ENGagement In eNgineering Education (“ENGINE”)  
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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  

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 [1]  

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.  

High-stakes (but enjoyable) competitions: ME 310, ME 270  

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References  