

# Collaborations Across Campus: Bringing Ethics and Social Science to the Engineering Classroom

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# What Brought Us Together?

Intersections of social justice, ethics, and education

Push for interdisciplinary research at federal funding agencies

Specific RFP on ethics and STEM

Complementary skill sets

# Background

4-year NSF funded project

Research questions:

- Does participation in service learning such as EWB-USA contribute to a culture of ethical STEM practice?
- Do participants from service learning projects experience their STEM education in a qualitatively different way than those who do not?
- How can we learn from the on-ground experiences of students and faculty to identify and promote best practices in humanitarian service learning for a more ethically aware STEM culture?
- Who is the primary client or beneficiary of SL?
- What is the balance between helping a community versus or contrasted to student experiences?

# Methodology

Interviews and Focus Groups with EWB Participants

Analysis of EWB project documents

Fieldwork with EWB Chapter

Interviews with faculty involved in other service learning

Survey of students (engineering and non-engineering) at UW-Stout



## Balancing (sometimes) competing objectives

Ensuring that university service learning work does not negatively impact vulnerable communities

Take advantage of positive influence over student opinions towards community service and career expectations

# Engineering Curriculum Study

- Many engineering programs around the country use humanitarian service learning, but few integrate social justice training directly into the engineering curriculum
- Investigating the influence of early exposure to topics of social responsibility, social justice, and ethics within an introductory engineering course

# Engineering Curriculum Study

- N = 231
- Mixed methods approach using quantitative survey instrument, open ended survey questions, and interviews qualitatively coded
- Survey instruments included the Sustainability Skills and Dispositions Scale and the Engineering Professional Responsibility Assessment
- Results analyzed using paired sample and individual sample t-tests

# Engineering Curriculum Study



- Participants overwhelmingly male (87%) and white (88.3%), largely not first-generation students (75.7%), and between the ages of 18 and 20 (78.7%)
- 54% report being affiliated with an organized religion, and 57.2% of those reported being either somewhat or very active

