Abstract
In 2012, the President's Council on the Advancement of Science and Technology (PCAST) predicted one million jobs in the fields of science, technology, engineering, and math (STEM) would go unfilled in the United States due to the lack of interested and qualified graduates matriculating in American universities, colleges, and technical schools (PCAST, 2012). In order to bolster interest and proficiency in STEM, research suggests instructional pedagogy incorporate experiential learning focused on solving real societal problems that are relevant to learners. Few studies have investigated the effects of such pedagogy within the context of a secondary-level, geometry course. A quantitative, quasi-experimental design was employed to determine the effect of an experiential learning course, Geometry In Construction (GIC), on secondary student achievement and motivation in geometry. Data were collected from 181 secondary students in ninth and tenth grade attending a large, suburban, Midwestern, public high school. Participants experienced a full academic year of instruction in either Geometry In Construction or a traditional geometry course. Achievement in geometry was measured using scores from a Missouri Geometry End of Course Practice Exam. Motivation to learn geometry was measured using John Keller's Course Interest Survey (Keller, 2010) based on Keller's ARCS model of motivation (Keller, 1987b). Analysis of the data indicates significantly higher achievement in geometry and motivation to learn geometry for students experiencing the Geometry In Construction curriculum. The effect is more pronounced among females. On this basis, it is recommended that geometry curricula incorporate experiential learning focused on solving real problems that are relevant to learners. Further research is needed to determine how this instructional model could be applied to other courses in order to improve interest and preparation for STEM careers.