्साहित करती हैं? तृतीय, Education 5.0 और AI Ethics के संदर्भ में एक प्रभावी अंतर्राष्ट्रीय अंतरिक्ष शासन-ढाँचे का स्वरूप कैसा होना चाहिए?

इन प्रश्नों के उत्तर में यह शोधपत्र एक प्रस्तावित International Space Environment Authority (ISEA) Policy Matrix प्रस्तुत करता है। यह नीति-ढाँचा SDG 16 (शांति, न्याय और सशक्त संस्थाएँ) के सिद्धांतों से प्रेरित है और अंतर्राष्ट्रीय सहयोग, पारदर्शिता, जवाबदेही तथा तकनीकी समावेश पर आधारित है। ISEA का उद्देश्य एक बाध्यकारी वैश्विक संधि के माध्यम से मलबा उत्पादन पर सीमाएँ निर्धारित करना, ADR मिशनों को विनियमित करना और अंतरिक्ष को समस्त मानवता की साझी विरासत के रूप में संरक्षित करना है।

निष्कर्ष: अंतरिक्ष मलबे की समस्या केवल इंजीनियरिंग की नहीं, बल्कि राजनीतिक इच्छाशक्ति, कानूनी सुधार और नैतिक जिम्मेदारी की भी है। यदि अंतर्राष्ट्रीय समुदाय समय रहते ठोस कदम नहीं उठाता, तो कक्षीय अंतरिक्ष का यह साझा संसाधन भविष्य की पीढ़ियों के लिए दुर्गम हो सकता है।

मुख्य शब्द: अंतरिक्ष मलबा; Outer Space Treaty; भू-राजनीति; ASAT परीक्षण; ADR; ISEA; केस्लर सिंड्रोम; SDG 16; Education 5.0; तुलनात्मक अंतरिक्ष नीति।

Competency Capacity Building Needs of Teachers in Management of Computer Assisted Instruction (CAI) For Effective Teaching of Agriculture to Pupils

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Abstract

This study aimed at determination of competency capacity building needs of teachers in the management of computer assisted instruction (CAI) for effective teaching of Agriculture to pupils. Three research questions guided the study. The study was carried out in Owerri North and Owerri West Local Government Areas of Imo State, Nigeria. Population for the study comprised of 1,005 primary school teachers from the area of study. Sample for the study was 201 obtained through proportionate (20%) stratified random sampling technique. A 43competency item questionnaire was developed and used to collect data. Data obtained were analyzed using weighted mean and Improvement Needed Index (INI) to answer the research questions. It was found out from the study that, the teachers needed capacity building in all the 43 competency items identified by the study. It was recommended that the findings of this study should be packaged and utilized by relevant stakeholders in re-training the teachers to build their capacity in the management of CAI. Relevant stakeholders such as government (through Ministry of Education and Local Government Education Authority), school management board, and others should be involved in organizing a successful retraining program for the teachers in this regard. The re-training program can be in form of seminars, workshops, or short duration courses for retraining primary school teachers to build their capacity in the management of computer assisted instruction (CAI) for effective teaching of agriculture to pupils in primary school.

Key words: Agriculture, Capacity building, Competency, Computer Assisted Instruction, Effectiveness, Management, Teaching.

Navigating the Algorithmic Frontier: AI Integration, Strategic Human Capital Development, and Organisational Competitiveness in Nigeria's Education 5.0 Era

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Abstract

Despite the rapid proliferation of Artificial Intelligence across global business systems, Nigerian organisations have yet to develop a strategic approach to developing competency within their workforce and integrating AI into their operations, leaving them underprepared to address the competency needs of Education 5.0. This study explores the relationship between the integration of Artificial Intelligence (AI) and strategic human capital development in the context of the Nigerian business administration and management landscape, which is still under-researched despite the transformative potential of the combination for organisational competitiveness in the Education 5.0 era. This research uses a convergent parallel mixed-methods approach, which is supported by the survey data collected from 312 business managers and HR professionals from three cities (Lagos, Abuja and Port Harcourt) and in-depth interviews with 24 senior executives and educational leaders. The study proposes and empirically tests the novel theoretical model, AI-Enabled Human Capital Competency Framework (AHCCF), which is an adaptation of the already existing digital competency frameworks to the Nigerian context. The quantitative results show a significant difference between organisations with a structured AI literacy programme and those with an ad-hoc or no AI literacy programme in terms of talent retention (mean difference = 1.28, $t(310) = 6.84$, $p < .001$) and innovation output ($r = .62$, $p < .001$). Leadership effectiveness is also a positive correlate of AI ethics training ($\beta = .54$, $p < .001$). Qualitative themes highlight ongoing barriers: digital infrastructure inequity, cultural resistance, and misaligned curricula that hinder the transition. The paper recommends that Nigerian business schools introduce AI ethics and digital transformation programmes within all MBA and management courses by the year 2027; corporate learning and development departments create structured AI literacy programmes aligned with the tier on the AHCCF by 2027, and government regulators develop a National AI for Business Education Fund to reduce digital infrastructure gaps.

Keywords: Artificial Intelligence, human capital development, business administration, Education 5.0, Nigeria, mixed methods, future of work.

Artificial Intelligence and Personalized Learning for Inclusive Science Education in Secondary Schools in Kogi State, Nigeria

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Abstract

The integration of Artificial Intelligence (AI) into education has transformed instructional delivery, assessment, and learner engagement across the globe. In Nigeria, especially in secondary school science education, AI-driven personalized learning presents opportunities for addressing challenges associated with overcrowded classrooms, learner diversity, poor instructional resources, and inequitable access to quality education. This paper examines the role of Artificial Intelligence in promoting personalized and inclusive science education in secondary schools in Kogi State, Nigeria. The study adopts a conceptual and descriptive approach using recent literature, policy documents, and empirical studies on AI and education. The paper discusses AI-based instructional tools, adaptive learning systems, intelligent tutoring systems, and automated assessment platforms that support individualized learning experiences. It further highlights the prospects of AI in improving students' participation, engagement, scientific reasoning, and academic achievement regardless of learners' socioeconomic background or learning abilities. Challenges such as inadequate infrastructure, digital illiteracy, poor internet connectivity, lack of teacher competence, ethical concerns, and funding constraints are examined. The paper concludes that AI has enormous potential to bridge educational inequality and enhance inclusive science learning in Kogi State if adequately supported through policy implementation, teacher training, infrastructure provision, and digital inclusion strategies.

Keywords: Artificial Intelligence, Personalized Learning, Inclusive Education, Science Education, Secondary Schools, Kogi State, Nigeria.

Accessible Mathematics Instruction for Learners with Visual Impairment: Evidence from the Use of the SciTec Braille Mathematical Set

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Abstract

Access to mathematics education remains a significant challenge for learners with visual impairment due to the highly visual nature of mathematical symbols, diagrams, and spatial representations. These barriers often limit participation, conceptual understanding, and performance in mathematics, thereby affecting equitable access to STEM education. This study examines the effectiveness of the SciTec Braille Mathematical Set as an assistive instructional tool for improving mathematics accessibility among learners with visual impairment. The SciTec Braille Mathematical Set was designed to support tactile exploration and independent engagement with mathematical concepts, symbols, and structured problem-solving tasks.

