A Systematic Review of the Intersections of Engineering Identity and Financial Need Literature in Community Colleges

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Engineering Identity & Community College Students with Financial Need

• Need high-quality, diverse engineering workforce; all socio-economic levels access and complete

• Students in community colleges from low-socioeconomic backgrounds and students with financial need may experience difficulty seeing themselves as engineers

• Little research has connected the concepts of engineering identity and financial need
Purpose

• Part of a Larger National Science Foundation Grant
  • SSTEM - Collaborative Research: ECSEL Scholarship Program (Electrical, Computer, and Software Engineers as Leaders) (#1565130)
  
• Systematic Review
• Engineering Identity, Financial Need
• Community Colleges
Systematic Literature Review Process

- Filters
  - Peer-reviewed
  - All Documents
  - 2000-present

- Databases
  - Compendex
  - EBSCHost
  - PsychINFO

- Community College Journals
  - Community College Review
  - Community College of Journal of Research and Practice
  - Journal of Applied Research in the Community College
Overview of the Findings

- Multitude of different frameworks used
- Multiple methodologies used
- Studies investigated a variety of engineering disciplines
- Engineering transfer engagement as central concept
- All Engineering Students, Rather Than Subgroups
Multitude of Different Frameworks Used to Examine Engineering Identity and Financial Need

- Adult learning
- Aspirational momentum
- Collaborative learning Model
- Community cultural wealth
- Community of Practice
- Experiential capital
- Learning Persistence in College
- Mentee/Mentor Relationship (2)

- Science Identity Theory
- Self-Efficacy (2)
- Social Learning Theory
- Stereotype Threat
- Transfer Capital (2)
- Transformative Experience
- Validation
Multiple Methodologies Used to Examine Engineering Identity and Financial Need
Studies Investigated a Variety of Engineering Disciplines

- Pre-Engineering: 11%
- Civil Engineering: 17%
- Engineering: 22%
- Electrical Engineering: 5%
- Chemical Engineering: 8%
- Mechanical Engineering: 8%
- Computer Engineering: 6%
- Bio-engineering: 3%
- Industrial Engineering: 3%
- Material Science Engineering: 3%
- Bio-Medical Engineering: 3%
- Aeronautical Engineering: 3%
- Cybersecurity: 3%
Literature Content: Engineering Transfer Engagement as a Central Concept
Literature Content: All Engineering Students, Rather than Subgroups

- All Students: 66%
- URM: 13%
- WOC/Gender & Race: 13%
- Women: 4%
- 1st gen: 4%

Iowa State University
School of Education
Implications: Future Research

- Engineering identity frameworks
- Creative, complex methods
- Financial Need & Subdisciplines
- Identity & Transfer
- Marginalized students, STEM Identity & Financial Need
- Longitudinal Study – Interviews
Implications: Policy & Practice

- Considering identity and financial need
- Engineering as an identity process
- Contextualizing by sub-discipline
- Understanding factors of identity for students with financial need
QUESTIONS?

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