

Unpacking Active Learning: Modeling how constructivist learning environment factors influence student outcomes in undergraduate chemistry courses

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Abstract: Research on active learning in science courses demonstrates its positive impact on students, but current broad definitions of active learning provide little information on why it works or the components that must be present. This research uses a constructivist theoretical framework to model how active learning may influence student outcomes. To test the model, an instrument was evaluated for its suitability in measuring student perceptions of aspects of a constructivist learning environment.

This talk will describe results from utilizing the instrument to model relations among aspects of the learning environment and student outcomes of satisfaction and academic achievement. Recently, data were collected from multiple undergraduate chemistry courses enrolling a diverse population of students to increase the generalizability of preliminary findings.

Biography: Dr. Komperda is a chemistry education researcher specializing in psychometrics and structural equation modeling. Her research focuses on developing and evaluating instruments to support discipline-based education researchers in selecting appropriate tools for measuring variables in various classroom and research contexts. She is currently working with instruments measuring student motivation, student study approaches, instructor teaching approaches, and learning environment characteristics. These measurements form the foundation of her research building larger statistical models to better understand how the adoption of evidence-based teaching practices influences student outcomes. Dr. Komperda utilizes the open-source R statistical software to encourage reproducible research.