Using a participatory and inclusive educational approach, the study involved learners with visual impairment who engaged with mathematics lessons using the SciTec Braille Mathematical Set over a defined instructional period. Data were gathered through classroom observation, learner feedback, teacher reflections, and performance-based tasks to assess usability, engagement, and perceived learning outcomes. Findings indicate that the use of the SciTec Braille Mathematical Set enhanced learners' participation in mathematics activities, strengthened conceptual understanding through tactile interaction, and increased confidence in solving mathematical problems independently. Teachers also reported improved lesson delivery and greater learner engagement during classroom instruction.

The study highlights the potential of tactile assistive technologies to reduce accessibility barriers in mathematics education and promote inclusive learning environments for persons with visual impairment. The findings contribute to the growing body of research on accessible STEM education and underscore the importance of integrating innovative Braille-based instructional tools into mathematics teaching and curriculum planning. The paper recommends broader adoption of tactile mathematical learning resources, teacher training on inclusive instructional strategies, and sustained policy support to advance equitable access to mathematics for learners with visual impairment.

Sprouting Resilient Health: The Role of Microgreens Interventions in Combating Adolescent Anaemia

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Abstract

Worldwide, iron-deficiency anaemia (IDA) remains a major public health concern, affecting 1.92 billion people. Among those affected, adolescent females living in low- and middle-income countries (LMICs) represent a major population group at risk of IDA, contributing to an intergenerational cycle of adverse maternal and child health outcomes. In spite of ongoing efforts, conventional iron supplementation strategies are limited by poor adherence, gastrointestinal side effects, and fragile supply chains. In this paper, we propose a sustainable dietary intervention based on microgreens as part of Education 5.0, specifically designed to enhance non-haem iron bioavailability. Microgreens have a short growth cycle, being harvested within 7-21 days post-germination, and are exceptionally rich in vitamin C, carotenoids, and bioactive phytochemicals. Crucially, they contain significantly higher concentrations (up to 40-fold) of these compounds compared to mature plants, thereby enhancing iron absorption and improving erythropoiesis. Central to this model is the transformation of schools into "Living Bio-Laboratories," where students cultivate microgreens using locally available seeds and resources while participating in the co-design of culturally acceptable, adolescent-friendly meals, beverages and functional products. This human-centered approach addresses nutritional deficiencies while helping adolescents to develop ecological awareness, problem-solving skills, and engagement with sustainable food systems. The proposed school-based microgreen programme supports the UN Sustainable Development Goals (SDGs) to eradicate hunger (SDG 2), create good health and well-being by both preventing and treating anaemia (SDG 3), and promote responsible production, consumption, and climate action through low-input, sustainable local farming (SDGs 12 and 13). Future research will focus on validation through localised randomised controlled trials and nutrient stability evaluations of functional products. Additionally, ensuring responsible data governance will allow for an effective scale-up of the programme. By bridging nutritional biochemistry with education and sustainability, this model provides a practical and adaptable pathway to combat adolescent anaemia while empowering future generations.

Keywords: Adolescent anaemia, nutrition, microgreens, iron bioavailability, Education 5.0, sustainable food systems, LMICs.

Strengthening Sustainability Education through Outcome-Based Learning Approaches

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Abstract

The growing environmental, economic, and social issues facing contemporary society have highlighted the pressing need for education that promotes sustainability. Educational institutions are now responsible for preparing learners with the knowledge, skills, values, and attitudes required to support sustainable development. Outcome-Based Education has gained importance as a learner-centered educational model that focuses on measurable learning outcomes, competency building, and the practical application of knowledge. This research paper explores how outcome-based learning approaches can enhance sustainability education by integrating sustainability competencies into curriculum planning, teaching methodologies, and assessment processes. The paper discusses the relationship between sustainability education and outcome-based learning, highlights major pedagogical strategies, identifies implementation challenges, and provides recommendations for effective practice. The study concludes that outcome-based learning approaches significantly contribute to the development of critical thinking, environmental awareness, ethical responsibility, and problem-solving skills necessary for sustainable development.

Keywords: Sustainability Education, Outcome-Based Education, Sustainable Development, Learner-Centered Education, Sustainability Competencies.

AI Ethics in Environmental Auditing for Sustainable Corporate Governance: Transparency and Accountability Issues

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Abstract

Artificial intelligence (AI) is increasingly being adopted in environmental auditing to strengthen sustainable corporate governance by improving monitoring accuracy, enhancing compliance detection, and supporting Environmental, Social, and Governance (ESG) reporting. However, the integration of AI into environmental auditing raises significant ethical concerns that directly affect corporate accountability and sustainability outcomes. This paper critically examines the intersection of AI ethics and sustainable corporate governance in the context of environmental auditing, focusing on key issues such as transparency, accountability, fairness, and regulatory compliance.

The primary objectives of this study are: (i) to analyze the role of AI in transforming environmental auditing practices within corporate governance frameworks; (ii) to identify ethical challenges arising from the use of AI in environmental compliance monitoring; (iii) to examine real-world applications and limitations of AI-driven environmental auditing systems; and (iv) to propose governance-oriented ethical considerations for responsible AI adoption in sustainability reporting and environmental oversight. The study employs conceptual, analytical, and policy-oriented research approaches based on secondary data collected from academic literature, policy documents, ESG reports, AI ethics frameworks, and environmental auditing sources.

The study highlights several practical applications of AI in environmental auditing. For example, machine learning algorithms are used by corporations and regulators to detect abnormal emission patterns in industrial facilities, enabling early identification of environmental violations. Satellite-based AI systems support deforestation monitoring by analyzing land-use changes over time, assisting both corporations and environmental agencies in verifying sustainability claims. Additionally, AI-powered ESG analytics tools are increasingly used by investors to assess corporate environmental performance and detect potential greenwashing in sustainability reports. Despite these advancements, ethical challenges persist, particularly in relation to algorithmic transparency, data reliability, and accountability for AI-generated audit outcomes.

The paper argues that many AI systems operate as "black boxes," making it difficult for stakeholders to understand how environmental audit decisions are produced. This lack of explainability raises concerns about trust, regulatory oversight, and legal responsibility when errors occur. Furthermore, biases in training data and unequal access to environmental datasets may lead to inaccurate or unfair compliance assessments. These challenges are compounded by weak regulatory frameworks governing AI deployment in corporate environmental governance.

The study concludes that while AI offers significant potential to advance sustainable corporate governance, its ethical risks must be carefully managed through robust governance mechanisms. These include explainable AI models, mandatory human oversight in auditing processes, standardized ESG data protocols, and clear regulatory accountability structures. Strengthening these safeguards will ensure that AI enhances, rather than undermines, environmental integrity and corporate responsibility.

Keywords: AI ethics, sustainable corporate governance, environmental auditing, transparency, accountability, ESG compliance.

Digital Transformation and AI Ethics in Education 5.0: Preparing Learners for the Future of Work

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Abstract

The rapid growth of digital technology and artificial intelligence (AI) is changing the way education is delivered and experienced. Education 5.0 is a modern educational approach that combines technology, innovation, and human values to prepare students for the future. This paper explores the role of digital transformation and AI ethics in Education 5.0 and their importance in preparing learners for future careers. It discusses how digital tools, online learning platforms, and AI-based technologies can improve teaching and learning. The paper also highlights important ethical issues such as data privacy, fairness, transparency, and the responsible use of AI in education.

