Second International Conference on Heritage, Innovation and Transformation

February 7-9, 2025 Mahendranagar, Nepal
माघ २५-२७, २०८१ महेन्द्रनगर, नेपाल

ABSTRACT BOOK

Organized by

Far Western University, Nepal

Co-organized by

IIT Roorkee, India


काठमाडौं विश्वविद्यालय
KATHMANDU UNIVERSITY
२०४८ – 1991


पूर्वाञ्चल विश्वविद्यालय
२०५२ 1995
PURBANCHAL UNIVERSITY
BIRATNAGAR, NEPAL


NEPAL OPEN UNIVERSITY


लुम्बिनी प्राविधिक विश्वविद्यालय
LUMBINI TECHNOLOGICAL UNIVERSITY


पोखरा विश्वविद्यालय
२०५४ 1997
POKHARA UNIVERSITY


मध्यपश्चिम विश्वविद्यालय
Mid-West University
२०६७ 2010
सुर्खेत, नेपाल
Surkhet, Nepal


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KEY SPEAKERS

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Vice Chancellor Kathmandu University Nepal

Prof. Dhruba Kumar Gautam
Vice Chancellor Mid-West University Surkhet,Nepal

Prof. Dr. Biju Kumar Thapalia
Vice Chancellor Purbanchal University,Nepal

Prof. Dr. Amar Prasad Yadav
Vice Chancellor Rajarshi Janak University, Nepal

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Bournemouth University, United Kingdom

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Former Vice Chancellor Far Western University, Nepal

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Dean Institute of Engineering, Lalitpur, Nepal

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Tribhuwan University, Nepal

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Prof. Dr. Padam Raj Joshi
Dean
Far Western University, Nepal

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School of Chemical Engineering, Vellore Institute of Technology-VIT, Vellore, INDIA

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Chairperson
Nepal Engineering Council, Kathmandu

Dr. Gunakar Bhatta
Executive Director
Nepal Rastra Bank

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Research Committee Chair
Everest Engineering College, Lalitpur, Nepal

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Director Pokhara University Research Center (PURC)
Pokhara, Nepal

Dr. Khem Raj Joshi
Associate Professor Former Dean Faculty of Health Sciences Pokhara University, Pokhara, Nepal

Dr. Yuba Raj Pokharel
Associate Professor South Asian University, New Delhi, India

Message from the Vice Chancellor

It is with great pleasure that I welcome you all to the Second International Conference on Heritage, Innovation, and Transformation, taking place from 7–9 February, 2025 in Far Western University, Mahendranagar, Kanchanpur, Nepal in collaboration with Indian Institute of Technology, Roorkee, India. This prestigious event will serve as a dynamic platform for leading researchers, academics, and professionals from diverse disciplines to exchange insights, present cutting-edge research, and engage in meaningful discussions on key areas shaping our world today.

The conference embraces a multi-disciplinary approach, covering a broad spectrum of themes, including society, culture, and history; science, technology, and engineering; agriculture, forestry, and natural resource management; health, population, migration, and development; policy, planning, and governance; education and pedagogy; environment, ecology, and climate change; and entrepreneurship, business, and economy. By fostering collaboration across these domains, we aim to inspire innovative solutions and transformative ideas that contribute to academic excellence and societal progress.

On behalf of Far Western University, I extend my heartfelt gratitude to all participants, presenters, and organizers for their invaluable contributions. Your presence and engagement will undoubtedly make this conference a significant milestone in our collective pursuit of knowledge and sustainable development.

I look forward to welcoming you to Far Western University and witnessing the enriching discussions that will unfold.

With Warm Regards,
Prof. Hem Raj Pant, PhD
Vice Chancellor
Far Western University, Mahendranagar, Kanchanpur, Nepal

Message from the Registrar

It is my privilege to extend a warm welcome to all distinguished scholars, researchers, and professionals participating in the Second International Conference on Heritage, Innovation, and Transformation, scheduled to take place from 7–9 February, 2025 in Far Western University, Mahendranagar, Kanchanpur, Nepal in collaboration with Indian Institute of Technology, Roorkee, India. This conference represents a significant academic gathering, providing a platform for interdisciplinary exchange, intellectual engagement, and the dissemination of research that addresses contemporary challenges and opportunities.

As an institution committed to fostering research, innovation, and knowledge dissemination, Far Western University is honored to host this esteemed conference. We deeply appreciate the contributions of all participants, keynote speakers, and organizers whose dedication and expertise enrich this academic endeavor.

I am confident that this conference will serve as a catalyst for new perspectives, meaningful collaborations, and impactful research contributions. I encourage you all to actively engage in discussions, share your expertise, and make the most of this academic exchange.

With Best Regards,
Prof. Yagya Raj Pathak
Registrar
Far Western University, Mahendranagar, Kanchanpur, Nepal

Message from the Organizer

Namaste and Good Morning

Dear Scholars, Researchers, Professionals, Students and Participants,

On behalf of the organizing committee, it is our great pleasure to invite you to the Second International Conference on Heritage, Innovation, and Transformation**,** taking place from 7–9 February, 2025 here in Far Western University, Mahendranagar, Kanchanpur Nepal in collaboration with Indian Institute of Technology, Roorkee, India. This prestigious event will serve as a dynamic platform for leading academics, researchers, and professionals to engage in meaningful discussions, share groundbreaking research, and explore innovative approaches to transformation in various fields.

We believe this conference will foster insightful conversations and collaborations that will contribute to the advancement of knowledge and the sustainable development of our societies. We warmly welcome you to join us in Mahendranagar, experience its rich cultural heritage, and be part of this intellectual gathering.

We look forward to your participation!

Warm Regards,
Conference Organizing Committee
Second International Conference on Heritage, Innovation, and Transformation
Far Western University, Mahendranagar, Kanchanpur, Nepal

ORGANIZER'S PROFILE

Far Western University (FWU) was established in 2010 AD through an Act of Parliament as a government funded university. The central office of the university is located at Bheemdatta Municipality of Kanchanpur district. The strategic location of the University Central Campus and its constituent campuses in the Sudurpaschim Province is conducive to create an academic environment in the region. Since its inception, the university has been fulfilling its responsibility of making higher education accessible to the people of this region through its 16 campuses in the nine districts of the Sudurpaschim Province and 31 affiliated campuses beyond the province. FWU has been delivering diverse educational programs at undergraduate, graduate and research levels, through nine faculties: Humanities and Social Sciences, Education, Management, Science and Technology, Engineering, Agriculture, Law and Health Sciences and Natural Resource Management.

A prime academic institution of the country aiming at academic excellence, research-based education, community engagement and partnership. Far Western University has a total of 671 employees (491 faculty members and 180 non-teaching staff) excluding the part time employees serving in the university. At present, 20,000 students are pursuing their study at the university from different cultural and socio-economic background. The university has signed MoU with national and international academic institutions, universities, local and provincial government organizations, and international research and development organizations.

With the transforming world scenario and paradigm shift in the global education system, Far Western University is planning to improve pedagogy through capacity-building projects and collaboration with renowned academic institutions across the world. It aims at promoting the advancement of learning and dissemination of knowledge for the overall welfare of the nation. Therefore, the university seeks to facilitate the integration of several academic innovations by introducing new curricula, strengthening academic programs, and launching research (M. Phil. and Ph.D.) degrees. To make the university a destination of knowledge, research, and innovation and to achieve its goals by creating academic excellence and fulfilling to some extent the need of the province, nation and the global community as well, a comprehensive strategic document is necessary that supports the mission and vision of the university.

PROGRAM AND AGENDA

1. **Organizers**
    - Far Western University, Mahendranagar, Kanchanpur, Nepal
    - Indian Institute of Technology, Roorkee, India
2. **Name of Program**
    - Second International Conference on Heritage, Innovation and Transformation
3. **Conference date and duration**
    - February, 7-9, 2025 (3 days)
4. **Conference Venue**
    - Central Office, Far Western University, Nepal
5. **Participants**
    - Professors, Researchers, Technologists, Academicians, Public representative, Policy makers, Students
6. **Participating countries**
    - Nepal, India, China, USA, Spain, Sweden, Italy, Romania, Korea, Japan, Cananda, UK, Colombia
7. **Main Themes**
    - Society, Culture, and History
    - Science, Technology, and Engineering
    - Agriculture, Forestry, Natural Resource Management
    - Health, Population, Migration, and Development
    - Policy, planning, and governance
    - Education and pedagogy
    - Environment, ecology, and climate change
    - Entrepreneurship, business, and economy
8. **Mode of Presentation**
    - Physical
    - Virtual
9. **Number of Participants**
    - 300
10. **Opening Ceremony:** २०८१ माघ २५ गते शुक्रबार **February 7, 2025**

    Chief Guest

    Nazir Miya

    Hon'ble Governor

    Sudurpaschim Province

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Day 1: Friday 7th Feb. 2025			
Opening Ceremony, Ramaroshan Hall & Online			
9:00 – 10:00	Registration and Tea	Central Office, Mahendranagar, Kanchanpur, Nepal	
10:00 – 11:00	Inaugural Program	Chair of the Inaugural Session: Prof. Hem Raj Pant, PhD, Vice-Chancellor, Far Western University, Nepal Chief Guest: Hon'ble Nazir Miya, Governor, Sudurpaschim Province, Nepal Special Guest Guest on Dias Welcome Speech and Program Highlight: Prof. Kishan Datta Bhatta, PhD, Chair, International Conference 2025 Inauguration of the Program by lighting the lamp: Chair of Inaugural Session and Chief Guest	
	Inaugural Remarks	- Prof. Amma Raj Joshi, PhD - Prof. Amar Prasad Yadav, PhD - Prof. Biju Kumar Thapalia, PhD - Prof. Dhurba Kumar Gautam, PhD - Prof. Yagya Raj Pathak, Registrar, FWU - Hon'ble Governor, Nazir Miya, Sudurpaschim Province	
	Closing Remarks	Closing the Opening Ceremony by the Chair of the Session, Prof. Hem Raj Pant, PhD	
Plenary 1			
11:00 – 11:30	Plenary Speech	Catalytic Synthesis of Organic Carbonates: Engineering Aspects Prof. Vimal Chandra Srivastav, Department of Chemical Engineering, Indian Institute of Technology Roorkee, India	
Thematic Keynote Speech I			
Time/Hall	Parallel Session A Shukhlaphanta Hall & Online Zoom Link: Theme: Science, Technology, and Engineering	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Entrepreneurship, Business, and Economy	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Education and Pedagogy
11:35-12:00	Sustainable Infrastructure Development in Nepal: Harnessing Local Waste Materials for a Greener Future Prof. Tek Raj Gyawali, PhD	Transformation of Higher Education: Selected Countries and Nepalese Reality Prof. Dhruba Kumar Gautam, PhD	Paradigm Shift in Education Prof. Basu Dev Kafle, PhD
12:00-12:25	Climate Refugee and Climate Induced Conflict in Nepal: Evidences from Upper Mustang Prof. Hari Krishna Shrestha, PhD	Globalization: In New-found World Order Pro. Biju Kumar Thapalia, PhD	Adolescent Mental Health Issues in Nepal Dr. Aruna Uprety

Invited Speakers			
Time/Hall	Parallel Session A Shukhlaphanta Hall & Online Zoom Link: Theme: Science, Technology, and Engineering	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Health, Population and Migration	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Agriculture and Environment
12:30-12:55	Tri-reforming over MOF-derived catalyst: An effective approach to convert biogas or flue gas into hydrogen-rich synthesis gas Prakash Biswas	Transforming Rural Healthcare and Medical Education: Karnali Academy of Health Sciences (KAHS) Experience Dr. Dabal Bahadur Dhami, Rector Karnali Academy of Health Sciences, Jumla, Karnali Province	Climate Change Impacts, Adaptation Strategies and Agro-Climatic Indices of Potato (Solanum tuberosum L.) in Karnali and Sudurpashchim Provinces, Nepal Prof. L. P. Amgain, U. B. Shrestha and Kamal Aryal
12:55–2:00	**Lunch Break**		
Round Table Session: I **Theme: Innovation and Development: Present Scenario and Way Forward**			
2:00-3:30	Venue: Ramaroshan Hall Moderator: Dr. Dipak Gyawali Panelists: Prof. Dr. VC Srivastav Prof. Dr. Prem Narayan Aryal Dr. Deepak Prakash Bhatta Dr. Tara Joshi Dr. Ram Kumar Phuyal Dr. Gunakar Bhatt Mr. Bharat Joshi		
3:30-3:45	**Tea Break**		
Technical Session I			
Time/Hall	Parallel Session A Shukhlaphanta Hall & Online Zoom Link: Theme: Science, Technology, and Engineering Session Chair: Prof. Tek Raj Gyawali, PhD	Parallel Session B Shukhlaphanta Hall & Online Zoom Link: Theme: Entrepreneurship, business, and economy Session Chair: Prof. Padam Raj Joshi, PhD	Parallel Session C Shukhlaphanta Hall & Online Zoom Link: Theme: Education and Pedagogy Session Chair: Prof. Prem Narayan Aryal, PhD
3:45-4:00	Post-Earthquake Assessment of Mud-Bonded Masonry Houses in Jajarkot: Issues and Challenges in Rural Resilience Binod Khadka, Jayram Panthi	Impact of Credit Risk, Liquidity Risk, and Operational Risk on Commercial Bank's Profitability Dr. Shiva Raj Poudel, Birendra Kunwar, Tika Ram Kharel, Subhadra Dahal & Dr. Rishikesh Panthi	Job Satisfaction and Attitude: A Study of Their Relationship Dr. Madan Singh Deupa

4:00-4:15	Geotechnical Assessment and Prioritization of Road Infrastructure in Karnali Province, Nepal Jay Ram Panthi, Rajan K.C.	Empowering Women Through Microfinance: Economic Growth and Poverty Alleviation in Sudurpashchim Province of Nepal Babu Ram Rawat	Causes of Failure in English at College Level: Students' and Teachers' Perspectives Dr. Gambhir Bahadur Chand
4:15 -4:30	Strength Characteristics of Compressed Stabilized Earth Block Units and Walls Toran Prasad Bhatt	Effect of Human Resource Management Practices on Employees' Commitment in Hotel Sector Dinesh Pant, Shailesh Pal	Integrating Digital Tools and 21st Century Skills in English Language Teaching: Teachers' Perspectives Chandani Pant (PhD. Scholar)
4:30-4:45	Carbon Footprint in Construction Industry: Key Sources, Effects and Challenges in Implementing Mitigation Measures Jyoti Deupa	Contribution of the Agriculture and Tourism Sector to the Nepalese Economy Ramesh Kumar Saud	Jayaprithvi Bahadur Singh: Pioneer of Socio-cultural and Educational Reform in Nepal Lal Bahadur Bohara
4:45-5:00	Role of Public Open Spaces in the Conservation and Management of Intangible Cultural Heritage in the Kathmandu Valley, Nepal Salik Ram Subedi, Sudha Shrestha (online)	Impact of Talent Management on Employee Performance in Service Organizations of Surkhet District Ramesh Prasad Gautam	Teacher Autonomy in Post Method Pedagogy: Exploring Practices and Perspectives in ELT Classrooms Krishna Singh Saud
5:15-7:00	**Cultural Program**		
Day II: Saturday 8th Feb. 2025			
8:30 – 9:00	**Registration/Tea**		
Plenary Session I			
9:00 – 9:30	Plenary Speech Shukhlaphanta Hall & Online	Science as the True Culture of Humanity Prof. Dinesh Raj Bhuju, PhD NAST, Senior Scientist	
Thematic Key Speech I			
Time/Hall	Parallel Session A Shukhlaphanta Hall & Online Zoom Link: Theme: Engineering	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Climate and Environment	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Science and Technology
9:35 – 10:00	AI and Robotics for Specialty Crops Prof. Manoj Karkee, PhD (Online)	Urban sustainability in Nepal: Managing solid waste and wastewater in cities for resource recovery and circularity Dr. Dilip Khatiwada (Online)	Ab Initio Study of Structural and Electronic Properties of Some Biologically Active Compounds Prof. Bhawani Datt Joshi, PhD

10:00-10:25	Security Issues and Challenges in SAAS Environment Prof. Subarna Shakya, PhD	Redefining Waste: A Circular Economy Approach to Sustainable Resource Management Prof. Mahesh Ganesapillai	Rational design of molecules for applications in catalysis, sensing, and photodynamic therapy Kaushik Ghosh
10:25-10:50	Redefining Engineering Education in Nepal: A Comprehensive Exploration of Outcome-Based Learning Prof. Padma Bahadur Shahi, Ph. D., PEng, MCIHT	From Himalayas to Global Markets: The Role of Medicinal Plants in Heritage, Health, and Economic Transformation Dr. Khem Raj Joshi	5-methoxyisatin series of thiosemicarbazones reactivate the mutated P53 in cancer cell line - novel emerging molecules for cancer treatment- A successful collaborative output of TU and SAU, New Delhi Dr. Yuba Raj Pokharel
10:50-11:00	**Break**		
	Invited Speakers I		
Time/Hall	Parallel Session A Shukhlaphanta Hall & Online Zoom Link: Theme: Science, Technology, and Engineering	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Society Culture and History	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Chemistry
11:00-11:25	Dual-Phase Design of Cobalt Sulfide and Oxyhydroxide on Metal-Organic Framework-derived Iron Carbide-infused Porous Carbon Nanofibers for High-performance Asymmetric Supercapacitors Prof. Hak Yong Kim, PhD	Cultural Heritage and Terrorism Financing Prof. Habil.dr. Cristian Gazdac (Online)	Role of Chemistry for Sustainability in Science Prof. Ram Sagar Mishra, PhD
11:25-11:50	Marked Formation of Minor Saponin Compound K from Herbal Plants, Ginseng by Hydrolysis Process Using Enzyme Extracted from Mushroom Mycelia Dr. Jitendra Upadhyaya	The Health System in Nepal's unique Federalisation experiment Prof. Dr. Edwin Van Teijlingen (Online)	Bioprospecting wild edible plants of Far Western Province for poverty reduction and food and nutritional security Dr. Lok Ranjan Bhatt
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12:15-1:15	**Lunch Break**		
	Technical Session I		
Time/Hall	Parallel Session A Shukhlaphanta Hall & Online Zoom Link: Theme: Engineering Session Chair: Prof. Tek Raj Gyawali, PhD	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Science and Technology Session Chair: Prof. Bhawani Chand Thakuri, PhD	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Agriculture, Forestry, Natural Resource Management Session Chair: Prof. Lal P. Amgai, PhD

1:15-1:30	Water Quality Index and Human Health Risk Assessment for Heavy Metals in Groundwater of Bedkot Municipality, Kanchanpur, Nepal: A Cross-sectional Study Sagar Hamal, Richa Bist, Bhaskar Pan	Theoretical Investigations on Physicochemical Properties of Caffeine Madhab Raj Bhatt, Govind Bahadur Dhami, Bhawani Datt Joshi	Evaluation of barley genotypes under varying fertility levels in inner terai region of Nepal Dr. Bishnu Bilas Adhikari, Asmita Aryal, and Anoj Adhikari
1:30-1:45	Community and Visitor's Perception in Shaping a City's Historic Urban Landscape Madireddy Vaishnavi, Abhishek Kumar (Online)	Reducing GHG Emissions from Diesel-Powered Irrigation Pumps: Mitigation Strategies for Nepal's Agricultural Sector Sudeep Thakuri, Shisher Shrestha, Raista Palikhe[3], Raju Chauhan	Socio-cultural significance of grain legumes in Nepal Raksha Sharma, Kiran Prasad Bhatta
1:45-2:00	Public Space Rehabilitation: Through Resettlement Strategies for Informal Settlements Sekiya Shakya (Online)	A Novel Method for Fabricating Metal Nanoparticle-Enclosed Nitrogen-Doped Carbon Nanotubes/Porous Carbonaceous Membranes for Energy Storage Dr. Tanka Mukhiya, Rajesh Shrestha, Yugesh Paudel, Aek Narayan Kamal	Farmer Producer Organizations: An Economic Study in Garhwal Division of Uttarakhand Neema, Shweta Chaudhary, Anil Kumar, Rajeev Ranjan
2:00-2:15	Sustainability in Stone: Lessons from Vernacular Architecture in Sweida, Syria Bushra Alarbeed, Harshit Sosan Lakra (Online)	Scope of Himalayan Essential Oil in Nanotechnology Dinesh Shah, Hem Raj Pant (Online)	Evaluation of hybrid maize genotype for yield and yield attributing traits in Birendranagar-2, Surkhet Bhawana Bhandari & Sanjay Kumar Raut
2:15-2:30	Electrospun Nanofibers as Encapsulation Systems for the Design of Food Active Packaging Carlos A. Fuenmayor, PhD (Online)	Innovative Free-Standing Electrodes for Energy Storage: A Study Using Nepali Paper Rajesh Shrestha, Tanka Mukhiya, Hem Raj Pant (Online)	Effect of Rhizobium, Phosphorus and Molybdenum on Growth, Yield and Root Nodulation of Mungbean (Vigna radiata L.) at Tikapur, Kailali, Nepal Lalit Pandey, Laxmi Bhandari, Lal Prasad Amgain, Bidhan Hamal Thakuri, Uma K.C.
2:30-2:45	**Tea Break**		
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Time/Hall	Parallel Session A Shukhlaphanta Hall & Online Zoom Link: Theme: Environment, ecology, and climate change Session Chair: Dr. Gadde Omprasad	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Management Session Chair: Prof. Yagya Raj Pathak	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: TESOL Session Chair: Dr. Madan Singh Deupa

2:45-3:00	Exploring Hydrochemical Dynamics and Water Quality: Insights from the Ramsar-Listed Ghodaghodi Lake Complex for Advancing Sustainable Development Goals Tark Raj Joshi, Ramesh Raj Pant, Ganga Paudel, Kiran Bishwakarama	Thematic Key Speech Project Financing and Quality Enhancement Perspective of Higher Education in Nepal Prof. Padam Raj Joshi, PhD	Academic Writing Challenges and Support Strategies: Insights from University Teachers in Far Western University Ashok Raj Khati, PhD Scholar
3:00-3:15	Mapping Value Chain Gaps in Lemongrass Cultivation, Value Addition and Marketing in the Uttarakhand Himalaya: An Action Research Study on Lemongrass Essential Oil Production Chinmaya Shah, Jagdish Sharma & Shriti Kumari	Autoregressive Integrated Moving Average Predictive Modelling for Gross Domestic Product of China, Pakistan, And Bangladesh Dipendra Bahadur Chand and Ranjita Pandey	English Language Teachers' Professional Development through Teacher Research Rajendra Prasad Joshi
3:15-3:30	Between Rivers and Risks: The Struggles of Kutiyakavar's Flood-Prone Community Deepak Chandra Bhatt, PhD	Impact of Money Supply and Interest Rate on Stock Market Performance: Evidence from the Nepalese Capital Market Khem Raj Subedi	Teacher Professional Development: English Teacher Educators' Perceptions and Experiences Dammar Singh Saud
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3:45-4:00	Disaster Risk Reduction Knowledge and Perceptions among Students in Bheemdatt Municipality, Nepal Ramesh Prasad Joshi & Janardan Joshi	Economy As a Complex System Laxmi Raj Bhatta (Online)	Attitude of Government School Teachers of Pokhara Metropolitan City Towards Teaching Profession Upendra Prasad Poudel, PhD Scholar (Online)
4:00-4:10	**Break**		
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Time/Hall	Parallel Session A Shukhlaphanta Hall & Online Zoom Link: Theme: Engineering Session Chair: Prof. Hari Krishna Shrestha, PhD	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Science and Technology Session Chair: Prof. Rajendra Joshi, PhD	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Policy and Planning Session Chair: Prof. Rajesh Kharat, PhD
4:10-4:25	Sustainable Architecture: Merging Traditional Construction Methods with Modern Eco-Innovations Anuj Verma, Rajat Kannojia, Prerak Swami	Prevalence and Burden of Contracaecum sp. larvae in Schizothorax richardsonii in Mahakali River, Nepal Yagya Raj Joshi	Sub-regional Cooperation in South Asia in the Renewable Energy Sector Dr. Gadde Omprasad

4:25-4:40	Traditional Water Management in Southern Italy. A Case-study from Pantelleria Carla De Agostini	Diabetes Prediction Using Machine Learning Algorithm Ramesh Prasad Bhatta	Remittance Economy, Political Development and Democracy: How to Study the Nepali Case? Sanjeev Humagain, PhD
4:40-4:55	Marine Conservation, Sustainability and Design Protection: The Case of Underwater Gardens Dr. Makhan Saikia	Comparative Study of Electrical Performance of $CH_3NH_3PbBr_3$ and $CH_3NH_3PbI_3$ Perovskite by using OghmaNano Software Prem Raj Joshi, Prem Singh Saud	Nepalese Political Parties' Perspectives on Environmental Degradation in the Himalayas Pankaj Kumar, PhD Scholar
4:55-5-10	Towards an Adaptive Groundwater Governance Framework: From Regional Insights to Local Adaptation Saurav KC, PhD (Online)	First Principles Investigation of Thermoelectric Properties in Low Thermal Conductivity Half-Heusler Compounds TiXPb (X = Ni, Pd, Pt) Prakash Khatri, Narayan Prasad Adhikari, Prasenjit Ghosh	Public Diplomacy in Soft Power Era and Nepal's Priority Rashmi Pant, PhD Scholar
5:10-5:25	Gender Inclusion in Public Transportation: Assessing the Impact of Design, Policy and Practices in Kathmandu Prajina Shrestha, Ajay Chandra Lal (Online)	Hybridization of DNA Cryptography for Securing Digital Data Madhav Dhakal, Subarna Shakya (Online)	Role of Alumni Associations in their Alma Mater Prakriti Thapa, Suraj Parajuli, Tulasi Acharya, PhD, Umed Pun, PhD (Online)
Day III: Sunday 9 February, 2025			
8:30-9:00	**Registration and Tea**		
Plenary Session I			
9:00-9:30	Plenary Speech Shuklaphanta Hall & Online	Society, Culture and Literature: Keystones of Sudurpaschim's Exclusivity, Ethos, and Identity Prof. Amma Raj Joshi, PhD	
Technical Session I			
Time/Hall	Parallel Session A Shuklaphanta Hall & Online Zoom Link: Theme: Health, Population and Migration Session Chair: Dr. Deepak Chandra Bhatta	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Society, Culture and History Session Chair: Dr. Sanjeev Humagain	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Management and Entrepreneurship Session Chair: Prof. Bharati Joshi, PhD
9:35-9:50	The Situation of Infrastructure Development in Semi-Urban Areas of Nepal Dr. Aishwarya Prasad Dhakal	Nepali Diaspora: A Catalyst for India-Nepal Relations Dr. Kanaklata Yadav	The Influence of Non-Monetary Reward on Enhancing Employee Performance of Commercial Banks in Birendranagar, Surkhet, Karnali Province Harendra KC

9:50-10:05	Contemporary labour, colonial constructs: Racialised perceptions of migrant hill men from Uttarakhand in India's hospitality industry Chitra Rawat	Digital Transformation of Cultural Heritage: A Study of Sites in India Dr. Anjali yogi	The Effects of Occupational Stress on Employee Performance: A Study of Nepal Telecom Dinesh Kumar Pant (PhD Scholar)
10:05-10:20	Tharu Borderlands: Identity as Mestizo y Origin, Culture and Myths Keshav Raj Chalise, PhD	The Proliferation of Modern Buddhist Monasteries in India and Their Cultural Significance Ajit Kumar, PhD	The Effects of Job Security on Employee Retention: A Study of Insurance Sector in Karnali Province Manoj Paudel (PhD Scholar)
10:20-10:35	Reconsidering 'Build Back Better': Transformation of the Hidden 'Bhulan Khyo' Newar cluster Settlement of Kathmandu Valley Shresttha Ram and Shen Zhon, Suma, Xiaoqing Shi (online)	Integrating Indigenous Knowledge into Development Initiatives: Examining Cultural Erosion and Contemporary Shifts in the Rana Tharu Community of Sudurpaschim Province, Nepal Prof. Mukund Ballabh Kalauni, PhD	The Role of Cooperatives in Promoting Socio-Economic Growth and Stability in Kanchanpur Tikaram Kharel
10:35-10:50	Migration Trends for Foreign Employment in Beldandi Rural Municipality, Kanchanpur Bir Bahadur Singh Thakuri	Economic Potential and Green Transition: Analyzing the Economic Sectors of Dhangadhi Sub-Metropolitan City Dr. Rajendra Bir Chand	Revitalizing the Surma Industry in Rohilkhand: Merging Traditional Craftsmanship with Modern Innovation for Sustainable Growth Dr. Vivek Sharma, Madhavendra, Mayank Gangwar
10:50-11:00	**Break**		
Technical Session II			
Time/Hall	Parallel Session A Shuklaphanta Hall & Online Zoom Link: Theme: Health, Population and Migration Session Chair: Prof. Dr. Hem Nath Joshi	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Engineering and IT Session Chair: Prof. Subarna Shakya, PhD	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Science and Technology Session Chair: Dr. Prem Saud
11:00-11:15	Antibiotic Susceptibility Pattern of Pseudomonas aeruginosa Isolated from Clinical Specimens and Detection of Virulence Genes in a Tertiary Care Hospital, Kathmandu, Nepal Tek Raj Ojha, Anil Kumar Sah, Govinda Lal Karn, Pramila Parajuli	Vecrosoft: A Deep Learning-Based Web & Mobile Application for Plant Disease Detection Dipa Joshi, Dhiraj Pant, Menuka Paneru, Dipak Raj Giri, Anuradha Bhatta	Seismic Risk Evaluation in Central Himalaya Using 50-Years Seismic Data Rudra Prasad Poudel, Ram Krishna Tiwari and Harihar Paudyal
11:15-11:30	Can Nursing Interventional Program be Effective in Improving Social Wellbeing of Rural Senior Citizens? A Mixed Method Study Shila Mainali & Jayanti Semwal	Renewable Energy Solutions for Heritage Sites: Combining Tradition with Innovation Kranti Gangwar	Spatio-Temporal Patterns of Human-Wildlife Conflicts and Effectiveness of Mitigation in Shuklaphanta National Park, Nepal B Pant, HP Sharma, BR Dahal, S Regmi, JL Belant

11:30-11:45	Social and Economic Impact of Geta Eye Hospital (GEH) on Cross-Border Relations Lt. Col. Deergh Bahadur Chand (Rtd.)	A Machine Learning Approach to Predict Student Dropout at Far Western University, Nepal Dharma Raj Ojha, Akhtar Husain	Green Synthesis of Nanomaterials: Their Potential Applications and Implications Dr. Deval Prasad Bhattarai, Hari Bhakta Oli, Pujan Nepal, Sandhya Parajuli, Sita Shrestha, Anup Subedee, Sabita Ghimire, Arun Kumar Sharma, Ram Lal (Swagat) Shrestha
11:45-12:00	Effect of Yogachara on Disease Transmission Dynamics at Saturated Incident Rate Using Mathematical Modeling Raghu Bir Bhatta	Nepal-India Hydropower Relations: A Critical Understanding Ammu S Anil (Online)	Advancing Smart Biodegradable Packaging with Locally Sourced Bioactive Compounds: A Circular Economy Approach Dikpal Kumar Shahi, Rajendra Bahadur GC, Khim Prasad Panthi, Shiva Pandeya, Mahesh Kumar Joshi
12:00-12:15	A Collaborative Research Approach to Addressing Social Determinants of Health in Western Nepal Dr. Puspa Raj Pant, Ammar Bahadur Air, Dr. Deepak Chandra Bhatt, Om P Kurmi (Online)	On-Street Parking Utilization and Management Efficiency: A Case Study of Mahendranagar, Nepal Rabin Khadka, Bhaskar Pant, Bijaya Kumar Oli (Online)	Green Emission of Er/Yb Doped YAGG Phosphors for NUV /NIR excitable Solid-State Lighting N. Ramadevi, R. Praveena, B.D. Joshi (Online)
12:15-1:00	**Lunch Break**		
Technical Session III			
Time/Hall	Parallel Session A Shuklaphanta Hall & Online Zoom Link: Theme: Society, Culture and History Session Chair: Prof. Dr. Amma Raj Joshi, PhD	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Agriculture, Forestry and Environment Session Chair: Dr. Bishnu Bilas Adhikari	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Science and Technology and Environment Session Chair: Prof. Ram Sagar Mishra, PhD
1:00-1:15	Ḍ euḍ ā: Resonance of Folk Poetic Tradition Narendra Bahadur Air, PhD	Effect of Seedling Density on Growth and Yield of Spring Rice Shreya Tiwari, Raksha Sharma[2]Nabin Ghimire, Sima Lamichhane	N-S Co-Doped Cobalt Oxide Carbon Composite Derived from Garlic Peels for Energy Storage Application Prakash Chandra Lohani, Salina Pant
1:15-1:30	Phonological Changes in Dotyali and Its Dialects: Historical Phonology and Dialectology Perspective Dharma Dev Bhatt	Effect Of Weed Management Practices on Growth and Yield Of Spring Rice Sima Lamichhane, Raksha Sharma, Shreya Tiwari, Nabin Ghimire, Badal Subedi, Kailash Bhatta	Hydrogen bond strength, molecular reactivity, and stability assessment on cocrystals of benznidazole: Screening from ESP, QTAIM, and NBO analysis Tirth Raj Paneru, Poonam Tandon, Bhawani Datt Joshi
1:30-1:45	Potential Mate Selection Criteria of the University Level Students: Influence of the Changed Socio-cultural Mindset in Youths Badri Aryal, PhD and Ganesh Sharma (Online)	Study on Prevalence of Subclinical Mastitis and associated risk factors in registered buffalo farm of Tikapur municipality, Nepal S. Gurung, B. Dhakal and B.R. Bhatt	First-Principles Calculation of Structural and Electronic Properties of New 2D Penta-AlCN Monolayer Ramchandra Bhatta (Online)

1:45-2:00	Post-secularism: An Emerging Approach to Subvert Dichotomy of Science and Religion Ramesh Gyawali (Online)	Exploring the Energy Matrix: The Impact of Saturated and Unsaturated Fats on Broiler Health and Productivity Suman Karki (Online)	Reclaiming the Invisible Hands through Collective Leadership Roles of Rural Women in Forest Management and Governance Patatri Baidya (Online)
2:00-2:15	Caste Discrimination and Untouchability in Nepal: Intergenerational Perceptions and Analysis Ujjwal Sundas (Online)	Exploring Circular Economy Potential in Municipal Waste Composition and Management Practice Keshab Raj Pant	
2:15-2:30	**Tea Break**		
Technical Session IV			
Time/Hall	Parallel Session A Shuklaphanta Hall & Online Zoom Link: Theme: Education, Pedagogy and Policy Session Chair: Dr. Yagya Raj Pandey	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Society, Culture and History Session Chair: Prof. Rajendra Prasad Bhatt, PhD	Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Management and Entrepreneurship Session Chair: Dr. Rajendra Bir Chand
2:30-2:45	Students' Performance and Perceptions of Flipped Classroom Approach in Business Mathematics Narayan Datta Bhatta	Opportunities and Challenges of Women Entrepreneurship in Pokhara Metropolitan Man Kumari Parajuli, Dr. Rishikesh Pandey	Empowering Connectivity: Financing Strategies for India-Nepal Electricity Trade Milind Suresh Dhaware
2:45-3:00	Challenges and Practice to Educating Children with Autism Spectrum Disorders in Inclusive Classroom Raju Acharya	Deudākhel as Liminal Escape from Normative Social Reality Bir Bahadur Katuwal	Microfinance and Financial Independence: Transforming Women's Lives for the Better – A Case Study of Microfinance Program of Udaydev Bahuudeshiya Sahakari Sanstha Ltd. (UBSSL) in Kanchanpur District, Nepal Nisha Bhatt Tiwari
3:00-3:15	Harnessing Digital Transformation for Good Governance in Nepal: Lessons and Insight from India Rahul Kumar, PhD Scholar	Exploring Women's Representations: Feminist Insights into Doteli Folktales Giri Singh Bohara	Effect of Management Control Systems on Employee Performance of Saving and Credit Co-Operatives of Kailali District Tirth Raj Joshi, MPhil Scholar
3:15-3:30	A Survey Study on the Digitally Devised Reading Culture of the Generation Z Chitrangada Saikia (online)	Terrain of Conflict: Indigenous Outlook and Colonial Involvement in the Kumaon Tarai and Bhabar Landscape Mitali Tewari (Online)	Education and Local Resourcing Practices of Indigenous Communities: A Study of Karnali Region, Nepal Rupesh Khatri, PhD Scholar
3:30-3:35	**Break**		

