ENgAgment In eNgineering Education ("ENGINE")

Leon Liebenberg (MechSE), Robert Baird (CITL), Ava Wolf (CITL), Shelly J. Schmidt (FSHN), H. Chad Lane (EdPsych), Blake Johnson (MechSE), Alex Pagano (MechSE), Molly Goldstein (ISE), Candace Martinez (Business), Tierney Dufficy (MechSE), & Elif Ertekin (MechSE)
University of Illinois at Urbana-Champaign

Goals

RESEARCH: To explore the relationship between pedagogies of engagement and cognition and emotion, to better understand how we may engage students more fully in their learning, reflection, and testing of ideas.

TEACHING: To move beyond traditional content delivery methods by exploring diverse pedagogical strategies with particular emphasis on improving classroom engagement and developing a professional mindset. Strategies will include assignments that invite students to apply, create, and iterate fundamental course concepts while developing practical experience working in a team-oriented environment.

GENERAL: Development and distribution of teaching and learning resources pertaining to pedagogies of engagement.

Pedagogies of engagement

 ✓ Interaction with real-world specialists
 ✓ Augmented and Virtual Reality apps
 ✓ Community building
 ✓ Self-directed learning
 ✓ ePortfolios
 ✓ Product dissection
 ✓ Modeling of favorite campus buildings
 ✓ Role-play
 ✓ Low-fidelity prototyping
 ✓ Competitions
 ✓ Graphic novels and Comics

Acknowledgments

 ✓ Academy for Excellence in Engineering Education (AE3)
 ✓ Department of Mechanical Science and Engineering (MechSE)

References


What do we hope to achieve?

Improved outcomes related to student engagement and self-directed learning, like these

Results from a 30-question student survey on pedagogies of engagement (specifically, play-in-learning) employed in ME 200 (Thermodynamics) during Fall 2018

Future work

 ✓ Evaluation of pedagogies of engagement in:
   - ME 200 (Thermodynamics)
   - ME 270 (Design for Manufacturability)
   - ME 310 (Fundamentals of Fluid Dynamics)
   - TAM 335 (Fluid Mechanics)
   - FSHN 101 (Introductory Food Science & Nutrition)
   - SE 101 (Engineering Graphics and Design)

 ✓ Strong focus on development of comprehensive Teaching-Learning-Assessment ePortfolios.

Online graphic novel (16 pages, online), ME 200 (Thermodynamics)