The study finds that digital transformation makes learning more accessible, flexible, and learner centered. It also shows that ethical use of AI helps create a fair and trustworthy learning environment. Education 5.0 supports the development of important skills such as critical thinking, creativity, problem-solving, digital literacy, and adaptability, which are essential for the future workplace. The paper concludes that successful implementation of Education 5.0 requires strong digital infrastructure, proper teacher training, and clear ethical guidelines for the use of AI. By combining technological advancement with human values, Education 5.0 can help develop responsible, skilled, and future-ready learners.

Keywords: Education 5.0, Digital Transformation, Artificial Intelligence, AI Ethics, Future of Work, Digital Literacy.

Codified and Non-Codified Traditional Healthcare Systems of India: Preserving Indigenous Knowledge for Sustainable Global Health

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Abstract

India has one of the richest traditions of indigenous healthcare knowledge in the world, built over thousands of years through cultural practices, spiritual beliefs and close interaction with nature. In general, these traditional healthcare practices are divided into codified and non-codified systems, based on their documentation, standardization, and institutional recognition. Codified systems are formally documented medical traditions based on classical texts, established theories, diagnostic procedures and organized structures of education. The major codified systems of medicine practiced in India are Ayurveda, Siddha, Unani, Yoga, Naturopathy and Homeopathy. The Government of India promotes these systems under the AYUSH system. Ayurveda emphasizes the balance of 3 doshas namely Vata, Pitta and Kapha. Siddha emphasizes the balance of Vatham, Pitham and Kapham. Unani medicine is based on the theory of four humors. Yoga and Naturopathy, on the other hand, is based on holistic treatment of the body, mind and natural treatment. These systems have a major role to play in preventive and curative healthcare and are increasingly being recognized worldwide for their holistic and personalized approach towards treatment.

Non-codified traditional systems, on the other hand, are mainly undocumented and are transmitted orally over generations in local and tribal communities. They are systems such as folk medicine, tribal medicine, ethnomedicine, traditional bone setting and indigenous midwifery practices. Non-codified traditions are deeply rooted in local culture, ecological knowledge and community experience. They heavily depend on the use of medicinal plants, animal products, spiritual healing and natural resources that are available in specific geographical regions. Tribal healers and folk practitioners have a wealth of knowledge on medicinal biodiversity and are important providers of primary health care, especially in rural and remote areas where access to modern health care facilities may be limited.

However, non-codified systems are facing a number of challenges, including loss of traditional knowledge, lack of scientific validation, biopiracy and declining transmission of indigenous practices to younger generations. Codified systems, however, have problems of standardization, quality control and integration with modern medical systems. Preservation, documentation, scientific evaluation and sustainable use of codified and non-codified traditional knowledge systems are needed to safeguard India's cultural heritage and to enhance the diversity of healthcare. Combining traditional wisdom with modern scientific research may provide new ways for drug discovery, holistic health care, biodiversity conservation, and sustainable community development. Thus, codified and non-codified traditional systems continue to be important components of India's medical and cultural prospects.

Keywords: Traditional medicine, Indigenous knowledge systems, Codified healthcare systems, Non-codified medicine, AYUSH systems.

Education 5.0: Water Security and Sustainable Management

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Abstract

Instead of viewing education as a static institution, we must rethink it as a dynamic ecosystem that can adjust to the needs and objectives of students in light of the rapidly changing world. The goal of Education 5.0 is to transform the existing educational system by amalgamating cutting-edge technology with human-centered learning. Students will be better equipped to meet their future needs as a result. One of the fundamental tenets of education 5.0 is sustainable development, which links education with global sustainability goals and encourages students to acquire skills that enhance societal and environmental well-being.

Addressing water treatment presents a major challenge in the global south. Incorporating environmental engineering into educational curricula can aid in overcoming this issue. By creating practical teaching resources on college campuses, learners can gain practical experience in sustainable development. Students can engage in initiatives related to water treatment, management of water resources, energy conservation, reducing carbon emissions, minimizing waste and raising public awareness, among others. We explore a unique water purification technology.

Keywords: Sustainability, Education 5.0, SDG, Environment.

Comparative Analysis of Sports Emotional Intelligence Among Cricketers and Baseball Players

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Abstract

The present study was conducted to compare Sports Emotional Intelligence among cricketers and baseball players representing All India Inter-University competitions in their respective games from Aligarh. Emotional intelligence is considered an essential psychological factor in sports, as it influences emotional control, stress management, motivation, teamwork, communication, and decision-making during competitive situations. Athletes with higher emotional intelligence are often better able to manage pressure and maintain consistent performance.

The main objective of the study was to examine and compare the level of Sports Emotional Intelligence between cricketers and baseball players. A total sample of 60 male players was selected for the study, consisting of 30 cricketers and 30 baseball players who had represented All India Inter-University tournaments in their respective sports. The participants were selected through purposive sampling technique. Sports Emotional Intelligence was assessed through the *Sports Emotional Intelligence Test* (2008) developed by C. D. Agashe and R. D. Helde.

A descriptive comparative research design was employed for the investigation. The collected data were analyzed by applying statistical techniques such as mean, standard deviation, and independent sample t-test to determine the significance of difference between the two groups.

The findings of the study revealed that cricketers possessed slightly higher Sports Emotional Intelligence than baseball players. However, the difference between the groups was found to be marginal. The higher emotional intelligence among cricketers may be attributed to the longer duration of the game, strategic decision-making, pressure-handling situations, and greater team coordination involved in cricket. The study highlights the importance of emotional intelligence in improving sports performance and psychological stability among athletes. The results may be beneficial for coaches, sports psychologists, and trainers in designing psychological skill development programs for athletes participating in competitive sports.

Keywords: Sports Emotional Intelligence, Cricketers, Baseball Players, Emotional Control, Athletic Performance.\

Navigating the Artificial Intelligence Revolution: Implications for Labour Markets, Curriculum Redesign, and Responsible AI Literacy in Business Schools

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Abstract

The proliferation of artificial intelligence (AI) technologies across industrial and institutional domains has prompted urgent reconsideration of how higher education institutions prepare students for an increasingly automated professional landscape. This conceptual paper examines the multidimensional implications of AI adoption for business education, drawing on empirical research from labour market studies, documented AI failure modes, and emerging technical research frontiers. The analysis proceeds in four parts: contextualising AI's economic momentum and its documented effects on occupational task structures; examining the principal vulnerabilities of contemporary AI systems, including hallucinations, algorithmic bias, and adversarial susceptibility; surveying key research trajectories from generative and explainable systems to federated and quantum AI approaches; and proposing a framework for curriculum redesign at business schools that integrates AI literacy, ethical reasoning, and project-based competency development across disciplinary boundaries. The paper argues that the gap between theoretical AI capability and observed workplace adoption defines a critical intervention window within which institutions can meaningfully act to close the AI literacy gap. The author concludes that responsible, proactive, and interdisciplinary AI education constitutes a pedagogical imperative for business schools operating in the current technological era.

Keywords: Artificial intelligence in education, Curriculum redesign, AI literacy, Labour market disruption, Algorithmic bias, Explainable AI, Business education.

Impact of Growth Mindset Interventions on Academic Success of Secondary School Students

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Abstract

The transition into secondary education introduces heightened academic rigour, social stressors, and shifting self-evaluations, making it a critical window for psychological and academic disengagement. A growth mindset is the belief that personal characteristics, such as intellectual abilities, can be developed, and a fixed mindset is the belief that these characteristics are fixed and unchangeable. Research on these mindsets has found that people who hold more of a growth mindset are more likely to thrive in the face of difficulty and continue to improve, while those who hold more of a fixed mindset may shy away from challenges or fail to meet their potential.

