

REEDER BRENNAN, CYNTHIA, Ph.D., 2015

Curriculum and Instruction

IMPLEMENTATION OF AUTHENTIC INVESTIGATIVE ACTIVITIES IN RATIO
AND PROPORTION TO ADULT LEARNERS: A CASE STUDY (325 pp.)

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Using a constructivist paradigm, the purpose of this qualitative case study was to examine what helps or hinders adult students to learn ratio and proportion when the topic is not the central focus of the mathematics course. This was of interest as there was a lack of scholarly research and literature on adult learners' understanding of ratio, proportions and proportional reasoning. Further, this study tied theory to educational practice in mathematics education by providing a model of authentic investigative activities that can be used in an IT or seated mathematics classroom.

Through a case study approach, four diverse adult learners from a 7 week IT finite mathematics class, required in a degree completion program, were asked to complete a pre-test questionnaire on ratio/proportion and attitudes, watch authentic investigative activities and then complete a post-test questionnaire on ratio and proportion and attitudes. Document analysis, interviews and observations were conducted to determine if their mathematical thinking and attitudes were impacted by the videos and supporting materials.

Three theoretical frameworks structured this study: Lamon's seminal theories on rational numbers and proportional reasoning, Ben-Chaim's theory on the implementation of authentic investigative activities to adult learners, and Lesh's theory on representations and translations. Because this study focused on adult learners, the discussion of the

results was organized to reflect the three major components that form and construct adult numeracy: context, content, and cognition and affect. Each one of these components was impacted positively by the implementation of the authentic investigative activities on ratio and proportion.