Oral Defense Announcement
University of Missouri – St. Louis Graduate School

An oral examination in defense of the dissertation for the degree
Doctor of Philosophy in Education

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M.A. in Philosophy, December, 2009, University of Missouri-St. Louis
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Processing Motion: Using Code to Teach Newtonian Physics

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Time: 10:00 AM
Place: TLC Conference Room

Abstract
Prior to instruction, students often possess a common-sense view of motion, which is inconsistent with Newtonian physics. Effective physics lessons therefore involve conceptual change. To provide a theoretical explanation for concepts and how they change, the triangulation model brings together key attributes of prototypes, exemplars, theories, Bayesian learning, ontological categories, and the causal model theory. The triangulation model provides a theoretical rationale for why coding is a viable method for physics instruction. As an experiment, thirty-two adolescent students participated in summer coding academies to learn how to design Newtonian simulations. Conceptual and attitudinal data was collected using the Force Concept Inventory and the Colorado Learning Attitudes about Science Survey. Experimental results suggest that coding is an effective means for teaching Newtonian physics.

Defense of Dissertation Committee
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