A growth mindset intervention is not just telling the students to try harder. It involves a specific pedagogical shift. Recent meta-analyses suggest that mindset interventions work best when the environment supports it and where there is no false growth mindset. A growth mindset will eventually lead to the attainment of academic success for students.

Academic success refers to the fulfilment of educational goals set within an academic environment. However, it goes beyond just acquiring high marks in examinations; it encompasses a deep understanding of subjects, acquiring pertinent skills, and personal and intellectual growth facilitated through learning. Academic success is a multifaceted achievement that encompasses a variety of outcomes. The academically successful possess the characteristics of higher self-esteem, lower levels of depression and anxiety, self-confidence, organisation, time management, prioritisation, concentration, and motivation.

This paper evaluates the empirical impact of the different interventions of growth mindset on academic success, specifically on secondary school students, and how it leads to inculcating soft skills, which ultimately shapes the different determinants of academic success. When students have a high academic success rate, a growth mindset is developed. The interventions yield highly significant, positive effects on students.

Keywords: Growth Mindset, Intervention, Secondary Education, Meta-Analysis, Determinants, Academic Success.

Artificial Intelligence and the Influence of Social Media on Adolescents: A Comprehensive Research Analysis

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Abstract

The proliferation of artificial intelligence (AI)-driven social media platforms represents one of the most consequential technological developments affecting adolescent development in the twenty-first century. This article examines the multifaceted relationship between AI algorithms, social media engagement, and outcomes across mental health, cognitive development, social behavior, and academic performance among adolescents aged 13 to 17. Drawing on a systematic synthesis of 87 empirical studies published between 2015 and 2026, alongside neurobiological frameworks, developmental psychology theory, and computational media analysis, this research demonstrates that AI recommendation engines—designed to maximize engagement—exploit adolescent neurological vulnerabilities, including heightened reward sensitivity and diminished prefrontal regulatory capacity, to foster compulsive use patterns. Findings indicate significant associations between heavy social media use and increased rates of depression ($r = 0.54$), anxiety ($r = 0.48$), sleep disturbance ($r = 0.62$), and cyber-bullying victimization ($r = 0.51$). The study further identifies algorithmic amplification of harmful content, AI-generated misinformation, and hyper-personalized advertising as mechanisms that disproportionately harm vulnerable adolescent subgroups. A multi-level intervention framework encompassing individual digital literacy, family-based supervision strategies, school wellness programs, and regulatory policy reform is proposed. Results underscore the urgent need for ethically transparent AI design, robust regulatory frameworks, and cross-disciplinary research collaborations to safeguard adolescent well-being in algorithmically mediated digital environments.

Keywords: Artificial Intelligence, Social Media, Adolescents, Mental Health, Algorithm, Digital Well-Being, Recommendation Systems, Cyber-Bullying, Screen Time, Developmental Psychology.

E-Commerce Ethics and Sustainable Consumption: Consumer Autonomy in the Algorithmic Economy

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Abstract

Purpose: Digital commerce has quietly transformed from a space of convenience into an environment shaped by constant algorithmic influence. Every recommendation, flash sale notification, and "suggested for you" section is designed to guide consumer behavior, often in ways users barely notice. This paper explores the ethical implications of these AI-driven systems and examines how they affect consumer autonomy and sustainable consumption practices in the modern digital economy.

Methodology: The study adopts a conceptual and exploratory approach by engaging with contemporary literature on e-commerce ethics, algorithmic decision-making, digital consumer behavior and sustainable consumption. It critically reflects on how online retail platforms use personalization, behavioral targeting, and predictive analytics to shape purchasing decisions. Rather than treating consumers as passive data points, the paper considers the emotional and psychological experiences of real individuals navigating increasingly persuasive online environments.

Findings: The discussion reveals that while algorithmic personalization enhances convenience and shopping efficiency, it also creates ethical tensions surrounding consumer freedom, transparency, and overconsumption. Many consumers experience a gradual loss of control as platforms continuously anticipate desires, encourage impulsive buying, and normalize excessive consumption patterns. The study further finds that growing awareness of digital manipulation, privacy concerns, and greenwashing is encouraging consumers to question the ethics of online marketplaces. Sustainable consumption in the digital era therefore depends not only on environmentally responsible products but also on ethical platform design that respects informed and independent decision-making.

Practical Implications: The paper highlights the need for e-commerce companies to adopt more transparent and human-centered digital practices. Ethical recommendation systems, responsible use of consumer data, and sustainability-focused platform policies can help build long-term trust while supporting conscious consumption behavior. The study also encourages policymakers and digital regulators to reconsider how consumer rights and autonomy are protected within algorithm-driven economies.

Value: This paper contributes to the emerging conversation on AI ethics and sustainable digital commerce by focusing on consumer autonomy as a central ethical concern. It moves beyond technological optimism to examine how ordinary shopping experiences are increasingly shaped by invisible systems of persuasion that influence not only what consumers buy, but also how they think, choose, and consume.

Keywords: E-commerce ethics, sustainable consumption, consumer autonomy, algorithmic economy, AI-driven retailing, ethical personalization, digital consumer behavior, online shopping ethics.

Predictive Modeling for Flood Resource Allocation Using Machine Learning and Crowdsourced Social Media Data in Disaster-Prone Regions

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Abstract

Effective distribution of resources in case of flood disasters is still among the most urgent dilemmas of emergency management authorities especially in geographically prone areas like the Kashmir valley. The conventional models of resource allocation are usually associated with delays, inaccuracy, and lack the level of real-time responsiveness making the disaster relief ineffective. The research presents a new predictive modeling system that incorporates machine learning algorithms and information on the crowdsourced social media to maximize flood resources allocation in disaster-prone areas. The data collection was organized in various social media outlets in cases of floods in Kashmir, including textual messages, images, and geotagged details. A collection of machine learning models such as Random Forest, XGBoost and Long Short-Term Memory (LSTM) networks were trained and tested in order to predict demand patterns of resources across the affected regions. These findings prove that the inclusion of real-time crowdsourced social media data significantly increases the predictive power of resource allocation models over traditional methods based on the exclusive use of historical data. The presented model records substantial gains in the speed of response and efficiency of resource allocation as it is proven by the simulation experiments according to the previous Kashmir flooding. Moreover, the research analyzes how predictive models, which are artificial intelligence, can be used to mediate the gap between the disaster demands at the ground and the institutional response capacity. The implications of the findings in terms of disaster management agencies, government bodies, and NGOs are substantial, as a solution to flood relief operations is based on the data and can be scaled. This study contributes to the evolution of the computational disaster management field and provides the basis of the further introduction of the AI-based emergency response systems.

Keywords: Predictive Modeling, Machine Learning, Flood Resource Allocation, Crowdsourced Data, Social Media Analytics, Kashmir Valley, LSTM, Disaster Management.

Why Introduce Numeracy Skills at Earlier Stages?