Technical Session V			
Time/Hall	Parallel Session A Shuklaphanta Hall & Online Zoom Link: Theme: Management and Entrepreneurship Session Chair: Dr. Bhawan Singh Chalaune	Parallel Session B Api-Saipal Hall & Online Zoom Link: Theme: Society, Culture and History Session Chair: Prof. Mukund Ballabh Kalauni, PhD	Parallel Session C Khaptad Hall & Online Film Presentation Zoom Link: Theme: Film Presentation Session Chair: Prof. Dharma Raj Upadhayaya, PhD
3:35-3:50	Prospects and Challenges of Tourism Development in Sudurpashchim Province, Nepal Pirt Bahadur Bist	Eco-tourism and Associate Lives across Tharu-inhabited Region of India-Nepal Border Mohan Dangaura	Artificial Intelligence in Teaching: Trends in Engineering Alberto Egea, Ruth Herrero Martín, Alberto García, Cristina Bianqui, Fatima Zohra Benouis
3:50-4:05	Reviving Indigenous Zari-Zardozi Work: A Case Study of the Rohilkhand Region in Uttar Pradesh, India Dr. Raveesh Agarwal, Dr. Ankit Agarwal, Dr. Gulshan Kumar	Imageries used for Hegemonic Domination and Othering in Joe Sacco's Palestine Pusp Raj Joshi	Clepsydra: A Practical Case for Engineering Students Alberto Egea, Ruth Herrero Martín, Alberto García, Cristina Bianqui, Fatima Zohra Benouis
4:05-4:20	Religious Scriptures and AI: Innovating with Traditional Knowledge and Modern Technologies Dr. Raveesh Agarwal, Ankur Bhatnagar, Aakash Gangwar	Understanding Kirati Ethnic Identity Formation in Nepal Swastika Kashyap, PhD Scholar	Gamified User-Centered Environmental Sustainability for University Students (GUESS) Alberto Egea, Ruth Herrero Martín, Alberto García, Fatima Zohra Benouis, Cristina Bianqui, Efthimios Zervas
4:20-4:35	Digital Kumbh: Innovating Heritage Preservation through Technology at the Kumbh Mela in Prayagraj, Uttar Pradesh Dr. Raveesh Agarwal, Dr. Gurav Kapoor, Muskan	The Shifting Identity and the effectiveness of policy provisions: Experiences of Dalit Communities Before and After Surname Changes Tirupati Pariyar	Heritage Precincts Management in India: Envisioning Equitable and Holistic Urban Development Vaishnavi Chandrakant, Kamble, Abhishek Kumar (online)
4:35-5:30	**Closing Ceremony**		

Poster Presentation: February 7-9, 2025

Time: 9:00-5:00

Name	Title
Sangam Jagari, Rajani Bohara, Bindu Bhatt, Ekta Bhandari, Sidhhant Joshi, Janak Raj Bhatt, Sagar Hamal	Solid Waste Management Practices in Bhimdatta Municipality, Nepal
Birendra K. Bohara, Sangam Jagari, Nirmal M. Joshi	Seismic Performance Evaluation of RC Buildings: A Comparative Study of Non-Engineered vs. Code-Based Designs
Roshan Bhat, Birendra K. Bohar, Sangam Jagari, Nirmal M. Joshi	Evaluating the Role of Column Strengthening in Mitigating Earthquake Damage in Non-Engineered RC Buildings
Nirmal Mani Joshi, Punam Bhatt, Niraj Singh Saud, Siddhant Joshi, Laxmi Karki, Soumya Jaishi, Laxmi Dhami, Janardan Joshi	Unveiling Community Insights on Water Woes: How Scarcity Shapes Livelihoods in the Northern Kanchanpur?
Shristi Dhanadi, Madhavi Khatri	Assessing the Impact of Stray Animals on Road Safety: A Case Study of the East-West Highway Section in Bheemdatta Municipality, Nepal
Yogendra Shah, Jagadish Joshi,Om Prakash Joshi, Sher Bahadur Kamar, Guna Raj Awasthi, Ramesh Shahi, Hem Raj Joshi, Pushpa Raj Padhaya, Chet Raj Joshi, Ram Prashad Ojha, Ram Singh Dhami, Kishor Pandey, Sudip Regmi, Dhan Kumar Pant, Shyam Prakash Dumre, Basu Dev Pandey	Association of RT-qPCR Ct Values and Disease Severity among COVID-19 Patients Visiting a Tertiary Care Hospital, Nepal
Pradip Bhatt, Nar Bahadur Dhami, Keshab Raj Bhatt, Dilendra Thagunna	SOE Intel: An AI-Powered Platform for Personalized Education
Vijay Kumar Pandit, Dr. Akshit Lamba, Dr. Indra Narayan Yadav	Critical Review of Design and Seismic Performance in Multi-Storey Residential Buildings
Richa Bist, Bhaskar Pant	Students' Knowledge, Perception, and Attitude Toward Renewable Energy at Far Western University, Kanchanpur

P1 Catalytic Synthesis of Organic Carbonates: Engineering Aspects

Vimal Chandra Srivastava
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Organic carbonates such as dimethyl carbonate (DMC) and diethyl carbonate (DEC) are considered as environmentally friendly green chemicals and are widely used in the synthesis of polymers, pesticides, flavoring agents, foodstuff, solvents, etc. due to their high versatility, excellent biodegradability with low toxicity and low bioaccumulation. DMC (53.2%) has higher oxygen content as compared to other additives on weight basis such as methanol (50%), ethanol (34.9%) and methyl tert-butyl ether (18.2%) and is consequently used as an oxygenate in gasoline fuels. The use of organic carbonates in gasoline also reduces the emission of suspended particulates and NOx. Methods used for the large-scale production of organic carbonates are: phosgenation, oxidative carbonylation of alcohol and methyl nitrite promoter with oxidative carbonylation process and methaylation process. Other methods such as direct synthesis from CO_2 and transesterification reaction are in research stage. A large amount of work has been carried on the synthesis of organic carbonates by direct-CO_2 and transesterification routes by our research group. First, thermodynamic analysis has been carried out on possible methanol utilization routes to dimethyl carbonate so as to understand thermodynamic limitations of these reactions. Various types of catalysts have been synthesized and screened based upon their acid-base, textural and structural properties; and their chemical and thermal stability. The operating conditions such as temperature, pressure, molar ratio, amount of catalyst, etc. were optimized using alcohol conversion, carbonate selectivity and yield as responses. Stability and recyclability of the synthesized catalysts/solvents has been studied. Detailed kinetic and thermodynamic studies have been carried out at the optimized synthesis conditions. During the talk, various non-phosgene methods for organic synthesis will be discussed with respect to the catalysts used, operating conditions and mechanism of synthesis. Performances of various catalysts will be compared graphically along with identification of problems and potential solutions. Certain engineering aspects including kinetics and thermodynamics of the synthesis routes will be highlighted.

Keywords: Catalytic synthesis, organic carbonates, recyclability, kinetics and thermodynamics

P2 Science as the True Culture of Humanity

Prof. Dr. Dinesh R. Bhuju
Academician, Nepal Academy of Science and Technology
Email:

Summary of Presentation

Science is the fundamental culture of humanity. It is shaped by our continuous struggle to understand nature—first for survival and later to harness its resources for progress. From the discovery of fire in prehistoric times to the modern technological age, science has been deeply embedded in human life, shaping values, ethics, modes of thinking, and behavioral codes. It has provided both a philosophical foundation and a technological tool that has significantly influenced civilization. Despite its undeniable impact, science is not traditionally classified as culture. The ability of scientific knowledge to drive change is widely recognized, as its applications help meet basic human needs and improve living standards. However, science, with its rigorous methodology—observation, hypothesis formulation, and experimentation—remains on the periphery of cultural discourse. It brings humanity closer to objective truths, yet it is not fully embraced as a cultural element. Why has science not taken root in human culture the way art, literature, or religion have? Is this due to the limitations of human perception, or does society consciously resist integrating science into culture? While science has profoundly shaped our worldview, social structures, and understanding of nature, it continues to be treated merely as a separate discipline in school curricula rather than as a cultural foundation. It is high time for the academic and scientific communities to advocate for recognizing science as an essential cultural force and for fostering a scientific temperament among students and society at large. Integrating scientific thinking into human culture is crucial for the continued advancement of society, ensuring that scientific values become an intrinsic part of how we perceive and navigate the world.

P3 Society, Culture and Literature: Keystones of Sudurpaschim's Exclusivity, Ethos, and Identity

Prof. Amma Raj Joshi, PhD
Tribhuwan University and Far Western University
Email: joshiammaraj@gmail.com

The social fabric with its culture and literature is a "mirror image" of society. The visibility, recognition, self-image and identity of a society remain ephemeral if isolated from its solid and exclusive social, cultural and literary heritage. Sudurpaschim is a composite of communities woven in a fine fabric (yet not loosened and snapped) of folk wisdom, taboos and belief systems, cultural practices and literary expressivity that exclusively reflect its spirit and identity. Its cultural specificities, living patterns, language, music and songs, performance and folk to modern literary creativity and expressions distinctly give it an exclusive identity and singularity. My presentation gives a bird's eye-view to the typical social composition meant to provoke scholars' interest to reflect upon its languages, ways of living, social, religious, cultural practices like Deuda, Gaura, Bharikhel, Bhasso, Holi, jaat mela, Dhamijakri, bhalamansa-type social administrative practices, Tallikothi-type judicial system along with ill practices and taboos like deuki, Chhaupadi, Jaatbhat, Chhauchut, Bahubibaha and jari, which have blemished yet rhetorized the pathos of disconnected, isolated and unheard territory and people till the 1990s. However, folk literary and performative socio-cultural tradition of Sudurpaschim will be the cynosure of my deliberation. The presentation is based on my first-hand experience and exposure to the society, cultural practices and literary expressions and the scholarly resources on society, culture, literature, tangible and intangible heritage of the province. Based on my exposure, experience, knowledge and reading, I consider that this society is still parochial, close, traditional and superstitious, feudal and narcissistic to some extent. The cultural composition is tinged with linguistic diversity, religious complementarity, performative variations depending on spatial distance, folk literary and performative peculiarities, uniqueness of food, costumes and habitation. Four distinct demographic segments visible on the social canvas with cultural variance comprising of the Saukas of Darchula, Tamangs and other indigenous communities of Dhuli, Bajhang and Doti, khas-chhetris of the hills (a heavily mobile population now) and the Tharus of the Terai with other migrant settlers from other regions of the country at times need mediation for interpersonal communication due to dialectical and linguistic variation. My assertion is that these peculiarities are domains of Sudurpaschim's exclusivity, ethos and identity.

***Keywords**:* Sudurpaschim, exclusivity, culture, identity, folk literature, intangible heritage

T1 Paradigm Shift in Education

Prof. Basu Dev Kafle, PhD
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Research in pedagogical sciences with technological advancements and societal changes, has caused paradigm shift in education which has moved from monolithic thinking to accepting multiple realities embracing and responding to learning needs of all irrespective of the differences and diversities. The issues of inclusion in education had never been raised so critically as toward the turn of the 20th century with the long-cherished goal of attaining ***Education for All*** by all the nations of the world to bring social justice, equity and equality into the spheres of the education system from the rights-based perspective to education. We have moved away from the elitist approach to education to accept that differences and diversities of the learners are the assets to a nation if we cherish the goal of equitable access to inclusive and quality education to do justice to people who are excluded from the main frame of education. This presentation is characterized by the notion that education must be inclusive if we justify the paradigm shift in education by recognizing both the gains of technological advancements and the humanistic outlook into the education system of the world in general and that of Nepal in particular.

Keywords: Humanistic outlook, learning needs, monolithic thinking, pedagogical sciences, paradigm shift

T2 Adolescent Mental Health Issues in Nepal

Dr. Aruna Uprety
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Mental health is our emotional, psychological, and social well-being. It is how we think, feel, and act. It helps determine how we handle stress, relate to others, and make healthy choices. Just like our physical health, it is important to all people at any age group. In Nepal mental health is (MH) not much given priority and there are a lot of stigma associated with this, MH had remained almost invisible on the health agenda. Globally, 10–20% of children and adolescents suffer from mental disorders, with half of all them starting by the age of 14 and three-quarters before the age of 25. In Nepal, 40% of the population is younger than 18 years of age, and as such there is a large proportion of the population that is at risk of developing a mental disorder. In response to growing concern, there is a need to conduct a review on children and adolescent mental health problems in Nepal. Child and adolescent mental disorders are common and linked to pre-mature death and serious dysfunction in adult life. About half of all mental disorders start by the age of 14 years and three-quarters before the age of 25. Risk factors for mental health problem and wellbeing are stressful events in life, family, community, poverty, alcohol. cybercrime etc. More awareness about MH issues with access to health care is needed to minimize the problem.

Keywords: Mental health, risk factors, awareness, adolescent

T3 AI and Robotics for Specialty Crops

Prof. Dr. Manoj Karkee
Director, Center for Precision and Automated Agricultural Systems, Biological Systems Engineering,
Washington State University, USA
Editor-in-Chief, Computers and Electronics in Agriculture

AI and Robotics has been and will continue to play a key role in reducing farming inputs such as labor, water and fertilizer, and increasing productivity and produce quality. Modular sensing, automation and robotics technologies developed in recent years (including mobile device-based Applications), decreasing cost and increasing capabilities of sensing, control and automation technologies such as UAVs, robust AI tools such as deep learning, and increasing emphasis by governments around the world in advancing AI-empowered smart and automated technologies have created a conductive environment to develop and adopt smart, robotic farming systems for the benefit of agricultural industries around the world with a wide range of farming scale and environment. In this presentation, the author will first discuss the importance of AI-empowered precision and automated/ robotic systems for the future of farming (Smart Farming, Ag 4.0). He will then summarize past efforts and current status of agricultural automation and robotics in fruit crops. For example, his work on apple harvesting robots achieved a picking rate of ~80% of apples in modern orchards taking about ~5.0 sec per fruit. His effort on robotic pollination of apple flowers has achieve a pollination success rate of 84% with a cycle time of 4.2 s. The presentation will conclude with an introduction of the novel robotic systems being developed in his program, and discussion on major challenges and opportunities in AI and robotics in agriculture and related areas including future directions in research and development.

Keywords: AI in agriculture, robotics, smart rarming, precision agriculture, fruit orchards

T4 The Health System in Nepal's Unique Federalisation Experiment

Prof. Dr. Edwin* Van *Teijlingen
UKCGE Recognised Research Supervisor
CMWH, Bournemouth University, UK
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When Nepal introduced its federal system in the 2015 Constitution changing the way society, including its health system, was organised. It meant that political changes and health systems changes occurred in parallel. Prof. Edwin van Teijlingen explores the impact of federalisation on Nepal's health system as part of an interdisciplinary mixed-methods study* called 'The Impact of Federalisation on Nepal's Health System: A longitudinal Analysis'. First, implementing a new federal system is a slow resource intensive process. While building new federal structures is important, challenging the status quo through strategic "unlearning and undoing" of old tendencies is also essential, as this creates spaces for new approaches that are more in line with federalism. This requires attention to emotional and political spheres, and not just structural or technical ones. Federalisation, generally, brought decision making, resources and service delivery closer to the people, yet the process remains challenging and incomplete. Importantly, at the same time as federalism was being introduced, Nepal's health system had to respond to COVID-19, making difficult to disentangle the effects of the pandemic from those of federalisation. The health system is also part of a broader, complex, and interdependent set of socio-political, economic, legal, and cultural systems. We found that the impact of federalisation varied across the six WHO building blocks and pre-existing conditions, e.g. wealthier regions often benefit disproportionately, exacerbating inequities in health. Our study further highlighted: (a) the importance of leadership and governance, combined with financing mechanisms; (b) insufficient planning and misalignment between central and local levels resulting in inefficiencies; (c) weak health information systems hinder the ability to measure long-term effects. Overall, unlocking the full potential of federalism will require political will and commitment at all three levels of government.

T5 Dual-Phase Design of Cobalt Sulfide and Oxyhydroxide on Metal-Organic Framework-derived Iron Carbide-infused Porous Carbon Nanofibers for High-performance Asymmetric Supercapacitors

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Designing advanced functional electrode materials with a tunable structure and multiphase/composition comprising a single metal via a one-step synthesis process for supercapacitor applications is challenging. Here, a dual-phase cobalt sulfide/cobalt oxyhydroxide ($Co_{1-x}S/HCoO_2$) hexagonal nanostructure on iron metal-organic framework (MIL-88A) derived iron carbide (Fe3C) integrated porous carbon nanofibers (PCNFs) is synthesized using a wet-chemical curing technique. MIL-88A is integrated by a physical blending process into a PAN/PMMA polymer matrix during the PCNFs preparation process. The integrated MIL-88A-derived iron carbide nanomaterial contributes to improving the electrochemical performance of electrode materials by lowering the inherent resistance. The optimal ($Co_{1-x}S/HCoO_2$)-1@Fe_3C/PCNFs electrode exhibits a high specific capacitance of 1724 F g^{-1} at 1 A g^{-1} with an improved rate capability and exceptional cycling stability with 89.8% retention even after 10,000 cycles. These excellent electrochemical capabilities are attributed to the double-phase hybrid composites, which have a variety of abundant sites, a large active surface area, rapid electron and ion transport capability, and strong structural stability. A $Co_{1-x}S/HCoO_2$@Fe_3C/PCNFs//Fe_2O_3/NPC@PCNFs asymmetric supercapacitor (ASC) demonstrates excellent electrochemical energy storage behavior, with a maximum energy density of 65.68 Wh kg^{-1} at a power density of 752.7 W kg^{-1} and excellent cycling stability (90.3% capacitance retention after 10,000 charge-discharge cycles at a constant current density of 20 A g^{-1}). These electrochemical results indicate that this ASC outperforms previously reported asymmetric supercapacitors, showing that the heterophasic electrode $Co_{1-x}S/HCoO_2$@Fe_3C/PCNFs has the potential to be applied in supercapacitor devices.

Keywords: Cobalt sulfide/Cobalt oxyhydroxide, MOFs, asymmetric supercapacitors, Energy Storage

T6 Security Issues and Challenges in SAAS Environment

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Cloud computing delivers the resources as a various services over the network.Cloud Security is one of the major issues in the SAAS environment. The main advantages of cloud computing are scalability, resilience, flexibility and efficiency. The cloud computing offers an innovative business environment model for organizations to adopt IT services without upfront investment. The keynote address on analysis of the cloud computing security issues and challenges focusing on software as service of the cloud computing and also focus on security solution in Software as a Service (SAAS) model for efficient implementation of cloud computing.

Keywords: Cloud computing, scalability, resilience, efficiency, software as service,

T7 Sustainable Infrastructure Development in Nepal: Harnessing Local Waste Materials for a Greener Future

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Nepal, despite being one of the most beautiful countries in the world, lags behind in infrastructure development compared to other nations. Unfortunately, much of its heritage, innovation, and transformation have been lost due to over-reliance on foreign expertise, especially for academic research and utilizing local resources. A major issue is that Nepal did not adequately preserve its ancestral knowledge of materials and technologies. Instead, the country often adopted foreign methods without proper documentation of its own. Nepal faces a critical challenge in advancing its infrastructure. Although the country is self-sufficient in basic concrete ingredients like cement and aggregate, it lacks essential additives, such as mineral and chemical admixtures, which are crucial for enhancing the properties of modern concrete. Importing these additives is not a sustainable solution for long-term infrastructure growth. Moreover, many of the United Nations Sustainable Development Goals (SDGs) for 2030 focus on infrastructure development that is environmentally responsible and avoids contributing to Earth's degradation. This article addresses these challenges by exploring the production of sustainable mortar and concrete using locally available waste materials, both organic and inorganic. By incorporating these materials, Nepal can not only improve waste management but also make its infrastructure development more sustainable and eco-friendlier. This approach could reduce the cost of construction by decreasing dependence on imported materials. Over time, Nepal may even develop the capacity to export sustainable building materials, boosting the economy and fostering long-term growth.

Keywords: Sustainable infrastructure, development, harnessing local waste, greener future

T8 Climate Refugee and Climate Induced Conflict in Nepal: Evidences from Upper Mustang

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The evidence and the impact of global climate change have become evident in recent times. The records of multiple climate parameters are broken, annually, across the globe. The precipitation and river flow patterns are getting unpredictable, and the bio-physical evidences of the climate change effects are ubiquitous. The snowfall and glaciers in the Himalayan region are declining but the glacial lakes are expanding. Unseasonal snowfall is becoming a norm, dry-spell and extreme rainfall days are on the rise while spring are drying. Those who contribute the least to climate change are facing its impacts disproportionately. The declining access to water is tearing rural societies apart. With limited coping capacity, weak governance, weaker climate change policy and adaptation programs the rural poor in Nepal are helpless. Lack of site-specific climate data has further victimized the voiceless rural poor and forced them to become climate refugee. The combined effect of the rise in climate refugees and the lack of legal identity has resulted in conflict. The official apathy, lack of legal instruments and weak evidences further victimize them. The existing legal framework ignores climate refugee, and institutional mechanism to address this problem is lacking. Inability to establish robust evidence is resulting in unnecessary suffering of the climate refugee. Ignoring the refugee issue will not make it disappear; it is high time to confront the realities of climate refugee in Nepal before the problem snowballs. Using specific examples, this presentation illustrates the issues related to the status of climate induced migration and the resulting conflicts in Nepal.

Keywords: Climate change, climate refugee, climate induced migration

T9 Cultural Heritage and Terrorism Financing

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The presentation provides a concise overview of the critical issues surrounding cultural heritage and its connection to terrorism financing. Cultural heritage encompasses the legacy of physical artifacts and intangible attributes of a group or society. The illicit trade in cultural heritage items has been increasingly linked to the financing of terrorism.

Connection Between Cultural Heritage and Terrorism Financing

1. **Illicit Trade**: The illegal trade of cultural artifacts is often exploited by terrorist organizations to generate funds. Reports indicate that terrorist and insurgent groups engage in the smuggling of cultural heritage items to finance their activities.
2. **Financial Mechanisms**: The Financial Action Task Force (FATF) has identified the need for policies to combat money laundering and terrorist financing in the art and antiquities market. Anti-Money Laundering (AML) and Combating the Financing of Terrorism (CFT) measures are essential to protect the integrity of financial systems.
3. **Impact on Cultural Heritage**: The destruction and looting of cultural sites during conflicts not only result in the loss of heritage but also facilitate the funding of terrorist activities. The illicit trade poses a significant threat to the preservation of cultural heritage, particularly in war zones.

The nexus between cultural heritage and terrorism financing highlights the urgent need for international cooperation and robust regulatory frameworks to combat these crimes. Protecting cultural heritage is essential for maintaining the identity and history of societies worldwide.

Keywords: Cultural heritage, terrorism financing, illegal trade, preservation

T10 Project Financing and Quality Enhancement Perspective of Higher Education in Nepal

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Higher education in Nepal has undergone significant growth, supported by both government initiatives and foreign aid. Since the establishment of Tribhuvan University in 1959, the system has expanded from a single institution to a diverse, multi-university framework. As of the 2023/24 academic year, Nepal has 24 universities and medical academies, with 17 recognized as central and provincial universities. Additionally, there are 1,432 higher education campuses across the country, including constituent, community, and private campuses, as well as 57 colleges affiliated with foreign universities (UGC EMIS Report -2023/24). This expansion has increased access to higher education and diversified academic offerings. Project financing has played a key role in addressing challenges such as inadequate infrastructure and limited resources. International donors, including the World Bank and the Asian Development Bank, have funded initiatives aimed at improving infrastructure, curricula, and academic standards. The government has implemented several reform projects, such as the Higher Education Project (HEP), the Second Higher Education Project (SHEP), and the Higher Education Reform Project (HERP), along with the ongoing Nurturing Excellence in Higher Education Program - NEHEP, with a budget of USD 60 million, aims to improve labor market relevance, promote collaborative research, and increase access for marginalized groups. These projects have contributed to institutional strengthening, improved instructional delivery, faculty development, and the creation of quality assurance systems. Despite these achievements, challenges persist, including the rapid migration of students abroad and concerns about graduate employability. To address these issues, there is a growing emphasis on professional education and skill development to better align graduates with labor market needs. These initiatives are vital for ensuring that Nepal's higher education system evolves to meet both national and global demands, equipping students with the skills necessary for success in a globalized economy.

Keywords: Project financing, quality enhancement, higher education, NEHEP

T11 5-methoxyisatin series of thiosemicarbazones reactivate the mutated P53 in cancer cell line - novel emerging molecules for cancer treatment- A successful collaborative output of TU and SAU, New Delhi

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Thiosemicarbazones (TSCs) has emerged an attractive pharmacophore for the treatment of different ailments. Development of TSCs as a potent chemotherapeutic drug has led researchers to synthesize a vast number of derivatives with structural modifications at various sites. Our study shows three such modifications in the parent TSC compound. The effective compound was screened from a panel of 23 derivatives in the first series, a panel of 6 compounds among the second series and a panel of 4 compounds from the third series of TSCs. Compounds with the highest inhibitory effect was selected for further studies. We found that all the three selected derivatives from each series of TSCs possess an anti-proliferative potential and induce apoptosis in the respective cell lines. MeOIstPyrd from the third series of TSCs showed cytostatic and cytotoxic potential more than 5FAmPyrr and HHyPyPyrd from the first and second TSCs series respectively. TSCs recently emerged as p53 reactivator, therefore first we checked the expression of p53 upon the treatment with selected compounds from three series. Interestingly, all the compounds increased the expression of p53 irrespective of the p53 status in cell lines. However, we further explored the mechanism behind p53 expression in A431 (R273H) cell line treated with MeOIstPyrd, as it showed both cytostatic and cytotoxic activity (Fig. 5.1). MeOIstPyrd damages DNA and activates p53, which upon upregulation activates ROS and causes cell death in a dose-dependent manner. MeOIstPyrd increased the half-life of p53, therefore, providing stability. It also helps p53 restore its transactivating potential and activates its downstream target genes such as PUMA and p21. MeOIstPyrd also stabilises p53 by phosphorylating p53 at ser15 and inhibiting the catalytic domain of MDM2 more potently than the known inhibitor RG7388. This study shows that MeOIstPyrd possesses potent anti-cancer activity in vitro and further in-vivo validation is necessary for it to be a successful drug candidate.

T12 Rational Design of Molecules for Applications in Catalysis, Sensing, and Photodynamic Therapy

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Metal complexes play a pivotal role in diverse scientific fields, particularly in homogeneous catalysis and biomedical applications. In organic transformations, these complexes act as catalysts that enable highly selective and efficient reactions, including cross-coupling, hydrogenation, and oxidation. In biomedical research, metal complexes are explored for their role in protein aggregation showing potential in inhibiting and detecting amyloid fibril formation associated with neurodegenerative disorders. Additionally, metal-based nitric oxide (NO) donors provide controlled NO release for therapeutic applications, such as vasodilation and immune regulation. Our lab focuses on designing such metal complexes that continue to drive catalysis and biomedical science advancements.

T13 Redefining Engineering Education in Nepal: A Comprehensive Exploration of Outcome-Based Learning

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Engineering education serves as the backbone of industrial growth, driving economic progress, creating jobs, and fostering prosperity. Engineers play a vital role in developing new technologies, enhancing efficiency, and improving productivity across various sectors. In an era of rapid technological advancement, engineering education must remain a top priority, continuously adapting to global trends and innovations to stay relevant and impactful.Each year, Nepalese universities produce over seven thousand engineering graduates across nearly twenty different engineering disciplines. These programs are traditionally conducted based on rigidly structured curricula, with a strong emphasis on teacher-centered pedagogy. Student performance is primarily assessed through written examinations featuring predefined sets of subjective questions, typically administered on a semester basis. However, in the modern era, this approach to engineering education is becoming increasingly outdated. Academic institutions must now foster an environment that prioritizes learning outcomes over simple educational outputs, focusing on the skills and competencies students acquire rather than solely on examination results. This paper focuses on the various aspects of the outcome-based engineering education with the comprehensive insights on the globally practiced graduate attributes. Outcome-Based Education (OBE) has emerged as a widely accepted standard in contemporary educational systems. It focuses on the measurable knowledge, skills, and abilities that students are expected to acquire by the end of a course or upon completing a degree program. OBE emphasizes the development of practical, real-world competencies. This approach shifts the focus from rigid instructional methods to student-centered learning, where clearly defined outcomes guide curriculum design, course content, teaching methodologies, and assessment strategies.At the same time, Nepalese universities must embrace a paradigm shift aimed at producing globally competent and recognized professionals. This requires the adoption of internationally recognized graduate attributes, tailored to fit the local context. Global standards for engineering education and professional practice are overseen by the International Engineering Alliance (IEA). A key agreement under the IEA is the Washington Accord (WA), which facilitates the mutual recognition of accredited engineering degree programs among its signatory countries. This not only enhances the global mobility of engineering graduates but also significantly boosts their employability in the international job market.

Keywords: Engineering education, Outcome-based education, Washington Accord, learning outcomes, graduate attributes

T14 Urban Sustainability in Nepal: Managing Solid Waste and Wastewater in Cities for Resource Recovery and Circularity

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Managing municipal solid waste (MSW) and wastewater is one of the significant challenges of urbanization in Nepal. Despite the least favorable option, the majority of the MSW is disposed of in open dumps or landfills. Wastewater generated is still released into the environment without any prior treatment. Many urban areas in Nepal face difficulties in providing wastewater treatment plants (WWTPs) and solid waste management facilities. Deploying advanced WWTPs and MSW management options can contribute directly to urban sustainability. This study explores the resource recovery, climate change mitigation, and sustainability aspects of solid and liquid waste management options in Nepal. The interlinkages between sustainable development goals and various benefits of resource recovery systems will be demonstrated. This study could be helpful for municipalities and decision-makers involved in planning and deploying resource recovery systems in a circular approach.

T15 *Ab Initio* Study of Structural and Electronic Properties of Some Biologically Active Compounds

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Biologically active compounds, commonly derived from plants, and animal products, or synthesized, play an effective role in living organisms, tissues or cells. Carbohydrates, lipids, proteins, RNA/ DNA, etc. are some natural products. Since ancient times, people of developing countries rely on their traditional medicines. Drugs derived from the plants have proved their diverse potential for managing common diseases in developing countries. Metabolites play their crucial roles in the life-sustaining chemical reactions in organisms. Primary metabolites directly involved in the normal growth, development or reproduction of the organisms while the secondary metabolites mediate their interactions. As such, studies on their molecular structures, electronic and vibration properties, chemical reactivity, protein-ligand binding activities etc. are increasing in interest. Spectroscopic measurements in the association of quantum chemical calculations are widespread and relevant techniques for these investigations. We have studied on structural, electronic, conformational and vibrational properties of oncoclyxone A, antitumor and antioxidant, by spectroscopic and quantum chemical methods using Gaussian program at B3LYP/6-311++G(d,p) level. 114 normal modes of vibration with red shift in C=O stretching were noticed, being involved in intramolecular hydrogen bonding in the solid state. Structural, electronic, conformational and molecular docking studies of cefradine, an antibiotic, were performed to examine the active binding site with the target protein. Similar studies on yohimbine, used for muscle growth and strength, weight loss, reduce fatigue in AIDS patients, and libido enhancer, were performed at the same level.

Keywords: *Ab Initio*, structural and electronic properties, biologically active compound

T16 Redefining Waste: A Circular Economy Approach to Sustainable Resource Management

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The worldwide solid waste management crisis requires a conscious shift from linear disposal to circular economy-based, sustainable alternatives. A circular economy framework could alter organic waste management by highlighting creative disposal and treatment methods that reduce environmental impact and improve resource recovery. Organic solid waste, mostly food, yard and agricultural leftovers, is a major global waste issue. Landfilling garbage increases greenhouse gas emissions, leachate production, and soil deterioration. Suboptimal resource management wastes nutrition, energy, and materials. Discussing studies on implementing a circular economy model for organic waste, emphasising waste reduction, repurposing materials, and recycling resources. We thoroughly evaluate various organic waste treatment and disposal methods for their environmental and economic impacts. Pyrolysis converts organic waste into biochar, bio oil and synthetic gas. The biochar can be used as fuel, soil amendment, and pollution adsorbent. We carefully evaluate how temperature, residence time, and catalyst addition affect biochar and its potential applications. This research concludes that integrated waste management systems that combine treatment approaches improve resource recovery and reduce environmental impact. Policy frameworks that promote trash reduction, circular economy practices, and novel organic waste management technologies are supported. We can use a circular economy to build a sustainable and resilient future by treating garbage as a resource. A circular economy offers organic solid waste a major opportunity. Composting and anaerobic digestion help us manage these resources. Innovative methods include hydrothermal carbonisation and black soldier fly larvae improve sustainable resource management.

Keywords: Organic solid waste, circular economy, composting, anaerobic digestion, black soldier fly larvae, hydrothermal carbonization, sustainable resource management

T17 Transformation of Higher Education: Selected Countries and Nepalese Reality

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Higher education in Nepal has experienced significant growth and transformation over the years. The Tribhuvan University, a first university of Nepal, was established in 1959 and it enjoyed a long period of time as a single university before formulating multi university concept by Government. The year 2010 was milestone for higher education of Nepal because of five universities established as central universities including Mid-West University and Far-Western University, and several other universities are in the pipeline to be established. The growth of the number of universities, and higher education institutes in one part, and faculty dedication to quality education, research, and knowledge transformation, stakeholder support, and leadership in another part are the most essential elements of higher education transformation. Faculty members are the cornerstone of any educational institution, playing a critical role in shaping the academic environment, fostering student learning, and advancing knowledge through research. Faculties of Universities and Higher Education Institutions have primary responsibilities to create new knowledge as well as disseminate the existing knowledge along with knowledge transfer from generation to generation for the welfare of society at large. The faculties who are engaged in carrying out academic research are always intended to produce theory, develop propositions, and test the existing knowledge. The faculties of most of the universities of South Asia have carried out theory testing aiming at getting tenure and meeting publishing quotas ignoring disseminating quality and impact. In this context, this paper aimed to highlight the research of Nepalese faculties as well as research scholars and faculties of some selected countries of South Asia- Bangladesh and Pakistan, and other selected countries based on similar populations in the most recent research produced. While analyzing, based on desk review and secondary sources of information, it is found that Nepalese universities and leaders need to learn to engage faculties for collaborative research, and sharing outcomes with internationally reputed journals. It shows that Nepalese faculties are gradually transforming their efforts towards research and knowledge production, however, the efforts are more individual rather than institutional. The sustainability of research programs and research scholar engagement are prime issues because the reputation and recognition of universities and faculties are only possible when academic research is boosted at the institute. The quality and success of these research activities and their outcomes largely depend on the University faculty's dedication, commitment, and continuation with a positive mindset and university top management policy to build the culture of research at the university.

Keywords: Knowledge creation, research and publication, culture of research, faculty engagement, education leadership, knowledge competitiveness

T18 Globalization: In New-found World Order

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Globalization, as led by the Western Hemisphere, has significantly shaped the modern world since the end of the Cold War. The latter part of the 20th century and the first decade of the 21st century was characterized by open trade, investment, technology, and communication systems. However, several major global events initiated a deglobalization process, resulting in disruptions of the world economy. The unchecked economic growth brought numerous benefits to societies, albeit at a substantial cost, as evidenced by various crises faced by the world in recent years. Recent developments in the world, including Trump's taking over the presidency, newfound political and economic power, major geopolitical events, and the pandemic situation, underscored the unsustainability of the existing model of globalization, highlighting the need for a new approach in this new era.The contemporary world has awakened to the realization of Western hegemony, the significance of plural identities, and the fragility of our environment. This signals the advent of a new order of Globalization, where the foundation is not universality but plurality, compassion, and care. Emerging economies such as China, India, Russia, Brazil, and others seek to break the hegemony of Western economies and wish to influence the shaping of the global order. Populations have recognized the unintended consequences of the present Globalization order, including wealth inequality, environmental and social externalities, fragility, law enforcement vulnerabilities, and the decline of nation-states.

Keywords: Globalization, western hemisphere, emerging economies

T19 Vitamin D and Human Health: Insights from Local Studies in Nepalese Population

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Vitamin D is one of the critical micronutrients that has huge impact in maintaining the proper function of musculoskeletal, bone health, immune, nervous and cardiovascular systems. Globally, several studies have demonstrated the importance of vitamin D in optimizing health and preventing a broad range of diseases. Low levels of vitamin D have been consistently linked to disorders such as rickets, osteomalacia, osteoporosis, cardiovascular disease, diabetes, autoimmune disease and cancer. Additionally, vitamin D influences numerous biological processes, including cell growth, differentiation, apoptosis, immune regulation, DNA stability, and neuronal development. While global studies have extensively documented the health impacts of vitamin D deficiency, there is a growing need to contextualize these findings within specific populations. Here we aim to provide an overview of the status of vitamin D among the Nepalese population and its association with genetic polymorphisms, drawing insights from local studies. The findings highlight the prevalence of vitamin D deficiency across various demographic groups in Nepal, and explores the role of genetic polymorphisms in modulating vitamin D metabolism. It also summarizes the association between vitamin D status and health outcomes, including immune-related disorders, metabolic syndromes, and bone health. By integrating our findings with the global literature, we present the distinctive challenges faced by the Nepalese population in addressing vitamin D deficiency and its associated health impacts. The insights gained from this review can improve public health strategies aimed at mitigating vitamin D deficiency and its associated risks in Nepal.

