EPI·STEM

National Centre for STEM Education

EPI•STEM Lecture Series

A talk by Professor Şenay Purzer
School of Engineering Education, Purdue University
Thursday 16th July, Time to be Confirmed, Room A1-062

Title of Talk: 'Untangling and Assessing Design Reasoning in Engineering'

ABSTRACT

Although engineering, as an integrative field, incorporates many aspects of other STEM disciplines, it also differs from these disciplines with its purpose as well as its focus on design context, constraints, and trade-offs. How do students develop engineering reasoning and become informed designers? How can we effectively assess the development of design reasoning in engineering? This talk will cover findings from a series of research studies conducted in secondary school and college classrooms on engineering design cognition and highlight three critical component of assessment: (1) understanding aspects of student cognition; (2) clarifying key characteristics of tools necessary to make meaningful evidence on student cognition; and (3) outlining teacher pedagogical content knowledge necessary to interpret assessment data on engineering reasoning. The seminar will conclude with a discussion on the implications of these studies and engage attendees in a discussion on what research on engineering reasoning should look like in the next ten years in K-12 and beyond.

BIOGRAPHY

Şenay Purzer is an Associate Professor in the School of Engineering Education at Purdue University. She is a recipient of 2012 NSF CAREER award for early career development. Her research focuses on assessing design innovation and reasoning. She is the director of Engineering Learning Observatory, where she conducts research using video, clickstream data, and content analysis methods to examine engineering students' approaches to innovation, design thinking, and collaborative decision-making processes. She currently teaches undergraduate courses on introduction to engineering and graduate courses on educational research methods. Şenay is a governing board member of the international Research in Engineering Education Network (REEN) representing North America zone and an editorial board member of Science Education and the Journal of Pre-College Engineering Education (JPEER). She received a B.S.E with distinction in Engineering at Arizona State University in 2009 as well as a B.S. degree in Physics Education in 1999. Her M.A. and Ph.D. degrees are in Science Education from Arizona State University. She is a member of NARST, a worldwide organization for improving science teaching and learning through research, and ASEE (American Society for Engineering Education). http://web.ics.purdue.edu/~spurzer/

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