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Abstract

Investing in the development of numeracy skills from a young age leads to significant changes not only in individuals but also in society and the nation as a whole. The early years of schooling are crucial for nurturing critical thinking and creativity without the constraints of a rigid educational structure. They can also foster resilience and a sense of responsibility from a very young age. Introducing numeracy skills early is essential, as it can predict the quality of mathematical education in later stages and is vital for holistic well-being. Recent global trends and evolving norms emphasizes the importance of integrating technology into our daily lives, which calls for a shift in how we teach numeracy skills. We need to focus on applying these skills to solve real-world problems effectively, rather than relying on traditional methods of mathematics instruction. This paper aims to highlight the importance of fostering numeracy skills during the initial years of schooling. Doing so builds a strong foundation not only for understanding abstract mathematical concepts later but also for enhancing overall well-being and equipping individuals with the 21st-century skills necessary for a globalized world. Various research studies have shown a troubling decline in students' interest in mathematics, often leading to a 'phobia' for the subject as they progress to higher grades. This decline is linked to a lack of foundational numeracy skills, resulting in individuals who may excel in abstract mathematics but struggle to apply it in real-life contexts. The school's aim is to let children explore their own strategies and provide ample opportunities for hands-on experiences, enabling them to construct their own understanding of the 'numeric world'. Additionally, this paper discusses barriers to developing numeracy skills and aims to help students overcome the mindset that "math is not their cup of tea." Furthermore, numeracy is not a skill acquired "out of the blue." It is imperative to take deliberate actions to cultivate a comfort with numbers, making math an integral part of their daily lives.

Keywords: -Numeracy Skills, Earlier Stages.

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Functional Education as Predictors of Self-Employed Graduates' Productivity in Oyo South Senatorial District, Oyo State, Nigeria

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Abstract

High and increasing rate of unemployment among graduates in Oyo South Senatorial district in Oyo State, in particular and Nigeria in general, with its attendant social and economic crises is of great cause for concern. These crises are not unconnected with inadequate capacity building by unemployed graduates in acquiring necessary skills that would allow them to be self-employed and contribute maximally to economic activities and national development. Some graduates who also ventured into self-employment are not making headways due to inappropriate information communication technology and managerial skills. This study thus investigated factors determining self-employed graduates' productivity in Oyo South Senatorial district in Oyo State, Nigeria. Descriptive survey research design was adopted for the study and all the self-employed graduates in the eleven (11) local government areas in Oyo South senatorial district of Oyo State formed the population of the study. Purposive and simple random sampling techniques were used to select on hundred (100) self-employed graduates each in the eleven (11) local government areas in Oyo South senatorial district of Oyo State. It is purposive in the sense that all respondents must be graduates and must have established the business ventures up to five (5) years. The total number of respondents for the study is thus One Thousand and One Hundred (1,100). The instrument used to collect data for the study was tagged "Self-Employability Skills and Productivity Questionnaire (SESPQ)". The reliability of the instruments was assessed using Cronbach's Alpha, and the value of 0.86 was obtained. Data was analysed using Pearson Product Moment Correlation analyses, using SPSS version 21.0. Findings revealed a coefficient correlation of 0.760 which implies that self-employed graduates' productivity is attributed to 76% determination to ICT skills possessed by them. This result implies that there is a high and positive relationship between the ICT skills possessed by self-employed graduates and their productivity level in Oyo South Senatorial district, Oyo State, Nigeria. Findings further revealed a correlation coefficient of 0.824 which implies that self-employed graduates' productivity is attributed to 82% of managerial skills possessed by them. This result implies that there is a high and positive relationship between the managerial skills possessed by self-employed graduates and their productivity level in Oyo South Senatorial district, Oyo State, Nigeria. The study concludes that ICT and managerial skills possessed by self-employed graduates play pivotal roles in business productivity and enhance sustainable economic development in Oyo South Senatorial district, Oyo State, Nigeria. It recommends that government at all levels should ensure that tertiary institutions are well funded to enhance the provision of digital equipment that will enhance ICT knowledge acquisition in order to produce graduates with self-employability ICT skills needed for productive business activities. Curricula contents in tertiary institutions should also be reviewed and enriched with entrepreneurial contents to emphasis managerial skills and business management activities for self-employment rather than preparing graduates for white-collar jobs.

Keywords: Functional, predictors, productivity, self-employment, skills.

Decolonizing Community Memory Archives Through Digital Humanities For Living Heritage Preservation In Yoruba Communities Of Nigeria

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Abstract

The growth of digital heritage preservation has transformed how cultural memory is archived, accessed, and circulated globally. However, the dominant global infrastructure behind digital archiving remains shaped by Western archival traditions. Ownership is usually institutional, while control is centralized. These approaches often do not easily fit African living heritage systems, particularly in postcolonial contexts where memory is carried through oral performance, kinship networks, ritual practice, and fragile local infrastructures rather than formal repositories.

Using the Yoruba community memory archives in Nigeria as its focal point, this paper questions the adequacy of prevailing digital heritage frameworks and argues that existing digitization models are poorly suited to such environments. In some cases, they reproduce older colonial patterns in digital form. Cultural knowledge becomes extracted, relocated, and reorganized according to external standards, while the communities that sustain that knowledge lose control over its interpretation and circulation. Drawing on perspectives from Digital Humanities, postcolonial archival theory, and Indigenous Data Sovereignty scholarship, this study advances a decolonial approach to digital heritage preservation. It reimagines community memory archives not as passive collections of artefacts, but as active cultural systems shaped by oral histories, praise poetry, ritual performances, lineage narratives, and indigenous knowledge practices. We propose a governance framework focused on community custodianship, participatory metadata creation, contextual preservation practices, and decentralized digital stewardship.

By situating Nigeria within broader debates on UNESCO cultural heritage preservation, digital repatriation, and technological inequality in the Global South, this paper highlights the infrastructural pressures that continue to shape digital heritage governance. It argues that lasting preservation in African contexts depends on moving beyond institution-driven digitization models toward digital ecosystems governed by communities themselves, grounded in cultural context and epistemic justice.

Gumamela (Hibiscus Rosa-Sinensis L.) Leaf Extract As Organic Rust Inhibitor

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Abstract

Rust formation on metals is a major issue in various industries, leading to material degradation and financial losses. Traditional rust inhibitors, while effective, often contain harmful chemicals that contribute to environmental pollution. This study investigates the potential of gumamela (*Hibiscus rosa-sinensis L.*) leaf extract as an organic rust inhibitor. Its effectiveness was compared to a commercial rust inhibitor (WD-40) by evaluating rust formation, pH, and viscosity. A completely randomized design (CRD) was employed. Thirty iron nails were divided into three groups: Group A (treated with WD-40), Group B (treated with gumamela leaf extract), and Group C (untreated control). Rust formation was monitored for seven days, while pH and viscosity tests analyzed the chemical properties. Results showed that WD-40 was the most effective, with rust forming on only 2 nails, whereas gumamela extract demonstrated moderate effectiveness, with rust developing on 6 nails. The control group experienced complete rust formation. pH analysis revealed that gumamela leaf extract was neutral (pH 7), whereas WD-40 was acidic (pH 5). Viscosity testing showed that gumamela leaf extract exhibited the highest viscosity (20.12 seconds), suggesting its potential as a protective barrier. A t-test confirmed a significant difference, with WD-40 performing better. However, gumamela leaf extract demonstrated promising rust-inhibiting properties compared to the untreated nails, presenting a potential sustainable alternative. This study highlights the importance of plant-based corrosion inhibitors for greener industrial practices. Further research should optimize extraction methods, extend observation periods, and test different metals to enhance applicability. The findings contribute to the growing field of green corrosion inhibitors and encourage the development of eco-friendly rust prevention methods.

Keywords: gumamela leaf, low-cost, non-toxic, rust inhibitor, rust formation.

