Examining the Relationship between Science Teachers' Epistemology and Self-Efficacy on Science Instructional Practices and Conceptualization of Student Research Experiences rooted in the Next Generation Science Standards

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Abstract

Teachers' values, beliefs, and self-confidence are critical components of decisions educators make every day, especially as they implement the Next Generation Science Standards. The purpose of the study is to examine the relationship between secondary science teachers' epistemology and self-efficacy on science instructional practices and conceptualization of student research experiences rooted in the Next Generation Science Standards. A mixed methods explanatory sequential design will be utilized to examine the variables. The Science Teachers Beliefs about Science Survey (STBAS), Self-Efficacy to Teach Science in Integrated STEM Framework (SETIS), and the Science Instructional Practice Survey (SIPS) will be administered to secondary science teachers. A follow up semi-structured interview will be administered to secondary science teachers, chosen based upon STBAS scores, to gather an understanding of the conceptualization of science instructional practices related to student research experiences.

Research Questions

1. To what degree and in what manner do a science teacher's personal epistemology regarding science and science teaching and self-efficacy to teach science in an Integrated STEM framework impact science instructional practices rooted in the Next Generation Science Standard Science and Engineering Practices?

2. How do science teachers conceptualize science instructional practices in the classroom in terms of student research experiences in relation to underlying science teachers' personal epistemology regarding both science and science teaching?

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