Visualizing the Professional Identity of Math & Science Teachers

Steven Hubbard, Ph.D.
Masters Candidate in Data Visualization

Looking beyond teaching techniques, using K-means clustering and data visualization to understand the professisonal identity of math and science teachers.

Students perform better in the classroom when their teachers are proficient in the subject they teach, and they remain committed to the teaching profession. However, studies in K-12 teacher retention demonstrate that between 15-25% of teachers leave the profession in the first 6 years of teaching. Teacher retention in K-12 education has become an important economic issue both nationally and locally. This is especially true for the math and science disciplines, which are in need of a diverse workforce for future economic development.

The purpose of this study is to explore and visualize concepts of professional identity in math and science education to help educators, administrators, and policy makers create better solutions to teacher retention in the math and science disciplines. The study approaches this phenomenon in two parts. First, the study analyzes and interprets professional identity by using a data set from a science and math teaching fellowship program. Second, the study will examine the effectiveness of using machine learning (K-means Clustering) and data visualization methods as a means to analyze written reflections of mid-career math and science educators.