Building Technology-Supported Environments for Teaching Undergraduate Mathematics Courses to Early Childhood and Middle Level Prospective Teachers

PI: Iman Chahine, Middle-Secondary Education & Instructional Technology
ichahine@gsu.edu
CO-PI: Margo Pamela Alexander, Department of Mathematics & Statistics
malexander@gsu.edu

Summary

This project requests funds to extend a training program to support the professional development of 14 graduate mathematics instructors teaching 8 mathematics required courses to prospective early childhood and middle level prospective teachers. These courses cover a wide range of mathematical content including numbers and operations; geometry and spatial sense; algebraic concepts; and probability and statistics. The goals are to: 1) foster the establishment or improvement of technology-supported mathematics learning environments in the undergraduate mathematics courses that specifically cater to elementary and middle level prospective teachers; 2) increase the scope of mathematical content and the range of problem situations using powerful tools for computations, construction, and visual representation; and 3) help instructors facilitate prospective teachers’ achievement of higher-order learning outcomes including reflections, reasoning, problem solving and decision making. The ultimate goal of the project is to equip the instructors with the necessary skills and dispositions to help prospective teachers move easily between mathematical notations and technology syntax and to use technological tools more flexibly and effectively to build conceptual understanding of the content. The program involved multi-tiered experiment design focusing on data collected from the instructors and the prospective teachers. Data was triangulated using qualitative and quantitative techniques.