I1 Marked Formation of Minor Saponin Compound K from Herbal Plants, Ginseng by Hydrolysis Process Using Enzyme Extracted from Mushroom Mycelia

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The protopanaxadiol-type major ginsenosides such as ginsenoside (G)-Rb_1, in Panax ginseng is poorly absorbed by human intestinal tract and only small amount are oxygenated by gastric juice with limited components being soluble. However, the minor ginsenosides such as G-Rg_3, -F_2, -Rh_2 and compound K (C-K), hydrolyzed products of major ginsenosides G-Rb_1 are more biologically active, more readily absorbed into the blood stream and function as active compounds than major ginsenosides but they exist either in much lower amount. Therefore, this study focused on obtaining C-K from the enzymatic transformation of G-Rb_1 by enzyme preparations from cultured edible or medicinal mushroom mycelia. Out of five mushrooms (*Fomitella fraxinea, Ganoderma lucidum, Phellinus Linteus, Elfvingia applanata and Pleurotus ostreatus*) used in this study, only *F. fraxinea* gave the most remarkable formation of C-K. The optimum conditions for C-K formation in two mushroom mycelia were reaction time 72 - 96 hrs, pH 4.5 - 5.0 and temperature 40 - 50°. The pathways followed by G-Rb_1, G-Rb_2 and G-Rc were Rb_1 Rb_2 and Rc → Rd→ F_2 → C-K, as major pathway and Rb_2 → C-O→ C-Y → C-K and Rc → C-Mc1→ C-Mc → C-K as minor pathway and the hydrolyzed products were identified by TLC, HPLC, HPLC-MS and spectroscopic analysis. This result suggests that mushroom mycelia can be used to produce biologically active minor ginsenosides from major ginsenosides without food safety concern.

Keywords: Ginsenosides, Enzymatic transformation, Panax ginseng, Hydrolyze

I2 Tri-reforming over MOF-derived Catalyst: An Effective Approach to Convert Biogas or Flue Gas into Hydrogen-rich Synthesis Gas

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CH4 and CO2 are the two problematic gases that cause environmental issues. The development of a process for the value addition of these two gases is very important. Recently, the tri-reforming of methane has been identified as a very favorable pathway for utilizing both CH4 and CO2 at a stretch. Most importantly, the flue gas and biogas as a source of CO2 can be used as a feed straight away. Tri-reforming (TR) is the combination of steam reforming, dry reforming, and the partial oxidation process, and this process is a promising route for the conversion of CH4 and CO2 to syngas in the presence of oxygen and water. TR is usually favored at a temperature of 500-800°C, and at this temperature, catalyst deactivation is a significant issue. Therefore, the development of a suitable catalyst and the reaction conditions optimization is very important to control the H2/CO ratio of the syngas. Metal-organic frameworks (MOF) have gained significant attention in reforming processes owing to their promising properties including high surface area, pore tuneability, and easier regeneration. Therefore, in this study, a nickel-alumina catalyst derived from an alumina-based MOF was synthesized. The catalysts were characterized by TGA, BET, XRD, TPR, and TPD, respectively. The TR activity of the catalysts was assessed in a downflow tubular reactor at 1 atm and 600-800°C. At 800°C, a complete conversion of CH4 and a constant H2/CO ratio of ~3 was observed for an extended duration of time. The enhanced catalytic activity was discovered to be mostly due to the strong metal support interaction and the smaller Ni crystallite size (14.6 nm), which promotes uniform dispersion.

I3 Climate Change Impacts, Adaptation Strategies and Agro-Climatic Indices of Potato (Solanum tuberosum L.) in Karnali and Sudurpashchim Provinces, Nepal

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Given the increasing impact of climate change, it is crucial to empirically identify its effects on potato tuber yield for the promotion of appropriate climate change adaptation measures. A comprehensive study, combining of field surveys and multi-locational on-farm field trials on potato (*Solanum tuberosum*, L.) was accomplished from September 2023 to July 2024 across the purposively selected sites in the high-hills (Bajura) at 2200-2500 masl., mid-hills (Dailekh) at 1200-1500 masl, and lowland Terai (Kailali) at 250-400 masl. in Karnali and Sudurpashchim Provinces, Far Western Nepal. When asked about their perceptions of climate change, 73% of respondents in Bajura, 57% in Dailekh, and 67% in Kailali acknowledged awareness of its occurrence, while a smaller percentage expressed skepticism or negative views (7% in Bajura, 23% in Dailekh, and 13% in Kailali). Trend analysis between potato tuber yield and seasonal maximum temperatures and rainfall showed positive correlation coefficients (r) of 0.52 and 0.35, respectively, for the period from 1990/91 to 2023/24 in the Terai, with similar trends observed in the high and mid-hill regions. The study also highlighted significant yield gaps in potato production, particularly in relation to changes in planting dates rather than potato cultivars. Yield gaps between early and late planting dates were substantial, with 13.1 t/ha (56.5%) in Bajura, 7.2 t/ha (45.9%) in Kailali, and 6.5 t/ha (34.5%) in Dailekh. Potatoes grown in the Terai recorded the lowest GDD, followed by the mid-hill, with the highest GDD observed in the high-hill agro-ecology, due to the longer crop duration in the hilly regions and the inverse relationship in the Terai. The findings suggest the adoption of climate-resilient potato cultivars with early sowing as a strategy to sustain potato productivity, profitability, and food security in the fragile agro-ecologies of Far Western Nepal.

Keywords: *Agro-climatic indices, climate change adaptation measures, climate change evidences, far western nepal, potato tuber yield*

I4 Enhancing Nitrogen Management in South Asia: Challenges, Solutions, and Alignment with SDGs

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Recent images of global emission data show the strong prevalence of nitrogen dioxide (NO_2), ammonia, and other reactive nitrogen compounds, particularly in South Asian region which clearly indicates nitrogen pollution as a significant environmental concern. Reactive nitrogen from agricultural activities and excessive use of synthetic fertilizers and manures can enter surface and ground water, manifesting as ammonia (NH_3) in the air and ammonium (NH_4^+) in water bodies. Ammonia deposition contributes to soil acidification and nutrient leaching, with agriculture accounting for a substantial portion of anthropogenic ammonia emissions. Unfortunately, there is decrease in nitrogen use efficiency (NUE) over the years which affects the global food system, with a significant portion of nitrogen dissipating into the environment. Improving NUE provides an opportunity for both environmental and financial benefits, focusing on minimizing harmful nitrogen emissions while maximizing fertilizer benefits. In this study, apart from household survey in Nepal (n=300), secondary data and government policies related to nitrogen were studied. Results indicate the high increasing trend of reactive nitrogen compounds although there are many pro-nitrogen policies drafted in South Asian countries. Nepalese farmers' perception on nitrogen input will also be discussed.
It can be concluded that sustainable agricultural practices, including minimal tillage, intercropping, cover crops, and effective use of crop residues are important. However, efforts to manage nitrogen pollution and losses in agriculture remain insufficient, which could worsen food security challenges in the future. The fragmented nature of nitrogen policies is evident in the Sustainable Development Goals (SDGs), where nitrogen-related indicators are underrepresented except for SDG 14.1 concerning life below water. Integrating NUE and nitrogen loss indicators into the SDGs could strengthen efforts to optimize nitrogen's role in sustainable food production and mitigate its negative effects, aligning with SDG 2 for improved food security.

Keywords: Nitrogen management, South Asia, SDGs

I6 Fullerene Nanoarchitectonics for Sensing, Energy Storage and Beyond

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Buckminsterfullerene (C60), an ideally zero-dimensional (0D) molecular nanocarbon building block, undergoes supramolecular assembly and forms various assembled nanostructures, including can be assembled into a wide variety of nanostructures including one dimensional (1D) fullerene nanorods or nanotubes, two-dimensional (2D) nanosheets, and three dimensional (3D) cubes at the liquid-liquid interface. These nanostructures result from the supramolecular assembly of fullerene molecules due to the p-p stacking interactions. These fullerene nanomaterials have emerged as novel p-electron-rich carbon sources for producing shape-controlled porous carbon materials demanded in the sensing, energy storage, and energy conversion applications. In this contribution, we will discuss the recent developments in producing self-assembled fullerene crystals from zero to higher dimensions. We discuss the novel yet simple concept of porous fullerene crystals with bimodal pore architectures and hierarchical superstructures composed of fullerene nanorods growing out of a cubic solid core. We also discuss the direct conversion of these fullerene nanomaterials into nanoporous carbon materials by direct carbonization at higher temperatures and their applications in vapor sensing and energy storage. The insertion of micro/mesoporosity enhances energy storage performances due to the ultrahigh specific surface areas and rapid diffusion of electrolyte ions through the interconnected channels of their mesoporous structures.

Keywords: Fullerene, nano, energy

I7 Plant Secondary Metabolism: A Specialized Biological Strategy for Crop Protection Against Biotic Stress

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Plants can be exposed to a wide array of biotic stressors including pathogens and pests limiting their proper growth and productivity. The climate change scenarios exacerbate the challenges of pathogens and pests. Plants trigger the synthesis of specific secondary metabolites in response to the stress conditions enhancing the stress tolerance and mitigating damage caused by adverse conditions. Secondary metabolism involves a complex network of biochemical pathways that produces diverse secondary metabolites, such as flavonoids, phenolics, alkaloids, terpenoids, carotenoids, glycosides, glucosinolates, and alkaloids. Glucosinolates in cruciferous plants provide defense against herbivores. Flavonoids and phenolic compounds are antioxidants and neutralize reactive oxygen species generated during stress, thereby reducing oxidative damage to cells. Various secondary metabolites including alkaloids, terpenoids, and phenolic compounds act as phytotoxins and allelochemicals suppressing the growth of the biotic stressors in their vicinity. Several plants produce secondary metabolites that attract natural enemies of insects and pests limiting the damage caused by the insect and pest feeding. The biosynthesis of stress-responsive metabolites is regulated at the level of gene expression by various transcription factors (TFs) including MYB, WRKY, bHLH, bZIP, NAC, and AP2/ERF. As climate change continues to threaten global agriculture, elucidation of genetic and molecular mechanisms underlying secondary metabolite biosynthesis in response to biotic stress exposure could lead to the development of stress-tolerant varieties ensuring the optimum productivity of crops.

Keywords: Secondary metabolite; secondary metabolism; biotic stress; stress resilience; transcription factor

I8 Transforming Rural Healthcare and Medical Education: Karnali Academy of Health Sciences (KAHS) Experience

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Karnali Province, the largest and least densely populated area in Nepal, faces significant challenges in healthcare accessibility due to geographical barriers, inadequate infrastructure, and a shortage of healthcare professionals. With 70% of Nepal's healthcare facilities concentrated in urban areas, rural regions face significant disparities. Therefore, KAHS was established in 2011 to produce healthcare professionals, conduct community-based research, and prevent and control diseases to improve the quality of life for peoples of rural area.The Academy is located at 2600 meters from the sea level in the mountain region having 300 bed hospital equipped with essential facilities, an academic building housing four schools, a state-of-the-art skill lab and a modern library to foster education and research. There are over 100 faculty members, 300 staff and paramedics, and approximately 500 students across disciplines such as Medicine, Nursing, Public Health, and Pharmacy in master and bachelor program. Its programs prioritize evidence-based training and community services in resource-constrained environments. KAHS represents a paradigm shift by decentralizing medical education, prioritizing community-based learning, bridging the rural-urban healthcare gap, and innovating in teaching and healthcare delivery.KAHS excels in rural healthcare with strong government support, dedicated faculty, and an integrated education model. However, challenges include geographical barriers, inadequate infrastructure, a shortage of professionals, resource constraints, and financial dependence on the government. Opportunities lie in telemedicine, public-private partnerships, research, and policy advocacy, but threats like urban-rural disparities, poverty, climate change, and workforce migration hinder progress. To ensure sustainability, KAHS is improving infrastructure, expanding rural healthcare, incentivizing professionals, promoting telemedicine, fostering research, strengthening supply chains, and advocating for policy reforms. These measures are vital for KAHS's long-term impact on rural healthcare and medical education.KAHS is playing a significant role in addressing the healthcare disparities in Karnali Province by producing healthcare professionals and improving healthcare infrastructure. Despite facing numerous challenges, KAHS continues to implement strategic measures to enhance healthcare accessibility and quality for the people of the province.

I9 From Himalayas to Global Markets: The Role of Medicinal Plants in Heritage, Health, and Economic Transformation

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The Himalayas, celebrated for their extraordinary biodiversity, are home to a rich array of medicinal and aromatic plants (MAPs) that have significantly contributed to traditional medicine and modern pharmacology. These plants, deeply rooted in cultural heritage, now play a pivotal role in addressing global health challenges and fostering economic transformation. Among them, Artemisia annua (the source of artemisinin, a revolutionary antimalarial compound), Swertia chirayita (rich in swertiamarin), Pterocarpus marsupium (containing pterostilbene), Gaultheria fragrantissima (producing wintergreen oil) and Cordyceps sinensis (Yarsagumba) exemplify the potential of MAPs to bridge the gap between tradition and modern science.The discovery of artemisinin, derived from Artemisia annua, is one of the most significant breakthroughs in global health. Awarded the 2015 Nobel Prize in Physiology or Medicine, artemisinin has saved millions of lives worldwide by becoming the cornerstone of malaria treatment. Beyond its medicinal importance, the economic implications of MAPs are profound. Nepal, a key player in the MAP trade, exports high-value plants such as Swertia chirayita, Nardostachys jatamansi, and Yarsagumba to markets in India, China, and Europe. Yarsagumba alone generates over NPR 1 billion annually, underscoring the economic opportunities inherent in sustainable MAP trade. However, challenges such as unsustainable harvesting, habitat degradation, and market inequalities hinder the full realization of this sector's potential. This address emphasizes the need for a multi-faceted approach integrating sustainable harvesting practices, scientific research, value addition, and equitable trade systems to harness the full potential of Himalayan MAPs. The global success of artemisinin serves as a beacon, demonstrating how traditional knowledge, when paired with innovation, can address critical health challenges while fostering economic growth and biodiversity conservation. Through this exploration of heritage, innovation, and transformation, the keynote aims to inspire collaboration among researchers, policymakers, and industry leaders to leverage Himalayan MAPs for global health advancements, economic development, and ecological sustainability.

I10 Bioprospecting Wild Edible Plants of Far Western Province for Poverty Reduction and Food and Nutritional Security

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Far-Western province, with its diverse topography, ranging from lowland Terai to the high Himalayas, is home for thousands of species of wild plants. It has the highest proportion of forested land in Nepal. It represents a wealth of biodiversity with cultural, scientific and economic significance. Many of these plants have enormous potential for pharmaceutical, cosmetic, and nutraceutical applications. Although blessed with rich biodiversity and natural resources with enormous potential for socio-economic development, Far western province remains underdeveloped. Food and nutritional insecurity are the big challenges in the hilly and mountainous districts of this province. It's unfortunate that poverty is rampant in the province from where significant amounts of wild plants are collected and sold in national and international markets. As seen in its recent policies and plans, the Government of Nepal has given priority in poverty reduction through entrepreneurship and employment generation from forestry sector. However, the resources have not been effectively allocated and mobilized to achieve it. Edible wild plants with nutritional and medicinal importance can make a substantial contribution to biodiversity conservation and rural development. They can reduce food insecurity, offer dietary supplements, health promoting phytochemicals and, have potential for green enterprise development. Bioprospecting of these resources provides an opportunity for scientific advancement, economic development, while ensuring the conservation of biodiversity and equitable sharing of benefits at local level. Wild plants in the province hold significant promise for addressing poverty reduction, employment generation and economic development through research, development, and innovation. The paper herein highlights the bioprospecting of wild plants in Far-Western province, especially on their food and nutraceuticals potentials.

O1 Scope of Himalayan Essential Oil in Nanotechnology

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Nano and micro structured polymeric fibrous membranes and thin films are in high demand for a range of applications, including filtration, adsorption, and biomedical uses. However, the widespread use of conventional toxic organic solvents in polymer processing limits their suitability for biomedical applications and poses significant health and environmental risks. Consequently, there is a pressing need to replace these harmful solvents with greener alternatives. Himalayan essential oils (EOs), known for being nontoxic and eco-friendly, present a promising solution as green solvents in polymer processing. Their biocompatibility and antimicrobial properties further enhance their appeal for biomedical applications. This study focused on the fabrication of polymeric nano/micro fibrous membranes and thin films using various EOs as green solvents and explores their potential in the biomedical field.The solubility of polymers, including polyacrylonitrile, polycaprolactone (PCL), polyurethane, Nylon-6, and cellulose acetate, was investigated using a trial-and-error approach with Himalayan essential oils such as cinnamon, lemongrass, turpentine, eucalyptus, mentha, citronella, and wintergreen oils. PCL, an FDA-approved polymer, was found to be soluble in cinnamon, wintergreen, and lemongrass oils, indicating their potential as green solvents for PCL processing. PCL solutions in these essential oils were successfully used to fabricate electro spun membranes via the electrospinning method. The resulting PCL electro spun membranes and thin films were characterized using various physico-chemical techniques, including SEM, FTIR, TGA, and WCA. Additionally, antimicrobial and cytotoxicity tests were performed to assess their antimicrobial properties and effects on cell viability. The results revealed that PCL electro spun nano/micro fibrous membranes created with cinnamon oil demonstrated excellent antimicrobial activity, biocompatibility, and cell viability. These findings suggest that Himalayan essential oils could serve as eco-friendly and nontoxic green solvent alternatives to conventional organic solvents in polymer processing, with significant potential for applications in tissue engineering and other biomedical fields

Keywords: Essential oil, green solvent, electrospinning

O2 Theoretical Investigations on Physicochemical Properties of Caffeine

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Caffeine is a methylxanthine alkaloid found in the seeds, nuts, or leaves of a number of plants but the best-known source of caffeine is the coffee beans. Physicochemical properties of caffeine with geometrical parameters, electronic properties, vibrational properties and molecular docking analysis has been incorporated in this study. Molecular structure, bond lengths, bond angles and dihedral angles have been calculated theoretically by B3LYP/6-31g level of theory. DFT at B3LYP/6-31g level of theory was used to calculate the vibrational frequency. 66 normal modes of vibrations were calculated and analyzed with their potential energy contributions. The calculated Raman and IR spectra were plotted using scaled wavenumbers. HOMO-LUMO, MESP and UV-Vis spectra and Mulliken charges were plotted. The HOMO-LUMO energy gap of 4.9916eV in gas phase and 5.0152eV in solvent phase, respectively, indicate that the molecule is stable. After analyzing all the vibrational modes, IR and Raman plots of the title molecule, it was concluded that the molecule is both IR and Raman active. Molecular docking of title molecule with three target proteins of *Homo sapience* Speakerly: Acetylcholinesterase, Potassium Channel (Protein) and Adenosine Receptor A_{2a} has been conducted using Auto Duck Vina and was analyzed by Pymol and Biovia Discovery studio softwares. The docked complex, Ramachandran plot, interaction in (2D and 3D), and Hydrogen bonding surfaces have been presented. The molecular docking analysis implies that the title molecule has good binding affinity to the selected proteins. This result supports the fact that the title molecule is used for different drugs. Moreover, this study may give a meaningful insight to solve the query, why caffeine is consumed in large scale worldwide. On the other hand, some of the common uses of caffeine has no any scientific reason has been presented yet, so the study like present study encourages and produce curiosity on the researchers in future. Thus, this study will be helpful for designing new drugs in the future.

Keywords: DFT, HOMO/LUMO, MESP, UV-Vis, molecular docking

O3 Reducing GHG Emissions from Diesel-Powered Irrigation Pumps: Mitigation Strategies for Nepal's Agricultural Sector

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The agricultural sector in Nepal plays a important role in the nation's economy, but its reliance on diesel-powered irrigation pumps contributes significantly to greenhouse gas (GHG) emissions. We conducted a study on the extent of GHG emissions from these pumps and the potential pathways for mitigating their environmental impact. Our work highlights that the widespread use of diesel pumps in Nepal not only leads to increased GHG emission, but also other pollutants, and exacerbating the vulnerability of the sector to climate change. In this presentation, we will share key findings from our research, providing a comprehensive assessment of GHG emissions from diesel-powered irrigation pumps in Nepal's agricultural landscape. The estimated number of DIPs for 2024 is about 51,137 (1.5 to 9 hp; average 5 hp DIPs), operating an average of 192 hours per year in Nepal. The DIPs consume 5891 m^3 (kL) of fuel per year and emits 14,674 tons of CO_2, 20.9 tons of CH_4, 0.18 tons of N_2O, 71.3 tons of NO_x, 52.2 tons of non-methane volatile organic carbon (NMVOC), 332.0 ton of CO, 54.4 ton of $PM_{2.5}$, 40.30 ton of organic carbon (OC), 17.8 tons of black carbon (BC) and 0.6 ton of SO_2 each year. The presentation further explore the mitigation potential of adopting cleaner alternatives, such as solar-powered irrigation systems, as well as improving the efficiency of existing diesel pumps through technological innovations. Furthermore, we will discuss the role of policy frameworks and financial incentives in encouraging the transition to more sustainable energy solutions. This study underlines the need for targeted interventions that address both environmental sustainability and agricultural resilience. By focusing on mitigation strategies, our work aims to reduce emissions, enhance productivity, and support Nepal's commitment to a low-carbon future.

Keywords: GHG emissions, Diesel-powered irrigation pumps, agriculture

O4 A Novel Method for Fabricating Metal Nanoparticle-Enclosed Nitrogen-Doped Carbon Nanotubes/Porous Carbonaceous Membranes for Energy Storage

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The creation of cost-effective and efficient multifunctional advanced nanomaterials with optimal composition and structure through simple methods is a significant challenge. This study presents the first report of synthesizing cobalt (Co) nanoparticles integrated with nitrogen-doped carbon nanotubes (N-CNTs) on porous carbonaceous membrane using a straightforward in-situ heating process. This approach does not require any external precursors or reducing gases. The N-CNTs, which emerge from highly porous, graphitic carbon nanofibers, exhibit excellent flexibility, large surface area, high porosity, enhanced conductivity, and a uniform incorporation of heteroatoms and metal components. These properties also contribute to a high number of active nanocatalytic sites. The resulting nanomaterial demonstrates strong performance for energy storage applications. This approach, which combines the benefits of metal-organic frameworks (MOFs) with electrospinning, offers a novel, direct, and cost-efficient method for producing N-doped CNT-based multifunctional membranes. The strategy showcases potential for future applications in energy storage systems.

Keywords: Metal-organic framework, carbon nanotube, electrospinning, porous carbon membrane

O1 Innovative Free-Standing Electrodes for Energy Storage: A Study Using Nepali Paper

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The rapid rise in human population and industrial globalization has significantly elevated environmental pollution levels, emphasizing the urgent need for sustainable materials and zero-carbon emission resources. Among potential solutions, eco-friendly functional materials, such as nanoporous adsorbents, filters, and photocatalysts, have proven effective in pollutant removal. Additionally, developing materials for energy storage and conversion is critical to addressing global environmental and energy challenges. Utilizing locally sourced natural resources not only promotes sustainability but also strengthens economic stability. Nepali Kagaj, commonly known as Lokta paper, exemplifies a native resource in Nepal with immense potential for innovative applications. Derived from the fibrous inner bark of Lokta and other plants, Nepali paper (NP) demonstrates versatility in integrating various materials.This study focuses on the growth of highly porous metal-organic frameworks (MOFs) at the nanoscale on the surface of NP. By combining the sustainable properties of NP with the superior pollutant removal and energy storage capabilities of MOFs, this research proposes a dual-purpose approach to tackling global pollution and energy challenges. The integration of traditional materials with advanced nanotechnology offers a practical, eco-friendly pathway for energy storage, conversion, and pollutant management. This fusion underscore the synergy between cultural heritage and contemporary scientific innovation for sustainable development.

Keywords: Innovative Free-Standing Electrodes, energy storage, Nepali paper

O6 Diabetes Prediction Using Machine Learning Algorithm

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Diabetes is the most common and deadly non-communicable disease, impacting over 5 million people worldwide. It can develop due to various factors, including obesity, high cholesterol, a family history of the disease, insufficient physical activity, and poor dietary habits. Diabetes increases the risk of heart disease, kidney disease, stroke, vision problems, nerve damage, and other health complications. Today, hospitals use a range of tests to gather the necessary information for diagnosing diabetes, and treatment is tailored based on the results. This study aims to create a model that can accurately predict the likelihood of diabetes in patients. The healthcare sector has extensive databases, and to find the most effective algorithm for accurate predictions, the research employed machine learning classification techniques such as Decision Tree, SVM, Random Forest, and logistic regression. Experiments were conducted using the Pima Indians Diabetes Database (PIDD). The performance of all three algorithms was assessed using various metrics like Precision, Accuracy, F-Measure, and Recall. The results obtained from the machine learning XGBoost classifier, reaching 81% accuracy, a 0.81 F1 score, and an AUC of 0.84 after training and evaluating all classification models. Additional hybrid models could be explored to further improve classification accuracy in diabetes prediction. The study showed to invest and fund in health informatics devices that supports data collection from diverse sources such as EHRs (Electronic Health Records), mobile apps. The integration of ML technologies with increased features into diabetes prediction and control will enhance early diagnosis and better prediction from live datasets from peoples.

Keywords: Diabetes prediction, SVM, Machine learning, Accuracy, Decision Tree, AUC

O7 Prevalence and Burden of Contracaecum sp. larvae in Schizothorax richardsonii in Mahakali River, Nepal

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Contracaecum is a predominant nematode which uses piscivorous animals (especially birds and mammals) as a primary hosts and invertebrates and fish as a secondary host for the completion of its life cycle. A cross-sectional study was conducted to investigate the prevalence and burden (mean intensity and abundance) of *Contracaecum* sp. larvae in *Schizothorax richardsonii* in Mahakali River, Nepal in between September 2024 to December 2024. Fish specimens (n= 90) were collected from the Khalla in the Mahakali River by using gill nets. Standard parasitological methods were used for the collection and processing of the nematode parasites. All sized and both male and female fish were found infected. Overall, the prevalence, mean intensity and abundance of the *Contracaecum* sp. larvae in *Schizothorax richardsonii* were 51.11%, 19.78 and 10.11 respectively. The prevalence was more in 10-20 cm sized fish (57.14%) in comparison to more than 20 cm sized fish (50.6%). But the larval burden (mean intensity and abundance) was higher in more than 20 cm sized (21.57 and 10.92) and 250 gm weight (49.8 and 41.5) female host fish (24.37 and 13.05) in the month of October (30.87 and 22.9). Statistically, the prevalence of the *Contracaecum* sp. larvae was insignificant ($p > 0.05$) with the body size and sex of the host fish but significant with the monthly infection ($p < 0.05$). This study reveals the zoonotic risk to human beings, if the *Schizothorax* fish are consumed in raw or undercooked forms.

Keywords*: Contracaecum,* prevalence, mean intensity, abundance, *Schizothorax richardsonii*

O8 Reconsidering 'Build Back Better': Transformation of the Hidden 'Bhulan Khyo' Newar cluster Settlement of Kathmandu Valley

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Abstract
The "Build Back Better" strategy aims to enhance resilience, sustainability, and equity in post-disaster recovery, going beyond the restoration of pre-disaster conditions. The Newar communities in the Kathmandu Valley, including historic towns like Kathmandu, Patan, Bhaktapur, and rural areas such as Lubhu, Khokana, Bugamati, Thecho, and Thimi, have adapted to changing needs over time. Thimi, a significant Newar settlement, is home to Bhulan Khyo, a notable open space surrounded by traditional structures. This study explores the architectural transformations in Bhulan Khyo following the 2015 Gorkha-earthquake and examines the gaps in heritage conservation policies that affect the preservation of traditional Newar architecture. The earthquake triggered significant reconstruction efforts, including the rebuilding of temples, ponds, and rest houses (Phalcha), Chosa, Newar Private building, and Courtyard. However, the absence of effective conservation policies has led to a perceived loss of cultural identity and landscape among residents. This raises critical questions about the application of the Build Back Better framework, emphasizing the need to incorporate built cultural into reconstruction efforts. The study concludes that the lack of expert involvement, clear conservation guidelines, and sufficient funding hampers the preservation of traditional architecture. It highlights the need for robust conservation policies to ensure the sustainable development of Newar settlements like Bhulan Khyo.

***Keywords*:** Bhulan Khyo; built cultural heritage; built back better; Thimi; transformation

O9 Hybridization of DNA Cryptography for Securing Digital Data

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In today's technology-driven world, people send data through public networks that may not be fully secure, especially while using IoT devices. When sending data online, extra care is needed, because if the information sent and received doesn't match, it can lead to serious problems. To keep data safe and private, it's important to use strong encryption methods, either on their own or in hybrid mode. In this study, novel data encryption scheme is proposed with two layers of encryption, whereas the first layer is a sequence of logical operations based on the Feistel structure, the second layer is based on the central dogma of molecular biology. The aim for this research is to implement and examine encrypt and decrypt algorithm for multiple datasets with CSV format. The data consist of datasets obtained from Kaggle and other sources, enriched by self-generated random text for better distribution. The experiment employed a 256-bit block size for encryption, with the implemented algorithm demonstrating significant results. It achieved a high level of security, evidenced by an avalanche effect of 77.86%, the method also exhibited high key sensitivity, ensuring that even slight variations in the key led to significant different ciphertexts, which is crucial for robust encryption. Furthermore, the algorithm showed improvements in execution time compared to other commonly used data security algorithms. In order to increase the secrecy level of data while encrypting, this paper proposes a novel cryptographic technique that combines Hashing, feistel structure, and Genetics.

Keywords: Hybridization of DNA, cryptography, digital data

O10 Seismic Risk Evaluation in Central Himalaya Using 50-Years Seismic Data

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This study evaluates seismic risk in the Central Himalaya and its adjoining region using 50 years of seismic data (1964 to 2023) from The USGS and ISC catalogs, comprising 1613 earthquakes (mc ≥ 3.7 mb). Seven seismic clusters (Speakerd 1 to 7) are identified in the region based on spatial and depth distribution, where Gumbel's extreme value theory was applied. The seismic parameter **b**, representing the seismic heterogeneity of a region, was calculated using the Gutenberg-Richter relation. Clusters 3 (1.09±0.16, Mc=3.8), 5 (0.89±0.06, Mc=3.7), and 6 (0.94±0.08, Mc=3.7) have higher **b**-values, indicating low seismic activity. Similarly, clusters 1 (0.62±0.04, mc = 0.9), 2 (0.73±0.04, Mc = 0.8), and 4 (0.71±0.05, Mc=0.06) have lower **b**-values, indicating higher seismic clustering. Cluster 7 shows moderate seismic activity with a **b**-value of 0.82±0.06 (Mc = 4.0).
Gumbel-I parameters α and β were calculated for each cluster, with β related to the seismic **b**-value (β ≈ 2b) and used to explain seismic hazards. The values of β are notably smaller for clusters 3 (1.84±0.08) and 4 (1.81±0.08), whereas they are comparatively higher in other clusters. Clusters 3 and 6 show larger and comparable recurrence intervals for smaller magnitude (<5.7 mb) earthquakes. In contrast, clusters 2 and 6 show a diverse and steep increase in recurrence time for higher magnitude earthquakes ranging from 6.5 to 7.0 mb.For magnitude 4.5 mb, the cumulative probability is significantly higher (90%) in cluster 6. Furthermore, the annual probability of an earthquake exceeding magnitude 5 is found to be less than 25% in clusters 3 and 5. This study concludes that cluster 2 has a longer recurrence time for larger magnitude earthquakes and also experiences frequent smaller earthquakes, highlighting the distinct characteristics of the Central Himalayan region.

Keywords: Gumbel extreme value method, seismic activity, G-R relation, annual probability

O11 Spatio-Temporal Patterns of Human-Wildlife Conflicts and Effectiveness of Mitigation in Shuklaphanta National Park, Nepal

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Human-wildlife interactions occur where human and wildlife coexist and share common resources including food or shelter. Increasing wildlife populations within protected areas also can increase interactions with humans living adjacent to these areas, resulting in conflicts including human casualty, livestock depredation, crop damage, and property loss. We analyzed six years human-wildlife conflict data from 2016–2021 in the buffer zone of Shuklaphanta National Park and conducted questionnaire survey to investigate factors influencing human-wildlife conflicts. Nineteen people were attacked by wildlife, primarily wild boar (*Sus scrofa*). Ninety-two livestock were killed by leopard (*Panthera pardus*), and among these most were sheep or goats killed near ShNP during summer. Crops were most frequently damaged by Asian elephants (*Elephas maximus*), followed by wild boar. Greatest economic losses were from damage to rice, followed by sugarcane and wheat. Asian elephant was the only reported species to cause structural damage to property (e.g., homes). Majority of respondents (83%) considered that the mitigation techniques that are currently in practice are effective to reduce the conflicts. However, the effectiveness of the mitigation techniques are the species specific, we recommend use of more efficacious deterrents (e.g., electric fencing) for large herbivores and mesh wire fencing with partially buried in the ground. Effective collaboration among different tiers of government, non-governmental organizations, civil societies and affected communities are important to share the best practices and continue to apply innovative methods for impactful mitigation of human-wildlife conflicts in the region.

Keywords: Human-wildlife conflicts, Shuklaphanta National Park, questionnaire survey

O12 Green Synthesis of Nanomaterials: Their Potential Applications and Implications

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Recent works on nanoscience and nanotechnology has led to the development of a separate field, a green synthesis of nanomaterials. Interest in the development of environmentally benign methods for the synthesis of nanomaterials (nanoparticles, nanorods, nanocomposites, etc.) has been tremendously increased since few decades. The process is benefitted due to its cost-effectiveness, minimization of negative impacts of synthetic route, environmentally friendly and possible application of easily available biomass-based local resources. Biological sources such as plants, algae, fungi and bacteria have been used for the synthesis of nanomaterials. We have synthesized various types of nanoparticles and nanocomposites using easily available plants and biomass resources. We have synthesized silver nanoparticles, copper oxide nanoparticles, zinc oxide nanoparticles, copper-zinc alloy nanomaterials, copper oxides doped zinc oxide nanocomposites. As-synthesized nanomaterials are co-related with their shape, size, and band gap. Physicochemical characterization of as-synthesized nanomaterials has been carried out via different techniques such as UV-VIS spectroscopy, FTIR, FESEM, XRD, zeta potential analysis, etc. Such nanomaterials have been tested for various possible applications. Though green synthesis of nanomaterials imparts a strong foundation for the synthesis of nanomaterials, reproducibility in the production of nanomaterials using different species of plants and finding the actual role of phytoconstituents is still a challenging task.

Keywords: Green synthesis, nanocomposites, antibacterial property, AgNPs, Zn-Cu NPs

O13 Advancing Smart Biodegradable Packaging with Locally Sourced Bioactive Compounds: A Circular Economy Approach

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Smart biodegradable packaging is an innovative and rapidly advancing field of research that has gained significant attention in recent years. This emerging domain builds on the strategies of traditional and active packaging by combining eco-friendly materials with advanced sensing technologies to address global concerns about food safety and environmental sustainability. This multidisciplinary approach enables the creation of packaging solutions that not only monitor food quality in real-time but also minimize environmental impact by using biodegradable materials. To enhance the functional properties of smart packaging, bioactive compounds derived from natural sources have garnered substantial interest. These compounds, such as anthocyanins, exhibit versatile properties, including antioxidant activity, antimicrobial effects, and intelligence capabilities for sensing changes in food quality. In this study, anthocyanins were extracted from commonly available plants in Nepal and integrated into smart packaging systems. This approach not only extends the shelf life of food products but also provides visible indicators of spoilage or quality deterioration, contributing to enhanced consumer safety and convenience. The exploration of locally available renewable resources for advanced applications underscores the potential of leveraging indigenous biodiversity to promote a circular economy. By utilizing natural compounds from sustainable sources, the study addresses the dual goals of reducing environmental impact and creating high-value, functional packaging solutions. These innovations represent a significant step forward in aligning smart packaging technology with global sustainability objectives, offering promising avenues for further research and industrial application.

