

Editorial

This is the Volume 21, Number 1 issue of the OUSL Journal, the Journal of the Open University of Sri Lanka which is published biannually. The articles published in this volume include research based on the disciplines of Computational Chemistry, Health Sciences, Education, Plant Sciences, Cosmetic Sciences and Social Sciences.

The paper titled *Computational Investigation of HDLP Inhibitors toward Anticancer Drug Design: Molecular Dynamics-Based Binding Energy Evaluation and Binding Pocket Characterization* presents a comprehensive computational study on hydroxamic acid-based inhibitors targeting histone deacetylase-like protein (HDLP), an important epigenetic target in anticancer drug design. The study integrates molecular docking, molecular dynamics (MD) simulations, and MM-PBSA binding free energy calculations to evaluate binding affinity, structural stability, and inhibitory potential. The results consistently identify CHR3996, ACY1215, and HAD5 as the most promising inhibitors, showing strong binding interactions, stable conformations, and favorable energetic profiles across all computational analyses. A major strength of the work is the use of multiple complementary computational methods, which improves the reliability and consistency of the findings. MD simulation analyses, including RMSD, RMSF, radius of gyration, and SASA, provide detailed insights into the dynamic stability of HDLP-inhibitor complexes. In addition, the agreement between docking scores, binding free energies, and theoretical IC_{50} values supports a clear structure-activity relationship. The inclusion of binding pocket characterisation and ADMET screening further enhances the study's overall scientific quality.

The study is primarily computational, and the predicted IC_{50} values are theoretical estimates; therefore, experimental validation is important to confirm the biological activity of the proposed inhibitors. Despite this limitation, the study provides valuable mechanistic insights and a robust computational framework to guide future anticancer drug development targeting HDLP.

Road traffic injuries remain a leading cause of preventable death globally, and the absence of structured pre-hospital care in many low- and middle-income countries compounds their severity. In Sri Lanka, where road fatality rates are among the highest in South Asia, and a formalized pre-hospital care system is yet to be established, traffic police officers occupy a uniquely critical position as first responders

at crash scenes. This study, *Assessing First Aid and CPR Proficiency and Related Factors Among Traffic Police Officers in Managing Road Traffic Injuries in Colombo District, Sri Lanka*, addresses a pressing gap in national emergency care preparedness by systematically assessing the first aid and CPR knowledge, attitudes, practices, and associated factors among traffic police officers in the Colombo District.

Conducted as a descriptive cross-sectional study among 148 traffic police officers across three police divisions, the study reveals a striking and consequential paradox: the majority of officers possessed good-to-excellent theoretical knowledge of first aid and CPR; yet, over 90% demonstrated poor practical competence. This knowledge-practice gap, compounded by the finding that fewer than 14% of the officers carried a first-aid kit while on duty, underscores a systemic failure that extends beyond individual preparedness to institutional policy and resource provision. Positive attitude, in-service training, work experience, gender, rank, and age were all significantly associated with better practice, while knowledge level alone was not, suggesting that practical competence is shaped more by attitudinal and structural factors than by theoretical instruction.

The study makes a timely and evidence-based recommendation for mandatory, refresher training, adequate equipment provisioning, and the formalisation of role-specific first aid and CPR training as a national policy requirement for traffic police officers. Its findings offer a critical foundation for strengthening Sri Lanka's pre-hospital care capacity and reducing RTI-related morbidity and mortality.

The study on *Effectiveness of gamification in Open and Distance Learning (ODL) in Nigeria* provides an empirical examination of how game-based instructional strategies influence learner engagement and motivation, particularly among undergraduate students of the National Open University of Nigeria (NOUN). Anchored on two research questions, the study adopts a robust multi-stage sampling technique, drawing 800 respondents from four randomly selected study centres across Nigeria's six geopolitical zones, thereby ensuring a relatively balanced national representation. Data were collected using the Gamification Effectiveness in Distance Learning Questionnaire (GEDLQ), which demonstrated good internal consistency with a Cronbach's alpha of 0.86, indicating that the instrument was reliable for measuring the intended constructs. Descriptive statistics and multiple regression analysis at a 0.05 significance level were employed to analyse the data, strengthening the validity of the findings. Findings from the study reveal that gamification serves as a highly effective pedagogical approach in ODL environments by enhancing learner motivation, increasing