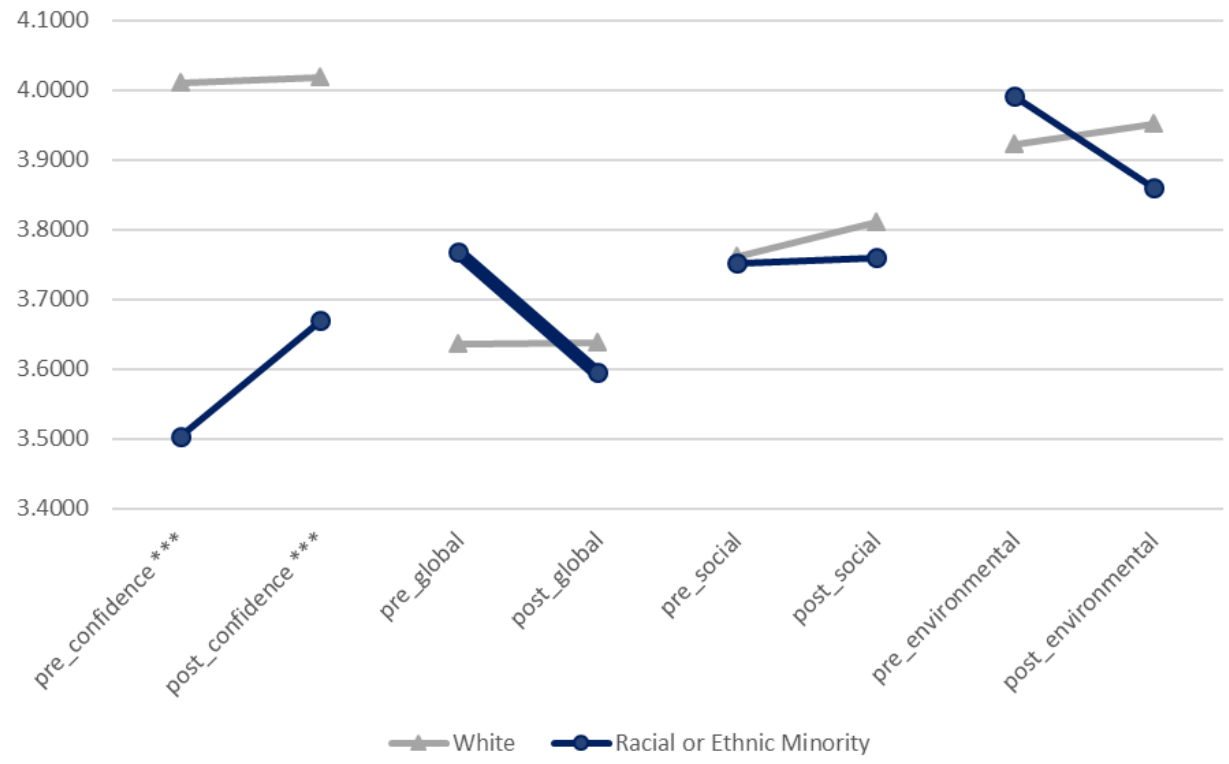


# Key Findings

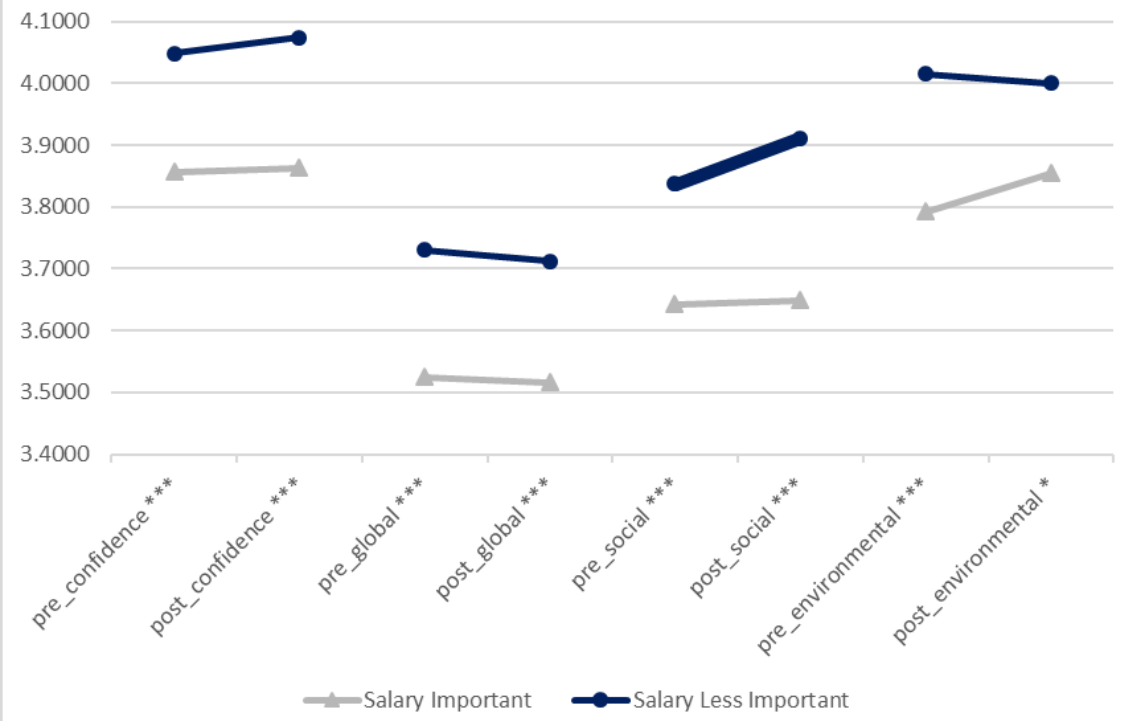
- A single course is insufficient for training engineers to have a sense of social justice and to engage ethically with vulnerable stakeholders.
- Students bring diverse perspectives to the classroom and the understanding that they gain from social justice curriculum is similarly diverse.

