

# *Concept-Building Approaches: How do Students' Approaches Affect their Performances in Chemistry Courses?*

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**Monday, September 25  
in TBBC 4630**

**3:30pm reception, 4pm lecture**

**Abstract:**

One primary goal of many STEM courses is for students to learn complex problem-solving skills. However, what STEM instructors see is that many students struggle in their introductory STEM courses. As faculty work to adopt more evidence-based teaching methods, the question arises how to determine early on who may have difficulty in these introductory courses. Recent basic cognitive-science research suggests that there are individual differences in how learners approach conceptual tasks: some learners tend to learn concepts by focusing on examples and features, and others tend to extract the underlying principles. We explored the possibility that this individual difference in concept-building might have consequences for classroom learning. Our results suggest that individual differences in how learners acquire and represent concepts persist from laboratory concept learning to learning complex concepts in introductory chemistry courses.



*Regina (Gina) Frey is the Florence Moog Professor of STEM Education at Washington University. She is also the Executive Director of The Teaching Center and the Co-Director of the Center for Integrative Research on Cognition, Learning, and Education (CIRCLE). Since joining Washington University, Gina has been one of the primary faculty members leading the teaching and curriculum development of General Chemistry. Gina has focused on the development, implementation, and evaluation of multiple-strategy active- and collaborative-learning pedagogies, such as PLTL and POGIL, and a transition program for underprepared students in General Chemistry.*



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