DEVELOPMENT OF PRESERVICE ELEMENTARY TEACHERS’ SCIENCE SELF-EFFICACY BELIEFS AND ITS RELATION TO SCIENCE CONCEPTUAL UNDERSTANDING

Deepika Menon

Dr. Troy Sadler, Dissertation Supervisor

ABSTRACT

This study utilized a mixed-methods approach to investigate science self-efficacy beliefs and the factors associated, and the relationship between the changes science self-efficacy beliefs and changes in physical science conceptual understanding in a specialized elementary physics content course for elementary education majors (N=51). Data collection included implementation of Science Teaching Efficacy Belief Instrument-B (STEBI-B) (Bleicher, 2004) and Physical Science Concept Test as pre- and post-test, two semi-structured interviews with 18 participants, classroom observations and artifacts. A pre-post, repeated measures multivariate analysis of variance design was used to test the significance of differences between the pre- and post-surveys across time. Results indicated statistically significant gains in participants’ science self-efficacy beliefs on both scales of STEBI-B - personal science teaching beliefs and outcome expectancy beliefs. Additionally, a positive moderate relationship between science conceptual understandings and personal science teaching efficacy beliefs was found. Participants’ responses indicated positive shifts in their science teacher self-image and confidence to teach science in future. Findings suggest that despite of the nature of prior science experiences preservice elementary teachers previously had, an exposure to a course that integrates relevant science content along with modeled instructional strategies can positively impact science self-efficacy beliefs. These findings have important implications for preservice science teacher preparation programs.