



THE OHIO STATE UNIVERSITY

COLLEGE OF ENGINEERING

Department of Engineering Education: Research Related to Equity and Diversity in STEMM

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Assistant Professor

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Department of Engineering Education

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Design Thinking | Diversity & Inclusion | Faculty Development | Engineering Thinking | P-12 Education | Entrepreneurial Education | Learning | Research Methods | Pedagogies, Assessment, and Evaluation | Partnerships | Professional Development | Technical Communication | Teaching

UNDERGRADUATE



FIRST-YEAR ENGINEERING

- Learning engineering design, analysis, and ethics
- Developing an entrepreneurial mindset and professional skills.
- Teamwork experience
- Over 2300 students taught each semester



MULTIDISCIPLINARY CAPSTONE

- Giving students hands-on experience through direct contact with industry professionals
- 14 different engineering departments collaborating with over 20+ non-engineering majors



TECHNICAL COMMUNICATIONS

- 36+ Class sections per year
- Preparing students for interviews
- Understanding the audience and becoming a part of the collaborative process
- Real-world applications



GRADUATE PROGRAM

- Courses on pedagogical issues, research methods, and theory
- Pursuing ground-breaking research with top scholars
- Specialization ranging from Design Thinking to P-12 Education





Engineering Education Research Questions



How can community-based learning support students and communities through reciprocal partnerships in engineering education?

How do women of color excel as faculty and in the professional workforce?



How can student success in engineering be improved through an understanding of identity and motivation?



How can educational innovations be propagated and sustained for broad adoption?



How can engineering student perceptions, major selection, and retention of learning inform how we design their first-year experiences?



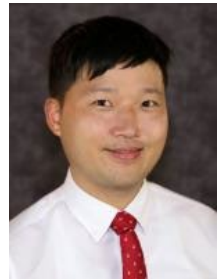
How can we intentionally design research to purposefully advocate for marginalized populations?



How can engineering students' university-to-industry transition be improved through the lens of identity and career development?



How do engineering educators innovate to adapt to broader social and historical changes?





Engineering Education Research Questions



How can service learning in engineering support students and communities through reciprocal partnerships?

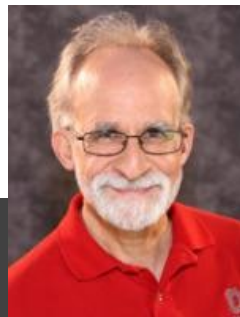
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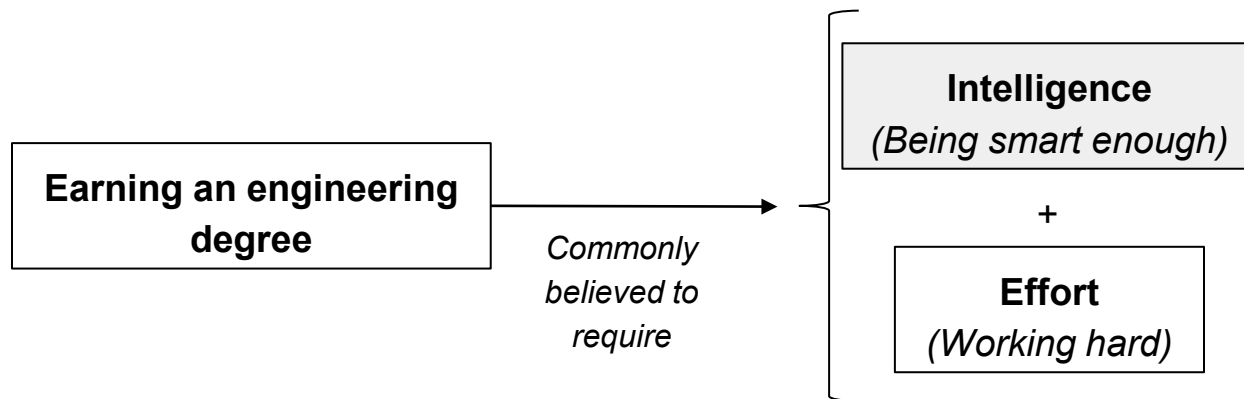
Beliefs in Engineering Research Group





Am I Smart Enough to be an Engineer? Study of Engineering Students' Beliefs and Identities Across Institutionalized Educational Pathways