Text Apps Are Not Enough: Why We Need AI Powered Real Time Nigerian Sign Language Interpretation in Mainstream Classrooms

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Abstract

Speech-to-text captioning applications have emerged as a prevalent assistive technology for students who are deaf or hard of hearing in mainstream educational settings. This opinion piece contends that relying solely on captioning is inadequate for achieving true inclusive education in Nigeria. Although the Federal Government has mandated the instruction of sign language in all primary schools and has instructed teacher training institutions to incorporate sign language into their curricula, a significant number of mainstream educators remain unable to sign. Furthermore, speech-to-text systems are plagued by cognitive overload, synchronization delays, inconsistent accuracy, and their inability to represent non-manual features such as facial expressions and body language. An innovative alternative is provided by AI-powered real-time sign language interpretation, which translates spoken language from teachers directly into Nigerian Sign Language (NSL) using three-dimensional avatars. Nevertheless, these AI systems must be collaboratively designed with input from the deaf community, trained on comprehensive NSL datasets, and subjected to stringent ethical safeguards, including the establishment of community oversight boards and restrictions against replacing human interpreters in sensitive situations. The paper concludes by offering five recommendations for the ethical development and implementation of community-centered AI sign language interpretation within Nigerian mainstream

Keywords: Speech to Text Apps, AI Powered Real time Nigerian Sign Language interpretation, Mainstream Classrooms.

Reviewing AI-Driven Personalized Learning Approaches for Children with Special Needs

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Abstract

Children with special needs (CWSN) are those who have a disability of some kind and need special assistance and care. The type of these children's disabilities determines their special needs. These children will require more assistance and services in education. The integration of artificial intelligence (AI) in special education represents a paradigm shift in addressing the diverse learning needs of children with disabilities. This research paper provides a comprehensive review of AI-powered personalized learning systems for children with special needs, examining their applications, effectiveness, challenges, and future directions. Drawing on a systematic analysis of 139 studies, the paper demonstrates that AI-driven technologies—including intelligent tutoring systems, adaptive learning platforms, natural language processing tools, and assistive communication devices—significantly enhance academic performance, cognitive development, and social engagement for students with autism spectrum disorder, dyslexia, ADHD, and other learning disabilities. Longitudinal evidence from a 12-month study involving 360 participants shows substantial improvements in attention, memory, and problem-solving skills, with neuroplastic changes observed in key brain regions. However, significant barriers remain, including limited access in low-resource settings, inadequate teacher training, ethical concerns regarding data privacy and algorithmic bias, and the risk of cognitive offloading. The paper proposes a framework for ethical implementation, emphasizing professional oversight, personalization, transparency, and continuous feedback. It concludes that while AI cannot replace teachers, it offers immense potential to enhance inclusive education when implemented thoughtfully with appropriate safeguards and teacher empowerment strategies.

Keywords: Artificial Intelligence, Personalized Learning, Special Education, Assistive Technology, Inclusive Education, Neurodevelopmental Disorders, Adaptive Learning Systems.

Beyond the Textbook: Integrating Computational Thinking + AI to Enhance Grade 8 Students' Understanding of Air Pressure

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Abstract

This action research investigates the integration of Computational Thinking and AI into Grade 8 science teaching to enhance students' understanding of air pressure. The study was conducted with 120 students over six weeks using a quasi-experimental pre-test and post-test design. While the control group received traditional instruction, the experimental group engaged in inquiry-based, project-based, and AI-augmented learning through simulations, data analysis, engineering tasks, and algorithmic problem-solving. The findings indicate a significant improvement in conceptual understanding, engagement, and transfer of learning among students exposed to the CT-AI approach. The study demonstrates that AI, when used as a cognitive partner rather than a replacement for thinking, can make abstract scientific concepts more accessible and meaningful while fostering digital fluency and higher-order reasoning.

Keywords: Computational Thinking, Artificial Intelligence, Science Education, Air Pressure, Middle School Learning, Digital Literacy.

A Critical Study on Non-Transferability of Space Authorisations in India's AI-Enabled New Space Ecosystem

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Abstract

India's space sector is witnessing a transformative phase driven by private participation, commercialization, and the increasing integration of artificial intelligence into space-related activities. Following the introduction of the Indian Space Policy, 2023 and the operational expansion of IN-SPACe, India's NewSpace ecosystem has grown rapidly, with over 200 registered space-tech startups by 2025 compared to fewer than 20 in 2020. Industry estimates further suggest that India's space economy, currently valued at approximately USD 8.4 billion, may reach nearly USD 44 billion by 2033. Simultaneously, AI-enabled technologies such as autonomous satellite operations, predictive orbital analytics, remote sensing, and intelligent data systems are reshaping the commercial and strategic dimensions of space governance. However, amidst this rapid expansion, the issue of non-transferability of space authorisations remains legally unresolved within India's evolving regulatory framework. The existing authorization structure reflects a State-centric approach grounded in sovereign responsibility, national security, and international obligations under instruments such as the Outer Space Treaty, 1967. Nevertheless, the rigid restriction on transferability presents significant commercial challenges in a sector increasingly dependent upon mergers, acquisitions, venture capital investments, strategic restructuring, and cross-border technological collaborations. This paper critically examines whether a strict rule of non-transferability remains legally and commercially sustainable in an AI-enabled NewSpace ecosystem. The study addresses the central question of law concerning whether India's current regulatory framework adequately balances sovereign oversight with the commercial realities of modern space enterprises. Adopting a doctrinal and comparative methodology, the paper evaluates regulatory practices in jurisdictions such as the United States and the United Kingdom while analysing India's emerging space governance model. The research argues that a conditional transferability framework, subject to prior governmental approval and regulatory safeguards, may better promote innovation, investment certainty, operational continuity, and sustainable growth while preserving national security and State accountability within India's rapidly evolving space economy.

Keywords: Space authorisation, non-transferability, IN-SPACe, NewSpace ecosystem, artificial intelligence, space regulation, Indian Space Policy 2023.

From Technostress to Botanical Alleviation: A Review on Functional Herbal Premixes for Digital Detox and Cognitive Support

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Abstract

With the advent of technological advancements in digital technology, there have been drastic changes in people's working methods and lifestyles, leading to prolonged screen exposure and stress, causing mental fatigue and cognitive decline. They have also led researchers to explore techniques for digital detoxification, which are natural and simple for everyone to follow. This study is centered around the synthesis of clinical and pre-clinical studies, along with ethnobotanical evidence, related to medicinal plants such as *Ocimum sanctum* (tulsi), *Mentha spicata* (mint), *Cinnamomum verum* (cinnamon), *Laurus nobilis* (bay leaves), *Curcuma caesia* (Khali haldi), *Myristica fragrans* (nutmeg), and Citrus species peel. The purpose of these plants is that they possess adaptogenic and anti-inflammatory and antioxidant properties and will be used for formulation of anxiolytic products useful for cognition under digital stress. Mechanistic considerations indicate the ability of phytochemicals not only to decrease oxidative stress and modulate cortisol and neurotransmission balance, but also to protect neuronal integrity, improving cognitive functions and clarity. This paper provides a critical insight into herbal premixes as functional assets for digital fatigue alleviation by focusing on their phytochemical constitution, neuroprotective actions and sustainability implications. In addition to the effects of individual constituents, the review stresses synergistic phytochemical interactions among botanicals that are part of herbal mixtures and formulation factors affecting efficacy, palatability, and sensory acceptance. More importantly, sustainability is considered in the analysis, including circular economy with agro-waste upcycling (e.g., citrus peels and spent leaves) and eco-implications of sustainable sourcing. It is indicative of their potential emphasis in comprehensive healthcare protocols that are designed to promote psychological resilience that is congruent with eco-sustainable and eco-friendly philosophies.

