A Study of University Mathematics Outreach Programs- Findings and Implications

Abstract
Generally, outreach efforts provide some type of service targeting a population that otherwise might not have access to such services. University mathematics outreach programs often target K-12 students or teachers and have one, or a combination, of the following goals: enhancement of mathematical content knowledge, development of mathematical skills, increased interest in the study of mathematics, and promotion of career choices in mathematically intensive fields. In this study, we are interested in three questions: What are the different types of mathematics outreach programs? What are the structural components of mathematics outreach programs? What questions must be addressed in the development and implementation of a mathematics outreach program? To answer these questions, we consult the literature in general and collect data from one hundred existing university/college mathematics outreach programs in the US, with particular interest on project target audiences, project goals, project design, and project assessment methods. Based on project outcome expectations we are able to identify three distinct categories of mathematics outreach programs: motivational, preparational, and motivational plus preparational. A descriptive research analysis is used to identify and compare the components and variables of the 100 outreach programs. This data is then used to provide a prototypical model of a mathematics outreach program in each of the three categories. In summary, this work presents a detailed description of many of the prominent math outreach programs in the United States. Programs are generally classified as either motivational, preparational, or a combination of both. Analysis of these descriptions reveals a consistent set of attributes that can
Action research in mathematics education: a study of a master's program for teachers, by Sarah Ultan Segal. This master's program in mathematics education is designed for teachers who currently teach mathematics and who seek a master's degree in mathematics education. The program was created with the goal of better equipping teachers in mathematical content knowledge and in mathematical pedagogical knowledge. A discussion of the implications of the findings for researchers, teachers, and university programs that have an action research capstone project is included.

Chapter 2
Review of the Literature
Introduction.