Keywords: Biodegradable, bioactive compound, circular economy

O14 First Principles Investigation of Thermoelectric Properties in Low Thermal Conductivity Half-Heusler Compounds TiXPb (X = Ni, Pd, Pt)

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Semiconducting half-Heusler compounds, known for their high-temperature thermoelectric properties, are promising candidates for thermoelectric generators. This study investigates the stability, electronic structure, lattice dynamics, and thermoelectric properties of half-Heusler TiXPb (X = Ni, Pd, Pt) using Density Functional Theory (DFT) and Semi-Classical Boltzmann Transport Theory (BTE). We found that the compounds are thermodynamically, dynamically and mechanically stable. They exhibit non-magnetic semiconducting behavior with indirect band gaps ranging from 0.32 to 0.64 eV, increasing from TiNiPb to TiPdPb and TiPtPb. Effective mass, and temperature dependent relaxation times were evaluated to analyze the thermoelectric properties. TiXPb compounds exhibit low lattice thermal conductivity, reaching a minimum of 3.46 $Wm^{-1}K^{-1}$ at 300 K for TiPtPb. Electrons demonstrate superior transport properties compared to holes across all compounds. Among these, TiPtPb achieves a maximum zT value of 2.22 for n-type doping at a concentration of 9.46×10^{20} cm^{-3} at 900 K, while the zT value for p-type doping is 1.80 at a concentration of 4.51×10^{20} cm^{-3} at the same temperature.

Keywords: Thermoelectric, low thermal conductivity, half-heusler compound

O15 Green Emission of Er/Yb Doped YAGG Phosphors for NUV /NIR Excitable Solid-State Lighting.

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A series of $Y_3AlGa_4O_{12}$(YAGG) phosphors doped with Er^{3+} and Yb^{3+} ions were successfully synthesized using the solgel technique. To evaluate their suitability for solid-state lighting applications, their crystal structure, morphology, and luminescence properties were thoroughly investigated. X-ray diffraction (XRD) analysis confirmed that the synthesized phosphors exhibited a single-phase cubic crystal structure belonging to the Ia-3d space group. Scanning electron microscopy (SEM) was employed to study their surface morphology and to identify the presence of compositional elements. The photoluminescence (PL) emission spectra were recorded under 380 nm excitation and revealed characteristic intra-4f transitions of Er^{3+} ions. These transitions included $^2H_{11/2} \rightarrow {}^4I_{15/2}$ at 524 nm, $^4S_{3/2} \rightarrow {}^4I_{15/2}$ at 553 nm, and $^4F_{9/2} \rightarrow {}^4I_{15/2}$ at 654 nm. Among these, the emission at 553 nm displayed the highest intensity, producing a green luminescence in the visible spectrum, accompanied by a weaker red emission. The intensities of these transitions varied depending on the concentration of Yb^{3+} ions and the excitation wavelength. An optimal luminescence output was observed at 1 mol% Yb^{3+}, with the phenomenon of concentration quenching attributed to exchange interactions between ions. The chromaticity coordinates of the YAGG: $2Er^{3+}/xYb^{3+}$ (x = 1, 2, 3) phosphors, determined using the CIE diagram, positioned the emissions in the greenish region of the color space. These findings demonstrate that the synthesized phosphors possess promising characteristics, making them potential candidates for use in photonic devices and advanced lighting technologies.

Keywords: Green emission, X-ray diffraction, solid-state lighting

O16 N-S Co-Doped Cobalt Oxide Carbon Composite Derived from Garlic Peels for Energy Storage Application

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Super capacitors have gained attention as efficient energy storage devices due to their exceptional power density, eco-friendliness, and reliable performance across temperature ranges. This study explores the role of Zeolitic Imidazolate Framework-67 (ZIF-67) in synthesizing high-performance carbon materials. Known for its thermal stability and adaptability, ZIF-67 serves as a template for creating nitrogen and sulfur-doped porous carbon structures via pyrolysis, enhancing ion transport and storage. N and S co-doping introduces active sites, boosts conductivity, and adds pseudo capacitance, collectively improving electrochemical performance. Using a three-electrode system with a 3 M KOH electrolyte, electrochemical techniques such as cyclic voltammetry (CV), galvanostatic charge-discharge (GCD), and electrochemical impedance spectroscopy (EIS) revealed that Co_3O_4@C800, derived from ZIF-67 and garlic peel waste, demonstrated superior performance. Co_3O_4@C800 exhibited high specific capacitance (291.70 F g^{-1} at 1 mA cm^{-2}) and excellent retention at higher current densities, attributed to its high conductivity, low charge transfer resistance, and effective capacitive contribution at higher scan rates. This work highlights the potential of sustainable ZIF-67-derived N-S co-doped cobalt oxide-carbon composites for high-performance supercapacitors, showcasing an innovative use of agricultural waste in energy storage applications.

Keywords: Metal-organic framework, ZIF-67, carbon, supercapacitors

O17 Comparative Study of Electrical Performance of $CH_3NH_3PbBr_3$ and $CH_3NH_3PbI_3$ Perovskite by using OghmaNano Software

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Solar energy is one of the best forms of renewable energy. Solar cells are the devices which converts solar energy into electrical energy. Because of abundance supply and environmental friendliness, solar energy is considered as promising energy source. Among various types of solar cell, perovskite solar cell (PSC) is considered as one of the efficient energy harvesting device. This study aimed for comparative analysis of electrical parameters of $CH_3NH_3PbBr_3$ and $CH_3NH_3PbI_3$perovskites by varying their active layer thickness whereas thickness of other layers was maintained constant. Open access OghmaNano software was used for the simulation purpose. The simulation results showed that, $CH_3NH_3PbI_3$ perovskite cell is more efficient than $CH_3NH_3PbBr_3$ cell because of low band gap energy. Furthermore, this study also reveals that proper adjustment of active layer thickness of perovskite is necessary to optimize the power conversion efficiency (PCE).

Keywords: Solar cell, Active Layer Thickness, Power Conversion Efficiency, GPVDM

O18 First-Principles Calculation of Structural and Electronic Properties of New 2D Penta-AlCN Monolayer

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After the discovery of hexagonal sheet graphene, penta graphene was come into account as a new pentagonal 2D structures. Going beyond this, now ternary pentagonal 2D sheets are of current interest because of its novel properties and wide range of technological application. Here in this work for the first time, we predict new ternary 2D penta-AlCN monolayer with its geometrical and dynamical stability based on first-principles density functional theory (DFT) approach using SIESTA program. This new penta-AlCN exhibit small band gap 0.52eV with semiconductor in nature. Furthermore, to in-hence it's electronic properties, we applied strain upto ±6 % which shows tunable band gap behavior. This amazing properties of this newly 2D penta materials reflect it's application on tunable band gap semiconducting nano devices.
Keynote: First-Principles Calculation, Electronic Properties, Penta-AlCN

O19 Hydrogen bond strength, molecular reactivity, and stability assessment on cocrystals of benznidazole: Screening from ESP, QTAIM, and NBO analysis

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The screening of cocrystals is an essential part of drug-design discovery because it can help to improve solubility, stability, bioavailability, and several other physicochemical characteristics of active pharmaceutical ingredients (API). This study focuses on screening API benznidazole cocrystals with four carboxylic group-containing coformers (maleic acid, malonic acid, oxalic acid, and salicylic acid). This study was conducted using computational analysis through density functional theory, which investigated the strength of hydrogen bonding. Strong hydrogen bonds are formed between the molecules by a hetero-synthon between the carboxylic group of the coformer and the pyridine of the benznidazole. The hydrogen bond donor and acceptor parameters were calculated to estimate the pairing interaction energies using the maximum and minimum potential mapped on the ESP surface. QTAIM and NBO analysis was also used to evaluate the strength of hydrogen bonds in the cocrystals under study. The interaction energy for the BZN-maleic acid cocrystal for O–H...N bonding was found to be greater, which produced a strong interaction. The hydrogen bond interaction O–H...N was shown to be more favourable than the C–H...O interaction, which was verified through electrostatic potential (ESP) analysis. According to frontier molecular orbital theory, the reactivity of BZN-salicylic acid cocrystals was found to be greater, indicating that they are more polarisable than those of BZN-maleic, BZN-malonic, and BZN-oxalic acid cocrystals. Cocrystals of benznidazole exhibit improved physicochemical properties compared to API benznidazole.

Keywords: Hydrogen bond strength, molecular reactivity, ESP, QTAIM, and NBO analysis

O20 Artificial Intelligence in Teaching: Trends in Engineering

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The rapid evolution of artificial intelligence (AI) is reshaping education, with engineering disciplines at the forefront of this transformation. AI offers innovative approaches to enhance teaching methodologies, improve student engagement, and tailor learning experiences. This explores emerging trends in the integration of AI within engineering education, highlighting its potential to revolutionize traditional pedagogical models. Key applications of AI in engineering education include adaptive learning platforms, which personalize content delivery based on individual progress and learning styles, and intelligent tutoring systems that provide instant feedback and guidance. AI-powered tools like natural language processing enable automated assessment of technical reports and coding assignments, significantly reducing the administrative burden on educators while maintaining accuracy and consistency. Despite its transformative potential, the integration of AI in teaching raises challenges, such as addressing ethical considerations, ensuring data privacy, and equipping educators with the necessary skills to effectively leverage AI tools. This paper emphasizes the need for a collaborative approach involving educators, researchers, and policymakers to maximize the benefits of AI while mitigating its limitations. By examining case studies and recent advancements, this work provides insights into the evolving role of AI in engineering education and its implications for future teaching practices. The findings aim to inspire educators to embrace AI-driven innovations and adapt to the changing educational landscape.

O21 Clepsydra: A Practical Case for Engineering Students

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The design and construction of a water clock, or clepsydra, to measure time is an engaging and interactive project that connects theoretical knowledge with practical application. This interactive project aims to help students transform theoretical knowledge into practical applications, promoting critical thinking, creativity, and collaborative problem-solving abilities. The activity begins with the students calculating the parameters necessary for their clepsydra to function accurately. This analytical phase provides a foundation for the subsequent design process, where students bring their concepts to life by creating models that integrate engineering principles with innovative ideas. Once the designs are finalized, students construct their clepsydras, often encountering and addressing real-world challenges. Through this process, participants gain practical experience in applying key engineering principles, including fluid mechanics, materials science, and precision measurement. Moreover, the project encourages teamwork and communication, as students often work in groups to brainstorm ideas, solve challenges, and present their final designs. By linking theoretical concepts to tangible outcomes, the Clepsydra project inspires curiosity and confidence in students, demonstrating the transformative power of experiential learning in engineering education. Ultimately, this activity equips students with practical skills and a deeper understanding of engineering concepts, preparing them for complex challenges in their future professional challenges.

O22 Gamified User-Centered Environmental Sustainability for University Students (GUESS)

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Sustainability is both a critical global challenge and a key educational focus for the future. While higher education institutions increasingly integrate sustainability principles into their curricula, these efforts are often limited to advanced courses in natural sciences and engineering disciplines. The GUESS project aims to address this gap by introducing first-year university students from all scientific disciplines to foundational sustainability concepts through an innovative, gamified approach. The project leverages a creative narrative centered on characters exploring Earth's environments, guiding students through sustainability principles in an engaging and relatable manner. The educational material is delivered via a 3D virtual world modeled after a small island ecosystem. Students create avatars, interact with gamified challenges, and collaborate with peers to explore and address sustainability issues. Each scenario is designed to be interactive and thought-provoking, fostering curiosity and critical thinking. GUESS is structured into three phases over two years:

1. Preparation Phase: Participating universities gather data on students' perceptions of sustainability to inform scenario development.
2. Development Phase: The virtual environment and scenarios are created, tested on small scales, and refined based on student feedback.
3. Implementation Phase: Students from partner universities engage with the final 3D environment, collaborate across disciplines, and evaluate the platform's effectiveness.

By introducing sustainability concepts early in students' academic journeys and employing gamification to enhance engagement, GUESS aims to empower future professionals across all disciplines to contribute meaningfully to a sustainable future. This project serves as a model for integrating sustainability education into university curricula in an innovative and inclusive manner.

O23 Role of Public Open Spaces in the Conservation and Management of Intangible Cultural Heritage in the Kathmandu Valley, Nepal

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Public open spaces, such as public squares, courtyards, streets, and temples, are essential for the conservation and management of intangible cultural heritage (ICH) in Kathmandu Valley, Nepal. As a UNESCO World Heritage Site, the Valley is celebrated for its rich cultural traditions, where ICH plays a central role in shaping local identities and community life. Public open spaces serve as vital platforms for the expression and transmission of cultural practices, rituals, festivals, and social interactions that are at the core of ICH. This study provides both physical and social environments in which traditions are enacted, promoting cultural continuity across generations. The main objective of this study is to explore the significant role of public open spaces in the conservation and transmission of ICH in the Kathmandu Valley, focusing on how these spaces function as venues for cultural expression and community engagement. This paper also assesses the challenges these spaces face, particularly in the context of rapid urbanization and modern development pressures, which threaten their accessibility and functionality. Using a case study methodology as a comprehensive approach, combining cultural, historical, and environmental perspectives, the need for effective policies to protect and manage public open spaces. This study highlights the role of public open spaces in essential for the conservation and management of the Kathmandu Valley's intangible cultural heritage and the cultural identity of its communities.

Keywords: Intangible cultural heritage, public open spaces, temples, conservation and management

O24 Sustainability in Stone: Lessons from Vernacular Architecture in Sweida, Syria

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Vernacular architecture, built to meet local needs using locally available materials and craftsmanship, represents a sustainable design paradigm shaped by generations of wisdom. In Sweida, southern Syria, this architectural tradition is characterized by using basalt stone, a durable material that defines the region's distinctive structures. Residents developed and refined building techniques, passing them from father to son, fostering a resilient architectural legacy. These houses stand as functional energy-efficient structures and serve as symbols of community solidarity and cultural identity. Despite the pressures of modernity and globalization, many residents remain committed to safeguarding stheir vernacular homes, engaging in collective efforts to maintain and preserve these structures. This practice of mutual aid strengthens social bonds and underscores the importance of community in heritage preservation. Lessons from such practices offer valuable insights into sustainable design, particularly for modern urban development. This study explores the design, structural, and sustainability aspects of vernacular architecture in Sweida through field documentation, observations, and informal interviews with residents and specialists. It reveals how traditional techniques have ensured thermal comfort, resource efficiency, and community cohesion. Moreover, it highlights the willingness of specialists to integrate these lessons into contemporary architectural practices, provided adequate institutional support is available. By examining this architectural heritage, the paper emphasizes the need to reintroduce traditional practices into modern design frameworks. Adopting vernacular principles, such as using local materials and community-driven maintenance strategies, can guide sustainable urban development while preserving cultural heritage. The findings advocate for a deeper understanding of vernacular architecture as a source of inspiration for creating harmonious, environmentally conscious, and socially inclusive modern cities.

Keywords: Vernacular architecture, craftsmanship, sustainable design, social bonds

O25 Community and Visitor's Perception in Shaping a City's Historic Urban Landscape

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In the present-day context of changing technology and urban growth, the cultural aspect of India is moving towards the phase of threat and development pressures, leading to fragmentation of its cultural identity. Rapid urbanization has placed many culturally significant sites across India under immense pressure, risking loss of their unique identity and heritage value. A holistic approach is required to develop a historic urban landscape (HUL) and should be such that it aligns with both urban development and heritage. The aim of this study is to integrate the historic, cultural, and touristic significance through the creation of a historic urban landscape strategy in India's socio-cultural environment. Architectural styles, traditional practices, and historical narratives that have shaped the community's identity receive special attention. In order to achieve a historic urban landscape approach, the role of the community and tourists has to be considered simultaneously, as they would have more impact due to the change in development. The study also examines community perceptions and parameters that are required to integrate conservation efforts, mainly considering aspects of gentrification, tourism pressure, and displacement. It also recognizes the ways in which cultural aspects may be enhanced to make the development more participative, with the locals engaged, and how interventions can be done in terms of adaptive reuse of heritage structures and precincts. By considering these ideas, it is possible to investigate how community and tourism could boost the local economy without compromising the social cohesion or authenticity of the local culture. By protecting cultural assets while simultaneously encouraging the development of intangible assets, this strategy makes India's ancient urban landscapes robust and vibrant contributors to the country's urban future. The study's conclusion adds to the larger conversation on how India's heritage sites may be transformed into dynamic environments that honour the past while embracing the future.

***Keywords*:** Historic urban landscape, cultural identity, community engagement

O26 Public Space Rehabilitation: Through Resettlement Strategies for Informal Settlements

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Urban public spaces are integral to fostering social interaction, environmental sustainability, and resilience in cities. In flood-prone areas, they also hold significant potential for mitigating flood risks and adapting to climate change impacts. This research examines voluntary resettlement of informal settlements residing in flood prone regions along the Bagmati river in Kathmandu as a transformative strategy for rehabilitating public spaces and flood prevention, framed within the theory of environmental justice. Research from various regions have recognized the potential of flood-prone areas to be reimagined as open spaces that "live with floods", offering flood resilience alongside recreational and livelihood opportunities. Studies have shown that the lack of use of land after resettlement projects leads to retaliation by the settlers, thus the proper use of the land is necessary. Kathmandu's Bagmati River Corridor exemplifies the complex interplay between urban public space management, informal settlements and flood vulnerability. Informal settlements along the Bagmati, in their current state are at unprecedented risk of floods. A case in point is the stretch from UN Park to Thapathali, informal settlements in Kathmandu in low-lying flood- prone areas face severe and recurrent risks, often resulting in annual displacement and added financial burdens. In contrast, areas like UN Park and the Pump Track Skating Park in Lalitpur, although impacted by flooding (e.g., damaged compound walls), avoid direct property losses for citizens, while continuing to serve the broader urban population. This contrast demonstrates how public spaces, if strategically located and designed, can mitigate flood and property risks to the public while preserving their social and ecological functions. Using spatial analysis, community engagement, and stakeholder collaboration, this research develops participatory resettlement approaches as a means to free disaster-prone areas along the Bagmati River in Kathmandu, creating opportunities to transform these spaces into public amenities utilizing Nature-Based Solutions (NbS) and Ecology-Based Adaptation (EbA). This approach not only reduces flood risks for settlements and their assets but also ncontributes to urban resilience by fostering ecological restoration and inclusive public spaces.

Keywords: Public spaces, environmental sustainability, resettlement, ecology-based adaptation

O27 Post-Earthquake Assessment of Mud-Bonded Masonry Houses in Jajarkot: Issues and Challenges in Rural Resilience

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On November 3, 2023, at 23:47, a 6.4 magnitude earthquake struck Jajarkot, Nepal, at 23:47 causing significant damage to infrastructure and resulting in the tragic loss of 153 lives and injuring at least 375 people. A reconnaissance survey was conducted nearly 6 months after the disaster revealed critical issues and challenges, particularly concerning the widespread use of mud-bonded masonry houses in the region. These structures constructed using locally available materials such as stone masonry with mud mortar, and stone slates for roofing, exhibited severe cracking and widespread collapses, highlighting their high vulnerability to seismic forces. Key issues and challenges identified included the poor construction practices, non-compliance with earthquake-resistant design principles, inadequate maintenance, and the use of low-quality materials. The survey also identified socio-economic constraints, such as limited public awareness of earthquake-resistant technologies, insufficient technical capacity among local masons, and financial barriers to adopting resilient construction practices. Additionally, the remote and rugged terrain of the region posed logistical challenges, delaying emergency response efforts and complicating post-disaster recovery. The findings emphasize the urgent need for uniform public awareness campaigns, promotion of cost-effective sustainable and earthquake-resistant construction techniques, coupled with community training and capacity building, to mitigate future risks and strengthen the resilience of rural housing in Nepal. This study serves as a base-line information and calls to action for policymakers, engineers, and stakeholders to address these challenges and prioritize the safety and sustainability of rural communities.

Keywords: Earthquake assessment, mud-bonded masonry houses, reconnaissance, sustainable

O28 Electrospun Nanofibers as Encapsulation Systems for the Design of Food Active Packaging

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As an encapsulation technology, electrospinning outstands for enabling the synthesis of polymeric sub-micron scale nanofibers that act nanoencapsulation/release systems of bioactive compounds. A myriad of polymers has been successfully electrospun to obtain ultrathin fibers, including synthetic polymers, biopolymers, and their composites. These materials have advantageous features for the fabrication of active food packaging (i.e., systems that offer protection against food spoilage in addition to passive barriers of conventional packaging), including high responsiveness to external stimuli and improved mechanical resistance. Electrospun nanofibers have been used to encapsulate antimicrobial and antioxidant substances, gas scavengers, and even living bacteria. The resulting functionalized materials have been proved as promising devices for extending the shelf-life of various food models. In this context, the use of polymers extracted or derived from biomass, as well as natural substances as active agents, allow to access important features for food packaging materials, such as biodegradability, food-contact safety, and even edibility. The aim of this overview is to discuss the prospects and strategic aspects of the design of nanofibers as encapsulation systems for active packaging purposes, and to present a brief literature examination of the experimental evidence of their use as food shelf-life extenders.

Keywords: Encapsulation technology, electrospun nanofibers, antimicrobial, food-contact safety

O29 Geotechnical Assessment and Prioritization of Road Infrastructure in Karnali Province, Nepal

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Karnali Province, one of Nepal's most geographically arduous regions, is hindered by inadequate road infrastructure, impeding regional connectivity and socio-economic advancement. The challenging terrain and scarce resources intensify problems like unstable slopes, insufficient drainage systems, and neglected roadways, resulting in several regions being isolated and unreachable. This study examines the districts of Dailekh, Surkhet,Jajarkot,and Kalikot,with the objective of evaluating road conditions, prioritizing infrastructure requirements, and offering practical solutions. A thorough walkover survey was performed to catalog existing roads and related structures, utilizing Geographic Information System (GIS) and Global Positioning System (GPS) technologies for data acquisition. Geotechnical assessments of soil characteristics identified significant inadequacies, including unstable slopes, insufficient drainage systems, and poorly maintained road surfaces, which impede accessibility and longevity. Critical road segments were designated for prompt action. The study emphasizes the necessity of including geotechnical evaluations into the planning, design, and maintenance of road infrastructure to guarantee sustainability and resilience. Recommendations encompass enhancing drainage systems, reinforcing slopes, and implementing sophisticated construction methods appropriate for difficult landscapes. This document is a reference for policymakers, engineers, and local stakeholders, presenting a methodical approach for enhancing road infrastructure in Nepal's rural areas. Future research should prioritize long-term monitoring and the investigation of novel materials to improve road performance in analogous settings.

Keywords: Geographic information system, global positioning system, geotechnical assessment

O30 Strength Characteristics of Compressed Stabilized Earth Block Units and Walls

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This research is mainly focused on strength behavior of Compressed Stabilized Earth Block (CSEB) units and CSEB walls. Compressed Stabilized Earth Block (CSEB) is a rectangular block used in wall construction. The ingredients of CSEB are: soil, cement, fine aggregate, crusher dust, and water. These blocks have less energy consumption and carbon emission, and they provide improved thermal insulation. In addition, they use local resources, and disseminate appealing aesthetics with elegant profile and uniform size. Due to these advantages CSEB can be used as a green construction material. This research aims to study the strength characteristics of CSEB wall in compression and diagonal shear; and evaluate the suitability of CSEB walls as load bearing walls in structures. This research studies physical and mechanical characteristics of CSEB units made from red residual soil of Lele (Lalitpur, Nepal) with 8% cement for stabilization. This paper discusses the compressive strength of CSEB units; compressive strength behavior of walls constructed of size 0.660m x 1.100m x 0.220m using CSEB units in cement sand mortar and stabilized mud mortar separately; and diagonal shear behavior of masonry walls constructed of size 1.200mx1.170x0.220m using CSEB units in cement sand mortar and stabilized mud mortar separately; which were tested after their curing for 28 days. Average compressive strength of CSEB masonry wall in cement sand mortar (1:6) is found to be 2.705 MPa and in stabilized mud mortar (8% cement and 16% extra sand) is found to be 1.215 Mpa. Average diagonal shear strength of CSEB masonry wall in cement sand mortar (1:6) is found to be 0.294 MPa and in stabilized mud mortar (8% cement and 16% extra sand) is found to be 0.146 Mpa. Results obtained from compressive strength tests and diagonal shear tests of masonry walls constructed in the laboratory and those values from different codes concerning the strength of masonry unit and mortar are compared, and found to be in agreement. The comparison of laboratory results with codal provisions of design of masonry walls illustrates that CSEB masonry walls can be designed in the similar way as brick masonry walls.

Keyword: CSEB, compressive strength, diagonal shear strength, stabilized mud mortar, CSEB masonry walls, masonry walls

O31 Gender Inclusion in Public Transportation: Assessing the Impact of Design, Policy and Practices in Kathmandu

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Kathmandu, home to a population of 3,025,386, with women constituting 49.4%, faces significant challenges in providing gender-inclusive public transportation. This study examines how public transportation in Kathmandu can address barriers such as safety concerns, harassment, and limited accessibility to promote inclusivity for women. The research aims to assess the impact of vehicle design, infrastructure, and policy implementation on women's mobility and inclusivity in public transport systems. Preliminary research involving 35 individuals highlights that buses are the most preferred mode of transport due to relatively better comfort and safety, while microbuses are the least preferred due to overcrowding and harassment. Based on these findings, the study delves into buses and microbuses to evaluate their design, operations, and gender inclusivity. Using a mixed-method approach, the study includes surveys of 150 individuals from diverse age groups and socioeconomic backgrounds, interviews with key stakeholders, and qualitative assessments to understand perceptions of safety, comfort, and accessibility. Findings reveal significant gaps in existing practices, including ineffective reserved seating arrangements, inadequate safety monitoring systems, and a lack of gender-sensitive training for transport staff. By addressing these challenges, the research aims to develop actionable recommendations for a safer and more inclusive public transport system, ultimately promoting equitable access to mobility for all.

Keywords: Accessibility, gender inclusion, public transportation, vehicle design, women's safety

O32 Carbon Footprint in Construction Industry: Key Sources, Effects and Challenges in Implementing Mitigation Measures

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The construction industry is a significant contributor to global greenhouse gas emissions, accounting for a substantial share of the world's carbon footprint. This emission has a major effect on climate change and environmental pollution. The construction industry alone is responsible for 39-40% of annual emissions among which 27-28% is from operational emissions and 11-13% is as embodied carbon. Despite these effects on climate and environment, unfortunately, no sufficient methods are proposed to reduce this high carbon emission percentage to zero. Regarding this context, this study aims to reveal the key sources of carbon emission in construction, its effects and challenges in implementing the mitigation measures. The study is based on qualitative research design and document analysis method is adopted for which several articles and research papers were accessed from data bases and reviewed to collect the data. After the systematic study of some of the papers, it was found that the carbon emission from the construction industry is still in increasing rate. Study also reveals that key sources of CO_2 emissions are extracting and quarrying of raw materials, manufacturing of construction materials, transportation of materials to the site, operational emissions during the service period of the buildings and demolition after service life. However, government and non-government sectors are formulating policies to minimize the emission rate. World Green Building Council (WGBC) is still working on its broad mission to make construction industry free from carbon emission by 2030. Minimizing waste, switching to sustainable building materials, following green building guidelines, use of renewable energy sources can be the game changer to reduce the overall CO_2 emission. However, challenges arise to implement these techniques to real field due to reasons like need of high capital investment, lack of skill and knowledge in workers, limited availability of low carbon construction materials.

Keywords: Carbon footprint, gas emissions, climate and environment, sustainable

O33 Traditional Water Management in Southern Italy. A Case-study from Pantelleria

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For communities to adapt, effective water management and governance strategies are necessary due to climate change's pressing challenges. This master thesis examines the effects of traditional water management systems on land adaptation to harsh climate conditions on Pantelleria, a volcanic island in the Sicilian Channel. Water management is an integral part of the island's cultural heritage, demonstrating a complex interaction between desertification, climate change, biodiversity, ecosystem services, and land adaptation. As a result of the combination of scientific research on desertification, socio-ecological systems, and land degradation with Appreciative Inquiry methodology and interviews with local stakeholders, the study demonstrates the importance of preserving cultural and living heritage as a foundation for contemporary adaptation strategies. These practices have enabled the community to maintain a resilient landscape mosaic while adapting to harsh climatic conditions. The thesis engages with interdisciplinary literature on climate change adaptation, integrated water resources management and water governance, and ecosystem services to situate the findings within a broader academic and policy context. The study contributes to understanding traditional knowledge as a dynamic and time-tested framework that addresses water management challenges and serves as an example for other regions experiencing similar water-related challenges. The structure of the study includes: an introduction explaining the research objectives, context, and significance of Pantelleria as a case study; a literature review of traditional knowledge, climate adaptation, cultural heritage, and water governance from an interdisciplinary perspective; a methodology chapter describing the research design and the appreciative inquiry framework; examining Pantelleria's traditional water practices and their impact on ecosystem services; discussion on integrating traditional and integrated resource management approaches within broader strategies of land use governance; and a conclusion discussing policy implications, and pathways to adopting traditional practices in modern governance framework to contrast climate risk vulnerabilities. By bridging traditional and contemporary methodologies, this research advocates reclaiming traditional knowledge as a paradigm for sustainable adaptation, underscoring its relevance in addressing global water and climate crises.

Keywords: Pantelleria's traditional water practices, climate adaptation, water management

O34 Water Quality Index and Human Health Risk Assessment for Heavy Metals in Groundwater of Bedkot Municipality, Kanchanpur, Nepal: A Cross-sectional Study

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This study assessed groundwater quality in urban, semi-urban, and rural areas of Bedkot Municipality, Kanchanpur, Nepal, where 68.6% of households rely on tube wells (TWs) for drinking water. 23 shallow TW water samples were randomly collected, comprising 10 from urban, 6 from semi-urban, and 7 from rural areas. Groundwater quality was assessed using the water quality index (WQI), and associated human health risks due to heavy metals oral ingestion were determined for children and adults based on assessment models proposed by the USEPA. WQI was calculated by analyzing pH, temperature, turbidity, EC, TDS, TH, Ca^{2+}, NH_4^+, NO_3^-, Fe, and As. Standard methods were followed for sample collection and analysis. Results revealed that TW water samples were freshwater and slightly acidic in all areas, with hardness varying from hard to very hard in urban and semi-urban areas, and moderately hard to very hard in rural areas. WQI value showed that none of TW samples were unsuitable for drinking, with 80% of samples in urban, 83.33% in semi-urban, and 100% in rural areas classified as excellent for drinking. Children in urban areas faced non-carcinogenic health risks ($HI_{children}$: 1.5–6.31), with similar risks observed in semi-urban and rural areas ($HI_{children}$: 1.56–2.01). Most adults in urban areas also faced risk (HI_{adults}: 0.73–2.98), whereas no such risks were identified for adults in semi-urban and rural areas (HI_{adults}: 0.73–0.95). Carcinogenic risks due to As ingestion was observed for both children (CR_{As}: 7E-04 to 2.5E-03) and adults (CR_{As}: 3.3E-04 to 1.2E-03) in urban, as well as children (CR_{As}: 7E-04 to 9E-04) and adults (CR_{As}: 3.3E-04 to 4.2E-04) in semi-urban and rural areas. Notably, children were 2.12 times more susceptible to non-carcinogenic and carcinogenic health risks than adults. These findings can guide sustainable groundwater quality management strategies.

Keywords*:* Tube wells, water quality parameters, public health risks, heavy metals, Nepal

O35 Towards an Adaptive Groundwater Governance Framework: From Regional Insights to Local Adaptation

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Groundwater governance is critical for sustainable water management, yet many regions struggle with weak institutional coordination, limited data availability, and policy gaps. This study develops an adaptive groundwater governance framework, integrating insights from Thailand, Cambodia, Laos, and Vietnam and contextualizing it for Nepal. The framework is structured around four key dimensions—technical, legal, and institutional, cross-sector policy coordination, and operational—and evaluates governance effectiveness using a Groundwater Governance Index (GGI), ranging from 0 (non-existent) to 3 (optimum). Applied in four rapidly urbanizing cities of the Lower Mekong Region, the GGI scores—Vientiane (0.9), Khon Kaen (1.18), Siem Reap (0.78), and Can Tho (1.23)—indicate that groundwater governance remains in an incipient to early acceptable state. Common challenges include inadequate stakeholder engagement, weak policy coordination, and gaps in gender-responsive governance. Building on these findings, the framework was contextualized for Nepal and applied in Barahathawa Municipality, Sarlahi. With 32 qualitative indicators, the assessment revealed a GGI of 1.03, signifying an early acceptable state but highlighting deficiencies in hydrogeological data availability, legal provisions, and institutional capacity. To strengthen governance, key recommendations include data generation and dissemination, local regulatory frameworks, enhanced cross-sector coordination, community engagement, and capacity building. By bridging regional experiences with local adaptation, this study presents a scalable and structured approach to groundwater governance. The findings offer practical insights for policymakers, researchers, and water managers to enhance governance mechanisms, ensuring resilient and sustainable groundwater management in diverse socio-hydrological settings.

Keywords: Water governance, water security, adaptive framework, groundwater governance index, Southeast Asia, Nepal

O36 Marine Conservation, Sustainability and Design Protection: The Case of Underwater Gardens

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Marine conservation is key to safeguard the health and wealth of the Planet Earth. The oceans consist of three quarters of the Earth's surface that supports feeding half of the world's population. Further, it is home to millions of known, unknown and endangered animal species that directly and indirectly balance the marine environment. Quintessentially, it is the life support system of our 'Blue Planet' that regulates climate on a global scale. Firstly, on the backyard of this, how 'Underwater Gardens', an innovative tech-savvy initiative is trying to protect fast depleting marine livestock will be studied. Secondly, it is argued that it is 'creating responsible innovation' and its protection under the Hague System of the World Intellectual Property Organization (WIPO) may encourage such other noble missions to prioritize sustainability and ecological responsibility towards the marine ecosystem. Thirdly, this article will find out how design protection leading to responsible innovation may create a band of environmental stewardships to halt debilitating changes in the ocean life. Fourthly, in the face of emerging climate changes, a commitment to innovation and collaboration between the global governance of Intellectual Property Rights (IPRs) and the environmental leadership is seriously advocated for marine conservation. It is to be pursued both at national and international levels to limit man-made damages to marine life and maintaining sustainable ocean and sea habitats. Finally, accepting the fact that marine ecosystem is irreversibly damaged and ocean management being treated separately by their terrestrial counterparts, it demands a comprehensive policy framework through IPR protection in undersea areas.

Keywords: Marine conservation, sustainability, design rights, WIPO, ecological responsibility

O37 On-Street Parking Utilization and Management Efficiency: A Case Study of Mahendranagar, Nepal

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This study focuses on the critical issue of on-street parking in Mahendranagar, Nepal, along five major routes experiencing high traffic and parking demands. Parking congestion, driven by rapid urbanization and an increasing number of vehicles, has resulted in severe road misuse and traffic inefficiencies. The significance of effective parking management is underscored by its role in supporting public transportation and sustainable urban mobility. A three-day field observation survey was conducted to assess parking patterns, peak usage times, and capacity utilization. Data collection focused on vehicle counts, parking indices, and compliance with existing regulations. The analysis revealed catastrophic overutilization of parking spaces, with parking indices reaching 182.50% on Street 1 and 191.25% on Street 5. Peak parking times were identified as 9:30–11:30 AM and 3:00–3:30 PM, during which over 300 vehicles accumulated on some streets, exceeding the design capacity of 160 vehicles. Current parking management, including unidirectional parking enforcement, was found ineffective due to public noncompliance and insufficient traffic personnel. The rapid growth in vehicle registrations, particularly over 15,000 two-wheelers in the past five years, has further exacerbated the problem. Immediate measures include establishing clear parking policies, enhancing enforcement mechanisms, and redesigning street layouts to improve traffic flow. Long-term solutions involve road widening, constructing multi-level parking facilities, and adopting vertical parking systems to accommodate increasing vehicle volumes. Collaborative efforts involving public participation, technological integration, and municipal planning are crucial to mitigating parking issues, reducing traffic congestion, and promoting efficient public transportation systems.

Keywords: On-street parking, parking congestion, traffic inefficiencies, parking management

O38 Vecrosoft: A Deep Learning-Based Web & Mobile Application for Plant Disease Detection

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Plant diseases significantly challenge agricultural productivity, emphasizing the need for efficient and accurate detection methods. This research introduces *Vecrosoft*, a web and Mobile-based application for plant disease detection leveraging deep learning. The system employs Convolutional Neural Networks (CNNs) to classify diseases from leaf images. Among the evaluated models—ResNet50, an experimental CNN, and MobileNetV2—MobileNetV2 demonstrated superior performance, achieving 98.88% training accuracy and 98.42% validation accuracy on a subset of the PlantVillage dataset, which includes 87,900 images across 14 plant species and 38 disease categories, including healthy leaves. Vecrosoft enables users to upload leaf images for real-time disease prediction with confidence scores. Additional features, such as content sharing and an AI-powered chatbot, enhance agricultural decision-making and community knowledge sharing. The lightweight architecture of MobileNetV2 ensures efficient operation on mobile devices, making the platform accessible to resource-constrained farming communities. This work highlights the potential of CNN-based systems for scalable and accessible plant health monitoring in precision agriculture, addressing critical challenges in food security and crop sustainability.