NSF EHR Core Award #1920421



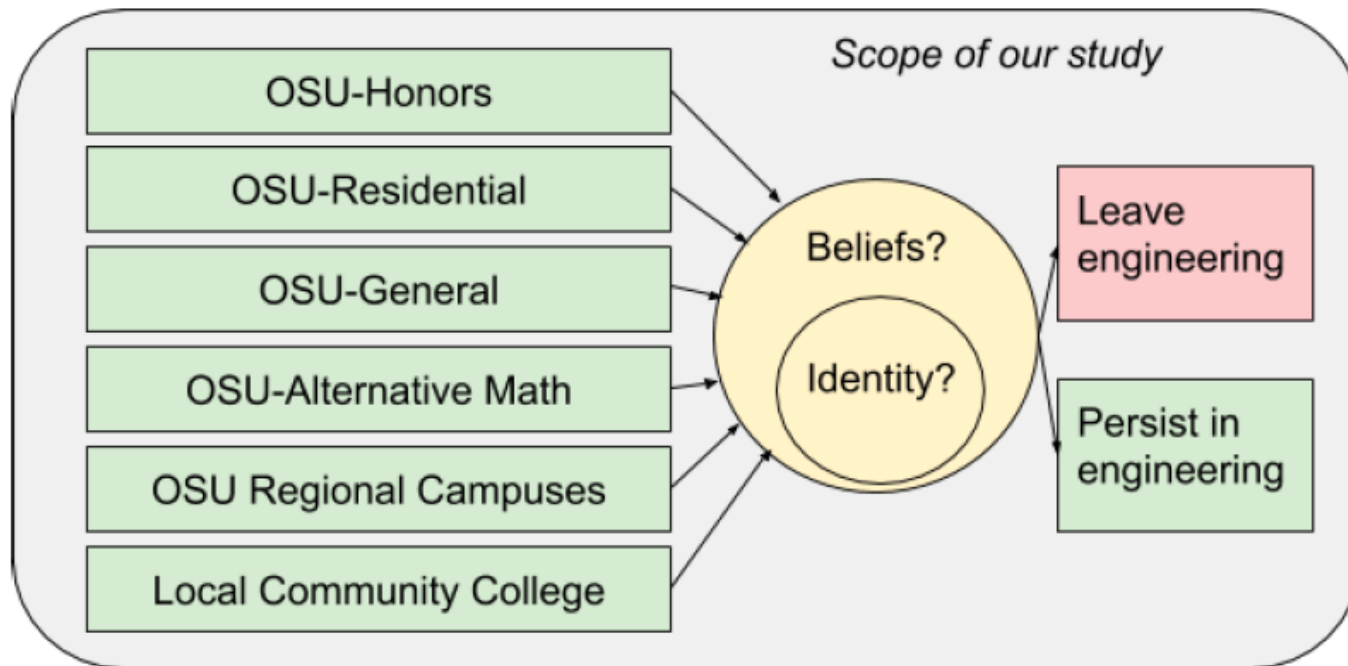
Engineering Pathway
1) OSU-Honors
2) OSU-Residential
3) OSU-General
4) OSU-Alternative Math Starting Point
5) OSU Regional Campuses <i>(Averaged across 4 campuses)</i>
6) Columbus State Community College





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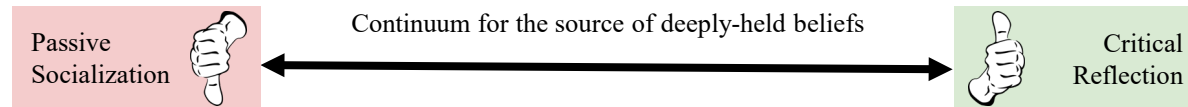
NSF EHR Core Award #1920421





CAREER: Surfacing deeply-held beliefs about gender- and race-based minoritization in engineering

NSF EHR Core Award #1943934



Who?

- Engineering faculty, staff and administrators
- Identify as White and/or male
- Recognized by members of minoritized identities for promoting inclusivity

What?

- Interviews about causal beliefs (why do women and people of color remain minoritized?)
- Graduate education: ENGREDU 6194 Autumn 2020!





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Thank you!

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 **BERG**
Beliefs in Engineering Research Group

