



Call for Papers
Special Issue of *Advances in Engineering Education* on
“Impact-Focused Engineering Education”

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For this special issue, we invite articles from courses and programs that 1) engage in real-world engineering projects related to social innovation and global sustainable development and 2) prioritize (or at least give equal importance to) long-term project outcomes rather than simply focus on student learning outcomes. This special issue aims to curate proven practices and initiate larger conversations emerging from the work of engineering programs that engage students and faculty in the rigorous research, design, field-testing, and dissemination of technology-based solutions that address global development challenges. Whether partnering with departments on campus or communities in Appalachia, or striving to transform markets in Angola, these programs espouse diverse academic models, philosophies of engagement, and funding channels to deliver practical, sustainable, and scalable solutions to complex challenges including those related to food, energy, water, and health. Sustainability, in this context, refers to the notion that real solutions must be technologically appropriate, socially acceptable, environmentally benign, and economically sustainable. There is a recognition that ideas, presentations, and prototypes do not solve problems; the real challenge is in the implementation, assessment, and fast-paced pivoting to reach a higher sustainable equilibrium. The challenge is in the execution - getting the job done in partnership with diverse actors in an ethical, harmonious, and self-determined manner.

For example, through a series of academic courses, students at the Center for Biomedical Innovation and Design at Johns Hopkins University have researched, designed, and commercialized new biomedical technologies for US and global markets. These student-driven innovations have led to over 25 patents, the formation of 15 startups, and over \$20 million in project-specific funding. Further, these endeavors occurred within the confines of regular courses leading to an academic degree. Through engaging in meaningful, authentic, and incredibly alive projects, students develop skillsets, mindsets, and portfolios to solve complex societal challenges. In order to foster and demonstrate these competencies, the students build sustainable technology-based enterprises, publish their works in peer-reviewed journals, integrate their insights into national policies, and champion social movements that influence the lives of millions of people. The quest for sustainable impact and preparing students to lead lives of impact drives the philosophy, pedagogy, and operations of such programs. How do we build such programs and ecosystems to prepare a new cadre of globally-engaged problem solvers who are adept at traversing the journey from creative inquiry to sustainable impact?

Possible submission topics include, but are not limited to, the following:

- Engineering as a care-giving profession: identities, representations, and manifestations.
- Program models, pedagogies, and partnerships that deliver scalable impact.
- Balancing (social) impact goals with educational goals; ethics of engagement.
- Engineering schools as epicenters of social innovation and entrepreneurship: systemic challenges and opportunities.

- Practical (validated) tools to help student-faculty teams identify opportunities and co-create solutions to sustainable development challenges.
- Measurement and assessment strategies for long-term project impact, impact on students, and their career trajectories.
- Transforming learning-centered programs to impact-centered programs.
- The role of original publishable research in developing and delivering rigorous evidence-based solutions.
- Integrating learning, research, and community (market) engagement to effect sustainable social change.
- Educating life-long learners and helping students reach a point of optimal ignorance where they can actively contribute to solving complex problems and creating sustainable value.

Scholars and practitioners from all disciplines are invited to submit manuscripts. We are open to diverse methodological approaches, philosophies of engagement, learning settings, conceptualizations of sustainable impact, and intellectual perspectives. We are most interested in those programs and models that strive to deliver tangible, measurable, long-term social impact for partnering communities or target markets, rather than those that simply focus on shorter term, student learning. We expect manuscripts to clearly articulate the long-term societal impacts through projects or programs that form the basis of their contribution to this special edition, and to provide an assessment of the efficacy and effectiveness of their educational innovation(s). We expect each manuscript to provide an overview of relevant literature including any foundational pedagogy.

Submission Guidelines:

Interested authors should submit titles, a 200-word description of the course/program and its impacts, and 500-word abstracts of their contribution by October 15, 2018 to the guest editor, Khanjan Mehta at krm716@lehigh.edu. Please be sure to include your contact information and institutional affiliation. After an initial round of editorial reviews, we will invite full articles that will go through the standard AEE review process. Papers are expected to be between 5,000-10,000 words in length. Completed draft manuscripts will be due on February 28, 2019. Work in progress or incomplete articles will be returned to the author without review. The special issue is expected to be published in Spring 2020.