

Title: Changing Mathematical Sophistication in Introductory College Mathematics Courses

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Abstract: The Mathematical Sophistication Instrument (MSI) measures the extent to which students' mathematical values and ways of knowing are aligned with those of the mathematical community based on eight interwoven categories: patterns, conjectures, definitions, examples and models, relationships, arguments, language, and notation. In this paper, we present the results of a study designed to explore whether students' scores on the MSI improved during their introductory college mathematics courses. A large sample of five sections of a first course for elementary education majors, five sections of College Algebra, and seven sections of mathematics for liberal arts majors completed the instrument both at the start and end of the spring 2009 term. Results showed that students in courses where instructors used inquiry-based pedagogies scored markedly higher on the instrument at the end of the semester than at the start. In courses where instructors used traditional pedagogies, only slight changes in scores were observed.