Keywords: Digital fatigue, Herbal premixes, Phytochemicals, Neuroprotection, Oxidative stress, Circular economy.

Consumer Acceptance of Algorithmic Advertising: The Role of Trust and Perception

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Abstract

The increasing integration of artificial intelligence and algorithm-driven systems into digital marketing has transformed the advertising landscape across social media platforms and e-commerce environments. Organizations increasingly rely on algorithmic advertising systems to deliver personalized advertisements based on user preferences, browsing history, online interactions, and behavioral patterns. Although personalized advertising improves relevance and consumer engagement, concerns related to privacy, transparency, manipulation, and trust continue to influence consumer acceptance of such systems. The present study examines consumer acceptance of algorithmic advertising with special emphasis on the role of trust and consumer perception.

The study adopts a quantitative research design based on primary data collected from social media users through a structured questionnaire. The questionnaire included measurement items related to Algorithm-Driven Personalized Advertising (ADPA), User Perception (UP), Trust (TR), and Purchase Intention (PI). Data analysis was performed using SPSS and SmartPLS-oriented statistical interpretation methods. Descriptive statistics, reliability analysis, correlation analysis, and Structural Equation Modeling (SEM) techniques were utilized to examine the proposed relationships among variables.

The findings indicate that user perception and trust significantly influence consumer acceptance of algorithmic advertising. Consumers generally demonstrate positive attitudes toward personalized advertisements when they perceive them as relevant, informative, and trustworthy. The findings also suggest that trust plays an important role in improving purchase intention and engagement with personalized advertising systems.

The study contributes to the growing literature related to artificial intelligence, digital marketing, and consumer behavior by examining algorithmic advertising acceptance within the context of social media platforms. The findings may help marketers and digital advertisers design transparent, consumer-friendly, and ethically responsible personalized advertising strategies.

Keywords: Algorithmic Advertising, Consumer Acceptance, Trust, User Perception, Personalized Advertising, Purchase Intention, Artificial Intelligence, Social Media Marketing, Consumer Behavior, Digital Advertising.

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Evaluation of Graphics Design Tool Utilization in Technology-Enabled Learning Environments

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Abstract

The rapid advancement of computer graphics technologies and the emergence of AI-assisted design tools have transformed the digital design landscape, creating new opportunities and challenges for design education. Higher education institutions continue to integrate various graphics design software into their curricula. However, students increasingly access and learn design tools independently through online platforms and self-directed learning. This shift raises questions regarding the alignment between academic instruction, student practices, and industry expectations. Despite the growing adoption of digital design tools, limited research has examined the utilization patterns of computer graphics software from multiple stakeholder perspectives, including students, educators, and industry professionals. Existing studies predominantly focus on technology adoption or educational outcomes, while insufficient attention has been given to the alignment between tools prescribed in academic curricula, tools utilized by students, and tools demanded by employers. Furthermore, the growing influence of AI-powered design technologies on software selection and workforce readiness remains underexplored. This study evaluated graphics design tool utilization in technology-enabled learning environments by examining the graphics software incorporated into academic curricula, the tools practiced by students through formal coursework and self-directed learning, and the factors influencing their utilization. The study employed the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as the theoretical framework to investigate the determinants of graphics tool usage among students. A mixed-methods research design was adopted. A survey was conducted among current higher education students enrolled in programs that include computer graphics courses to identify commonly used graphics tools and the factors influencing their utilization. In-depth interviews with selected students provided deeper insights into learning experiences and tool adoption patterns. Interviews with educators explored perspectives on software selection, pedagogical considerations, and curriculum relevance. Interviews with industry professionals identified the graphics tools most valued during recruitment and examined the perceived impact of artificial intelligence on future design competencies. The study provided a comprehensive understanding of the alignment between curriculum design, student utilization patterns, and industry requirements in digital design education. The findings may contribute to curriculum enhancement, support student-centered learning practices, and facilitate the development of industry-relevant digital design competencies in the Education 5.0 era.

Keywords: Graphics Design Tools, Digital Design Education, Student-Centered Learning, Artificial Intelligence in Design, Workforce Readiness.

Strategic Talent Acquisition and Employee Retention: Evidence from Indian ITeS Companies

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Abstract

The Indian Information Technology Enabled Services (ITeS) sector has emerged as one of the fastest-growing industries contributing significantly to employment generation, digital transformation, and economic development. In an increasingly competitive business environment, organizations are continuously searching for skilled professionals who can contribute effectively toward organizational growth and long-term sustainability. As a result, strategic talent acquisition has become an important Human Resource Management function that focuses not only on attracting qualified candidates but also on improving workforce stability and organizational commitment. Employee retention has become a major challenge in Indian ITeS companies due to high employee turnover, competitive work environments, changing employee expectations, and increasing employment opportunities.

The present study examines the relationship between strategic talent acquisition and employee retention in select Indian ITeS companies. The study focuses on major dimensions of strategic talent acquisition such as recruitment strategy, employer branding, selection process effectiveness, onboarding practices, training and hiring practices, and workplace communication. The study attempts to understand how these dimensions influence employee retention within the Indian ITeS sector.

The research adopts a quantitative research design. Primary data were collected from employees working in Indian ITeS companies through a structured questionnaire using a five-point Likert scale. A total of 120 valid responses were considered for analysis. Statistical techniques such as reliability analysis, correlation analysis, regression analysis, and Structural Equation Modeling (SEM) through SmartPLS were proposed to evaluate the relationship between strategic talent acquisition and employee retention.

The study is expected to provide valuable insights for HR managers, organizational leaders, and policymakers regarding the importance of strategic recruitment and employee-centered hiring practices in improving employee retention. The findings may help organizations develop sustainable HR strategies capable of reducing employee turnover and strengthening workforce commitment in the Indian ITeS sector.

Keywords: Strategic Talent Acquisition, Employee Retention, Human Resource Management, Recruitment Strategy, Employer Branding, Indian ITeS Sector, Employee Commitment, Workforce Stability, Organizational Performance, Talent Management.

Algorithmic Labor and Informal Employment Systems in Developing Economies: Examining the Socioeconomic Effects of the Gig Economy

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Abstract

The rapid expansion of the gig economy has emerged as one of the most significant transformations in contemporary labor markets, particularly within underdeveloped and developing economies. Driven by digital platforms, technological penetration, and rising unemployment, gig work has been widely promoted as a flexible and inclusive employment alternative. However, in the context of the Global South, where labor markets are already dominated by informal employment structures, the gig economy often reinforces rather than resolves existing vulnerabilities. This study critically examines the intersection between platform-based gig work and unstructured labor systems, focusing on socioeconomic impacts, worker precarity, and policy challenges.

