
HELENA OSANA, Concordia University

Understanding Mathematical Knowledge for Teaching: An Examination of the Content Knowledge of First-Grade Teachers

The ultimate goal of teaching mathematics is to assist children to develop a genuine understanding of the discipline. It is becoming increasingly clear, however, that a teacher's knowledge of mathematics alone is not sufficient for achieving this educational objective. Rather, elementary teachers need a specialized type of professional knowledge of mathematics to be effective in the classroom. For example, teachers must know how children think about mathematics and the types of misconceptions they generally hold, as well as how to identify and interpret students' work and ways to design classroom activities to mobilize specific concepts in the school curriculum. Dr. Osana will present data from a larger study that explores the relationship between teachers' specialized mathematics knowledge, their classroom practices, and the development of their students' mathematical proficiency. In this talk, Dr. Osana will focus on an instrument she developed to measure teachers' knowledge in the context of this larger project. She will present items from the instrument as well as report on data that have been collected using the measure with a sample of first-grade teachers. The findings will illustrate the complex forms of knowledge even elementary-level mathematics teachers appear to require to assist their students to think about mathematics with meaning. Connections to the teachers' classroom practices will also be addressed.