Save the Date:

November 12 at 4:30 p.m. | Simmons Auditorium A, Tepper Building

Lecture Title:

ICAP: How to Promote Deeper Learning by Engaging Students Cognitively

MICHELENE (MICKI) T.H. CHI

Foundation Professor and Dorothy Bray Endowed Professor of Science and Teaching, Mary Lou Fulton Teachers College; Director of the Learning and Cognition Lab, Arizona State University

Cognitive and Educational Learning Scientist

SIMON INITIATIVE DISTINGUISHED LECTURE

"More than once, [Chi] has challenged basic assumptions about the mind and defined new approaches that have shaped a generation of cognitive and learning scientists." – Cognitive Science Society

Michelene (Micki) T.H. Chi (MCS 1970; TPR 1971, 1975) is the Foundation Professor, the Dorothy Bray Endowed Professor of Science and Teaching in the Mary Lou Fulton Teachers College, and director of the Learning and Cognition Lab at Arizona State University. <u>Chi's research</u> focuses on how students learn best, especially complex concepts in STEM.

Chi's research has been recognized with multiple awards and honors earned throughout her career. These accomplishments have included election into the National Academy of Education in 2010, an E.L. Thorndike Career Achievement Award from the American Psychological Association in 2015, and the Rumelhart Prize from the Cognitive Science Society in 2019. In addition, Chi was inducted into the National Academy of Arts and Sciences in 2016.

In November 2018, she was named an Arizona State University Regents Professor, the highest of faculty ranks at the university, in recognition of her seminal research in cognitive science. Before joining ASU, Chi was a research scientist in the Learning Research and Development Center and professor in the Department of Psychology at the University of Pittsburgh. Chi received her Ph.D. in psychology from Carnegie Mellon University. Her thesis committee was comprised of David Klahr, Patricia Carpenter and Herbert Simon.

LECTURE ABSTRACT

ICAP is a theory of active learning that differentiates students' engagement based on their behaviors within the learning environment and the outputs they produce. ICAP postulates that **Interactive** engagement, demonstrated by collaborative dialogues, is superior for learning than **Constructive** engagement, indicated by generative behaviors. Both kinds of engagement exceed the benefits of **Active** or **Passive** engagement, marked by physically manipulative and attentive behaviors, respectively. This talk will briefly describe ICAP along with two five-year projects that attempted to translate ICAP into a theory of instruction for K-12 teachers, assessing both teachers' design, teachers' implementation and students' learning. We focus in particular on why it is difficult to implement optimal co-constructive ways of collaborative or Interactive engagement. Ideas for how to salvage lecturing in college instruction will also be discussed.

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RESEARCH

Chi's research <u>examines</u> how self-generated explanation improves student understanding. Her scholarly work on <u>vicarious learning</u> aims to understand why observing human tutoring is more effective than watching recorded lectures.

Chi also focuses on why it is difficult for students to acquire a deep understanding of science concepts of processes. To combat students' misconceptions about science concepts, Chi developed a Learning and Instruction article.

Finally, in this <u>Ed-Talk</u>, Chi discusses the ICAP framework. This <u>fact sheet</u> highlights misconceptions about deep learning and summarizes key findings.