Keywords: Vecrosoft, deep-learning, plan disease detection, MobileNetV2

O39 Sustainable Architecture: Merging Traditional Construction Methods with Modern Eco-Innovations

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As the demand for eco-conscious construction that integrates cultural heritage continues to burgeon, sustainable architecture is emerging as a compelling answer. The study is based on the idea of complementing modern eco technology with vernacular building methods providing green buildings preserving the culture. The main purposes are to explore how indigenous architecture and traditional construction techniques can be implemented with modern techniques. The main need is to create construction materials and buildings that do not disrupt the cultural and natural ecosystem. Using a multi-disciplinary methodology, this research integrates field studies and case analysis with interviews with architects, designers, environmentalists, and civil engineers so that we can seamlessly integrate with new advancements in sustainability technology, such as solar panels, green roofs, and energy-efficient building materials. Among other things, the attempt is to deliver a framework as well as recommendations to architects and builders on how to influence these recommended strategies in real projects, research intends to provide a practical toolkit for how to avoid the loss of this important aspect of our cultural heritage while facilitating sustainability. In conclusion, this research posits the future of architectural design as one that is as much about preserving our past as it is about embracing the new to find sustainable solutions to a world in flux.

Keywords*:* Sustainable architecture, traditional construction, eco-innovation, cultural preservation, energy efficiency

O40 Renewable Energy Solutions for Heritage Sites: Combining Tradition with Innovation

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The preservation of heritage sites is an important and serious concern for a nation as it retains the memories of the past, keeps the identity of a country alive and works as important resources to learn by the future generation. It is equally important to maintain cultural authenticity and ensure environmental and economic sustainability with the latest technologies. As there is an increasing environmental concern and need for energy efficient resources, it provides excellent opportunities for the integration of renewable energy solutions into heritage conservation. The objectives of this research are to explore how different renewable energy technologies can be incorporated for heritage sites to provide environmental and economic benefits while fostering sustainability and what are the major challenges in practical application. This research is based on secondary data. It is found that careful balance is required in the integration of renewable energy technologies into heritage sites like solar energy, wind energy, biomass and bioenergy, use of hydroelectric power, geothermal energy, etc. It may yield several environmental and economic benefits to society. Although it is not easy task and may pose serious architectural and aesthetic constraints, technical, legal and regulatory issues, environmental challenges, political, social, cultural, funding issues, etc. but if are able to overcome these challenges, we can be able to get the benefits from use of renewable energy while preserving the heritage sites as it holds cultural, historical, social, and economic significance for generations to come.

Keywords: Renewable energy, heritage conservation, sustainable solutions, innovation, cultural preservation

O41 Job Satisfaction and Attitude: A Study of Their Relationship

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Satisfaction and attitude are two important psychological traits of human beings. Satisfaction refers to the emotional gratification that comes from accomplishing one's professional or personal goals, while attitude is the inclination to react favorably or unfavorably to a specific thing, person, or circumstance. Literature suggests that job satisfaction and attitude have a bilateral relationship, with both influencing each other. Without a positive attitude, no one can perform well in their profession. In this context, the purpose of this study is to identify the relationship between job satisfaction and attitude. This study employed a quantitative design. A survey method was used to collect the required data, utilizing an attitude scale and a job satisfaction scale as data collection tools. Two independent samples from diverse context, one from Nepal and the other from India, each consisting of 75 schoolteachers selected through random sampling, were used to triangulate the results. Data were analyzed using SPSS. In Nepal, job satisfaction and attitude were found to be significantly correlated at the 0.01 level of significance, with a correlation coefficient of .490. For the Indian sample, the correlation coefficient was .681, and the analysis showed a similarly significant correlation at the 0.01 level of significance. The correlation coefficient is slightly higher in the Indian sample than in the Nepali sample, but both results indicate a similar relationship between job satisfaction and attitude. This correlational analysis indicates that a person's attitude is directly dependent on their level of job satisfaction. To improve employees' attitudes toward their profession, concerned authorities should enhance job satisfaction by reviewing and improving the facilities provided to the schoolteachers.

Keywords: Attitude, correlation, job satisfaction, quantitative design, teaching profession

O42 Students' Performance and Perceptions of Flipped Classroom Approach in Business Mathematics

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Flipped classroom is a widely adopted innovative instructional approach within higher education, effectively addressing students' needs by fostering their higher-order thinking and problem-solving abilities. It primarily offers basic learning through online lecture videos before the class and in-class comprehensive learning through collaborative activities under the teacher's guidance. However, in Nepalese higher education institutions (NHEIs), this model notably lacks its studies and practices. This case study aimed to identify students' learning outcomes and perceptions of the flipped approach, applying it for four weeks, in the researcher's business mathematics classroom consisting of 40 students at Far Western University. Data were gathered by conducting a test and survey among all students and conducting a focus group interview with six purposively selected participants. The descriptive statistical and qualitative analysis of the data revealed that the flipped model yielded a positive performance. Most students perceived the model as effective for enhancing their content comprehension, problem-solving abilities, communication and digital skills and relationships with peers and teachers. Moreover, they viewed the flipped model as suitable for digital-era learners and preferred it for other courses. The findings also indicated that for effective flipped classroom practice, digital infrastructure facilities, digitally skilled teachers, self-responsive students, and educators' clear, concise and quality lecture videos are essential. The study seems significant for university authorities and educators to encourage adopting a flipped classroom approach for quality education and product, scholars to support conducting further studies and consequently to fill the gap in the existing literature. The study suggests conducting further extended and rigorous studies in this area to ensure more valid and generalized findings.

Keywords: Flipped classroom, students, performance, perceptions, business mathematics

O43 Parents' Views on Mother Tongue in Nepal's EMI Schools

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English Medium Instruction (EMI) is becoming more and more popular in Nepal's community schools, frequently resulting in a dynamic interaction between the mother tongue and English usage. As key stakeholders in their children's education, parents hold distinct views about the mother tongue's place in EMI classrooms. These beliefs reflect larger societal attitudes on language and identity and are influenced by cultural, social, and educational variables. This study aimed to ascertain parents' views on the function of the mother tongue in EMI classrooms as well as their beliefs and goals regarding the use of the mother tongue in education. Using an ethnographic approach, in-depth interviews and FGDs were conducted with five purposively selected parents of children in EMI classes to explore their perspectives. Parents are concerned that relying solely on the mother tongue could limit their children's English skills, which are seen as crucial for academic success and future careers. However, the majority support a balanced approach, where children can learn English while also preserving their cultural and linguistic identity. The study concludes that parents' motivation to enroll their children in EMI classes stems from aspirations for better future prospects. It is recommended that educational policies be developed to effectively integrate both the mother tongue and English, ensuring that children acquire language proficiency while preserving their cultural identity.

***Keywords**:* Mother tongue, English Medium Instruction (EMI), parents' perceptions, language in education, language ideologies, cultural identity, language policy

O44 English Language Teachers' Professional Development through Teacher Research

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Teacher research is considered as a critical tool for professional development, particularly in the context of English language teaching. It helps the teachers to better understand their classroom dynamics and the teaching and learning environment get enhanced through it. This study addresses how teacher research promotes in the professional growth of English teachers at the secondary level. Data were collected through questionnaire from 30 English teachers teaching in the secondary level focusing on teachers' experiences, practice and motivations for engaging in research. The study addresses several key questions, including the type of professional development training teachers have undertaken, the inclusion of research components in these trainings, and the frequency and nature of classroom research conducted by teachers. The research concluded that many teachers have participated in the professional development programs offered by government and non-government agencies. These training enhanced their research skills and they get motivated to conduct the research back into their class. Research activities they are involved in during their professional activities improved their teaching practices by addressing classroom challenges and enhancing students' success. The study highlights how teacher research positively influences teaching methods, classroom management, and student outcomes. Teachers shared specific strategies and techniques adopted through research as differentiated instruction and collaborative learning. They also presented that the research culture increases their collaboration with other teachers also benefit them individually and professionally. This research highlights the need to integrate teacher research into professional development programs systematically and provides insights into transformative potential for teaching and learning.

Keywords: Teacher research, professional development, classroom effectiveness

O45 Challenges and Practice to Educating Children with Autism Spectrum Disorders in Inclusive Classroom

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The study entitled Challenges and practice to educating children with Autism Spectrum Disorders in inclusive classroom had the main objective is to identify challenges and practice to educating the children with autism in inclusive education and explore the ways of mitigating these challenges. The study used qualitative method which focused on interview, with parents and special need education teacher, a purposeful sampling procedure was used to select two parents and two teachers. The key factor in successful inclusion of students with ASD is the concern of teachers to collaborate and consult with the stakeholders to workout strategies as creative planning, teamwork, building a climate of acceptance for both parents and students, along with tailored (personalized) teaching methods. Promoting the inclusion of children with autism in schools is enhanced by engaging families in activities encompassing daily living and extracurricular pursuits. Schools must also work to eliminate barriers such as stigmatization and bullying that can hinder inclusion. Creating a supportive and disability-friendly atmosphere is vital, trained paraprofessionals, and school administrators should encourage teachers to maintain positive relationships with students and their families, fostering participation in inclusive education.

Keywords: Inclusive education, Autism, disability, special education, inclusive school

O46 Attitude of Government School Teachers of Pokhara Metropolitan City Towards Teaching Profession

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The performance of the students highly depends upon the attitude of the teachers towards their profession. This study aims to find out the attitude of the government school teachers of Pokhara valley towards teaching profession which directly affects the learning of the students and overall teaching learning process. To assess the attitude of teachers, thirty teachers from ten schools were selected as the respondents with random sampling. Likert type attitude scale was constructed with 50 statements. Content validity of the scale was established by the judgement of four experts of the subject area and 27 percent upper and lower group method was used to determine the power of discrimination of the statements. Finally, 32 statements were accepted. A z square norm and interpretation criteria were developed. Under the quantitative research design, the attitude scale questionnaire survey is used to find the attitude. The research came in to the conclusion that only one fifth of the teachers are have favorable attitude towards their teaching profession and major percentage of teaching faculties have neutral and unfavorable attitude towards the profession. The concerned stakeholder should timely address the dissatisfaction of the teachers towards their profession and should focus on morale, motivation and issues of order of precedence which shall bring a new energy to the teachers.

Keywords: Attitude scale, quantitative research design, teaching profession, Pokhara Metropolitan City

O47 Academic Writing Challenges and Support Strategies: Insights from University Teachers in Far Western University

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Students at the master's level in Nepali universities face numerous challenges in developing academic writing skills for several reasons. This study explores these challenges and the strategies employed to enhance students' academic writing skills from the perspectives of university teachers at Far Western University in Nepal. Adopting a qualitative approach, the study collected data through semi-structured interviews with four university teachers from three different disciplines. The research is grounded in the social perspectives of academic writing, particularly the notion of scaffolding, which involves experts assisting learners in performing tasks they cannot accomplish independently. The findings argue that students develop academic writing skills through interaction and collaboration with their teachers and supervisors. Teachers play a crucial role by providing writing samples and offering constant feedback on their work. However, the study reveals that a prevalent misconception among students views academic writing merely as a means to fulfill degree requirements. Furthermore, traditional supervisory approaches have hindered the effective development of writing skills. Despite these challenges, the study highlights support strategies such as training programs, workshops, virtual seminars, and individual feedback, which contribute to improving students' academic writing. The study concludes by emphasizing the need for university to develop visible policies and plans to support and enhance students' academic writing.

Keywords: Academic writing, thesis writing, writing challenge, university teacher, Far Western University

O48 A Survey Study on the Digitally Devised Reading Culture of the Generation Z

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The explosion of information through Internet has deeply impacted the Generation Z and its reading habits. Truly, the new generation easily adopt technological innovations and put them into use. Concurrently, the current education system is seriously realizing the need to adapt to the revolutionary changes heralded by digital mediums to suit the urgent needs of the Gen Z. Notwithstanding their ease, adaptability and keenness in learning, the reading culture of this age group has undergone profound changes leading to both mounting challenges and enormous opportunities. The primary objective of this paper is to reexamine the fast-changing reading habits of the Gen Z. It is important to recognise how technological innovations disrupt their capacities leading to erosion of deep reading habits. This work evaluates how a fast-reading culture on digital platforms is pushing the new generation away from exploring classics, thought-provoking and scientifically designed texts that may invigorate deep thinking and learning. Crucially Gen Z is fully immersed in digital technology. From background knowledge, inference and critical analysis to empathy and insight-all their faculties have undergone profound change. The paper highlights formidable hardships and immense possibilities brought by the Internet to Gen Z. This research figures out the road ahead for the Gen Z to overcome these difficulties to make learning and reading better, enjoyable and absorbing. The author has used a survey method to analyse the nature and impact of digital learning to locate the challenges and opportunities of the Gen Z. It covers four samples of students and working people born between 2002 to 2012. The author rightly addresses the literature gaps as very few research studies have addressed the concerns encountered by this particular age group. The initial findings indicate that reading culture of the Generation Z needs to redirect to the original and physical textbooks. And it is also found that there is an urgent call to control machines and tools created by humans instead they fast bossing over the latter.

Keywords: Technology, information, Gen Z, knowledge, culture, Internet

O49 Teacher Professional Development: English Teacher Educators' Perceptions and Experiences

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The ever-evolving nature of English language education and the complex needs of learners demand continuous professional development (TPD) for English as a Foreign Language (EFL) teachers. To ensure effective teaching and foster learners' English proficiency, it is essential for EFL teachers to update their attitudes, skills, and knowledge regularly through diverse TPD activities. This study explores the perceptions of EFL teacher educators about the importance of TPD and identifies the activities they have experienced to enhance their professional competence. Conducted at a university in Nepal, the research involves eight EFL teacher educators who participated in individual semi-structured interviews. The study adopts an interpretative research paradigm and a case study research design, with thematic analysis employed to analyze the collected data. The findings indicate that most participants perceive TPD as crucial for improving teaching effectiveness and meeting the diverse needs of learners. Participants emphasized the significance of various activities, including enhancing English language proficiency, advancing teaching pedagogies, developing digital literacy, and fostering research capabilities. These activities were recognized as essential for adapting to the evolving landscape of English language teaching and ensuring the holistic development of both educators and learners. Moreover, participants offered recommendations for university administrators to design and implement structured professional development programs tailored to address these needs. Such programs, they argued, could foster the development of skilled, adaptable teaching professionals capable of addressing the demands of contemporary education. This study provides valuable insights for stakeholders in higher education, particularly policymakers and administrators, by highlighting effective TPD strategies and identifying areas requiring greater focus. These findings underscore the importance of prioritizing TPD initiatives to build a sustainable and dynamic framework for professional growth in English language education.

Keywords: English proficiency, pedagogical strategies, teacher professional development

O50 A Machine Learning Approach to Predict Student Dropout at Far Western University, Nepal

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Student dropouts is considered as a serious challenge in higher education, particularly in developing countries like Nepal. This research attempts to investigate this issue by utilizing machine learning methods to analyze and predict dropout rates at Far Western University, drawing on data from its Education Management Information System (EMIS). Employing Recursive Feature Elimination with Cross-Validation (RFECV) to identify the most significant predictors, the study incorporates secondary data through purposive sampling, and systematic preprocessing techniques, such as handling missing values, encoding categorical variables, and normalizing numerical features. The study analyses 3,985 undergraduate student records from 2020-2021 to 2023-2024, with 3,750 records retained after preprocessing. The dataset includes demographic information, academic performance indicators, attendance figures, and financial aid details. Logistic regression, random forest, and gradient boosting classifiers were evaluated, with the gradient boosting model achieving an F1-score of 0.82 and an AUC-ROC of 0.93. The study identifies GPA, attendance rates, and scholarship status as key predictors of student dropout. Results show a total dropout rate of 12.34%, with higher rates among students in lower GPA ranges (2.0–3.0). Students with a cumulative GPA below 2.5 had a 23% higher probability of dropping out compared to peers. Attendance rates were crucial, with students attending fewer than 75% of classes showing a 15% increase in dropout likelihood. Scholarship status significantly influenced retention, with students not receiving financial aid being 18% more likely to drop out. The study emphasizes the importance of academic performance and financial assistance in reducing dropout rates and improving student retention. It recommends developing targeted interventions to address these issues effectively. By offering both academic insights and practical tools, the research supports evidence-based decision-making in higher education institutions in Nepal, tackling a significant educational challenge.

Keywords: Learning analysis, Education Management Information System (EMIS), machine learning, student dropout

O51 Causes of Failure in English at College Level: Students' and Teachers' Perspectives

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The English subject has become problematic for college-level students, particularly those in the faculties of education, management, and humanities. A significant number of students fail in compulsory English courses at this level, which adversely affects the overall academic performance of colleges and universities. This study aimed to explore the causes of failure in English and provide suggestions for improvement for college-level students. The study adopted qualitative research design in general and narrative inquiry in particular. Data were collected from four teachers and six students in colleges located in the Far Western region of Nepal using a purposive sampling method. An interview protocol was employed to gather their perspectives. The collected data were analyzed thematically. The findings revealed that factors such as limited classroom interaction, ineffective teaching methods, learners' attitudes, an outdated curriculum, and an inadequate evaluation system are the primary causes of failure. Participants suggested enhancing classroom interaction, adopting more effective teaching methods, revising existing courses, and reforming the university examination system to improve students' academic performance, particularly in compulsory English courses. Considering the findings, it can be suggested that teachers need to change their teaching methods to increase the pass percentages of students at the university level.

Keywords: Cause of Failure, teaching methods, classroom interaction, evaluation system, students performance

O52 Teacher Autonomy in Post Method Pedagogy: Exploring Practices and Perspectives in ELT Classrooms

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Teacher autonomy is a fundamental aspect of postmethod pedagogy (PMP) that empowers educators to move beyond rigid frameworks and adapt effective teaching to local contexts. The research aims to explore how teachers exercise autonomy, the challenges they face, and the impact of their autonomous practices on learner engagement and outcomes. The qualitative method is used to collect data from five high school teachers. Data were collected through semi-structured interviews, classroom observations, and document analysis from three secondary level ELT teachers from public schools of Mahakali Municipality, Darchula, Nepal. It uncovers the paradigm shift of ELT practitioners from method to post method in ELT applying three principles of PMP such as particularity, practicality and possibility. It is found that teachers are sensitive regarding context, practical operation and socio-cultural context in ELT classroom. The flexibility motivates the teachers to do innovative activities applying new strategies according to ground reality of children's interest and classroom context. The findings contribute to the broader discourse on PMP by emphasizing the relationship between teacher agency and contextual factors for effective language teaching practices.

Keywords: ELT, teachers' autonomy, post-method pedagogy, paradigm shift

O53 Integrating Digital Tools and 21st Century Skills in English Language Teaching: Teachers' Perspectives

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The connection between technology and learning has become increasingly evident at present time. This study investigates the experiences of secondary-level English language teachers from community schools in Kanchanpur district, Nepal, regarding the integration of digital tools and 21st-century skills in pedagogical activities. The study adopts an interpretive/constructivist approach. It will purposefully select data and contexts and be conducted in the natural environments of participants. The focus is on community-based secondary-level English teachers in Kanchanpur district, specifically three teachers with five years of experience who have received training on information and communication for pedagogical purposes. Data will be collected primarily through interviews, follow-up interviews, and interactions, utilizing unstructured interviews and lived experience descriptions (LED) of teachers. Teachers recognize the benefits of digital tools, such as increased engagement and collaboration along with some challenges. Teachers see the importance integrating digital tools and 21st century skills for fostering critical thinking, collaboration and creativity. The study calls for comprehensive training, clear guidelines, and equitable resource distribution to create dynamic classrooms that prepare students for competitive world.

Keywords: Digital tool, 21st century skill, English language, globalization

O54 Jayaprithvi Bahadur Singh: Pioneer of Socio-cultural and Educational Reform in Nepal

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This study explores the contributions of Jaya Prithvi Bahadur Singh (JB Singh), a National Hero of Nepal, to the country's socio-cultural and educational transformation during Rana regime, a dark period, by critically analyzing the existing literatures such as books authored by JB Singh, along with recollections, reports, and articles written by some other intellectuals. For the study, I applied Narrative Inquiry as the research design. By reviewing the prevalent literatures rigorously, the study explores he dynamics of socio-cultural and educational evolution and critically examines the same through the perspective of humanism. The findings reveal that though his evolution as a revolutionary author was challengeable for himself and the sustainability of the status quo at that time, it contributed as a milestone for the socio-cultural and educational transformation in Nepal. In addition to his authorship, his personality, behavior, attitudes, and daily routine also embodied the dynamics of enlightenment of the then Nepalese society. In the absence of his endeavors, his home district, Bajhang, and the nation as a whole remained barren concerning such a transformation. Finally, I ensure that this study might be meaningful for those who are interested in history, heritage, innovation and societal transformation.

Keywords: Pioneer, socio-cultural, transformation, heritage, revolutionary

O55 Role of Alumni Associations in their Alma Mater

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After the restoration of democracy and introduction of liberal economic policies, Nepal's education sector has witnessed substantial growth. Despite this progress, the role of alumni and alumni associations remains a largely untapped resource and an unexplored area of research. This study investigates the status and contributions of alumni associations, particularly in providing scholarships for their alma maters. It also examines the challenges faced by schools and colleges in forming and sustaining such associations. This study used both qualitative and quantitative approach. We conducted the interviews with college administrators, campus chief and member of alumni associations. We entered the existing collected data in Microsoft Excel 2016 and analysed using the same software. The research surveyed 44 schools and colleges in the Kathmandu Valley, revealing that only 24 institutions have established alumni associations. Of these, merely 14 are actively engaged, with just two contributing to scholarship programs. Institutions with active alumni associations, however, were found to excel in delivering quality education, ensuring better career opportunities and even job placements for their graduates. While Nepali students celebrate securing scholarships and opportunities abroad, there is a glaring absence of reciprocal efforts within the country. The result highlights a significant gap compared to Western practices, where alumni endowments often finance prestigious scholarships and research grants. The purpose of this study is to contribute to education and scholarship through alumni associations' support and to help higher education institution in Nepal fully recognize and harness the potential of alumni associations. Based on the research, the study recommends the need for a cultural shift, urging alumni to contribute actively to their alma maters. By fostering a culture of giving back, Nepal can transform its educational landscape from relying on external generosity to nurturing its own academic ecosystem. This change is crucial for building a sustainable future centred on equitable access to quality education and academic excellence.

Keywords: Alumni associations, alma mater, liberal economic, democracy, cultural shift

O56 Sub-regional Cooperation in South Asia in the Renewable Energy Sector

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Sub-regional cooperation in South Asia gained momentum with the 2015 BBIN Motor Vehicle Agreement and was further strengthened by the 2024 Nepal-Bangladesh electricity trade facilitated through India, reflecting deeper regional integration efforts. The BBIN sub-region faces escalating energy demands due to economic growth and urbanization. Despite abundant renewable energy resources, such as solar, wind, and hydropower, the region remains heavily reliant on fossil fuels, with coal and oil constituting a significant portion of the energy mix. This reliance exacerbates environmental challenges and leads to energy insecurity, as significant portions of fuel needs are imported. Transitioning to renewable energy offers a sustainable solution, enhancing economic resilience and reducing carbon emissions. Regional integration through cross-border electricity trade (CBET) can optimize resource utilization, but is hindered by political tensions, regulatory disparities, and financial constraints. Addressing these challenges requires a cooperative approach, focusing on harmonizing policies and strengthening institutional frameworks to facilitate energy connectivity within the BBIN sub-region. This paper aims to explore the prospects of renewable energy integration at the sub-regional level, identify key challenges, propose strategic frameworks for overcoming these obstacles, and contribute to the growing discourse on sustainable energy solutions and regional cooperation.

Keywords: South Asia, regional cooperation, renewable energy, cross-border, sustainability

O57 Public Diplomacy in Soft Power Era and Nepal's Priority

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We live in an era of soft power. On the one hand, how the major powers are strategically employing their soft power, along with the analysis of continuity and change, becoming a popular question in academic discussion as well as public discussion forum. On the other hand, Nepal is also in the path of establishing and promoting its soft power around the world. This study examines Nepal's strategy, plans and programs in generating soft power through public diplomacy. It conducts the study in three steps: content analysis of the Nepal Foreign Policy 2020, diaspora based public diplomacy and Nepal's international communication and exchange strategy as well as programs. Moreover, this study also makes inquires on effectiveness as well as sufficiency of present strategy – though this is not the main scope of this study. Though Nepal's foreign policy 2020 has identified mobilization of the diaspora community as an opportunity, it has not been addressed in the principles and values of the policy. Also, it has not been recognized as the key part of Nepal's foreign policy. Moreover, this is not taken as key part Nepal's soft power. This undermining has negative impact on program as well as exchange and communication. This study not only compares Nepali case with some effective models of public diplomacy, but also presents some recommendation based on the key findings of this study.

Keywords: Public diplomacy, soft power era, national priority, foreign policy, strategy

O58 Remittance Economy, Political Development and Democracy: How to Study the Nepali Case?

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This study investigates the theoretical model to examine the impact of remittance economy in political development/decay in contemporary Nepal. It basically focuses aims to develop a political economic model to examine the linkage between remittance economy and change of patron-client relations in politics. The previous studies have focused on political remittance, development of technology and absentee effects to examine political impact of remittances. This study claims that rise of Khudra Pasal Arthatantra (retail economy) and occupational unclarity needs to take as mediating variables in explaining the relations between rapid socioeconomic development and ironic transformation – rather than elimination as argued previously – of patron-client relations, which ultimately has played negative institutionalization of the democracy. In sum, it presents a new theoretical model to examine the relations between remittance economy and political decay in developing world.

***Keywords*:** Remittance economy, political development, democracy, retail economy, Nepalese case

O59 Nepalese Political Parties' Perspectives on Environmental Degradation in the Himalayas

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The Himalayas, often called the "Third Pole," are vital for Nepal and South Asia, providing fresh water, regulating climate, and supporting biodiversity. However, environmental degradation due to climate change, deforestation, urbanisation, and unsustainable tourism threatens this fragile ecosystem. Since Nepal's democratic transition in the 1990s, environmental policies have gained prominence, but political instability has hindered their consistent implementation. Major political parties have varied approaches: the Nepali Congress (NC) emphasises sustainable development and international cooperation, while the Communist Party of Nepal-Unified Marxist Leninist (CPN-UML) integrates environmental concerns into national development, particularly through hydropower. The Maoist Centre highlights the impact on marginalised communities but faces contradictions with its industrialisation agenda. The Rastriya Prajatantra Party (RPP) focuses on cultural conservation and eco-tourism but lacks comprehensive environmental policies. Despite recognising climate change, deforestation, and unregulated tourism as critical challenges, political parties struggle with policy enforcement and long-term planning due to governance instability. A unified national strategy, backed by political consensus and global engagement, is essential to mitigate environmental threats and ensure the Himalayas' sustainability for future generations.

Keywords: Nepalese political parties, democratic transition, political instability, environmental degradation, Himalayas sustainability

O60 Nepal-India Hydropower Relations: A Critical Understanding

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Recently the Finance Minister of Nepal, Prakash Sharan Mahat, announced a landmark agreement with India, signing a long-term deal to export 10,000 MW of electricity over ten years. According to him, this collaboration not only opened significant investment opportunities in Nepal's hydropower sector but also continued to achieve green energy transition goals for both countries. Based on the water resources availability, Nepal's technical potential for hydropower has been estimated to be 83 gigawatts (GW). Nepal exports around 177 MW of energy to India. With over 6000 rivers and streams, Nepal has enormous potential for hydropower. Nepal's development stalled as the country battled a civil war ending in 2006. It was dealt further blow in 2015 when earthquakes killed 9000 people with the country experiencing a period of relative peace and memories of the earthquakes fading. Tremors of the Tibetan earthquake in 2025 has also blown the Nepalese people and the vulnerability of the Himalayan state is under question. The literatures of Dipak Gyawali and Ajaya Dixit critically questions the development discourses of hydropower in Nepal and India. The unfair river treaties are also existing between the two countries. Hence this paper will examine the history of hydropower development of Nepal-India and by using a critical methodology we will deconstruct the emerging hydropower discourses. It will be following a discourse analysis method by going through the secondary data available as books, articles, news reports etc. The paper also investigates the role of colonial modernity in building dam culture to both the states in attaining the development goals as well as questioning the element of sustainability in hydropower development in terms of cost and ecological risks.

Keywords: Hydropower relations, critical discourses, dam culture, modernity, Nepal-India

O61 Harnessing Digital Transformation for Good Governance in Nepal: Lessons and Insight from India

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The purpose of this paper is to explore the role of digital transformation in fostering good governance, with a specific focus on India's initiatives and their outcomes. This study aims to analyze how digital tools and platforms have been utilized to address governance challenges, promote accountability, and bridge the gap between the government and citizens. By examining India's experiences, the paper seeks to provide actionable insights for Nepal, striving to harness digital transformation for good governance and to achieve sustainable development and improved service delivery. The methodology involves a mixed-methods approach, combining qualitative and quantitative analysis. Primary data is drawn from government reports, case studies, and interviews. Secondary data is sourced from academic literature and policy documents, and global indices. The study focuses on flagship initiatives such as Aadhaar, Digital India, and the Unified Payments Interface (UPI), assessing their impact on service delivery, corruption reduction, and citizen engagement. The findings reveal that digital transformation has significantly improved governance in India by streamlining administrative processes, reducing bureaucratic inefficiencies, and enhancing transparency. Initiatives like Aadhaar have enabled targeted welfare delivery, according to the World Bank, DBT saved the Indian government approximately **$27 billion (₹2.2 lakh crore)** by eliminating fake beneficiaries and middlemen between 2013 and 2022. While UPI has revolutionized financial inclusion and reduced the reliance on cash, curbing black money and improving financial transparency. However, challenges such as digital divide, data privacy concerns, and resistance to change persist. The paper concludes that while digital transformation holds immense potential for good governance, its success depends on inclusive implementation, robust regulatory frameworks, and continuous capacity building. India's journey offers valuable lessons for Nepal and its e-governance initiatives like Nagarik Aap, Digital Nepal Acceleration (DNA) Project etc.

Keywords: Digital transformation, good governance, Unified Payments Interface (UPI), financial inclusion, digital divide, Digital Nepal Acceleration (DNA)

O62 The Situation of Infrastructure Development in Semi-Urban Areas of Nepal

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The main thrust of this paper is to deliver the situation of infrastructure in the specific context of development as it is prevailed in semi-urban area of Nepal. Well-developed infrastructure enhances productivity and efficiency projected towards forecasting the economic growth. Policy makers and development agencies have to concern for improved transportation, communication, and energy system to a competitive social environment. Infrastructure development is pre requisite for attractive investment atmosphere and enhances entrepreneurship. The aim of this paper is to depict the issues of infrastructure related activities and action as prevailed in the semi-urban area of Birendranagar, Surkhet, Nepal. This paper is based on the qualitative data and information as available from the field and government publications. The term infrastructure primarily denotes two aspects; physical and social infrastructures. This has been argued that both physical and social infrastructure have been inevitable components for the balance development for a contemporary society.

Keywords*:* Infrastructure, semi-urban, development, entrepreneurship, economic growth

O63 Social and Economic Impact of Geta Eye Hospital (GEH) on Cross-Border Relations

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This study explores the hospital's impact on medical tourism, cultural exchange, and economic ties, analyzing its role in strengthening cross-border cooperation. Using descriptive and analytical methods, and drawing on both primary and secondary sources, the research frames GEH's contribution through the lens of Liberal International Relations theory, emphasizing cooperation and interdependence. The study highlights that GEH has built trust among India's low- and middle-income Populations, fostering a "Netra-Prakash" (eye-sight) bond that transcends borders. Indian eyes filled with the light from Nepali expert services by modest earning of foreign currency. As a result of facilitating medical tourism and public diplomacy, the hospital has contributed to people-to-people relations, and cultural exchange in the border regions. Additionally, GEH has enhanced the capacities of local organizations and fostered cross-border collaborations, exemplifying the effective use of soft power in international relations. While its scope remains predominantly regional, GEH has made a commendable contribution to Nepal-India bilateral relations, serving as a model for healthcare diplomacy. This paper underscores the need for further research on the contribution of healthcare diplomacy to strengthen cross border relations with India and policy attention to maximize the hospital's potential in promoting interdependence and cooperation.

Keywords: Socio-economic impact, geta eye hospital, cross-border relations, medical tourism, healthcare diplomacy

O64 A Collaborative Research Approach to Addressing Social Determinants of Health in Western Nepal

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Nepal's western provinces, including Lumbini, Karnali, and Sudurpaschim, face significant challenges in social and health development despite their rich cultural and natural heritage. Over 40% of the population resides in rural areas, where access to quality health services is limited. Common health issues include gastrointestinal, respiratory, and musculoskeletal problems. The federal governance system mandates municipalities to provide primary healthcare, but they often require increased support in the form of resources and guidance to effectively implement health improvement programmes. To address these challenges, a collaborative approach involving local communities is proposed. A consortium will be established to support municipalities in improving health indicators, particularly for vulnerable groups such as mothers, children, women, older people, migrant workers, and people with disabilities. The consortium will analyse policies and best practices from better-performing municipalities and engage in primary research with active community input to identify and prioritize pressing health issues. This will facilitate dialogue between academics, the community, and local decision-makers. The expected outcomes include improved health-related indicators for vulnerable populations and enhanced functionality of local health centres and strategies. The initiative aims to establish the Far Western University as a leading hub for health research and implementation in the region. The implications of this initiative are multifaceted. It will contribute to strengthening the local health system by reducing health disparities, improving access to quality healthcare, and promoting community-driven health solutions in three western provinces. This collaborative approach can serve as a model for other regions facing similar challenges, ultimately enhancing the overall health and well-being of Nepal's population.

Keywords: Health disparities, community engagement, rural healthcare, collaborative governance, vulnerable populations, health equity

O65 Tharu Borderlands: Identity as Mestizo by Origin, Culture and Myths

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This paper studies the Tharu communities of Chitwan and their cultural practices and myths focusing on the nature of Tharu identity. The research is of the combined nature- both archival and field study. Using the theoretical tool of cultural study, this research delves into the Tharu identity, and comes to identify that Tharus are mestizos—a blend of various cultural influences —by their origin, culture and myth. Stories on Tharus origin, especially of Chitwanian, with the myths of Jimutbahan (Jitiya), Bikram Baba, and Lotus Pond, exhibit diverse historical records and confirm their early settlement in Terai region of Nepal. Residing in the borderlands, La Frontera in Spanish terms, Tharus are viewed as ethnic yet mixed tribes, with their origin implying their ancestry from Buddha or Mongols mingled with Hindu Aryans culturally. Studies on Tharu identity, up to now, have focused on their identity just as an indigenous ethnic group, and this research addresses the research gap on how Tharus are Mestizo. This is meaningful in connecting two cultural identities, Tharus and Mestizos and establishing a new truth of their identity- Tharus as Mestizos.

O66 Antibiotic Susceptibility Pattern of Pseudomonas aeruginosa Isolated from Clinical Specimens and Detection of Virulence Genes in a Tertiary Care Hospital, Kathmandu, Nepal

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Pseudomonas aeruginosa is one of the most common causes of hospital-acquired infections. It threatens worldwide public health because of its intrinsic antibiotic resistance and virulence. In this context, this research aimed to determine the occurrence of P. aeruginosa in a clinical setting, examine its susceptibility to antibiotics, and detect the presence of virulence genes, viz. exoY, oprL and toxA in all isolates. It was a cross-sectional study carried out from June 2022 to December 2022. A total of 1356 clinical specimens were collected and processed in the laboratory for Gram staining, culture techniques, and biochemical tests. The Kirby-Bauer disk diffusion method was applied to examine the antibiotic susceptibility pattern and conventional PCR was used to detect the virulence genes in all confirmed P. aeruginosa isolates. 40.5% of specimens showed bacterial growth, of which only 3.02% were identified as P. aeruginosa. Among them, 61.0% were multidrug resistant and 29.2% were β-lactamase producers. Aztreonam (70.7%) was the most effective antibiotic. Among all P. aeruginosa isolates, 68.3% isolates were exoY positive, 61.0% were oprL positive and 56.1% were toxA positive. Strategic interventions are required to stop the emergence and spread of antimicrobial resistance as a result of the isolation of multidrug resistant (MDR) isolates carrying these virulence genes. This study can benefit the medical staff and the entire community in building a surveillance system and enhancing infection control procedures.