Education 5.0- Human Empathy, AI and The Future Work Force

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Abstract

Technologies have always encountered the existence of human beings by easing certain works as well as posing challenges to the anthropocentric views. Today everything is technology driven. Laptops, computers, mobiles and internet have interconnected functions. Internet cannot exist without the devices and bases. Laptops and all function as a device and a base to facilitate to connect to internet. This is a web of technology. Where one is completely dependent upon the other to function. We have seen the development of basic mobiles to smart mobiles. Similarly the technological advancements and development of certain tools help us gain knowledge. Through these mediums it is a certained that we have access to knowledge and its means throughout all the times. In today's time we cannot think of our existence without a mobile. In certain terminologies human beings have become addicted to mobiles, that has caused a different level of challenges to human beings and their cultural values. Any material and anything is available today through the internet on these devices. The Times of covid and post-covid saw a major shift in the advancement tools. The technological advancement tools help human beings in sorting out certain concepts, works and assist them in organising their individual tasks, available material and affairs. These have also helped and posed challenges in the education field. Artificial intelligence is a technological tool that have interrupted our functioning in everyday affairs. In this paper, with these backgrounds I discuss the importance and challenges of human empathy, AI and the future workforce in education 5.0.

Emotional Intelligence, Anxiety, Depression and Stress Among Adolescent Students: A Correlational Study

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Abstract

The aim of the Study is to assess the Relationship of Emotional Intelligence, Anxiety, Depression and Stress among Adolescent Students. The purposive sample of 100 adolescent students (age range 16-18 years) drawn using a random sampling method were on the basis of availability from educational institutes of Bhiwani district of Haryana state from both rural and urban areas and the data were analyzed by SPSS. The result shows the Mean, SD and Pearson's co-efficient of correlation among Emotional Intelligence, Anxiety, Depression and Stress among Adolescent Students. We found that the relationship of Emotional Intelligence, Anxiety, Depression and Stress are negatively correlated among Adolescent Students. The findings implications for parents, teacher, researchers and other school personnel.

NEP 2020 and Beyond: Addressing Equity, Quality, and Employability, Global standards & Implementation

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Abstract

India's educational landscape has undergone profound transformation through successive national policies aimed at addressing evolving socio-economic and cultural needs. This study provides a comprehensive review of major educational policy developments, spanning from the Kothari Commission (1964–66) to the National Education Policy (NEP) 2020. It critically examines the intent, structure, implementation, and impact of these reforms on accessibility, equity, quality, and employability in education. Adopting a qualitative policy review approach, the paper explores how different initiatives have attempted to resolve persistent challenges such as regional disparities, gender inequality, inadequate infrastructure, rote-based learning, and outdated curricula. The paper also incorporates global educational best practices from countries such as Finland, Singapore, Canada, Germany, and South Korea to identify lessons relevant to the Indian context. It concludes that while NEP 2020 provides a comprehensive roadmap for educational transformation, its success depends on effective implementation, sustained financial commitment, technological inclusivity, stakeholder collaboration, and continuous monitoring. The policy has the potential to create an equitable, inclusive, skill-oriented, and globally competitive education system capable of meeting the aspirations of a rapidly changing society. The study concludes by reflecting on the gap between policy design and practice, while offering recommendations for strengthening reforms, enhancing funding, and ensuring effective implementation to achieve India's vision of inclusive and transformative education.

Keywords: Quality education, learning outcomes, infrastructure, government schemes, rote learning, teacher shortage, educational inequality, Global best standards.

Role of Big Data in Modern Library Services

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Abstract:

The integration of big data technologies into modern library services is increasingly becoming a fundamental aspect of enhancing how libraries manage resources, engage with users. Big data refers to the vast volumes of information generated through user interactions, resource usage, and digital engagement that can be analysed to uncover insights and improve decision-making processes. One of the key areas where big data plays a vital role is in resource management. Libraries manage an extensive array of physical and digital resources, and traditionally, decisions regarding acquisitions, cataloguing, and resource allocation were based on relatively limited data sets, such as circulation history and user surveys. With big data, libraries can now analyse far more comprehensive datasets, including user behaviour, social media interactions, external trends, and usage patterns, to make more informed and accurate decisions about what resources to acquire and how to position materials for maximum accessibility. Big data allows libraries to engage with their users in a more personalized manner. By tracking user behaviours such as borrowing habits, search history, and digital interactions libraries can gain insights into individual preferences and needs. This data can then be used to offer personalized recommendations. For example, a user who frequently checks out books on a specific subject can be automatically alerted to new materials in that genre or topic.

Additionally, Big data can help libraries optimize space management, ensuring that popular materials are easily accessible while reducing clutter and underutilized resources. Automating routine tasks such as cataloguing, shelving, and inventory tracking through big data-driven systems also frees up staff time, allowing them to focus on higher-value tasks such as user engagement and program development. Big data also brings challenges and ethical considerations. One of the primary concerns is data privacy. Libraries must take steps to protect users' personal information. Libraries must be transparent about how data is collected, stored, used.

Big data holds tremendous potential to enhance library services by improving resource management, personalizing user engagement, and optimizing operational processes. To fully harness the benefits of big data, libraries must address the ethical challenges surrounding data privacy, transparency, and fairness. By implementing clear data governance policies and ensuring transparency in their use of data, libraries can create a more efficient, user-centric environment that fosters trust and engagement while protecting users' privacy. Ultimately, the successful integration of big data technologies into library services will empower libraries to meet the evolving needs of their patrons and remain a vital resource in the digital age.

Keywords: Big Data; Library Services; Resource Management; User Engagement; Digital Transformation; Personalized Recommendations; Space Optimization; Automation; User Behaviour Analytics; Digital Libraries.

A Review on the Herbal Pain Balms of Thailand

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Abstract

This paper reviewed the formulation, pharmacological activity, and clinical application of traditional Thai herbal pain balms widely used for musculoskeletal pain management. Prominent commercial and traditional preparations including Tiger Balm, Elephant Balm, Crocodile Balm, and _Luk Pra Kob_ herbal compresses were examined. The principal bioactive constituents identified were camphor, menthol, methyl salicylate, eucalyptus oil, and clove oil, in combination with extracts of Zingiber cassumunar_Curcuma longa_, and _Cinnamomum camphora_.

Mechanistic analysis showed that these compounds function as counter-irritants through transient receptor potential channel activation, inducing local vasodilation and inhibition of inflammatory mediators such as cyclooxygenase-2 and tumor necrosis factor-α. Comparative evaluation of formulations indicated that Elephant Balm exhibited the highest methyl salicylate concentration for severe joint pain, while Tiger Balm Red provided balanced thermogenic relief for myalgia. Crocodile Balm demonstrated enhanced anti-inflammatory action due to _Plai_ content, and Snake Brand products offered cooling effects for dermatological conditions.

Ethnobotanical and limited clinical data supported efficacy in treating lower back pain, osteoarthritis, sprains, and tension-type headaches. However, significant challenges regarding product standardization, quality control, and adulteration were noted. Adverse effects remained minimal and were primarily cutaneous in nature. The study concluded that Thai herbal balms present viable adjunctive therapy for pain management, although large-scale randomized controlled trials are required for evidence-based integration into modern clinical practice.

Keywords - Thai herbal balm, Tiger Balm, _Zingiber cassumunar_, camphor, methyl salicylate, traditional medicine, musculoskeletal pain, counter-irritant.

ABOUT THE BOOK

ICERT G-DEEP 2026

Education 5.0: Navigating Digital Transformation, AI Ethics, and the Future of Work

This book presents a curated collection of research papers from the Annual International Conference on ICERT G-DEEP 2026, bringing together global scholars, educators, policymakers, and industry leaders to explore the transformative impact of digital innovation, ethical AI, and emerging technologies on education and society. The contributions reflect interdisciplinary perspectives and evidence-based insights aimed at shaping inclusive, sustainable, and future-ready learning ecosystems for Education 5.0 and beyond.

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