



# SPECIAL SEMINAR: Research in Chemical Education and STEM Pedagogy



## Dr. Heather Tienson- Tseng

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### Using Assessment to Inform Instructional Changes

**Abstract:** An integral aspect of education is assessment, but what is the purpose of assessment, and what can we do to better assess our students? Two common reasons for assigning assessments include determining what students have learned and assigning grades, yet another purpose of assessments can include providing information about the effectiveness of instruction, both longstanding approaches and instructional innovations. In this seminar we will discuss both formative and summative assessments, as well as how one can use all forms of assessment to inform curricular change. Using examples from my research, we will discuss ways to integrate formative assessment into a course to provide feedback for the instructor as well as learning opportunities for students. We will explore an investigation in which I used a concept inventory to identify chemistry misconceptions held by students at the start of a biochemistry course, and then used the results of that assessment to make targeted instructional changes that succeeded in correcting those misconceptions. In another study, I helped develop an exam-level assessment that was used to evaluate student understanding of metabolic pathways; this provided evidence of systems thinking in student responses and illustrates ways to make assessments more accessible to all students. This assessment data can now serve as a baseline to evaluate future instructional changes in the biochemistry course. Through this seminar, we will see that all forms of assessment can be used to identify areas of instruction that can be improved upon, and that changes to instruction in response to assessments can be as small as a targeted clicker question or as large as redesigning a course. Regardless, instructional changes should be based on evidence from student assessments and continually evaluated for their efficacy through assessment of student learning.

**Tuesday, June 6<sup>th</sup>, 2023**

**2:30 p.m. | YH4222 - Collaboratory Yoo  
Seminar & Conference Hall**