Keywords: Pseudomonas aeruginosa, antimicrobial resistance, β-lactamase, virulence genes

O67 Can Nursing Interventional Program be Effective in Improving Social Wellbeing of Rural Senior Citizens? A Mixed Method Study

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Ageing as a deleterious process, affects in basic activities and interactions of human life (isolation) thereby affecting social wellbeing. The study's aim was to promote and improve social wellbeing of seniors by providing community interventions in comprehensive way. Adopting the mixed method approach, comprehensive nursing interventions was developed by focus group discussion in Machhapuchhre rural municipality, Kaski in first phase then its' effectiveness was assessed through quasi experimental study among 120 seniors aged 60 to 75 years by multi stage cluster random sampling in two rural communities of Nuwakot district of Bagmati province in the second phase. The validity and reliability of the tools (sociodemographic characteristics and elderly social wellbeing scale) were maintained prior to study. After baseline assessment, intervention was provided to the experimental group twice a week for six weeks in 12 sessions in a group in their community. Post assessment was done to both groups after 1 month of the interventions, follow-up assessments were done to only experimental group after 3 & 6 months for identifying retention of effectiveness. Both descriptive & inferential statistics were used for analyzing data including qualitative analysis. Seniors were dissatisfied with their relationship but found positive towards ageing process, showed by thematic analysis. Median value of social wellbeing in control group was 63 at baseline which remained the same after 1 month of intervention whereas the baseline median was 61 in experimental group, which increased to 68 after 1 month of intervention. Moreover, the median constantly remained the similar (67 in 3 months) and (66 in 6 months) among the experimental group. Community interventional program is a new comprehensive nursing; was found to be effective in improving social wellbeing of senior citizens. The interventions can be tailored to address social needs of each senior individually and added in elderly care as holistic approach.

Keywords: Social wellbeing, senior citizen, effectiveness, nursing interventions, rural communities

O68 Contemporary labour, colonial constructs: Racialised perceptions of migrant hill men from Uttarakhand in India's hospitality industry

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Young migrant hill men from Uttarakhand are disproportionately employed in India's booming hospitality industry. Employers often justify their recruitment choices based on racialised perceptions of Uttarakhand's hill men as "hardworking," "honest," and "industrious". Situating contemporary migration within a colonial-historical framework, the paper explores how British-era racial classifications of hill communities as 'martial,' 'loyal,' and 'laborious', inform postcolonial labour market choices. The study looks at the proliferation of 'hill stations' which enforced migration on the local populations through displacement, and through coercive labour practices, enforced professions on the local individuals in serving the colonial administration through servitude, formalized by the hill stations. The paper argues that these colonial constructs continue to influence employment choices and hiring patterns for migrants and employers, respectively. It further interrogates the role of caste and kinship-based informal recruitment chains in sustaining these perceptions and structuring employment pathways. By tracing the continuity between colonial labour hierarchies and present-day migration patterns, the paper highlights how historical legacies, social networks, and economic aspirations intersect to shape the evolving nature of migrant labour in India's hospitality sector.

Keywords: Racialization, colonial legacies, migrant labor, hospitality industry, informal recruitment, uttarakhand migration

O69 Migration Trends for Foreign Employment in Beldandi Rural Municipality, Kanchanpur

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This study assesses the migration trends for foreign employment in Beldandi Rural Municipality, Kanchanpur, Nepal, emphasizing the socio-economic dynamics of labor migration. The primary objective is to examine the current foreign employment scenario, exploring motivations like economic opportunities, family expectations, and personal aspirations. It also evaluates family-level socio-economic trends, including income, lifestyle and social changes. From a sampling frame of 1,543 migrants, a sample size of 308 was determined using the Raosoft calculator at 5% margin of error and 95% confidence level. Findings revealed gender disparities, with 76.3% male and 23.7% female migrants. Ethnically, 58.1% belonged to Brahmin/Chettri and 28.2% to Janjati communities. Hindus dominated (79.9%), followed by Christians (19.8%) and Muslims (0.3%). Most migrants (64.6%) had secondary-level education. India (37%), Malaysia (21.8%), and the UAE (13.3%) were primary destinations. Push factors included unemployment (43.5%) and poverty (36%), while pull factors were higher wages (37%) and job opportunities (44.5%). Remittances were mainly used for daily consumption (36.7%), housing (24%), and loan repayment (12.3%), though only 30.8% of migrants received skill-based training. Recruitment agencies (50%) were the leading employment channels, followed by personal networks (36%) and online portals (10.4%). Challenges included legal issues (65.6%), language barriers (10.1%), and cultural differences (9.7%). Foreign employment significantly contributes to Nepal's economy through income generation, poverty reduction and remittances, though its reliance stems from a lack of local opportunities. To reduce this dependence, the study recommends creating domestic jobs, modernizing agriculture, promoting investments and utilizing returnee skills. It also highlights the need for skill development, gender-inclusive policies, regulated recruitment and effective remittance to ensure sustainable development.

Keywords: Migration, foreign employment, remittance, pull and push factors and impact.

O70 Heritage Precincts Management in India: Envisioning Equitable and Holistic Urban Development

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The socio-economic dynamics of heritage precincts stand distinctively across the face of India battling the growing demand for urbanization. Despite several attempts to safeguard heritage precincts from the clutches of encroachment, gentrification, and loss of integrity; heritage models seldom surpass physical attributes like urban design, and architectural and structural integrity. The need for re-envisioning the management of heritage precincts is rooted in preserving the socio- economic and then cultural, and architectural assets with due diligence to holistic and equitable development. Highly urbanized states of India often face the wrath of unplanned development. The negative impact of this development is evidenced by the loss of cultural and historic integrity. The lack of interventions in their models in favor of preserving, protecting, and conserving socio-economic dynamics arising in heritage precincts as a result of the said heritage including eco-sensitive zones; is the leading cause of loss of heritage integrity. This study aims to institutionalize a mechanism that can be applied to any precinct in India based on the regional context, historic importance, and cultural implications with due diligence to socio-economic dynamics through a Systematic Literature Review (SLR). This mechanism has the potential to safeguard India's rich heritage and enhance the quality of life of local communities who have developed their livelihoods around the heritage sites. Legislations and regulations developed for heritage precincts as a result of this mechanism will reduce negative impacts like gentrification and encroachment, allowing for effective heritage management. The result of this study impacts future listings of heritage precincts bringing in reforms for heritage precinct management, and fostering sustainable development, by battling gentrification in its process. The scope of intervention for management of heritage precincts arrived at, with the outcome of this study will help with capacity building of important sectors of urban planning, such as tourism, housing, transportation, and more.

Keywords: Heritage precincts, heritage grading, cultural integrity, historic integrity

O71 Effect of Yogachara on Disease Transmission Dynamics at Saturated Incident Rate Using Mathematical Modeling

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Communicable diseases are major health problems. They affect the whole economy of the nation. So, developing new prevention strategies and educating people about their transmission dynamics is necessary. This paper investigates the effects of the prevention strategy Yogachara with quarantine at a saturated incident rate. Yogachara provides public health information, improves the whole human body's metabolic system, and helps achieve the practitioners' physical, mental, social, and spiritual well-being. It makes people aware of the disease. Motivated by the Eastern philosophy of Yoga, a SIQS mathematical model has been developed with three governing ordinary differential equations that capture disease situations present in society. These equations were analyzed using mathematical techniques. The next-generation matrix method was used to calculate the reproduction number. Sensitivity analysis of parameters indicated that the reproduction number decreases with increased preventive measures. Local and global stability analyses at disease-free and endemic equilibria were calculated. Our results highlight that the theory-based and data-based Yogachara and quarantine effect terms had almost the same result. Numerical simulations suggest that these strategies have a positive influence on preventing disease transmission dynamics. They reduce Susceptibility and infectivity. This model provides new opportunities for the planning, prevention, and treatment modalities of diseases.

Keywords: Yogachara, metabolic system, disease transmission, incident rate, mathematical modeling

O72 Evaluation of Barley Genotypes Under Varying Fertility Levels in Inner Terai Region 0f Nepal

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Barley is vital for food security providing a resilient staple in marginal lands, serving as nutritious livestock feed, and supporting local brewing industries for economic sustainability. To explore its productivity under inner terai condition, an experiment was conducted in 2020 at Khairahani, Chitwan. This study was conducted in two factors RCBD as three barley genotypes (Bonus, B90K-024-1-1-2-0K, and LG51/X-VEOLA-5-77) and four fertilizer levels (30:20:10, 40:30:20, 50:40:30, and 60:50:40 kg NPK ha^{-1}). Phenological data revealed that the Bonus as the longest-duration variety (82 days to heading), while LG51 was the earliest (78 days). Growth traits demonstrated significant varietal differences: B90K achieved the tallest plant height (116.64 cm), while LG51 had the longest spike (19.80 cm). Fertilizer levels influenced plant height, peaking at 40:30:20 kg NPK ha^{-1} (108.51 cm). Yield attributes showed LG51 producing the most grains per panicle (71), while B90K had the highest test weight (40.53 g). Effective tillers per m^2 were highest in Bonus (254), and the 40:30:20 kg NPK ha^{-1} treatment produced the most (219). Grain yield results indicated B90K as the best-performing genotype, yielding up to 1.8 tons/ha, particularly under higher fertility levels. The 60:50:40 kg NPK ha^{-1} treatment resulted in maximum yields (1.18 tons/ha). Correlation studies showed that number of grains per panicle (0.962*), 1000 grain weight (0.92) and biological yield (0.96*) has significant and positive correlation whereas heading days (-0.2), lodging (-0.91**), number of tillers per m2 (-0.86**) and number of leaves (-0.2) have negative correlation with grain yield in context of variety, fertilizer dose and with their interaction. In conclusion, the B90K showed superior adaptability and yield potential under all fertility levels, particularly at 60:50:40 kg NPK ha^{-1}. LG51's early heading and Bonus's biomass potential offer context-specific advantages. These findings recommend B90K for better adoption in Terai region of Nepal under optimal fertility management.

Keywords: Barley, fertility management, grain yield, productivity, spikes, sterility

O73 Farmer Producer Organizations: An Economic Study in Garhwal Division of Uttarakhand

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To overcome the problems and multifold the income of small and marginal farmers, the government has launched a new form of collective organization called Farmers Producer Organization. In Uttarakhand, average landholding constitutes around 0.95 hectare. One of the major challenges is aggregating small and marginal farmers to enable them to integrate with agricultural market. The study was aimed to achieve three objectives viz., to examine the business performance of selected farmer producer organizations, to analyze the marketing efficiencies and to identify the constraints faced by members of Farmer Producer Organizations and various non-members. Balance sheet analysis revealed that the current ratio and acid test ratio of selected six FPOs was more than one which indicate the sound financial status. The net capital ratio and equity to asset value ratio of all six FPOs were more than one which means the fund of lenders is safe and also highlights the profit of the organization. Income statement analysis revealed that the efficiency ratio and profitability ratio of selected six FPOs was less than one which indicates that organization was able to meet out its expenses. The ratio within one indicates that the organization spent less than what it earned in carrying out its operation. The Garrett's ranking analysis depicts that the major constraints faced by members of FPO was lack of proper infrastructure, unawareness of credit facilities, price fluctuations over the year where untimely, costly and poor-quality inputs and lack of awareness about grading and packaging were minor constraints. The important constraints faced by non-members were delay in payment, exploitation by middle men, lack of market information, lack of facilities of transportation, poor market linkage, lower price for produce and distress sale and lack of extension facilities. Suitable recommendations from the study were FPO farmers should be trained about strategic decisions, awareness and knowledge about management and marketing skills, because small and marginal farmers were primary producers, they need to learn modern marketing and management tactics for value added products

Keywords: FPO, financial feasibility, Garrett's Ranking, income statement

O74 Socio-cultural significance of grain legumes in Nepal

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Grain legumes play a vital role in nutritional, societal and emotional wellbeing of Nepalese population. Despite huge impacts on the socio-cultural aspects, studies have been scarce in this sector. This study is among the first of this kind aiming to explore the socio-cultural impact of grain legumes in Nepal. Students from various social/ethnic/regional groups of Faculty of Agriculture, Far Western University were the population for this study. The 110 students were divided into five groups, each of the groups discussed and explored the major grain legumes used in their community, explored several aspects related to their local customs and traditions in the use of grain legumes during several occasions and for conducting several rituals. Again, the findings were validated through triangulation within small ethnic/regional groups from other batch of students. A total of 10 focused group discussion was carried out during the study period. Nutritional, environmental and ritual aspects of grain legumes have been explored in detail to the extent possible. However, due to vast diversity of ethnic/regional population, we were able to explore only a few communities. The results revealed that grain legumes are the integral part of local lifestyles across all the ethnic/regional groups, which has been impacting positively to the local ecosystem and the livelihoods. There are several rituals, practices and belief systems linked to grain legumes which nurture social harmony and promote climate-resilient nutrient enriched food system. It can be concluded that much need to be explored yet. Moreover, exploring the scientific base for these customs and traditions will help further promote their conservation and use, which is both nutritionally beneficial as well as environment friendly.

Keywords: Customs, ethnic diversity, food culture, rituals, way of life

O75 Evaluation of hybrid maize genotype for yield and yield attributing traits in Birendranagar-2, Surkhet

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Maize isthe second most grown cereal and major staple food in the hilly region of Nepal. With changing consumer habit, increasing industrialization and urbanization, the demand of maize for food and feed is increasing day by day and the alternative to address increasing demand is hybrid maize which has higher yield potential as compared to traditional varieties. The experiment was conducted in Birendranagar-02, Hilekhali, Surkhet from March to July of 2024. Eighteen different genotypes of hybrids were laid out in Alpha-Lattice Design comprising of two replication and six blocks. The phenotypic variation (%) ranged from 6.22 (plant height) to 17.69 (yield) and the genotypic variation (%) ranged from 4.81 (cob length) to 14.23 (yield). Most of the studied traits showed positive correlation with yield. Genotype RH16 had the highest yield (5.47t/ha) followed by NH-2223 (4.88t/ha), RML2141/RML2259 (4.82t/ha) NH2226 (4.72t/ha). Based on yield performance of genotypes, above genotypes could be promoted as high yielding genotype in Birendranagar, Surkhet.

Keywords: Correlation, Genetic Coefficient of Variation (GCV), Hybrid Maize, Phenotypic Coefficient of Variance (PCV)

O76 Effect of Rhizobium, Phosphorus and Molybdenum on Growth, Yield and Root Nodulation of Mungbean (Vigna radiata L.) at Tikapur, Kailali, Nepal

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An experimental trial was conducted at Tikapur, Kailali during spring season of 2024 to study the effect of *Rhizobium* and molybdenum on growth, root nodulation and yield of mungbean. The trial was laid out in randomized complete block design with three replications and eight treatments. Ammonium molybdate as a source of molybdenum and single super phosphate for phosphorus supplement was used. The experimental results revealed that application of *Rhizobium* in combination with 60 $kgha^{-1}$phosphorus and 1.5 kgh^{-1} molybdenum had significant influence ongrowth parameters such as plant height (43.9 cm),number of leaves (14), number of branches (5-6), number of pods (38), pod length (8.44), number of seeds per pod (10.7), as well as root parameters viz. root length (17.7 cm), total nodules (51-78), effective nodules (39.4), dry weight of root (5.05 gm), , followed by *Rhizobium*along with 60 $kgha^{-1}$ phosphorus and 1 kg ha^{-1} molybdenum. Similarly,grain yield (443 $kgha^{-1}$), biomass yield (615.05 $kgha^{-1}$) and 1000 grain weight (54.59 gm) were also recorded highest at Rhizobium + 1.5 $kgha^{-1}$molybdenum. The effect of Rhizobium inoculation alone as well as increasing level of phosphorus and molybdenum was significant over control for all these parameters. All these parameters were recorded lowest at control concluding Rhizobium + 60 $kgha^{-1}$ phosphorus + 1.5 $kgha^{-1}$ molybdenum as best combination for growth, nodulation and yield of mungbean under Tikapur condition.

***Keywords*:** Biological nitrogen fixation, biomass, inoculation

O77 Effect of Seedling Density on Growth and Yield of Spring Rice

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An experiment was conducted at Bhajani Municipality, Kailali, Nepal from February to June, 2023 to assess the effect of different seedling densities hill-1 on the growth and yield of spring rice. The experiment was laid out in randomized complete block design with four treatments, viz. one, two, three and four seedlings hill-1, which were replicated five times. The individual plot size was 3m×2m with spacing maintained at 20cm×15cm, where the rice variety Hardinath-1 was tested. Several growth parameters like plant height, number of tillers per plant, leaf number and yield attributing characters like effective tillers per m2, panicle length, filled grains per panicle, sterility percentage, thousand-grain weight, grain yield, straw yield and harvest index (HI) were monitored to evaluate the crop's performance under each treatment. Results indicated that varying seedling densities had a significant effect on most of the yield attributing characters and yield except thousand-grain weight, filled grains per panicle and sterility percentage. The highest plant height was observed in one seedling hill-1 (89.26cm) followed by three seedlings hill-1 (87.47cm). A significantly higher number of tillers per plant (15.84), effective tillers per m2 (431.8), grain yield (6.08 t/ha) and straw yield (9.94 t/ha) were obtained at three seedlings hill-1. The longest panicle length was obtained at four seedlings hill-1 (23.84cm) and one seedling hill-1(23.75cm). Three seedlings hill-1 was found to have exhibited superiority in most of the yield attributing traits and yield as compared to other seedling densities for cultivation of Hardinath-1 variety in Kailali. This study, however, recommends further experiments with similar treatments for conformity of the results.

Keywords: Chaite dhaan, Hardinath-1, planting density, plant population, seedling per hill

O78 Effect of Weed Management Practices on Growth and Yield of Spring Rice

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The field research was conducted at Bhajani, Kailali from February to June, 2023, to study the effect of different weed management practices on the growth and yield of spring rice. The experiment was setup using randomized complete block design (RCBD), with five treatments replicated four times. The treatments included the application of Pre-emergence herbicide: Pretilachlor 50% EC, the Post-emergence herbicides Bispyribac Na 10 %SC, weed free (weeding at 15 days intervals), weeding at 30 and 60 DAT and no weeding (control). The rice variety Hardinath-1 was used for the experiment following recommended dose fertilizer dose 120:40:40 N: P: K/ha. Data regarding plant height, tiller numbers/m2, panicle length, grains per panicle, sterility percentage, thousand grain weight, grain and straw yield were recorded. All the parameters were significant except thousand grain weights, sterility percentage, harvest ndex and straw yield. Among different treatments, plots treated with Pretilachlor recorded highest plant height (84.20cm) and tiller number (14.38/m2), followed by the plots treated with Bispyribac Na at 90 DAT. Likewise, the plots treated with Bispyribac Na recorded a significantly higher number of effective tiller/m² (421.25) and grain yield (5.8t/ha). The application of Bispyribac Na was found to be the most effective in controlling weeds and achieving an ample yield. Bispyribac Na can be a better alternative for weed control in comparison to laborious hand weeding in spring rice.

Keywords: Pre-emergence herbicides, post-emergence herbicides, weed, rice

O79 Study on Prevalence of Subclinical Mastitis and associated risk factors in registered buffalo farm of Tikapur municipality, Nepal

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Mastitis is one of the most common and economically important disease impacting dairy herds globally. Subclinical mastitis is the inflammation of mammary tissue in the absence of clinical signs, which causes physical and chemical changes in milk as well as pathological changes in the udder. A high somatic cell counts in milk and a notable decline in milk both in terms of quality and quantity lead to increased production costs. Subclinical mastitis is subtle and more difficult to detect. A cross-sectional study was carried out from April 2024 to July 2024 to assess subclinical mastitis, its prevalence and identify associated risk factors for mastitis. For this study, Tikapur municipality was selected purposively. Milk samples from 61 lactating buffaloes (244 quarters) were examined to detect subclinical mastitis by California Mastitis Test (CMT). The collected data was processed and analyzed using MS Excel and Statistical Package for Social Sciences (SPSS). Overall prevalence of subclinical mastitis was found to be 18.03% (n = 11/61) and 9.01% (n = 22/244) at animal level and quarter level, respectively. Data on potential risk factors including breed, age, parity, lactation stage, feeding practices, housing system, bedding materials, floor type, milking method, teat dipping and herd health were collected through questionnaire surveys to respective owner. However, statistical analysis revealed that the examined risk factors did not show significant associations with the prevalence of subclinical mastitis. These findings suggest that other unexamined factors may influence the development of subclinical mastitis. Further research with larger sample sizes and a broader scope of risk factors is recommended.

Keywords: California mastitis test, cross-sectional study, parity

O80 Exploring the Energy Matrix: The Impact of Saturated and Unsaturated Fats on Broiler Health and Productivity

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Nutritionists and farmers face challenges in feeding animals for profit, especially when raw material prices rise. Poultry requires a higher energy ration due to its higher body temperature. Feed alone costs 65-70% of total broiler production, leading to high poultry meat prices. Poultry feeding and nutrition have been significantly changed, surpassing that of any other species. The RATWG meeting (2070,71, 72 B.S) and NARC meetings have identified high feed and production costs in poultry feeding and suggested alternative feed resources. The main objective of this research was finding the impact of use of saturated and unsaturated fat on blood parameters and productivity.210 Cobb-500 broiler birds used in a experiment in completely randomized design (CRD), involve seven treatments, each with ten birds, prepared separate feed formulation with isocaloric and isonitrogenous diet, as per the Cobb 500 manual guide (2008). The diet formulations included basal diets (T1), 2% Hydrogenated vegetable oil (T2), 1% Hydrogenated vegetable oil + 1% Mustard oil (T3), 2% Mustard oil (T4), 4% Hydrogenated vegetable oil (T5), 2% Hydrogenated vegetable oil + 2% Mustard oil (T6), and 4% Mustard oil (T7). Feed and water were provided ad libitum throughout the experimental period where fed using a three-phase system, starting from the first week to 14 days, 15 to 28 days, and 29 to 42 days. Data on body weight, feed intake, and mortality will be recorded at occurrence. T4 diet had the best FCR (1.85). Mortality was higher on T1. The dressing percentage did not change substantially; nevertheless, it was maximum (82.36%) in T5 and lowest (77.02%) in the T6 diet. The birds on T1 had low sugar, protein, and globulin levels, but the birds on the fat and oil diet had higher sugar levels than the control diet. The control diet had the highest T3 and T4 concentrations in the serum. It indicates that both saturated and unsaturated fats have immunological attributes as well as beneficial effects on alleviating stress. So, to minimize the stress and increase the nutrient density of the feed, fat or oil can be incorporated in poultry diet.

Keywords: Broiler, energy matrix, production parameters, blood parameter

O81 Marine Conservation, Sustainability and Design Protection: The Case of Underwater Gardens

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Marine conservation is key to safeguard the health and wealth of the Planet Earth. The oceans consist of three quarters of the Earth's surface that supports feeding half of the world's population. Further, it is home to millions of known, unknown and endangered animal species that directly and indirectly balance the marine environment. Quintessentially, it is the life support system of our 'Blue Planet' that regulates climate on a global scale. On the backyard of this, how 'Underwater Gardens', an innovative tech-savvy initiative is trying to protect fast depleting marine livestock will be studied. This research was conducted by employing Survey Method to examine all the available secondary literatures, reports, working papers etc to address the research gaps and to underline the scope for future research. It is argued that it is 'creating responsible innovation' and its protection under the Hague System of the World Intellectual Property Organization (WIPO) may encourage such other noble missions to prioritize sustainability and ecological responsibility towards the marine ecosystem. This article found how design protection leading to responsible innovation may create a band of environmental stewardships to halt debilitating changes in the ocean life. In the face of emerging climate changes, a commitment to innovation and collaboration between the global governance of Intellectual Property Rights (IPRs) and the environmental leadership is seriously advocated for marine conservation. It is to be pursued both at national and international levels to limit man-made damages to marine life and maintaining sustainable ocean and sea habitats. Finally, accepting the fact that marine ecosystem is irreversibly damaged and ocean management being treated separately by their terrestrial counterparts, it demands a comprehensive policy framework through IPR protection in undersea areas.

Keywords: Marine conservation, sustainability, design rights, WIPO, ecological responsibility

O82 Mapping Value Chain Gaps in Lemongrass Cultivation, Value Addition and Marketing in the Uttarakhand Himalaya: An Action Research Study on Lemongrass Essential Oil Production

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The cultivation and processing of medicinal and aromatic plants (MAPs) offer immense potential for additional income generating opportunities in mountain regions. Despite the ecological and economic significance of MAPs, value chains in the Uttarakhand Himalayas remain fragmented, limiting their impact on smallholder mountain farmers. To address this challenge, the Institute of Himalayan Environmental Research and Education (INHERE) conducted an action research initiative focused on steam distillation of Lemongrass (*Cymbopogon citratus*). Using a Public-Private Partnership (PPP) model, the study aggregated produce from local farmers, facilitated access to government-funded distillation infrastructure, and collaborated with private entities for value addition and marketing. This multi-stakeholder approach enabled the mapping of critical gaps in the Lemongrass value chain, including logistical inefficiencies, harvesting and post- harvesting techniques, technical limitations in processing infrastructure, and market access barriers. The findings provide a blueprint for scaling similar initiatives in comparable mountain landscapes in the Central Himalayan region particularly the Far-West region of Nepal, which shares topographical and agricultural similarities with the Uttarakhand Himalayas. By highlighting the potential of PPP model, this study emphasizes the importance of integrating stakeholder collaboration to address structural gaps in Lemongrass value chain. The research contributes to the broader discourse on climate resilient agriculture, rural livelihoods, and mountain development. It underscores the need for capacity building, targeted policy interventions, and infrastructure enhancement to unlock the full potential of Lemongrass processing in the Himalayan region and beyond. The paper, thus, seeks to present actionable insights on understanding Lemongrass value chain in the mountain regions of Uttarakhand. It further aims to foster discussions on exploring potential public private partnership approaches for processing similar Himalayan medicinal and aromatic crops.
Link to the initiative: https://www.youtube.com/watch?v=3hX_l7QxgNo&t=7s

Keywords: Himalayan medicinal and aromatic crops, lemongrass, public-private partnership, value chain, sustainable development, central Himalayas

O83 Between Rivers and Risks: The Struggles of Kutiyakavar's Flood-Prone Community

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Kutiyakavar, a small settlement in the southwestern part of Dodhara Chandani Municipality, Nepal, is uniquely vulnerable due to its location at the junction of the Mahakali and Jogbuda Rivers along the Nepal-India border. Home to 44 households, predominantly Dalit (81.9%), Janjati (6.8%), and other marginalized groups (11.3%), the community faces recurring monsoon floods exacerbated by climate change. These floods cause severe soil erosion, agricultural losses, livestock mortalities, and frequent displacement, disrupting livelihoods and intensifying socio-economic marginalization. The study aims to explore the vulnerabilities of this flood-prone community and analyze their livelihood strategies among recurring disasters. Using a census-based approach, data were collected through household surveys, interviews, and focus group discussions to assess socio-economic challenges, resilience mechanisms, and cross-border interdependencies. Results show that the community's history spans over five decades, during which repeated floods have reshaped its geography, forcing residents to rebuild on increasingly vulnerable land. Poorly constructed housing made of grass, wood, and mud offers little disaster resistance. With limited local employment opportunities, 94% of men migrate to India for work, making remittances the primary source of income. However, this dependency intensifies economic instability. Educational attainment is low, with only 5% of males completing school and 80% of women lacking literacy. Inadequate healthcare facilities, and insufficient flood-resistant infrastructure further compound vulnerabilities. Despite NGO and government efforts to construct safe houses, they remain insufficient for the entire community during crises. Cross-border interdependence, marked by reliance on Indian markets and inconsistent relations with Indian security forces, adds complexity. The study concludes that transboundary cooperation in river management, strengthened flood-resilience infrastructure, and community-driven disaster risk reduction initiatives are essential. Sustainable adaptation policies are critical for safeguarding the long-term well-being of Kutiyakavar's residents.

Keywords: Rivers and risk, vulnerability, flood-prone community, livelihood strategies, Nepal-India border, transboundary cooperation

O84 Exploring Circular Economy Potential in Municipal Waste Composition and Management Practice

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Rapid urbanization and population growth have exacerbated the challenges for municipal solid waste management where traditional practices like open dumping and waste burning persisting. This emphasizes the need to explore sustainable alternatives for waste management. This study aims to address the existing gap by analyzing the composition and challenges of municipal solid waste management systems in Bheemdatt Municipality, Kanchanpur, Nepal. Primary data were collected from three Key Informant Interviews (KIIs) with waste management focal person, private investors and sanitation committee representative of municipality. Experimental households survey in 381 households with 95% confidence level were selected for survey. Socioeconomic diversification, caste ethnicity and geographical location of sample households were considered. Wards of municipality were considered as cluster and sample households were selected randomly from each cluster area. Sample size was distributed for each ward based on their total households' numbers. Findings reveal organic waste predominance, with approximately 57.40% of total household waste being organic kitchen waste. Plastic waste constitutes approximately 5.13% of the total waste generated. Paper waste represents about 6.77%, textile 2.44%, rubbers 1.60%, metal 5.97%, glass 5.65%, e-waste is 1.03% and others 14.01% of the total waste. Waste generation rates is 267 grams per person per day. Challenges include technological limitations, human resource shortages, poor policy implementation and inadequate infrastructure. Recommendations emphasize the essential for municipality to prioritize the development of comprehensive waste management plans. Following this, expanding waste collection coverage is crucial to ensure that all households and businesses are included. Additionally, raising community awareness on source segregation, developing infrastructure for waste sorting, and promoting collaborative governance by engaging private stakeholders are vital steps. Supporting green enterprises will further contribute to mitigate waste management challenges and establishing circular economic practices for sustainable municipal waste management system.

Keywords: Municipal waste, circular economy, waste composition, challenges, green enterprises

O85 Reclaiming the Invisible Hands through Collective Leadership Roles of Rural Women in Forest Management and Governance

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Grassroots movements led by rural women have become significant in resisting exploitation by neoliberal forest policies and promoting sustainable practices. This study examines the leadership of rural women in the Joint Forest Management Committee (JFMC) of Brindabanpur village, Bankura district, West Bengal, as an ecofeminist model of resistance against neoliberal policies. Ecofeminism is a theory which connects the exploitation of nature with the oppression of women and identifies their shared roots in capitalist- patriarchal systems. It emphasizes the interconnectedness of ecological health, gender justice, and social equity, by highlighting how women's marginalization often parallels environmental degradation. This study explores how women-led leadership in forest governance counters neoliberal policies and promotes sustainable ecological practices. It also investigates the intersection of gender justice and ecological resilience in the collective actions of rural women in forest conservation. The research employs a qualitative case study approach through analyzing data from a census of 54 committee members through in-depth interviews, participant observation, and document analysis. Brindabanpur JFMC was chosen due to its significant involvement of women in decentralized forest governance framework and its role in protecting the Joypur Forest. The ecofeminist theoretical perspective provides a lens to explore how these women's leadership challenges neoliberal paradigms and resist exploitation by promoting collective decision-making, sustainable resource management, and the preservation of gendered indigenous knowledge systems. Their actions include enforcing forest conservation rules, advocating for equitable benefit-sharing, and integrating traditional practices with contemporary conservation methods. These efforts have strengthened ecological resilience, reduced deforestation, and enhanced social equity through empowering marginalized groups. This research contributes to the discourse on ecofeminism and forest governance by demonstrating how women-led initiatives offer viable alternatives to capitalist- driven policies. It concludes with highlighting rural women's empowerment through inclusive decision-making, challenging power dynamics, and showcasing grassroots leadership's role in ecological sustainability.

Keywords*:* Ecofeminism, grassroots movements, Joint Forest Management Committee, neoliberal forest policies, women's empowerment, ecological sustainability

O86 Disaster Risk Reduction Knowledge and Perceptions among Students in Bheemdatt Municipality, Nepal

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The increasing frequency and intensity of natural disasters are growing global concerns resulting in human, livestock, environmental and economic losses. Bheemdatt municipality is a multi-hazard-prone region, particularly vulnerable to earthquakes, floods and landslides. The research aims to explore the perception of disaster risk and disaster risk reduction knowledge among class 10 students in Bheemdatt Municipality, Nepal. Students in the study area are at extreme risk of natural disasters when they are in schools and at home. This study used a descriptive research design with simple random sampling to select 14 schools from Bheemdatt Municipality. A total of 110 Class 10 students were randomly selected due to their academic background made them better equipped to understand disaster risks and take part in disaster risk. Students had limited knowledge of disaster risk reduction such as mitigation, preparedness, response and recovery. Moreover, girls were less involved in DRR activities than boys; highlighting a gender gap in DRR participation. Additionally, all students had experienced floods and earthquakes in the region, with many expressing that all disasters are inherently dangerous. This research highlights the need for targeted interventions to improve disaster education in the Bheemdatt Municipality, particularly for girls with lower participation in DRR activities. These interventions could strengthen disaster resilience through better educational programs.

Keywords: Disaster risk reduction, preparedness, students, mitigation, recovery

O87 Exploring Hydrochemical Dynamics and Water Quality: Insights from the Ramsar-Listed Ghodaghodi Lake Complex for Advancing Sustainable Development Goals

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Wetlands are recognized as some of the most diverse and productive ecosystems on the planet, offering essential ecological services that sustain life. The primary objectives of this research include assessing hydrochemical variations and determining the suitability of GLC's water for agricultural use, directly tackling local sustainability challenges in line with environmental Sustainable Development Goals (SDGs). Water samples were collected from Fourtynine different sites during both pre-monsoon and post-monsoon periods, and nineteen physicochemical parameters—including dissolved oxygen (DO), total dissolved solids (TDS), and major ions like calcium (Ca^{2+}), magnesium (Mg^{2+}), and bicarbonate (HCO_3^-)—were meticulously analyzed using standard on-site and laboratory methods. The water quality assessment employed several key indices, and multivariate statistical techniques, along with hydrochemical diagrams such as Piper plots. The results revealed significant seasonal variations, with pre-monsoon TDS levels averaging 143.1 mg/L compared to 78.9 mg/L post-monsoon, highlighting the impacts of evaporation and dilution. The hydrochemical facies of the GLC lakes, illustrated in Piper diagrams, predominantly displayed Ca–HCO_3 and Mg–HCO_3 types, indicative of carbonate weathering processes. The study reveals the significant consequences for environmental SDGs 6 (Clean Water and Sanitation) and 15 (Life on Land).Seasonal variations in water quality over this Ramsar-listed site, showing how factors including agricultural runoff, evapo-concentration, and natural water cycles can affect key hydrochemical parameters, including TDS, EC, and ion concentrations, notably Ca2+ and Mg2+. These differences directly supported SDG 6, which seeks to ensure the availability and sustainable management of water and sanitation.

Keywords: Wetland hydrochemistry, water quality, irrigation suitability, piper diagram, environmental sustainability

O88 Ecology, Production, Distribution and Traditional Uses of Critically Endangered *Nardostachys Jatamansi* DC. in Alpine Rangeland of Nepal

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This study aimed to assess the ecology, production, and distribution of *Nardostachys jatamansi* in Nepal's alpine rangelands, focusing on its growing stock, annual allowable harvest (AAH), suitable habitats, and optimal elevation ranges. Additionally, it documented traditional uses, management practices, and community-based conservation efforts by community forest user groups in these alpine meadows. A participatory resources inventory approach was used, establishing 25 m² circular plots with stratified random sampling (n=345) and 0.01–0.1% sampling intensity for ecological data collection. Habitat suitability was analyzed using the MaxEnt model, while principal component analysis (PCA) assessed environmental variables, including elevation, aspect, and climate. Traditional uses and management practices were documented at the community level. The study found the growing stock of *Nardostachys jatamansi* ranged from 10.3 to 293.1 kg ha^{-1}, with a total stock estimated at 51.4-295 tonnes across alpine rangelands. Habitat suitability encompassed 16,294 km², with high suitability concentrated in Karnali and Eastern Nepal. North and northwest aspects had the highest yield per hectare. Optimal production was observed at elevations of 3700–3900m, followed by 4000–4100m, while elevations of 3400–3600m had the lowest growing stock. This study underscores *Nardostachys jatamansi*'s ecological and economic importance, highlighting its role in alpine biodiversity conservation and rural livelihoods. Sustainable management and harvesting practices are essential for balancing ecological value and economic benefits, while enhancing resilience to climate change impacts for resource-dependent communities.

Keywords: Biodiversity, climate change, rangeland, traditional use

O89 Nepali Diaspora: A Catalyst for India-Nepal Relations

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The cultural, religious, and social fabric of Nepal and India share deep similarities, rooted in their shared historical heritage of Hinduism and Buddhism. These commonalities, along with geographical proximity, an open visa policy, the Treaty of Peace and Friendship (1950), and cross-border kinship ties, have facilitated significant movement of people between the two countries. A large Nepali diaspora resides in India, contributing to diverse sectors such as labor, trade, and religious tourism. This diaspora significantly influences the bilateral relationship, fostering both cooperation and occasional tension. Economic ties, underpinned by trade and investment, further bind the two nations, though the Treaty of 1950 remains a topic of debate. The presence of Nepali migrants in India offers both challenges and opportunities. While fostering cultural exchange and mutual understanding, it also highlights issues of social integration and diaspora representation. Matrimonial alliances and shared cultural practices have strengthened interpersonal and intercommunity ties, forming the foundation of India-Nepal relations. This study examines the multifaceted role of the Nepali diaspora in shaping bilateral relations, addressing their social, economic, and cultural impact. By exploring the diaspora's role in fostering inter-cultural understanding, economic development, and social cohesion, this research underscores the importance of peaceful coexistence and regional stability. It provides valuable insights for policymakers, enhancing border cooperation, conflict resolution, and environmental sustainability. Beyond policy, the study empowers communities by promoting appreciation for cultural diversity and fostering a more interconnected and prosperous society. Ultimately, the research contributes to enriching the cultural and social landscape of both nations while strengthening the historical bonds that unite them.

