

A MULTIFACTORIAL MODEL OF CONCEPTUAL CHANGE

GRANT PROPOSAL ABSTRACT

Following our work on creating instructional materials to facilitate conceptual change about the mechanism of natural selection, we are branching out to additionally consider the influence of student factors, namely motivation (e.g., interest, relevance to career goals, self-efficacy, etc.), cognitive and metacognitive strategies, epistemic beliefs, coherence of misconceptions, biology knowledge, and formal reasoning ability. We propose to begin to data collection with the ultimate goal of building a structural equation model that identifies the relative contributions of these factors in changing misconceptions, using natural selection instruction as the context in which the model is developed. Data collection will involve 48 instructors of undergraduate biology courses across the country and their estimated 4800 students. We will collect demographics information and pre- and post-unit assessments from students in 48 introductory biology courses. Our data collection approach will follow the approach we successfully used in our previous research, a “national survey of active learning.” This is an interdisciplinary project with co-principal investigators in education and ecology; it will employ a doctoral student or postdoctoral associate in science education.