engagement, and improving satisfaction with online learning experiences. The statistical results, particularly the moderate positive relationship ($R = 0.465$) between gamification components and learners' motivation, suggest that while gamification is not the sole determinant of motivation, it plays a meaningful contributory role. The study further emphasises that when gamification is intentionally integrated into instructional design and aligned with institutional quality assurance frameworks, it has the potential to significantly improve learning outcomes in Nigerian ODL institutions. However, the moderate strength of the relationship also implies that other factors beyond gamification may influence learner motivation, pointing to the need for a more holistic approach to instructional design in distance education contexts.

Bio-economy offers a beneficial solution for sustainable development through the rational use of financial and human resources to achieve better productivity and environmental stewardship. The citrus family encompasses various plant species known for their antimicrobial properties, and different parts of these plants have been used in traditional Sri Lankan medicine for an extended period. Information on the antibacterial efficacy of two indigenous citrus plants in Sri Lanka, *Citrus crenatifolia* and *Citrus reticulata*, is limited in the literature. Additionally, antibiotic resistance in bacterial pathogens is a global challenge that poses a significant threat to public health, highlighting the need for effective alternative strategies. The present study, *Achieving a Sustainable Bio-economy: Exploring the Antibacterial Efficacy and Phytochemical Properties of Two Indigenous Plants in Sri Lanka, Citrus crenatifolia and Citrus reticulata*, was conducted to investigate the antimicrobial properties and phytochemical composition of *C. crenatifolia* and *C. reticulata*. Active phytochemicals present in the fruit peels were extracted using an aqueous reflux method. The antimicrobial properties of the peel extracts were assessed using the agar well diffusion method against six common pathogens: *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Proteus mirabilis*, *Klebsiella pneumoniae*, *Escherichia coli*, and *Enterococcus*. However, no statistically significant difference in antimicrobial activity among the six microbes was observed for *C. crenatifolia* peel extract according to the one-way ANOVA test ($p > 0.05$); whereas a statistically significant difference was found for *C. reticulata* peel extract ($p < 0.05$). Tukey's post-hoc analysis for *C. reticulata* indicated that the mean diameters of inhibition zones for *Staphylococcus aureus* differed significantly from those of *Pseudomonas aeruginosa* ($p = 0.044$) and *Klebsiella pneumoniae* ($p = 0.049$). The antibacterial activity of both *C. crenatifolia* and *C.*

reticulata is supported by the presence of phytochemicals such as alkaloids, steroids, flavonoids, phenols, and tannins, which may act synergistically. These findings highlight the potential of these citrus peel extracts as valuable sources of antimicrobial agents, warranting further investigation to elucidate their specific mechanisms of action and potential applications in microbial control.

The review paper, *Cosmetic Science in Undergraduate Education in Sri Lanka: An Integrative Review of Educational, Industrial, and Economic Perspectives*, examines the relevance of incorporating cosmetic science into undergraduate Bachelor of Science programmes in Sri Lanka, drawing on peer-reviewed literature, industry reports, policy documents, and international curriculum descriptions published between 2010 and 2025. The review is organised around four thematic areas: global and local trends in cosmetic science education, industrial and economic drivers, Sri Lanka's biodiversity and traditional knowledge, and considerations for curriculum integration. The review effectively situates Sri Lanka's cosmetic sector within global market trends, noting the industry's valuation at over USD 300 billion and the increasing demand for herbal and natural formulations. Against this backdrop, the identification of a structural gap in formal cosmetic science training within SLQF-aligned state university programmes is well-supported by the literature. Followed by a comparative analysis of three international curriculum models, the author recommends the concentration/minor framework as the most contextually feasible pathway for resource-constrained institutions in Sri Lanka.