# Key Findings

SSDS Changes by Race and Ethnicity



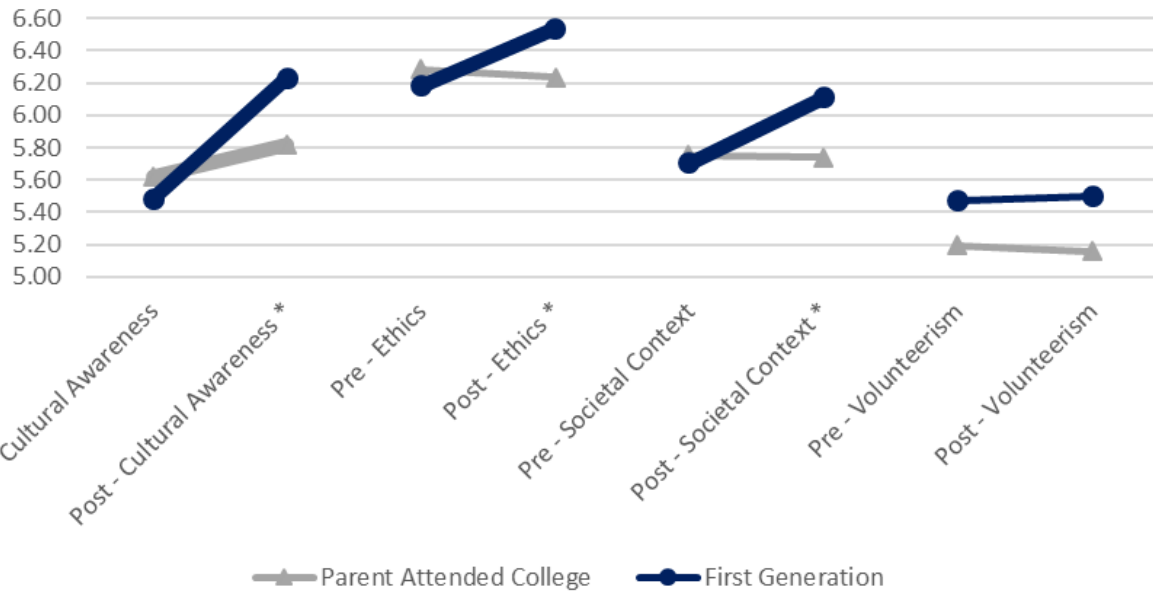
SSDS Dimensions Changes by Importance Placed on Salary



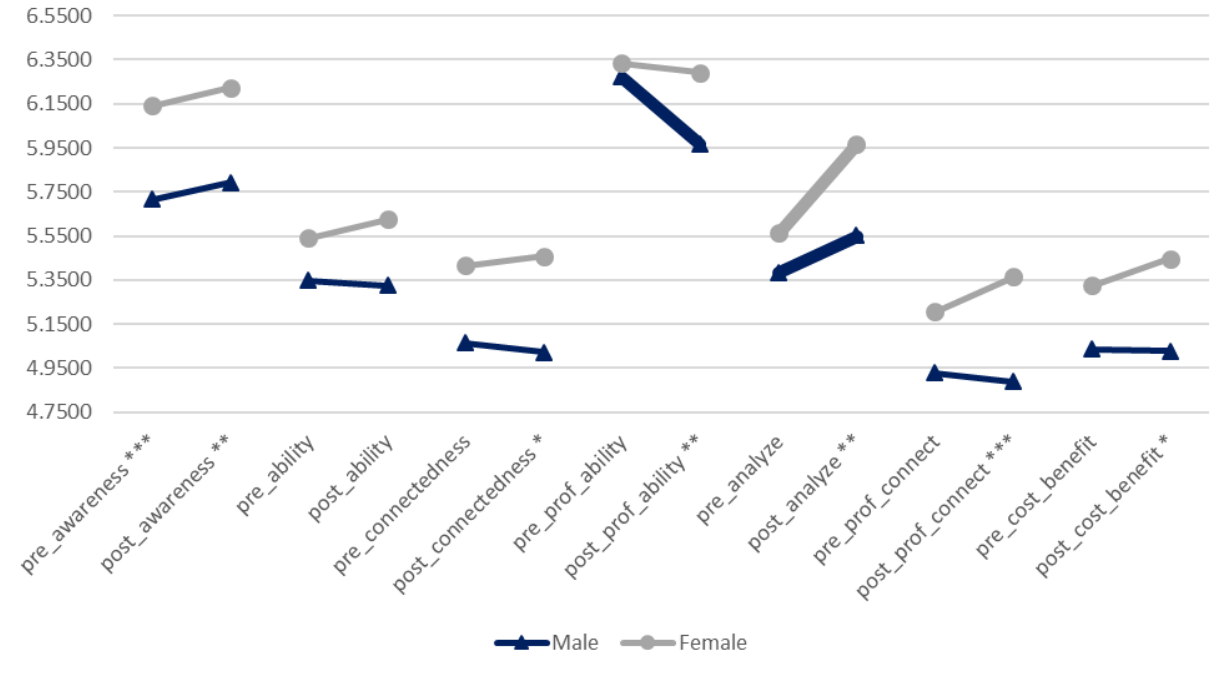
<https://engrxiv.org/v83k5/>

# Key Findings

Changes in Perceived Importance of Skills by First Generation Status



EPRA Dimensions Changes by Gender



“...social justice work is not mutually exclusive with engineering. I can do both and therefore can make a difference through my work.”



Questions?