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The Potential of Socio-scientific Issues on Improving Students' Motivation in Chemistry Classes

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Abstract

Chemistry may seem irrelevant to the college chemistry student, and thiscan affect their desire to learn or their ability to apply their learning to real-world situations. Most course content is taught abstractly so it can be challenging for students to see the value of chemistry in their everyday lives. This study investigates changes in students' chemistry self-efficacy and motivation by incorporating a socio-scientific problem into the general chemistry curriculum. Due to phosphate's economic importance and potential supply risk, phosphate sustainability was chosen as the Socio-Scientific Issue. Students explored the topic with a Prezi learning activity, teaching the students the chemical properties of phosphate, its uses, and recycling strategies that can help preserve this limited resource. Surveys were administered to measure the change in motivation and self-efficacy before and after the learning activity. It was found that the learning activity improved both student motivation and chemistry self-efficacy. The data suggests that gender does not affect the change in motivation, but that ethnic background does. In addition to administering surveys, students were given three open-ended questions to understand the depth of the discussion they had with their peers. Analysis of the responses indicates an improvement in comprehension of phosphate sustainability and human's role in the process. This study provides insight for chemistry educators on how they can introduce socio-scientific problems into their curriculum, making the subject more relevant to students and changing the way they perceive their own abilities to learn the material.

Keywords: General chemistry, phosphate sustainability, relevancy of science, science education, self-efficacy