

ABSTRACT

AZMY, CHRISTINA. Secondary Mathematics Preservice Teacher Development of Statistics Teaching Self-Efficacy. (Under the direction of Dr. Hollylynn Lee).

The purpose of this study was to examine the statistics teaching self-efficacy (TSE) beliefs of secondary mathematics preservice teachers (PSTs) and the impact of experiences on those beliefs. In order to research experiences and beliefs, I designed a two-phase qualitative collective case study within a situated context with thirty-four participants from two institutions in Phase I, and a subset of seven of those participants in Phase II. Phase I involved participants' submitted work in a two-week online module expertly designed for preparing mathematics PSTs to teach statistics. Submitted work included a survey about confidence to teach statistics, records of discussion forums, reflection assignments, written statistical investigations, and screencast statistical investigations. Phase II involved an online autobiographical survey documenting participants' past experiences with learning and teaching statistics, and transcripts of a recorded semi-structured interview to gain insight into how those experiences impacted their statistics TSE (STSE). All data was coded, guided by a theoretical framework, and descriptions and themes were developed. Main results from the study are communicated in two manuscripts.

The first manuscript's focus is the beliefs secondary mathematics PSTs hold and express about their self-efficacy for teaching statistics. Because of the unique nature of statistics, it is important to characterize both personal teaching efficacy beliefs and general statistics education beliefs when describing STSE beliefs. Both types of beliefs expressed within the online module and during interviews are described, with implications for teacher education. Specifically, the types of general statistics education beliefs, in addition to the types of personal efficacy beliefs, that participants hold that were impacted by participants' engagement in the module and that are

a result of prior experiences that were impacted by participants' engagement in the module are described.

This particular collective case engaged in a two-week online module, and so the situated context provided a set of similar experiences that could be examined, which is the focus of the second manuscript. Opportunities the module provided for impacting mathematics PSTs' STSE are described. In addition, evidence that those experiences had an impact, from submitted work from the module and post-use interviews, is presented.

Results from the study indicate that the examined two-week intervention, aimed at impacting secondary mathematics PSTs' general statistics education beliefs, was effective to a certain extent. In addition, although participants displayed an overall incomplete personal belief in teaching statistics that has been reported in past research, a closer look reveals specific types of personal confidence. Results on the effectiveness of the online materials indicate success in developing certain factors that we know to be important in statistics teaching self-efficacy (STSE) – PSTs' view of statistics, statistical knowledge, pedagogical knowledge, and use of technology.