O90 Digital Transformation of Cultural Heritage: A Study of Sites in India

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The main contribution of this research is a comprehensive investigation of new technologies used for the digital transformation of CH. The article provides information on solution suggestions for the Cultural Heritage 4.0 concept of digital technologies. The use of data, network, and artificial intelligence (DNA) technologies, which are core infrastructure for digital transformation, is continuously expanding in the field of culture and arts.Technological developments have spurred a paradigm shift towards the digitalization of CH. This transformation has given rise to Digital Cultural Heritage (DCH), which upholds the fundamental goals of CH preservation and the amplification of public awareness Building heritage significantly contributes to the urban landscape, serving as a magnet for tourists and augmenting environmental quality within urban environments. Hence, legal safeguards are often implemented to preserve their visual appeal.This study employs a quantitative approach to conduct an in-depth analysis of Novel Technology Use for Digital Transformation of CH. The data extracted from the bibliometric database offers a comprehensive overview of the domains and tools in which Novel Technology has been applied within the realm of CH. The paper concludes with prospects for the future research in the field. The paper may enable a higher understanding of the relationship between technologies and concepts. The paper shall also explore challenges associated with it such degradation from natural disasters, the environment, and human impact. Environmental challenges are linked to the production of technological devices, with potential adverse impacts on natural resources and biodiversity. Social challenges encompass issues of equitable internet access and transparent decision-making processes.

Keywords: Cultural heritage, digital heritage, data visualization, digital reconstruction, artificial intelligence

O91 The Proliferation of Modern Buddhist Monasteries in India and Their Cultural Significance

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This paper examines the proliferation of modern Buddhist international monasteries in India, particularly those constructed by Asian countries near ancient Buddhist sites. Devoted to the teachings of Buddha, many Asian nations have built new temples and monasteries in locations such as Lumbinī, Bodh Gayā, Sārnāth, Kuśīnagar, Rājgīr, Śāvasti, Sankisa, and Vaiśālī. Since the 20th century, these sites have witnessed remarkable growth in the presence of temples and monasteries, primarily from Eastern and Southeast Asian countries. Furthermore, this paper offers a comparative study of the art and architecture of Buddhist temples and monasteries across various countries, including China, Sri Lanka, Myanmar, Thailand, Vietnam, and Japan. Notably, the architectural styles of temples and monasteries often differ from one site to another within a single country, reflecting regional and cultural variations. The paper also investigates the role of kings
and patrons in the construction of modern temples and monasteries, using the late King Bhumibol Adulyadej of Thailand1 as a case study. His contributions to the building of Thai temples at historical Buddhist sites have incorporated elements of traditional Thai and Mon Buddhist architecture. An interesting aspect explored in this paper is how Eastern and Southeast Asian countries express their cultural identities through Buddhist art and architecture, and how these religious structures serve to preserve and promote national culture and identity.

Keywords: Modern Buddhism, Buddhist Art & Architecture, Buddhist Cultural Identities

O92 Integrating Indigenous Knowledge into Development Initiatives: Examining Cultural Erosion and Contemporary Shifts in the Rana Tharu Community of Sudurpaschim Province, Nepal

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The study explores the socio-cultural and economic transformations of the Rana Tharu community in Kailali and Kanchanpur, highlighting their unique traditions and social institutions. Despite their rich cultural heritage, the community faces significant challenges due to the pressures of modernization and westernization. The research identifies key socio-cultural changes and explores the challenges of cultural preservation and management amid these shifts. Employing historical analysis, comparative perspectives, and field observations, the study integrates secondary data with primary ethnographic methods. Data collection involved interviews and focus group discussions within Kailali and Kanchanpur districts. This study underscores the evolving socio-cultural and economic dynamics of the Rana Tharu community while highlighting the importance of initiatives such as home-stay programs in their villages. These initiatives aim to safeguard and revitalize the community's socio-cultural institutions, fostering sustainable cultural practices. Ultimately, the research emphasizes the need to protect the Rana Tharu's cultural values and traditions as they navigate the complexities of modernity.

Keywords: Rana tharu, culture, bharra, bhalmansa, padhana, tradition

O93 Economic Potential and Green Transition: Analyzing the Economic Sectors of Dhangadhi Sub-Metropolitan City

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Abstract
This study evaluates the economic landscape and green transition potential of Dhangadhi Sub-Metropolitan City (DSMC), the economic hub of Sudurpashchim Province, Nepal. The research aims to assess the contributions, challenges, and growth potential of key economic sectors, and analyze the feasibility of waste management as a driver of economic and environmental sustainability. A mixed-methods approach integrates quantitative analyses—such as GDP calculations, sectoral contribution assessments, and cost-benefit analyses of waste management projects—with qualitative insights derived from interviews, focus group discussions, and stakeholder consultations. Primary data were collected from municipal authorities, economic associations, and waste management representatives, while secondary data were sourced from government records and economic reports. Preliminary findings reveal that the service sector dominates DSMC's economy, contributing 76.76% to the local GDP, followed by agriculture (18.12%) and manufacturing (5.12%). Despite rapid urbanization reducing agricultural output, opportunities for growth exist in modern farming practices, dairy production, and fish farming. The manufacturing sector faces structural challenges such as limited industrial land and workforce skill gaps, necessitating strategic interventions like vocational training and industrial policy reforms. Additionally, DSMC's burgeoning waste management sector demonstrates potential for job creation and revenue generation through recycling and public-private partnerships. These insights underscore DSMC's pivotal role in driving regional economic growth and highlight the need for targeted policies that align economic development with environmental sustainability. The findings have implications for urban economic planning, green job creation, and sustainable development strategies applicable to emerging economies globally.

Keywords: Dhangadhi Sub-Metropolitan City, economic analysis, green transition, GDP contribution, waste management, sustainable development

O94 Caste Discrimination and Untouchability in Nepal: Intergenerational Perceptions and Analysis

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Nepal underwent major political changes in 1950, 1962, and 1990. Radical change occurred particularly after the decade-long Maoist insurgency in 1995-2005. Nepal was declared as a nation free from caste-based discrimination and untouchability in the year 2006. Many forces are contributing to societal changes in Nepal. The process of social change may be imperceptible and cumulative, i.e., one may not easily perceive the processes of social change, although it is always taking place. There has been a substantial development in the education system, more advancement of technology, growing urbanization, and the effects of global trends, etc. Subsequently, much more is expected for the human rights of marginalized people, fair distribution of power and national resources. But due to the strong existing structural setup and cultural values built for thousands of years, backed by strong "SANATAN" Dharma, any form of new dynamics gets dissolved into the status quo causing sluggish change seemingly undeterred manner. This study applied a qualitative method. The study focused on the intersectionality of gender, geography, and diversity of the respondents and employed a cross-sectional approach to study the lived experience of Dalits over the last 70 years. Inter-generational experiences of Dalits falling under the Baby Boomer, Generation X, and millennial generations are interviewed. The method of sampling for the survey questionnaire was non-probability sampling under which the convenience sampling method has been employed. Factors determining the social changes, factors impeding the social changes, and the state of new equilibrium in the society have been analyzed through the lenses of the caste system and practice of discrimination. The older generations were under a higher degree of oppression. The middle-aged Dalits were less suppressed, and given access to education and other opportunities. Dalits from the younger generation are not explicitly discriminated. Many of the youngsters from the millennial category have not experienced extreme forms of discrimination today. There have been some changes in society regarding caste-based discrimination and the practice of untouchability. But yet the progress has not been as desired by Dalits. The discriminations are not as blatant as in previous years but continue in implicit manners. The traditional cultural values are quite stubborn. Evolutionary changes are more effective than the abrupt changes. The impeding forces need to be tackled jointly by Dalits and non-Dalits. More needs to be done in the academic field as changes brought by education are sustainable and maintain social harmony

Keywords: *Caste-based discrimination, untouchability, social change, radical change, evolutionary change*

O95 Potential Mate Selection Criteria of the University Level Students: Influence of the Changed Socio-cultural Mindset in Youths

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The main objective of the study was to identify the potential mate selection criteria of the undergraduate level students and examine gender gap in searching their potential partners. A total of 224 students studying in the bachelor level programmes of Pokhara University in the colleges located at Kathmandu city were surveyed during February to March 2024 using self-administered questionnaire. Data were analyzed using univariate descriptive statistics and bivariate level inferential statistics like Chi-square test. Findings of the study indicated that in line with other studies, there is gender variation in most of the criteria of potential mate selection by the undergraduate level unmarried youths. Male prefer the potential mate who is younger, shorter and lighter in body structure while female prefer the opposite in these attributes. Most females focus on the physical structure, education, occupation, income, wealth of their potential partners while males are more open to such criteria. Findings of the study suggests that the influences of changed socio-cultural mindset of Nepali youths who renounce inborn kinds of attributes like caste, culture and religion, while searching for the merit-based attributes like education, profession and income in their potential partners for creating an ideal family setup.

Keywords: Criteria, mate, potential, sociocultural, mindset, attributes

O96 Phonological Changes in Dotyali and Its Dialects: Historical Phonology and Dialectology Perspective

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Dotyali belongs to the Indo-European language family, the Indo-Iranian branch, and the Indo-Aryan subgroup, with a close historical relationship to Sanskrit and Prakrit. Nepali linguists commonly regard Dotyali as the official language of the ancient Doti Kingdom (13th century) (Chataut, 2001; Adhakari, 2014) until 1790 B.S. (Chand, 1995). However, there is a lack of linguistic material comparing the phonological systems of Dotyali and its modern dialects, including Doteli, Dadeldhuri, Bajhangi, Achami, Baitadeli, Darchuleli, and Bajureli. This study, drawing from ancient texts (selected from " Dotyali Brihat Sabdakos" "Belako Boli Bakhatko Itihas"), the author's collection of ancient scriptures, and extensive fieldwork, selects 50 pieces of Old Dotyali linguistic material, examines the phonological changes in written Dotyali across seven dialects (Dotyali and its dialects) investigates the changes in the phonological phenomena from both traditional phonology and phonemics perspectives, uncovering the phonological evolution rules in chronological order to explore the genetic relationship among dialects. Analyzing the dynamic phonological phenomena in the dialects tracks their phonological evolution, describes the relationship between Dotyali, and, for the first time, compiles the modern phonological system of Dotyali, laying a foundation for further research.

Keywords: Dotyali, modern dialects, phonological evolution, phonological rules

O97 Caste Discrimination and Untouchability in Nepal: Intergenerational Perceptions and Analysis.

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Nepal underwent major political changes in 1950, 1962, and 1990. Radical change occurred particularly after the decade-long Maoist insurgency in 1995-2005. Nepal was declared as a nation free from caste-based discrimination and untouchability in the year 2006. Many forces are contributing to societal changes in Nepal. The process of social change may be imperceptible and cumulative, i.e., one may not easily perceive the processes of social change, although it is always taking place. There has been a substantial development in the education system, more advancement of technology, growing urbanization, and the effects of global trends, etc. Subsequently, much more is expected for the human rights of marginalized people, fair distribution of power and national resources. But due to the strong existing structural setup and cultural values built for thousands of years, backed by strong "SANATAN" Dharma, any form of new dynamics gets dissolved into the status quo causing sluggish change seemingly undeterred manner. This study applied a qualitative method. The study focused on the intersectionality of gender, geography, and diversity of the respondents and employed a cross-sectional approach to study the lived experience of Dalits over the last 70 years. Inter-generational experiences of Dalits falling under the Baby Boomer, Generation X, and millennial generations are interviewed. The method of sampling for the survey questionnaire was non-probability sampling under which the convenience sampling method has been employed. Factors determining the social changes, factors impeding the social changes, and the state of new equilibrium in the society have been analyzed through the lenses of the caste system and practice of discrimination. The older generations were under a higher degree of oppression. The middle-aged Dalits were less suppressed, and given access to education and other opportunities. Dalits from the younger generation are not explicitly discriminated. Many of the youngsters from the millennial category have not experienced extreme forms of discrimination today. There have been some changes in society regarding caste-based discrimination and the practice of untouchability. But yet the progress has not been as desired by Dalits. The discriminations are not as blatant as in previous years but continue in implicit manners. The traditional cultural values are quite stubborn. Evolutionary changes are more effective than the abrupt changes. The impeding forces need to be tackled jointly by Dalits and non-Dalits. More needs to be done in the academic field as changes brought by education are sustainable and maintain social harmony.

Keywords: Caste-based discrimination, untouchability, social change, radical change, evolutionary change.

O98 Ḍeuḍā: Resonance of Folk Poetic Tradition

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This study explores the folk poetic ambiance of Ḍeuḍā, an oral art form deeply embedded in the cultural fabric of Sudurpaschim Province, Nepal. Grounded in the theoretical perspectives of orality and folklore studies, the research examines the poetic qualities, cultural significance, and communal essence of Ḍeuḍā songs. Using qualitative methodologies, including textual analysis, field observations, and interviews, the study highlights how Ḍeuḍā encapsulates the emotions, experiences, and traditions of its people. Characterized by simplicity, spontaneity, and a profound connection to communal life, Ḍeuḍā songs are rich in lyricality, rhythm, and emotional depth, reflecting the joys and struggles of everyday existence. These songs, composed and performed orally in dialogic or collective settings, address themes such as love, nature, social justice, and political commentary. Their oral transmission preserves historical memory while allowing for variation and adaptation, making each performance a unique cultural expression. The findings emphasize Ḍeuḍā as a living folk poetic tradition that bridges the past and present, retaining its authenticity through its deep roots in the lives of ordinary people. The collective emotions of performers and audiences shape its ambiance, fostering empathy and cultural solidarity. However, the study also identifies challenges to its continuity, including the impact of modernization and the decline of oral traditions. By situating Ḍeuḍā within the broader framework of folk poetic traditions, the research celebrates its role as a dynamic repository of cultural heritage and a medium of communal expression. The study advocates for sustained efforts to preserve and promote Ḍeuḍā, ensuring that its rich folk poetic tradition endures for future generations.

Keywords: Ḍeuḍā, folk poetic ambiance, oral tradition, cultural heritage, communal expression

O99 Post-secularism: An Emerging Approach to Subvert Dichotomy of Science and Religion

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Although postsecularism is sometimes mistakenly defined as a regressive concept for its advocacy of the revival of religion in the public sphere, it boasts of its capabilities to address issues such as inequality, injustice, and curtailed liberty in the Speaker of democracy in the age of capitalism. With the failure of secularization, as one of the grounds of modernity, and the impact of massive migration caused by globalization and the claim of role by religious organizations, postsecularism wakes from the dormant state and tries to balance the orthodox religion and extreme secularism. This article attempts to critically analyze the concept of postsecularism with its emergence and evolution in the West and the East, keeping in mind the failed promises of secularism and modernity at large, as well as the stimuli of postsecularism. Besides, it argues that postsecularism is a suitable theoretical approach in the contemporary world to explore the biases of science and religion and find the meeting point for them where just and equal human relations are envisioned to be significant. It compares and contrasts with the idea of secularism and turns to the concept of various thinkers that equip postsecularism to subvert the binary and hierarchy. The findings suggest that postsecularism provides a strong foundation for exploring the faultlines, exclusions, injustices, oppression, and paradoxes prevalent in various disciplines of study, including literary or fictional works, through the process of reflexivity and discursive translation, promoting harmonious interactions among multiple worldviews.

O100 Opportunities and Challenges of Women Entrepreneurship in Pokhara Metropolitan

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Women economic empowerment through entrepreneurship is a fundamental tool to enhance women economic autonomy, confidence build up, job creation, and is a pathway to respectful and dignified life. So, this study aims to understand and analyze the opportunities and challenges of women entrepreneurship. The research conducted among 149 randomly selected women entrepreneurs from 618 registered until 2023 in Lekthnath Chamber of Commerce and Industry used descriptive and inferential research design, and both qualitative and quantitative approach was adopted. The research relied on the primary source of information gathered through semi-structured questionnaire. There is a predominance of service and trading(retail) sectors among women entrepreneurs. The majority of them are found to have completed school level education. Agriculture and foreign employment are the major family professions of the respondents. Around three fourths of the respondents have invested below twenty lakhs. Partnership seems atypical with very few numbers of women engaging in collaborative business. Almost half of the women have made investment with loan from financial institution, while remaining through personal saving, household money and borrowed from friend or relatives. More than two third of them have accessed subsidized loan granted to women entrepreneurs. Education, technological access and competency, skill training and investment are associated with income. Preferential treatment in subsidized loan, other national and international level effort for women's economic empowerment, possibility of perpetuating gender role and economic role simultaneously through business are tailwinds for women entrepreneurship while traditional gender division of labor, uncooperative husband and family, inept legal and institutional setup are headwinds. There is correlation among the different dimensions (education, skill training, legal institutional, economic and gender role construction) constraining the women entrepreneurship.

Keywords: Constrains, empowerment, entrepreneurship; gender, opportunities

O101 Deudākhel as Liminal Escape from Normative Social Reality

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The purpose of this article is to investigate ritual dynamics of free-floating and most celebrated, but least admired and understood cultural heritage-deudā, predominant in Sudurpaschim far we and Karnali province of Nepal. Transmitting orally from generation to generation, deudā is performed in typical style on the occasion of feasts and festivals.This study tries to explore how deudākhel creates and enacts a sense of liminal communitas of participant during the performance. Literature surrounding the carnivalesque and liminality refers to the subversion of social status. As a qualitative and an interdisciplinary approach, this study interlinks concepts of carnivalesque and liminal communitas of transitional order developed by Makhail Bakhtin and Victor Turner to make an inquiry into the performative transference during the performance practice. The text written in Nepali language, field visit and the audio-visuals are the analytical research tools and techniques for the critical exploration. What is notable throughout the discussion is that the performance procession of deudā (khel) is metaphorical crossing of spatial and temporal constraints of rustic life that harmonizes and reactivates folk life. In fact, the performance with slanted steps, singing spontaneous cryptic refrains of deudāis the celebration of slippery moments of freedom and an escape from routined social responsibility. Though this, it is suggested that the northern foothill of Sudurpaschim and Karnali province of Nepal can be taken as the cultural capitals of deudā, and must be preserved capitals of deudā-tourism.

Keywords: Carnival, liminal, communitas, normative, deudā

O102 Exploring Women's Representations: Feminist Insights into Doteli Folktales

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This research examines the portrayal of women in Doteli folktales, analyzing gender representations and power dynamics within Doteli community. It focuses on how these tales, as key cultural texts, reflect patriarchal ideals and shape societal perceptions of gender roles. The study argues that most Doteli folktales with female protagonists present women in a negative light compared to their male counterparts. This bias underscores the relegation of power to males, who dominate through patriarchal discourse. The analysis is based on eight selected and translated tales from Purnanada Ojha's collection, with feminism, specifically feminist folklorist theory, as the guiding framework. Feminist folklorist principles, particularly those of Alison Lurie, have been applied to critique the gendered and stereotypical portrayal of women. Feminist folklorists challenge traditional narratives by deconstructing stereotypes and highlighting the marginalization of women's voices and experiences in folklore. The findings reveal that Doteli folktales often depict female characters as conforming to patriarchal norms, reinforcing male dominance. While some tales feature strong female protagonists who challenge chauvinistic norms and assert agency, these characters are typically portrayed negatively and face eventual decline, reflecting societal resistance to women's empowerment. The research concludes that Doteli writers and storytellers should reconsider their approach to crafting folktales, emphasizing the need for narratives that amplify women's voices and foster self-expression. Redrawn and rephrased folktales can play a transformative role in promoting gender equality, making them integral to Doti's cultural heritage and societal progress. By reshaping these narratives, contemporary storytellers can contribute to a more equitable representation of women, empowering them within both folklore and broader social contexts.

O103 Terrain of Conflict: Indigenous Outlook and Colonial Involvement in the Kumaon Tarai and Bhabar Landscape

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This paper aims to explore the intricate interactions and interpretations of the concept of landscape within the Tarai and Bhabar regions of Kumaon. It presents this landscape as a contested space, shaped by varying perspectives of the indigenous populations and colonial authorities. Significantly, it investigates the disruptions caused by colonial interventions, wherein the colonial state imposed a distinct vision of the landscape. This mental restructuring was executed through various policies, affecting a transformative impact on the local worldview. In this regard, colonialists acted as development experts, despite their overt aims being different. They sought to control the terrain by constraining the activities of local people, often perceived as wasteful or ignorant. The displacement of local knowledge, rooted in practical experience, in favor of external philosophical or ideological schemes illustrates a fundamental conflict. At the core of this exploration is the contrast between the perspectives of residents and colonial ideologies, each attributing disparate values to the landscape. Ultimately, the paper contributes to a deeper understanding of the intricate interplay between indigenous perceptions and colonial impositions in shaping the cultural and historical landscape of the region.

Keywords: Nature, cultural landscape, colonial intervention, tarai and bhabar regions

O104 Eco-tourism and Associate Lives across Tharu-inhabited Region of India-Nepal Border

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This paper explores the potential for developing the Tharu-inhabited region along the India-Nepal border, specifically focusing on the Farwestern region of Nepal and the Uttar Pradesh and Uttarakhand regions of India. The shared cultural borderland makes the Tharu-inhabited area for the preservation of cultural ecology from the practice of the Indigenous model of development. The paper studies the qualitative model on how the use of ecological resources and indigenous knowledge could help promote ecotourism and sustainable development between the two nations. The study involves the experiences of and interviewing Tharus residing at the border of Kailali and Kanchanpur. Using an ethnographic research approach, the study examines the collective experience of the common tribe across the border. The semi-structured interviews have been applied with almost two dozen participants from the bordering areas to answer specific queries. It involved Tharu community leaders, tourism business owners, and local legislators. Moreover, the paper uses Deborah Bird Rose and Davidow Vernoica's concepts of ecotourism and environmental sustainability to justify the use of borderlands of shared cultural groups for achieving the highest common welfare. The cultural commonalities of language, dress, food, houses, and cultural practices work to maintain harmonious relationships among themselves. However, minimal support and promotion from social organizations and public agencies hamper the much-needed cultural and economic development of the borderlands. Thus, the study of the cultural borderlands of the Tharu communities across the border helps to understand the crucial phases of eco-semiotics, cultural identity, and locally lived experiences of sustainable development.

Keywords: Tharu, cultural borderland, identity, ecotourism, development

O105 Imageries used for Hegemonic Domination and Othering in Joe Sacco's Palestine

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This study critically examines the use of hegemonic and othering imageries in the novel Palestine. Joe Sacco's non-fiction graphic novel Palestine depicts the painful experience and plight of people living in the West Bank and the Gaza Strip. The novel focuses on the interplay of visual and textual elements to reveal the covert discursive strategies that shape representations of displacement and marginalization. Employing Norman Fairclough's three-dimensional approach to critical discourse analysis focusing on textual analysis, discursive practice, and sociocultural practice - to uncover embedded power structures, while, Antonio Gramsci's concept of hegemony that examines how dominant ideologies are reinforced through both verbal and visual narratives, and Teun A. van Dijk's framework on othering that helps analyze the construction of social divisions within the novel. The research investigates how dominant groups assert power and marginalize others. Drawing on a close reading of Palestine and related scholarly works that underscore the experiences of displaced communities, the research illustrates that graphic multimodal narratives effectively exhibit the construction and reinforcement of social polarization. More broadly, the study highlights the role of graphic novels as critical sites of discourse and resistance, illustrating their potential to challenge dominant narratives, expose structural injustices, and provide alternative representations of marginalized communities.

Keywords: Graphic novels, critical discourse analysis, visual culture, hegemony, othering

O106 Understanding Kirati Ethnic Identity Formation in Nepal

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In South Asia, ethnic identity formation is a product of rich interplay between historical forces, colonial legacies, and post-colonial state-building efforts. The aim of the study is to understand the formation of ethnic identity of one of these historically significant Himalayan communities known as the *Kirati,* which includes a wide range of cultural groups residing in the eastern Himalayan region. The broader political and socio-cultural context of the region has invariably contributed to the loss of their culture and identity. However, Twentieth Century saw the rise of national consciousness in the South Asian region; identities based on religion, language and ethnicity began to crystallize. Under the circumstances, *Kiratis* found new hope and began to be actively engaged in reconstructing their culture and ethnicity in search of lost identities. Therefore, the aim of the study is typically to understand the process of ethnic identity formation of *Kiratis* in two levels – A) At the singular level, the study seeks to look into the formation of identity within the cultural groups – how the Limbus define their own culture and ethnicity distinctly from that of the Rais, thereby forming cultural boundaries. Similarly, how the *Sunuwars* distinguish themselves from the *Yakkhas* or the Limbus or the Rais and vice versa. B) At the cognate level, it attempts to understand how the boundaries between these cultural groups become permeable to form a more complex ethnic identity – the *Kirati* ethnic identity.

***Keywords*:** Ethnicity, culture, identity, ethnic boundaries, *Kiratis*

O107 The Shifting Identity and the effectiveness of policy provisions: Experiences of Dalit Communities Before and After Surname Changes

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Dalit community comprising of 13.6% population in Nepal experience and endure caste indignities rooted in the 3500 years institutional and systemic caste-based discrimination forced by various rulers down the history. The state of Nepal has taken ample policy actions to address the issue of caste-based discrimination and untouchability (CBDU). Despite these litigation measures in place, the Dalit Human Rights Book of Samata Foundation confirms that the rate of CBDU incidences have not reduced in the recent years as per the aspiration of the legal and policy actions. Eighteen years down the efforts of the state, the impact of these policy provisions is subject to study in assessing their effectiveness. Thus, the paper aims to generate policy recommendations based on the experiences of Dalit community with regards to surname change within policies relating to surname change of Dalit community. The study collected case studies from Dalit individuals who have changed their surname, comparative analysis of reported discrimination before and after surname change, interviews highlighting shifts in social acceptance, access to resources and interpersonal treatment. KII was conducted with lawyers and right activists from both Dalit and non-Dalit communities as well as scholars and law makers from Dalit community. The desk review of the available policy and legal instruments provided deeper insights into existing provisions.

The study explored that discrimination persists among those continually residing in the locality after the surname changes. The fact that their residence in the same locality for generations sustains consciousness of their identity to the neighbourhood. They also face difficulties in accessing reservation policies. Factors such as migration play a vital role in creating new identity with changed surname leading to dignified life. Therefore, policies relating to migration, urbanization, and other social protection should accompany the CBDU policies at local and federal levels.

Keywords: Surname change, Dalit, CBDU policies, caste indignities

O108 Empowering Women Through Microfinance: Economic Growth and Poverty lleviation in Sudurpashchim Province of Nepal

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Microfinance interventions have been widely recognized as tools for poverty alleviation and economic growth in developing countries. This study aims to analyze the impact of microfinance on economic growth and its contribution to poverty alleviation in Nepal. A descriptive and causal-comparative research methodology was employed to examine the cause-effect relationships between variables. The study utilized non-probability convenience sampling, with a sample of 380 women affiliated with Infinity Laghubitta Bittiya Sanstha Ltd. and Grameen Bikas Laghubitta Bittiya Sanstha Ltd. in Kanchanpur. Primary data were collected through a structured questionnaire, focus group discussions, and observations, while secondary data were obtained from records, papers, journals, and other microfinance-related publications. The regression analysis revealed that basic needs, living standards, income, employment, and the use of microfinance significantly influence poverty levels, with basic needs and the use of microfinance demonstrating the strongest relationships. The demographic profile of the respondents showed a predominantly middle-aged population with a focus on secondary education. Land ownership patterns varied, and there was a preference for private healthcare. The study also found significant shifts in water sources and financial support after affiliation with microfinance institutions. The findings underscore the importance of addressing basic needs, expanding educational access, and fostering financial resilience through microfinance to combat poverty. Further research is needed to explore additional variables for a more comprehensive understanding of poverty determinants.

Keywords: Microfinance, economic growth, poverty alleviation, living standards, basic needs, financial inclusion

O109 The Effects of Occupational Stress on Employee Performance: A Study of Nepal Telecom

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Employee performance is a critical determinant of organizational success, influencing productivity, profitability, and overall business outcomes. This study investigates the impact of occupational stress on employee performance within Nepal Telecom in Karnali Province, Nepal. Specifically, it examines how factors such as the working environment, workload, salary and benefits, and job security serve as predictors of employee performance. Data were collected from 325 employees of Nepal Telecom Ltd. using a structured questionnaire administered through convenience sampling. The study employed Pearson's correlation coefficient and regression analysis to assess the relationships between the independent variables (working environment, workload, salary and benefits, and job security) and the dependent variable (employee performance). The findings indicate that all four constructs—working environment, workload, salary and benefits, and job security—have a significant positive effect on employee performance. The study suggests a favorable working environment enhances employee performance by providing a comfortable and supportive setting. An optimal workload ensures employees are neither overburdened nor underutilized, thereby maintaining high performance levels. Competitive salary and benefits packages serve as motivators, while job security reduces anxiety and fosters a focus on performance. These results underscore the importance of managing occupational stressors to enhance employee performance.

Keywords: Employee performance, occupational stress, working environment, workload, salary and benefits, job security

O110 Effect of Human Resource Management Practices on Employees' Commitment in Hotel Sector

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The primary purpose of this study is to evaluate the effect of human resource management practices on employees' commitment in hotel sector. Quantitative research approach and confirmatory survey research design are utilized for the study. The study employed descriptive design to determine characteristics of the findings and causal comparative design because of the use of correlation and regression. Data were collected through a self-administrated questionnaire disseminated in 20 hotels in operating in Sudurpaschim Province. The 210 employees were selected as sample by using simple random sampling. The result shows that the recruitment and selection, training and development, compensation and reward, performance appraisal, growth opportunity has positive and statistically relationship impact on employee commitment in Nepalese Hotel sector. The study recommend that human resource managers should emphasize the critical role of HRMPs in enhancing employee commitment and motivating hotel employees to remain with their hotels. This study provides a conceptual model for researchers in the HRM practices and employee commitment.

Keywords: Recruitment and selection, training and development, compensation and reward, performance appraisal, growth opportunity, employee commitment

O111 Autoregressive Integrated Moving Average Predictive Modelling for Gross Domestic Product of China, Pakistan, And Bangladesh

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Gross Domestic Product (GDP) of a nation is an important index which reflects health and performance of an economy and its aggregate income. In this paper, annual GDP of three Asian economies for the time period 1960 – 2022 is used for predictive Autoregressive Integrated Moving Average (ARIMA) modelling. ARIMA is a time series analysis method that can capture temporal tendencies and trends in the data series. We seek to gain insights into the future expected trajectory of economic growth in the selected countries through long-term predictions for the time period 2023 – 2037. Augmented Dick Fuller (ADF) test is used to asses stationarity of the data. In the present empirical study, stationarity at the second order differencing with ARIMA (0, 2, 2) model is identified to predict GDP of China, ARIMA (2, 2, 1) model is identified to predict GDP of Pakistan, and ARIMA (0, 2, 1) model is identified to predict GDP of Bangladesh for the next 15 years. The finding shows that the forecast values of China's GDP will be $14123.90 per capita in 2023 and $29842.64 per capita in 2037, Pakistan's GDP will be $1589.066 per capita in 2023 and $2115.446 per capita in 2037, and Bangladesh's GDP will be $2880.167 per capita in 2023 and $5566.303 per capita in 2037. Our study provides skeletal guidance for governmental bodies and direct investors who rely for business planning and strategizing of the resources on reliable predictions of GDP per capita. Advance knowledge about futuristic GDP level enables administrators, investors and policymakers to make informed economic decisions that may steer economic growth, stability, and development in an optimum direction.

Keywords: GDP; ARIMA, Forecasting; Box- Jenkins methodology, autoregressive

O112 The Influence of Non-Monetary Reward on Enhancing Employee Performance of Commercial Banks in Birendranagar, Surkhet, Karnali Province

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Non-monetary rewards are rewards or benefits provided to employees that do not involve direct financial payments. These incentives are designed to motivate employees, enhance their job satisfaction, and improve performance. Therefore, non-monetary incentives play a crucial role in enhancing employee performance. The study aims to investigate the impact of non-monetary rewards on employee performance in commercial banks located in Birendranagar, Surkhet, Karnali Province focusing on how various non-monetary rewards such as flexible work arrangements, employee recognition, career development opportunities, and job promotions influence on employee performance. This research utilized a structured survey to collect primary data from 335 employees across multiple commercial banks in Birendranagar, Surkhet. Convenience sampling was employed to select participants, and the data were analyzed using descriptive and inferential statistical methods to identify trends and relationships between non-monetary incentives and employee performance. The findings reveal a positive and significant relationship between employee performance and factors such as flexible work arrangements, career development opportunities, and job promotions. Conversely, employee recognition was found to have a minimal impact on performance, indicating variability in the effectiveness of different non-monetary incentives. The study concludes that non-monetary rewards, particularly flexible work arrangements, career development opportunities, and job promotions, play a significant role in enhancing employee performance in the commercial banking sector. However, employee recognition, while valuable, has a less pronounced effect. These findings provide practical insights for bank managers and HR professionals, underscoring the importance of designing reward systems that prioritize impactful non-monetary incentives. By focusing on elements such as flexibility, professional growth, and advancement opportunities, commercial banks can improve employee engagement, boost productivity, reduce turnover, and foster sustainable organizational growth.

Keywords: Flexible work arrangements, employee recognition, career development opportunities, job promotion and employee performance

O113 Impact of Money Supply and Interest Rate on Stock Market Performance: Evidence from the Nepalese Capital Market

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This paper examines the influence of money supply and interest rate including other macroeconomic variables on stock market performance in Nepal, using the data spanning from 1994 to 2023. The study employed the ARDL model of co-integration analysis to examine the long-run and short-run relationships between the NEPSE index and some selected macroeconomic variables, including broad money supply, interest rates, real GDP, and remittance inflow. The findings revealed unidirectional causality from broad money supply to NEPSE index, by-directional causality between real GDP and NEPSE index and unidirectional causality between remittance flow and NEPSE index, but absence of causality between interest rate and NEPSE index. Moreover, the findings revealed that the money supply significantly and positively affects the NEPSE index, both in the long run and the short run, highlighting the importance of liquidity in stock market performance. But, interest rates show a marginally significant negative impact, indicating the dampening effect of higher borrowing costs on equity investments. The real GDP demonstrates a strong positive correlation with the NEPSE index, underscoring the critical role of economic growth in boosting corporate earnings and investor confidence. Conversely, remittance inflows exhibit no significant relationship with stock market performance, perhaps reflecting their predominant use in consumption and real estate. The negative and highly significant error correction term confirms that deviations from the long-run equilibrium are corrected in the subsequent period rapidly. These findings provide valuable insights for policymakers and stakeholders, emphasizing the role of macroeconomic stability in fostering sustainable growth in Nepal's stock market.

Keywords: Money supply, NEPSE index, macroeconomic variables, ARDL model, Nepal
JEL Classification: E44, E51, G10, C32, O53

O114 Economy as a Complex System

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The economy is an ever-changing system shaped by social norms, structures, and innovations. Mainstream economic theory and economic complexity the two primary approaches to interpreting economic phenomena. Mainstream economic theory has developed throughout history and is rooted in the belief that self-interested individuals or agents pursue maximum utility under given constraints. Economic complexity has emerged as a field of study when physicists and mathematicians shifted their focus to interconnections within the economy. They concluded that the current economic crisis was due to the failure of mainstream economic theories in highly networked economies. Therefore, this conference will discusses mainstream economic theory and its weaknesses in a changing economic system. The IT revolution has led to the emergence of a digital economy and platform ecosystem. A platform is where people connect, interact, and network by simplifying and enhancing market activities. Historian, Yuval Noah Harari describes the nature of markets in *Homo Deus: A Brief History of Tomorrow.* Prices in markets are determined by the combined actions of individuals, informed by their personal networks. Switzerland based Chinese professor, Yi- Cheng Zhang developed new structure of laws of demand and supply. In the market, there are three key players, including information goods, which psychologically influence the mindset of both buyers and sellers. As a result, the market components do not follow a linear pattern but instead operate in a nonlinear manner. J. Doyne Farmer, a renowned mathematician and a leading figure in complexity economics, described the economy as a complex system that cannot be effectively analyzed using traditional linear methods such as econometrics. Instead, he advocated for a bottom-up approach, suggesting that agent-based modeling is more suitable for studying the economic behaviors of individuals for policy making.

