

Transforming Chemistry Education: Integrating Experiential Learning and Interdisciplinary Collaboration for Sustainable Development

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Abstract

In preparing future leaders in sustainability and STEM (Science, Technology, Engineering, and Mathematics) disciplines, it is essential to enhance communication and writing skills through impactful experiential learning initiatives. This presentation advocates for a curriculum reform in higher education research that integrates experiential learning into undergraduate chemistry programs via the Global Classroom model.

The proposed initiative emphasizes collaborative projects that pair chemistry research students with peers in human resource management (HRM), spotlighting the Sustainable Development Goals (SDGs) within an interdisciplinary, problem-based learning (PBL) framework. Using LIWC-22, a validated text analysis tool, we analyzed students' written reflections on their experiential learning experiences. Preliminary findings indicate that participants in these initiatives demonstrate heightened curiosity and engagement in their reflections, suggesting the curriculum reform's potential to promote deeper learning. Although the study's sample size is limited, initial data highlight the significance of SDG-centred experiential learning in enhancing metacognitive skills and nurturing student curiosity, attributes vital for addressing intricate sustainability challenges. This presentation will detail the development and implementation of our experiential learning framework within the Global Classroom model, a scalable approach to embedding SDG-focused PBL into chemistry curricula. By integrating disciplines, this curriculum reform not only sharpens students' problem-solving capabilities but also significantly strengthens their communication and writing skills, better preparing them to confront global sustainability challenges effectively.

Keywords

Chemistry Education, Curriculum Reform, Experiential Learning, Global Classroom, Sustainable Development Goals, Interdisciplinary Collaboration, Communication Skills, Metacognitive Skills.