GLOBALLY COMPETENT ENGINEERS
DO INTERNATIONAL EXPERIENCES MATTER?

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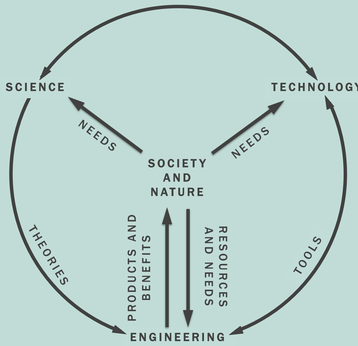
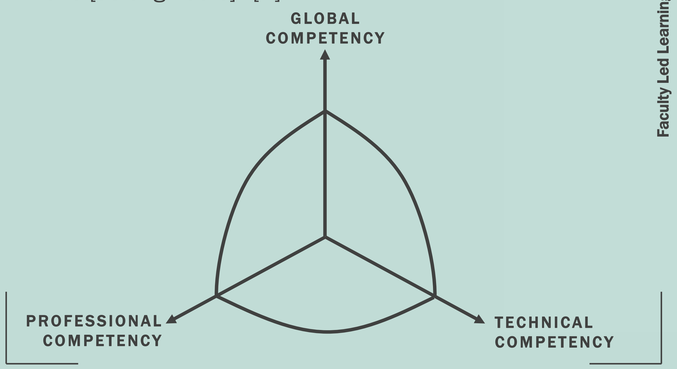
Our shared global future require engineers and designers who are defined by their intersectionality, that is, engineers who are technically competent in their field(s) of engineering but also have global competency and professional skills **to practice engineering design as professional global citizens**

"[There is a] Global need for engineers who understand the problems of development and sustainability, can bring to bear on them their engineering knowledge, are motivated by a sense of the future, and are able to interact with other disciplines, with communities and with political leaders to design and implement solutions" [2]



"The real 'problem' of engineering education is the implicit acceptance of the notion that high-status analytic courses are superior to those that encourage the student to develop an intuitive 'feel' for the incalculable complexity of engineering practice in the real world" [3]

"[Engineering education needs to go] beyond just seeking technical solutions to an understanding of the problems […] to encourage a more critically reflective approach towards addressing problems that need to be tackled, understanding and valuing different perspectives and recognizing that external factors, be they economic, political or cultural, do play a role in influencing the decisions we make [as engineers]" [4]



RESEARCH QUESTIONS

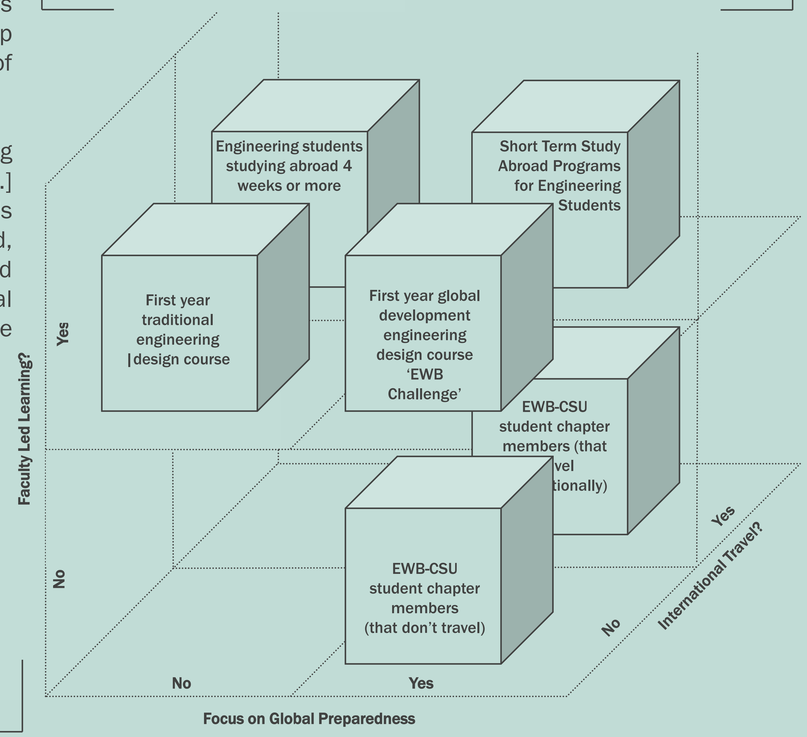
What professional skills and global competencies for engineering graduates are recognized as fundamental by key stakeholders in global engineering practice and engineering education?

What are the current educational practices and models for weaving professional skills and global competency through undergraduate engineering core curriculum and optional or co-curricular learning opportunities?