Overall, the review provides a well-structured, literature-informed rationale for recognising cosmetic science as an academically relevant and economically significant domain within undergraduate science education in Sri Lanka and offers a useful foundation for further empirical investigation and curriculum policy discussion.

The paper, *A Constructivist Case Study Methodology for Researching Leadership Practices in Under-Resourced Low-Fee Private Schools in Nepal*, provides a well-reasoned methodological justification for adopting a constructivist case study approach to investigate leadership practices in under-resourced low-fee private schools in Nepal. It argues that leadership in such contexts cannot be adequately understood through conventional leadership models developed in well-resourced educational settings. Instead, leadership is presented as a context-specific and socially constructed process shaped by financial constraints, institutional realities, and the lived experiences of school leaders.

A key strength of the paper is its critical comparison of the case study traditions of Robert Yin, Sharan Merriam, and Robert Stake. Rather than treating case study as a single research method, the authors explain how each scholar's philosophical orientation influences methodological choices. The paper convincingly demonstrates that Merriam's constructivist perspective is the most appropriate framework because it emphasises participant meaning, bounded systems, and contextual understanding, all of which align closely with the study's purpose. The manuscript also outlines a rigorous qualitative research design using semi-structured interviews, observations, document analysis, thematic analysis, and established trustworthiness criteria. These discussions provide a clear methodological roadmap for researchers investigating complex educational settings.

Despite these strengths, the paper could be improved by engaging more critically with contemporary methodological debates rather than relying primarily on descriptive summaries of existing literature. A more explicit discussion of potential limitations, such as researcher reflexivity and the limited transferability of case study findings, would strengthen the methodological argument. Additionally, incorporating more recent scholarship on leadership in resource-constrained schools would enhance the paper's relevance. Overall, the paper makes a valuable contribution by demonstrating that understanding leadership in under-resourced schools in Nepal requires a research methodology that prioritises context, lived experience, and participant interpretation. It offers a strong methodological foundation for future qualitative research on educational leadership in resource-constrained settings.

The paper titled, *Cultural Exchange and Economic Cooperation as Drivers of Ethnic Harmony: A Case Study of the Gandara Area of Sri Lanka*, investigates the underlying dynamics of inter-ethnic coexistence between the majority Sinhalese and minority Muslim populations within the Gandara East Grama Niladhari Division in southern Sri Lanka. While macro-level discourse on ethnic relations in Sri Lanka is historically dominated by the post-civil war Sinhalese-Tamil paradigm and punctuated by contemporary instances of localised post-war Islamophobia, this paper pivots to an empirical, micro-level analysis of a region with no recorded history of severe communal violence.

Utilising a robust qualitative framework grounded in the principles of interpretivism, the study adopts a case study approach with a purposeful sample of 55 respondents, including five administrative officials and 50 residents (30 Sinhalese, 20 Muslim). Theoretical triangulation is achieved by synthesising Cultural Integration Theory,

Economic Interdependence Theory, Intergroup Contact Theory, and Social Capital Theory. The empirical findings reveal that social cohesion in Gandara East is structurally anchored by two main pillars: proactive cultural interactions and robust economic interdependencies. Culturally, the community fosters bridging social capital through mutual participation in life-cycle rituals, sports, and religious festivals, such as joint volunteering during Buddhist Peraheras and cross-community resource provisioning during Ramadan. Economically, the regional fishing industry acts as a crucial engine for inter-communal cohesion, fostering dense commercial exchange networks and high-trust, debt-free transactional mechanisms between Sinhalese boat owners and Muslim distributors. Concurrently, the paper addresses localised friction, noting that external political shifts following the 2019 Easter Sunday bombings and disputes regarding mosque loudspeaker volumes present structural stressors to this social fabric. Ultimately, the paper concludes that ethnic harmony is not merely the passive absence of physical violence but a dynamic, actively negotiated equilibrium. The synergy of cultural and economic networks builds resilient localised conflict-management mechanisms, positioning Gandara East as a viable operational model for sustainable peacebuilding and community-level pluralism in divided societies.

We welcome your suggestions for further improvement of this Journal. We are looking forward to publishing your current research findings in our next issue.

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