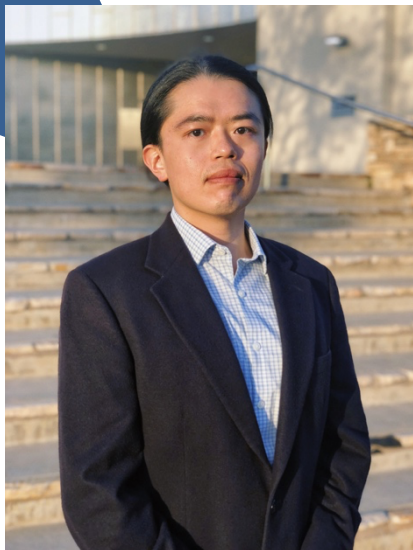




SPECIAL SEMINAR: Research in Chemical Education and STEM Pedagogy



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A post-structural analysis of student learning with an augmented reality molecular visualization tool in an undergraduate chemistry course

Abstract: External representations provide an important space of learning and medium for communicating about molecular structure and function in the chemical sciences. As affordable visualization tools continue to advance, there has been increasing interest to utilize novel technologies, such as augmented reality (AR), in the development of new molecular visualization tools. However, existing research on these visual-spatial learning tools often assumes the meaning of external representations as inherent and focuses primarily on student performance and competence, with less attention towards how external representations take on situated meaning and potential inequity in how students participate in classroom activities that involve molecular visualization tools. In this talk, I will describe a post-structural approach to investigate student learning with external representations that aims to address the representational practices through which external representations become increasingly meaningful and the fluid and multifaceted situations of (in)equity in an AR-mediated biochemistry group learning activity. The analysis centers around BioChemAR, a mobile application that utilizes AR technology to create protein models for student learning. Data sources include audio and video recordings of undergraduate biochemistry students engaging with AR protein models in classroom and interview settings. Pairing qualitative analysis with quantitative metrics, I will present a complex and nuanced story of how students learn with new forms of external representations that utilize AR technology. Findings highlight how external representations become increasingly meaningful through the (re)configuration of the material, discursive, and semiotic aspects of representational practices in chemistry and provide unique ways of conceptualizing equity and inequity in chemistry learning settings.

Tuesday, May 2nd, 2023

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