Integrating Indigenous Knowledge Systems with Science Process Skills: Enhancing STEM Learning among Senior High School Students

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Abstract

This study aims to analyze the effectiveness of integrating Indigenous Knowledge Systems (IKS) with Science Process Skills (SPS) in enhancing science learning among Grade 12 STEM students at Infanta National High School. Specifically, it seeks to determine how this integration impacts students' academic performance, conceptual understanding, and appreciation of cultural identity. This study utilized a mixed-methods approach, specifically the explanatory sequential design, to analyze both the quantitative improvement in students' academic performance and the qualitative impact on their conceptual understanding and cultural identity. The respondents of this study are Grade 12 learners under the STEM strand from Infanta National High School. The results showed that the performance of Grade 12 learners on the pretest in General Chemistry is relatively low and needs to be enhanced using appropriate teaching strategies. The performance of the Grade 12 learners, as reflected in the posttests in General Chemistry, is moving towards mastery. It only indicates that most of the learning competencies in the subject are met. There is a significant difference between the pretest and posttest scores of the respondents. The integration of indigenous knowledge and science process skills in teaching concepts in General Chemistry 1 is effective. The indigenous knowledge system influenced the students' understanding of scientific concepts through collaborative learning; it allows the learners to think beyond the box, and they are able to know the practical application of knowledge. Furthermore, it enables the learners to have community knowledge sharing, and it fosters interdisciplinary learning. By exposing the learner's indigenous knowledge system in science instruction, they are able to understand from concepts to practice, they can identify scientific connection, and value that indigenous practice is real-life science. Moreover, the learner's area able to uphold cultural identity and understands science through the lens of indigenous practices.

Keywords: Indigenous Knowledge Systems, cultural identity, Science Process Skills, Senior High School Students