What is the effect of changing the context of engineering design courses to include content from international development projects on undergraduate student's global preparedness and professional skills?

To what extent can engineering students improve their global preparedness through engineering learning opportunities based on campus compared with learning opportunities that include international travel?

What is the relative improvement on engineering undergraduate student's competency to work in global engineering context, through different educational experiences such as curricular, co-curricular, study abroad and volunteer models of engineering education?



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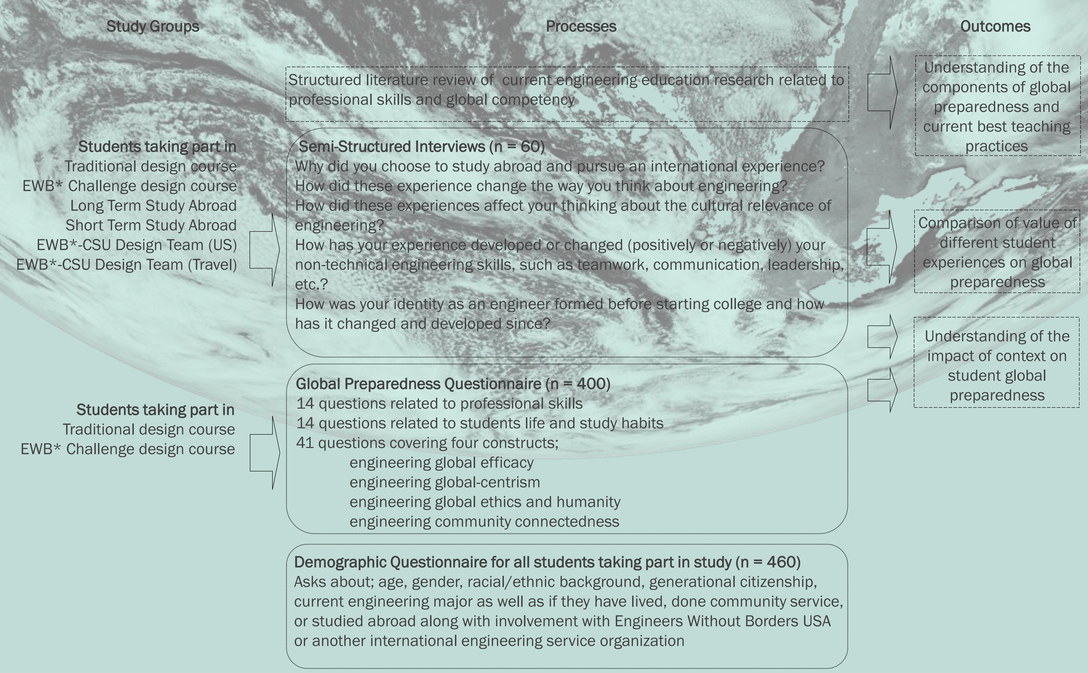

Sub Construct [5]	Description [5]	Professional Skills
Global Engineering Ethics	Depth of concern for people in all parts of the world, sees moral responsibility to improve life conditions through engineering problem solving and to take such actions in diverse engineering settings	Cross-cultural skills, ethics, global awareness, sustainability, disciplinary knowledge
Global Engineering Efficacy	The belief that one can make a difference through engineering problem solving; support for one's perceived ability to engage in personal involvement in local, national, international engineering activities towards achieving greater good using engineering problem solving and technologies.	Critical thinking, civic responsibility, creativity, strategy, problem-solving, global awareness, disciplinary knowledge,
Engineering Global-centrism	Valuing what is good for the global community in engineering related efforts, not just one's own country or group, making judgments based on global needs for engineering and associated technologies, while not focusing on ethnocentric standards	Global awareness, sustainability, communication, teamwork, environmental awareness, problem-solving
Engineering Community Connectedness	Awareness of humanity and appreciation of interrelatedness of hall people and nations and the role that engineering can play in improving humanity, solving human problems through engineering technologies, and meeting human needs across nations.	Communication, Cross-cultural skills, ethics, humanitarianism, innovation, teamwork

Self identifying female students scored significantly higher across all four subscales

Younger students gained significantly across all four subscales, non-traditionally aged students didn't.

Students with previous international travel or international development service experience scored significantly higher across all four subscales.

	PRE-TEST		RETROSPECT. PRE-TEST		POST-TEST	
SUBSCALE WITHIN THE INSTRUMENT	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Engineering Efficacy	4.08	.86	3.86	.98	4.02	0.97
Engineering Ethics	3.84	.94	3.59	1.06	3.71	1.08
Engineering Global-centrism	3.94	.92	3.72	1.01	3.87	1.03
Engineering Community Connectedness	4.02	0.93	3.84	1.02	4.00	1.01