The Impact of Science Methods Courses on Preservice Elementary Teachers' Science Teaching Self-Efficacy Beliefs: Case Studies from Turkey and The United States

Murat BURSAL

...ideas for the future...

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Abstract

Four case studies in two American and two Turkish science methods classrooms were conducted to investigate the changes in preservice elementary teachers' personal science teaching efficacy (PSTE) beliefs during their course periods. The findings indicated that while Turkish preservice elementary teachers (TR sample) started the science methods course semester with higher PSTE than their American peers (US sample), due to a significant increase in the US sample's and an insignificant decline in the TR sample's PSTE scores, both groups completed the science methods course with similar PSTE levels.

Consistent with Bandura's social cognitive theory, describing four major sources of self-efficacy, the inclusion of mastery experiences (inquiry activities and elementary school micro-teaching experiences) and vicarious experiences (observation of course instructor and supervisor elementary teacher) into the science methods course, providing positive social persuasion (positive appraisal from the instructor and classmates), and improving physiological states (reduced science anxiety and positive attitudes toward becoming elementary school teachers), were found to contribute to the significant enhancement of the US sample's PSTE beliefs.

For the TR sample, although some of the above sources were present, the lack of student teaching experiences and inservice teacher observations, as well as the TR samples' negative attitudes toward becoming elementary school teachers and a lack of positive classroom support were found to make Turkish preservice teachers rely mostly on their mastery in science concepts, and therefore resulted in not benefiting from their science methods course, in terms of enhancing their PSTE beliefs. Calls for reforms in the Turkish education system that will include more mastery experiences in the science methods courses and provide more flexibility for students to choose their high school majors and college programs, and switch between them are made.

In addition to the mastery experiences contributing to the PSTE beliefs, this study reported that preservice elementary teachers' unawareness of their science misconceptions also results in enhancing their self-efficacy, which is troublesome. Revisions in science content courses to employ inquiry activities, designed for addressing and correcting students' misconceptions, are recommended to overcome teacher candidates' lack of science competency and negative attitudes toward science.

Table of Contents

List of Tables

List of Figures