Keywords: Economy, mainstream, complex system, bottom-up approach

O115 The Effects of Job Security on Employee Retention: A Study of Insurance Sector in Karnali Province

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This study aims to analyze the effects of job security on employee retention with insurance sector in Karnali province, Nepal. Specifically, it examines how factors such as the supportive work environment, training and development opportunities, fair compensation and benefits, and supervisors and co-workers relationship serve as predictors of employee retention. Data were collected from 335 employees of different insurance companies using a structured questionnaire administered through convenience sampling. The study employed Pearson's correlation coefficient and regression analysis to assess the relationships between the independent variables (work environment, training and development opportunities, fair compensation and benefits, and supervisors and co-workers relationship) and the dependent variable (employee retention). The findings indicate that all four constructs—supportive work environment, training and development opportunities, fair compensation and benefits, and supervisors and co-workers relationship—have a significant positive effect on employee retention. The study indicates that a supportive work environment enhances employee retention by creating a comfortable and motivating atmosphere. Providing training and development opportunities helps employees stay engaged and productive. Fair compensation and benefits serve as essential motivators, while job security reduces stress and allows employees to concentrate on their responsibilities more effectively. Moreover, strong relationships with supervisors and co-workers cultivate a sense of belonging and support, further boosting their intention to stay in an organization. These findings emphasize the importance of managing key occupational factorssupportive work environment, training and development opportunities, fair compensation and benefits, and positive relationships with supervisors and co-workers to strengthen employee retention and enhance overall organizational performance.

Keywords: Employee retention, work environment, training and development opportunities, fair compensation and benefits, and co-workers relationship

O116 Empowering Connectivity: Financing Strategies for India-Nepal Electricity Trade

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The electricity trade between India and Nepal presents a path to strengthen energy security, stimulate economic development, and advance sustainable energy transitions in South Asia per say. This trade gives sustainable access to Nepal's extensive hydropower potential and addresses India's increasing energy demands focusing on shared energy challenges while promoting regional initiatives to lower carbon emissions with sustainable development in the region. The objective of this research paper is to assess the existing conditions of electricity trade between India and Nepal, pinpoint major challenges, and suggest sustainable financing options. Employing a mixed-methods strategy, the study combines qualitative evaluations of policy documents, bilateral agreements, and case studies with quantitative analyses of financial deficiencies and infrastructural requirements. Information was gathered from government reports, publications from multilateral agencies, and interviews with principal stakeholders in the energy sector. The findings indicates that insufficient infrastructure, regulatory disparities, and financial limitations continue to be the main obstacles to cross-border electricity trading. Creative financing solutions, such as public-private partnerships, concessional loans, and green bonds, are recognized as feasible approaches to tackle these issues. Furthermore, the study emphasizes the importance of regional collaboration and policy alignment in promoting sustainable and effective energy trade. The study concludes that overcoming these obstacles with focused financing approaches and improved cooperation can establish the India-Nepal electricity trade as a benchmark for regional energy integration. It also highlights the transparent regulations, foster regional cooperation, multilateral institutions and streamline approvals.

Keywords: South Asia, India, Nepal, Hydropower, Electricity, Sustainable Development Goals

O117 Microfinance and Financial Independence: Transforming Women's Lives for the Better – A Case Study of Microfinance Program of Udaydev Bahuudeshiya Sahakari Sanstha Ltd. (UBSSL) in Kanchanpur District, Nepal

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Microfinance has become a vital tool for promoting economic empowerment and financial inclusion, particularly among women in underserved communities. This study investigates the role of microfinance in enhancing women's economic independence in the Kanchanpur district of Nepal. Microfinance is a financial system where small, non-collateralised loans are extended for low-income earners (especially women) to invest in income-generating activities, alleviate poverty and improve socio-economic worth, using a descriptive research methodology adopting quantitative and qualitative research paradigms to explore the relationships between microfinance interventions and changes in women's roles, responsibilities, and decision-making capacities at the household level and community levels too. The study examines the extent to which access to microfinance services, including loans, savings, and skill development programs, impacts women's livelihoods, entrepreneurial activities, and decision-making capabilities. In this case, a simple random sampling method is used to choose 320 respondents who are involved in UBSSL's microcredit projects. The research relies on both primary and secondary data sources to understand the socio-economic outcomes of microfinance initiatives. Through structured interviews, surveys, and focus group discussions with women beneficiaries, the study highlights how microfinance has enabled women to increase their income, improve household welfare, and contribute to community development. Additionally, secondary data from reports and case studies provides context regarding the operational practices and outreach of microfinance institutions in the district. Findings reveal that while microfinance has significantly improved women's access to financial resources and entrepreneurial opportunities, challenges such as high-interest rates, limited financial literacy, and socio-cultural constraints persist. The study underscores the need for targeted capacity-building initiatives and supportive policies to maximize the benefits of microfinance programs. These insights are expected to guide stakeholders, including policymakers and microfinance practitioners, in enhancing the effectiveness of microfinance interventions in the region. This research adds to the wider discussion on gender equity, and offers policy and practice-oriented research implications for bridging socio-economic divides in Nepal.

Keywords: Microfinance, Women's Empowerment, economic independence, financial inclusion

O118 Application of Management Accounting Tools in Non-Life Insurance Companies of Nepal

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This study explores how management accounting tools are used in Nepal's non-life insurance sector, with a particular focus on budgeting, variance analysis, and cost-volume-profit (CVP) analysis. It evaluates how these tools contribute to better decision-making, cost control, and financial performance. The research uses a mixed-methods approach, combining data analysis with interviews conducted with financial managers from 20 non-life insurance companies across urban and semi-urban regions in Nepal. The findings highlight that budgeting and variance analysis are the most widely used tools, playing a crucial role in managing operational costs and improving profitability. However, the use of advanced tools like activity-based costing (ABC) and balanced scorecards remains limited. Although ABC is commonly linked to manufacturing and service industries, it is relevant to the insurance sector too. It helps allocate indirect costs, such as those for claims processing and underwriting, to specific activities or policies. This more detailed cost allocation offers valuable financial insights and supports better decision-making. The limited use of these advanced tools, however, restricts the sector's ability to optimize long-term financial strategies and achieve sustained growth. The study stresses the importance of adopting advanced management accounting tools to enhance strategic decisions and improve operational efficiency. It also underlines the need for targeted training specifically in management accounting rather than general financial management. Such training would equip financial teams with the skills needed to use advanced tools like ABC and balanced scorecards effectively. This, in turn, would strengthen their ability to tackle emerging challenges and refine financial strategies. By embracing advanced tools and prioritizing specialized training, Nepal's non-life insurance sector can elevate its financial management practices, fostering growth, sustainability, and competitiveness in the market.

Keywords: Management accounting, non-life insurance, budgeting, variance analysis, activity-based costing, financial performance, Nepal.

O119 Contribution of the Agriculture and Tourism Sector to the Nepalese Economy

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Agriculture is the main backbone of the Nepalese economy. At the same time, tourism is another important economic sector of Nepal with high potential. This paper analyzed the contribution of the agriculture sector which includes agriculture, forestry, and fishing; and the tourism sector which provides international tourism receipts to the GDP of Nepal. This paper examined the contribution of the agriculture and tourism sector to the Nepalese economy by using secondary time series data from 1995 AD to 2020 AD. This paper also used the secondary time series data related to the agricultural sector's value added to the GDP from 1965 AD to 2023 AD for trend analysis. The secondary time series data obtained from World Bank- World Development Indicators used descriptive statistics for descriptive analysis. This paper is based on multiple linear regression and uses the ordinary least square method for analyzing the significant relationship between dependent and independent variables. This paper used the GDP as a dependent variable, agriculture, forestry, and fishing as a main independent variable, and international tourism receipts as a supporting independent variable. This paper concluded a positive and significant relationship between GDP and the agriculture sector. At the same, time the empirical results of this paper also proved a positive and insignificant relationship between GDP and international tourism receipts.

Keywords: Agriculture, tourism, forestry and fishing, development indicators

O120 Impact of Talent Management on Employee Performance in Service Organizations of Surkhet District

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Talent management is a strategic process aimed at attracting, developing, retaining, and optimizing an organization's workforce to achieve its objectives effectively. In this setting, this study examines the impact of talent management practices on employee performance in the service sector of Surkhet District. This study employed a quantitative research approach, using surveys to gather data from 315 employees in the service sector of the Surkhet District, chosen for its demographic diversity and significance as the headquarters of Karnali Province through the convenience sampling technique. The area's varied workforce in terms of race, caste, age, sex, and marital status presents challenges in aligning employee performance with organizational goals, making it an ideal setting to study the impact of talent management practices. Data was collected through a structured questionnaire, and regression analysis using SPSS 25 was conducted to examine the relationships between key talent management variables and employee performance. The findings indicate a significant positive impact of independent variables—talent planning, development and attraction, recruitment and retention, and rewarding and compensation—on the dependent variable, employee performance. These practices enhance engagement, motivation, and productivity through strategic workforce planning, professional development, efficient recruitment, and competitive compensation, fostering organizational success. Service sector organizations in the Surkhet District face difficulties in adopting a strategic HR approach due to limited awareness, resource constraints, and a shortage of skilled professionals. The traditional emphasis on operational efficiency and challenges in managing a diverse workforce underscores the relevance of this study in exploring the potential of talent management practices to enhance organizational performance in the region.

Keywords: Planning, developing & attracting, recruitment & retention, rewarding & compensation and performance

O121 Prospects and Challenges of Tourism Development in Sudurpashchim Province, Nepal

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Abstract
Nepal and India share a 1,751-kilometer open border, fostering deep socio-cultural and religious ties. There is a long tradition of Nepalese visiting India for religious tourism, while Sudurpashchim Province in Nepal has significant potential as a tourist destination due to its natural beauty, biodiversity, historical and archaeological sites, and cultural diversity. This study aims to identify the prospects and challenges of tourism development in Sudurpashchim Province, exploring its potential attractions and obstacles that hinder its growth. The study employs qualitative and exploratory research methods, utilizing interviews with experts in geography, nature, socio-culture, history, and religious tourism. Key informants include businesspersons in the tourism sector and individuals crossing the Nepal-India border. Sudurpashchim Province possesses vast tourism potential due to its diverse landscapes, including the Himalayas, hills, and Terai. Key attractions include Api Saipal, Api Nampa, Mahabharat Lake, Chure Parvat, Suklaphanta and Khaptad National Parks, Ghodaghodi Lake, and religious sites such as Khaptad, Badimalika, and Parshuram Dham. The region also boasts unique cultural traditions such as Shauka and Botiya culture in the Himalayas, Khas Arya culture in the hills, and Tharu culture in the Terai. Traditional festivals, dances, and cuisine further enhance its tourism appeal. However, several challenges hinder tourism development, including inadequate infrastructure, poor transportation facilities, complex border-crossing procedures, lack of promotional activities, insufficient entertainment options, and a shortage of tourist information centers. Sudurpashchim Province has immense tourism potential, but infrastructural and administrative challenges must be addressed to unlock its economic benefits. Improved facilities, better connectivity, streamlined border processes, and extensive promotion are necessary to develop the tourism sector effectively. Enhancing tourism in Sudurpashchim can significantly contribute to employment generation and economic development. Policy interventions focusing on infrastructure, tourism promotion, and cultural preservation are essential for sustainable tourism growth.

Keywords: Tourism, Sudurpashchim, Nepal-India border, religious tourism, cultural heritage, infrastructure development

O122 The Role of Cooperatives in Promoting Socio-Economic Growth and Stability in Kanchanpur

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This study explores the pivotal role of cooperatives in advancing socio-economic growth, rural stability and development in Nepal, with a focus on agricultural, financial, and multipurpose cooperatives. By addressing collective economic and social needs, cooperatives act as democratic and inclusive business models, fostering community development, financial inclusion, and empowerment of grassroots stakeholders. Despite their significant contributions, cooperatives face critical challenges, including operational inefficiencies, limited adoption of digital technologies, and governance shortcomings such as a lack of transparency and accountability. To investigate these issues, data were collected using meticulously designed questionnaires, piloted for clarity and distributed to a random sample of 380 respondents across 50 cooperatives in Nepal. The study employed both closed-ended and open-ended questions to capture quantitative and qualitative insights, analyzed using descriptive statistical techniques. Key findings reveal that cooperatives enhance rural livelihoods by providing accessible credit, promoting savings and supporting community investments. For instance, 72% of respondents reported increased household income due to cooperative membership. Additionally, cooperatives were found to play a transformative role in empowering women and marginalized groups by fostering their inclusion in economic activities. This study concludes that while cooperatives are instrumental in driving socio-economic transformation, addressing operational inefficiencies, integrating modern technologies, and improving governance practices are crucial for their sustainability. The findings underscore the need for targeted interventions, such as the adoption of digital platforms, capacity-building initiatives, and enhanced governance frameworks, to ensure that cooperatives continue to serve as vital agents of rural development, economic empowerment and community stability.

Keywords: Cooperatives, socio-economic growth, rural development, financial inclusion, governance, empowerment

O123 Effect of Management Control Systems on Employee Performance of Saving and Credit Co-Operatives of Kailali District

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This study investigates the implementation of Management Control Systems (MCS) by savings and credit cooperatives in Kailali district and examines their impact on employee performance. The findings indicate that MCS is effectively used by senior management in guiding organizations towards their objectives. Data from 671 cooperatives in Kailali, with a 32% increase from 2077 to 2081, shows that 14% of these are savings and credit cooperatives. A random sample of 21 active cooperatives was selected, and data was collected from 62 respondents, including branch managers, officers, and subordinate staff. Descriptive statistics reveal a mean value greater than 3, indicating the presence of MCS practices, while the correlation analysis shows a strong positive relationship between MCS and employee performance, with significant correlations for budgeting ($r = 0.402$), control environment ($r = 0.545$), risk assessment ($r = 0.473$), information and communication ($r = 0.529$), and monitoring and supervision ($r = 0.630$) at a 99% confidence level. The regression model further supports the hypothesis, with an R^2 of 0.446, explaining 44.6% of the variance in employee performance along with p value 0.000. Overall, the study confirms that effective MCS practices are positively related to enhanced employee performance in savings and credit cooperatives registered under local government authorities within the district.

***Keywords**:* Management control system, budgeting, control environment, risk assessment, information and communication, monitoring and supervision

O124 Education and Local Resourcing Practices of Indigenous Communities: A Study of Karnali Region, Nepal

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The study investigates the significance of indigenous knowledge and practices in Nepal's Karnali region, with an emphasis on education, life skills, jobs, customs, and resource management. It emphasizes how oral traditions and skills like as farming, animal husbandry, and craftsmanship help to promote sustainable agriculture, cultural preservation, and community resilience. The study investigates the feasibility of incorporating these indigenous practices into modern education, business operations, and sustainable development, advocating for their inclusion in management frameworks to promote creativity, sustainability, and culturally sensitive, environmentally sustainable practices in both academic and industrial settings. The study employed a qualitative methodology, conducting in-depth interviews using discourse narrative technique of inquiry with three self-learned personalities to explore how informal learning processes and locally available resources management practices help local communities acquire survival skills efficiently and cost-effective resource utilization. The study highlights the importance of indigenous knowledge in promoting sustainable development through community-driven infrastructure projects using local materials, and advocates for its integration into formal education to enhance life skills and address community needs. It stresses the preservation of indigenous knowledge as a key resource for innovation, resource management, socio-economic progress, and strengthening local identity, particularly in the Karnali region.

***Keywords:** Indigenous knowledge, discourse narrative, resource management, sustainability, community resilience*

O125 Impact of Credit Risk, Liquidity Risk, and Operational Risk on Commercial Bank's Profitability

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The major objective of the study is to examine the impact of bank specific risk factors such as credit risk, liquidity risk, and operational risk on commercial bank's profitability operated in Nepali money market. The study consists of descriptive and causal comparative research design. All the data are collected from the annual reports of nine sample banks for 15 years from mid-July 2009 to mid-July 2023 with 135 observations. The explained variables are return on assets and the return on equity whereas the explanatory variables are capital adequacy ratio, non-performance loan, leverage, cost to income ratio, loan loss provision, and loan to deposit ratio. The research methods used for the study consists of descriptive statistics, correlation analysis, and regression analysis. The results confirmed that capital adequacy ratio, non-performing loan, cost to income ratio, and loan loss provision have the significant negative impact on commercial bank's profitability. In contrast, leverage ratio has the significant positive impact on return on equity only. Loan to deposit ratio do not has any significant impact on profitability. More clearly, credit risk and operational risk both have the significant negative impact whereas liquidity risk has the significant positive impact on commercial banks operated in Nepali money market. The policy makers involving in the money market and the executives taking decisions can be beneficiated from the findings if they consider these findings for their day-to-day practices.

***Keywords**:* Credit risk, liquidity risk, operational risk, commercial bank, bank profitability

O126 Reviving Indigenous Zari-Zardozi Work: A Case Study of the Rohilkhand Region in Uttar Pradesh, India

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Zar-Zardozi work has ancient origins in India and its neighboring countries known as the jewel of the Indian fabric craft. It is having cultural and heritage significance and its royal symbol status goes beyond its elegant, ravishing and visual appeal. It is a traditional embroidery work in which gold and silver threads are woven into fabrics using a needle, curved hook, scissors & trimmers. Precious metals are also used to create aesthetic and opulent designs on various types of garments, fashion accessories, home furnishings items, jewelry, bags, shoes, decorative items, and more. The various forms of Zari work include Zardozi, Kamdani, Mina Work, Gota Work, etc. Zari's traditional handicraft is losing its shine and becoming less popular and is only found in a few parts of India due to several reasons. Although there is significant downfall in the demand of Zari-Zardozi embroidery works, this traditional craft is deeply rooted in the Rohilkhand region of Uttar Pradesh. The objectives of the research are to find out the various reasons for downfall of this work in Rohilkhand region, challenges face by the workers and understand the role of latest technologies to rejuvenate this craft. To meet the research objectives, data are collected from primary and secondary sources. Primary data is collected from the artisans, workers and businessmen involved in this work in Bareilly and nearby regions like Nawada, Chandpur Jogiyan, Rithora, Senthal, Nawabganj, Sahi, Pilibhit, etc. It is found that Bareilly known as one of a big hub of Zari-Zardosi work among few cities of India is into shackles and facing several problems starting from sourcing the raw materials, issues related to manufacturing facilities, funding issues, to marketing and selling the products issues in home country and abroad. This sector requires more attention like proper training, innovative technologies for manufacturing, government supports, etc. to revive and get back its old royal status again in the years to come.

Keywords: Artisan empowerment, craft revival, Rohilkhand region, technology integration, Zari-Zardozi

O127 Revitalizing the Surma Industry in Rohilkhand: Merging Traditional Craftsmanship with Modern Innovation for Sustainable Growth

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Bareilly, an Indian city of Western Uttar Pradesh, located on the bank of Ramganga River is famous for multiple reasons. Its heritage and cultural identity are rooted in the traditional trades of Zari-Zardozi embroidery work, Bans-Furniture, Manjha, Surma, etc. Surma has been used since ancient times for beauty and is associated with various health benefits, especially for the eyes and may be used for treatment of different eye disease like low eyesight, burning and irritation in eyes, etc. It has also got its religious and cultural significance. People used to gift Surma in family gatherings on different occasions. Among other traders, Hashmi family got global recognition and they are maintaining their quality standards set by their forefathers. As the world is getting industrialized and with modern technologies, this trade is also affecting and creating lot of troubles to manufacturers and marketers. This trade was also badly affected in pandemic like other trades. The purpose of this research is to understand more about Surma trade business and their problems which are faced by them. Data are collected from primary and secondary sources. It is found that few families in Bareilly are still trying their best to revive this conventional trade. It is limited to few traders as other products entered into the market which caused losses to the local traders. Younger generation is less interested to use Surma as they find it old fashioned and unhygienic that's why their preferences are changing now days. The traditional business which was shining in ancient times and identity of Bareilly city and its traders, now facing extinction. It requires the assistance and support from state and central government so that local traders will revive this trade. It will also require the awareness among the society members to reap the benefits from this product though selling the product not only in local markets but it should also reach to global market through digital technology like online shopping options to keep unique identity alive, carry forward our traditions and empower this traditional trade for sustainable growth.

Keywords: Bareilly, Surma trade, traditional craftsmanship, sustainable growth, Zari

O128 Religious Scriptures and AI: Innovating with Traditional Knowledge and Modern Technologies

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The use of Artificial Intelligence (AI) to spread the ancient knowledge offers a golden opportunity to learn and preserve it in the digital age. As religious scriptures face the threat of loss due to modernization, this research explores the potential of AI in safeguarding and revitalizing traditional religious scriptures while maintaining its authenticity and spreading its light of wisdom around the globe. The data is collected from the secondary sources. It is observed that AI has the potential to safeguard the traditional religious scriptures in many ways and can share it at global level. It can be preserved and digitized through optical character recognition, faded text can be resorted and it can be translated into many languages. AI can enhance its accessibility and global reach by understanding scriptures in their language, provide answers of their questions, can convert text to speech who do not want to read or those who are visually impaired. It can also offer simplified learnings and summarize the content or provide deep insight in a simple, understandable way. The further research can be done how our religious scriptures can be used to reduce conflicts among the society members, how it can promote empathy, understanding and cultivating inner peace with the help of modern technologies.

Keywords*:* Artificial Intelligence, Culture, Innovation, Religious scriptures, Traditional knowledge

O129 Digital Kumbh: Innovating Heritage Preservation through Technology at the Kumbh Mela in Prayagraj, Uttar Pradesh

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Kumbh Mela is an important Hindu pilgrimage, celebrated after a certain period of time at different pilgrimage sites as Prayagraj, Haridwar, Nashik and Ujjain. It is a symbol of India's cultural and religious heritage. As we are living in the digital age, technologies have changed the way to organize the Kumbh mela at various places. This year, we witnessed one of the world's largest religious gatherings in Kumbh Mela at Prayagraj taking place after 144 years. This mela provides a once-in-a-lifetime opportunity to integrate technology with tradition, uphold the integrity and enhance the efficiency of organization of this mela. The objective of this research is to understand how world's largest event can be organized successfully, how technology is helpful in planning, organizing, staffing, directing and controlling the manpower to manage the world's largest gathering at one place (crowd management), and how we can arrange all the resources required for them. Data are taken for the secondary sources for this study. It is found that although there are several issues and challenges at every step related to security, accessibility, infrastructure development, connectivity, information dissemination, transport management, waste management, emergency management, etc. in organization of this fair but all the challenges are successfully managed and setting the example to the world how latest technologies can be integrated into the preservation of intangible cultural heritage and organize the large events successfully. It can also serve as a model to organize for other cultural festivals worldwide.

***Keywords**:* Cultural authenticity, Digital innovation, Kumbh Mela, Heritage preservation, Technology integration

PO1 Solid Waste Management Practices in Bhimdatta Municipality, Nepal

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Solid waste management (SWM) mainly refers to the collection, treatment, and disposal of solid waste. In the modern world, SWM has been a major concern as the waste generation rate is increasing drastically. Although SWM acts and policies exist in Nepal, SWM practices are still ineffective. This study aims to assess the solid waste management system in Bhimdatta Municipality, Nepal. A survey was conducted using a random sampling technique in Wards No. 4 and 18(especially Street No. 1,2,3,4, and 5 due to the dense population and core business area) from June 16 to 21 2024. Three research instruments according to WHO standards were used (i) Structured questionnaire (ii) Interview with concerned authorities (iii) Field visit. Data was collected using mWater portal and analyzed in Excel. The respondents were from the commercial sectors (61.17%), household (30.10%), institutional (4.85%), and medical (3.88%). Generated waste was both organic and inorganic (44.6%), organic only (11.65%), and inorganic only (43.69%). More than half (66.99%) segregated waste whereas only 14.56% were practicing resource recovery: plastic (11.65%), paper (1.94%), and glass (0.97%). Only very few (9.71%) had attended training sessions on SWM. The municipality provides door-to-door collection services to limited urban wards using 5 vehicles and 48 workers which are insufficient to collect waste daily and doesn't have a separate collection service for segregated waste. The municipality disposes of waste without any treatment in temporary landfills due to a lack of permanent landfill sites. The SWM approach of the municipality is ineffective. Financial constraints, insufficient manpower and vehicles, and lack of permanent disposal sites and separate collection service for segregated waste were found as major barriers to the proper SWM. The municipality should focus on enforcing strict laws and policies regarding SWM, segregation at the source, and the construction of permanent landfill sites and resource recovery centers.

Keywords: Solid waste management, urban wards, landfills, policy

PO2 Seismic Performance Evaluation of RC Buildings: A Comparative Study of Non-Engineered vs. Code-Based Designs

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This study investigates the seismic vulnerability of non-engineered reinforced concrete (RC) buildings compared to codel-based structures. The research uses linear elastic and nonlinear pushover analyses to evaluate critical seismic performance parameters such as natural periods, mass participation, base shear, capacity curve, ductility ratio, overstrength factor, collapse mechanics, and nonlinear hysteretic damping. Structures designed following standards like NBC 205 (old), RUD 205 new, and IS 1893 are analyzed against non-engineered building samples (NES1–NES6) to highlight performance gaps. The findings reveal that code-compliant buildings demonstrate significantly higher seismic resistance, greater flexibility, effective earthquake energy dissipation, higher ductility, overstrength factor, and base shear capacity. Non-engineered buildings often exhibit soft-story failure, with initial damage observed in the columns, highlighting their vulnerability during seismic events. Meanwhile, engineered RC buildings (RUD) designed with seismic principles demonstrate better seismic performance, adhering to the "strong column, weak beam" philosophy and superior strength-to-capacity ratios, higher overstrength factors, and enhanced ductility ratios, highlighting their resilience under seismic loads. These results indicate the critical need to adopt and enforce seismic design codes and retrofit vulnerable buildings to enhance earthquake safety. The results conclude that addressing the code provisions ensures earthquake-resistant buildings with warranted ductile behavior for structural systems, enabling the achievement of the intended collapse mechanism.

***Keywords**:* Nonengineered buildings, Earthquake safety, NBC, Overstrength factor, ductility

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PO3 Evaluating the Role of Column Strengthening in Mitigating Earthquake Damage in Non-Engineered RC Buildings

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Nepal lies in a high-seismic zone, where earthquakes such as the 2015 Gorkha earthquake and 2023 Jajarkot earthquake have caused significant damage to non-engineered and outdated reinforced concrete (RC) frame structures. This study uses response spectrum and pushover analyses to evaluate the seismic performance of three representative non-engineered RC buildings located in hilly regions, particularly Darchula. The research focuses on the performance of structural columns and assesses retrofitting techniques such as concrete jacketing, steel jacketing, and steel bracings. Results indicate that retrofitting significantly enhances seismic performance, improving stiffness, strength, and ductility. Steel bracing proved the most effective among the other methods, achieving up to 80% reduction in interstory drift and lateral top-story displacement, followed by jacketing techniques. Pushover curves revealed improved lateral load capacity, with retrofitted models demonstrating higher base shear and displacement levels. Column design analysis showed that retrofitting reduced P-M-M interaction ratios, with the lowest values observed in steel-braced models, indicating enhanced stability. Capacity curves and failure mechanisms highlighted the superior performance of retrofitted buildings, with plastic hinges forming in bracings rather than columns, preventing sudden failure. Overstrength and ductility factors also showed significant improvements, with steel-braced models achieving higher energy dissipation and reserve strength. This study concludes that retrofitting non-engineered RC buildings with steel bracing or jacketing techniques substantially improves their seismic resilience, ensuring safety and functionality in high-seismic zones. These findings provide a framework for enhancing the structural capacity of vulnerable buildings and mitigating the risks of future earthquakes.

Keywords: Evaluation, column strengthening, earthquake, mitigating

PO4 Unveiling Community Insights on Water Woes: How Scarcity Shapes Livelihoods in the Northern Kanchanpur?

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Access to water resources is crucial for human well-being and sustainable development, particularly in water-scarce regions such as the Chure region of Nepal. This study tries to assess the water scarcity, its impacts and livelihood adaptation strategies of residents in the lower Chure Bhabar region in the northern parts of Bheemdatta Municipality. Community perceptions strongly influence local water management practices and policies, underscoring the importance of understanding these perspectives for effective conservation efforts and resource management. In the northern region of the municipality where although several rivers run through the area, residents, especially in the Bhabar zone, suffer from water scarcity for both drinking and irrigation due to it's highly permeable and porous materials. Structured questionnaire survey of 120 respondents on demographics, water quality and access, impacts, and livelihood adaptation strategies helped to point out the status of water scarcity in the study area. As most of the households depend upon the rainwater and spring sources, they have to face water shortage especially during dry season. This has led to reduced crop production, irregular water supply, water disputes in the communities, increased frequency of water borne diseases, high cost of irrigation, and no vegetable production among others ultimately leading to economic burdens. They also have to face water quality issues like turbidity, smell, odor and taste. The challenges observed in the study area closely align with Sustainable Development Goal-SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action). To address these challenges, the community has adopted strategies such as implementing water storage systems and extending crop cycles. This study connects a local concern with a global challenge, contributing valuable insights into water scarcity issues in the northern region of Bheemdatta municipality.

Keywords: Community perception, livelihood adaptation, SDG, water scarcity, climate action

PO5 Assessing the Impact of Stray Animals on Road Safety: A Case Study of the East-West Highway Section in Bheemdatta Municipality, Nepal

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This research aims to assess the impact of stray animals on traffic safety in the Bheemdatta Municipality region along the East west Highway section. Over the past seven years, the frequency of road accidents involving stray animals has escalated, resulting in increased animal-vehicle collisions, fatalities, and significant financial damages. A mixed-method approach was adopted, combining both quantitative and qualitative methods, with data analyzed using descriptive statistics and statistical charts. Data was collected from local traffic police records over the past three years, along with questionnaire surveys conducted with 154 respondents, including drivers, passengers, local residents, and traffic police. The findings revealed 13 recorded animal-vehicle collisions, with 5 human deaths, 9 stray animal injuries, and 13 stray animal deaths. Additionally, 92.2% of respondents reported encountering stray animals daily on the roads. The study suggests that measures such as using reflective collars, enforcing animal ownership laws, and establishing shelters for stray animals, along with utilizing stray animals for biogas production, could reduce the adverse impact on road safety. This research underscores the need for effective animal management strategies to enhance road safety and protect both human lives and the welfare of stray animals in the region.

Keywords: Stray animals, road safety, East-West Highway, Bheemdatta, Animal Vehicle Collision, sustainable solutions

PO6 Association of RT-qPCR Ct Values and Disease Severity among COVID-19 Patients Visiting a Tertiary Care Hospital, Nepal

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COVID-19 pandemic due to SARS-CoV-2 has been one of the major global health issues of this aeon. The aim of this study was to evaluate the association of SARS-CoV-2 cycle threshold (Ct) values with multiple factors among COVID-19 patients visiting a tertiary care hospital in Sudurpashchim province of Nepal. A retrospective analysis was performed on the data of randomly selected COVID-19 cases among the total RT-qPCR tested patients from March 2020 to April 2022. The Ct values at the time of patient admission and their clinical outcomes (discharge or death) were compared. Among the COVID-19 patients, survivor group had significantly higher initial Ct value compared to non-survivors [median Ct values 23.21 and 24.39 ($P < 0.0001$)]. Selected haematological parameters; white blood cells ($P<001$), neutrophils ($P<001$), and monocytes ($P<0.0001$), and all the biochemical parameters were significantly different between these two groups ($p < 0.005$). Furthermore, significantly increased CRP (61.54±63.00, $P<0.0017$), D-dimer levels (0.8979± 1.480, $P<0.0001$), creatinine (0.7931±0.2551, $P<0.0001$), monocytes (0.6782±0.7981, $P<0.0001$), and random blood sugar (152.4±34.32, $P<0.0001$) were observed among non-survivors indicating as cause of disease severity in COVID-19. The findings of this study imply that the Ct value, CRP and D-dimer levels could be a crucial marker for the early detection of severe COVID-19 patients or those at higher risk of developing severe disease. This will eventually help to identify cases requiring immediate and critical medical care and reduce mortality.

Keywords: SARS-CoV-2, COVID-19, RT-qPCR, Cycle Threshold-Ct, Disease Severity, Severity Marker, Nepal

PO7 SOE Intel: An AI-Powered Platform for Personalized Education

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Personalized education has become an essential component in academic success, particularly in engineering education. The development of SOE Intel, an AI-driven platform, addresses the need for tailored educational tools at Far Western University, School of Engineering (FWU-SOE). This system leverages advanced language models, such as BERT and GPT-3, customized with FWU-specific content, including syllabi, textbooks, past exams, and lecture slides. The methodology involved designing a scalable web application using the MERN stack (MongoDB, Express.js, React, Node.js), ensuring real-time content generation and interactive learning. SOE Intel delivers concise notes, multiple-choice questions (MCQs), and mock exams aligned with FWU's curriculum. Additionally, the platform includes an AI tutor for personalized guidance and licensing exam preparation. Initial evaluations of SOE Intel focused on user satisfaction, efficiency, and content accuracy. Feedback from a pilot study involving 100 FWU-SOE students indicated an improvement in exam readiness by 35. The results underline the potential of AI-powered platforms in revolutionizing educational practices by simplifying learning processes and improving academic outcomes. These findings highlight the importance of deploying tailored AI tools to foster personalized education and promote student success in engineering programs.

Keywords: Personalized education, SOE Intel, AI-driven learning, MERN stack, content generation

PO8 Critical Review of Design and Seismic Performance in Multi-Storey Residential Buildings

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This endeavor's standard goal is to use ETABS and STAAD to plan and examine a G+6 private design. Master if we employ manual systems, unique strategies require more chance because the present is the best opportunity using calculations. This item provides us with a rapid outcome. For study and setting up any development for greater precision, it is simple to use. Within the STAAD. In accordance with Indian Standard Code and Practices, Genius and ETABS limit state procedures are used. STAAD. The best for class user interface, representation tools, and amazing assessment and planning engines with cutting-edge limited part and dynamic examination capabilities and result confirmation, STAAD, are all remembered by Virtuoso. The dead burden, live burden, wind load, and seismic burden mix of these stacks are taken into consideration in this G+6 structure using Indian principles. Arranging is an advanced method for performing calculations. The Heaps are then depicted after describing the cross parts for the fragment and shaft, section thickness, etc. Following then, 'run assessment' is used to investigate the model. Reviewing whether development succeeded or failed in applied stacks at that point. Finally, a similar review of programming in light of the bar and section plans is accomplished, and the next step is to determine which design and computer program development is more successful.

Keywords: Seismic Performance, ETABS, run assessment, STAAD

PO9 Students' Knowledge, Perception, and Attitude Toward Renewable Energy at Far Western University, Kanchanpur, Nepal

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Renewable energy has attracted significant attention over the last few decades due to its rapid development and low costs. The purpose of this study is to understand the knowledge, perception and attitude of the students and to identify the factors shaping their opinions about renewable energy sources. This study was conducted in the Engineering Department of Far Western University, Kanchanpur, which includes three programs: Architecture, Civil, Computer Engineering, and Architecture. A questionnaire was designed using the random sampling technique for the survey and administered to a sample of 102 respondents from the department. The respondents have a positive attitude toward renewable energy systems. Most of them are familiar with hydropower as a source of renewable energy, followed by solar energy. It was found that students pursuing the civil engineering program are more likely to pursue careers related to renewable energy. The awareness section scored a reliability of 0.798 while perception scored 0.818. Students rated renewable energy as cost-effective with an average score of 4.05 and effective in reducing environmental pollution with 4.24. They also showed interest in learning about renewable energy, scoring 4.03, and a willingness to make lifestyle changes, scoring 3.90. Approximately 45% of the respondents have either never studied renewable energy sources or are unsure if they have. This factor plays a significant role in shaping their opinions on renewable energy. Furthermore, most respondents believe that the lack of government support is the biggest challenge in promoting renewable energy sources. The study underscores the importance of targeted education and active involvement, particularly among engineering students. To address these challenges, renewable energy topics should be integrated into education and government support should be increased.

Keywords: Renewable energy, students, perception, attitude, knowledge

O130 Teacher Practices, Perspectives and Classroom Activities on the Semester System at the College Level

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This study was related to teacher practices in the classroom at the undergraduate level, aiming at discovering teacher practices in the class. Similarly, it attempted to elucidate the classroom activities of teachers within the framework of the semester system. This was a qualitative study and it is a phenomenological study. Four teachers teaching at the bachelor's level were interviewed for eliciting the data using the interview guidelines. The researcher had derived different themes: the lecture method was used as a major way of teaching, the semester system was less effective in comparison to the annual system in the less equipped situation of classroom teaching and learning, and there was a lack of resources for students and passivity among students. Monitoring, feedback, and inspiration were less taken care of in the class. Alongside, the system of education was changed, but the policies of teaching and learning were less enhanced with the modern pace. Finally, the semester system was found more effective for the technical and new programs, for instance, BBA, BSC CSIT, BA LLB, and BSC Forestry.

Keywords: Classroom activities, teacher practices, semester system, teaching and learning

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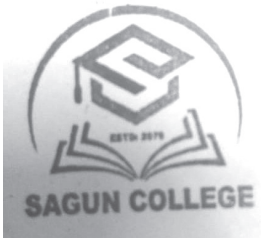

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