



Online Ethics Center
FOR ENGINEERING AND SCIENCE

Understanding and Evaluating Ethical Engineering Practice

Author(s)

Michael Loui
Justin Hess

Description

This project qualitatively investigates how practicing engineers experience ethical issues in their workplace. This understanding of practicing engineers' experiences will support a better alignment of engineering ethics instruction with what students might experience in professional practice.

Body

The OEC Project Pages are intended to cultivate a community of practice and allow ethics researchers, educators, and practitioners to more effectively disseminate their work. This Project Page provides a detailed overview and relevant resources for an on-going science or engineering ethics project. Once you've explored this project, visit the "Projects" section under "Resources" to see more ethics projects.

Description

Engineering degree programs recognize that ethics is essential in preparing students for professional practice. However, current efforts in ethics education may not

adequately reflect practicing engineers' experiences with ethical issues.

We are applying phenomenography, a qualitative, empirical research methodology for investigating qualitatively different ways people experience a phenomenon, to comprehensively understand how practicing engineers experience ethical issues in their workplaces. We will categorize and explore variations in the ways engineers experience ethics in professional practice based on 45 phenomenographic interviews. While we do not presuppose core features of such variation, such features may include ethical decision-making processes, relationships between stakeholders, and organizational culture. Whereas others have interviewed practicing engineers to gather cases for ethics education, we aim for fundamental understanding. Our approach is descriptive, not normative. We are not aware of previous phenomenographic research studies in engineering ethics education.

We are conducting semi-structured interviews with engineers from three areas of the health products industry: orthopedic, pharmaceutical, and other medical devices. Participants were selected to ensure variation on several criteria, including years of experience, workplace roles, gender, and academic degrees. Phenomenographic analysis will enable us to generate a comprehensive framework to understand engineering ethics, grounded in the experiences of engineers. This understanding of practicing engineers' experiences will support a better alignment of engineering ethics instruction with what students might experience in professional practice.

Leadership

Dayoung Kim

School of Engineering Education
Purdue University

Carla B. Zoltowski

School of Electrical and Computer Engineering
School of Engineering Education

Michael Loui

School of Engineering Education
Purdue University

Alison J. Kerr

University of Tulsa

Justin L. Hess

STEM Education Innovation & Research Institute
Indiana University Purdue University Indianapolis

Nicholas D. Fila

Department of Industrial Design
Iowa State University

Funding

Engineering of 2020 Seed Grant, College of Engineering, Purdue University; National Science Foundation Awards: 1737303 and 1623125

Recipient Organization

Purdue University, West Lafayette, Indiana, USA

Start and End Date

September 2017-August 2020

Contact Information

Andrew O. Brightman (aob@purdue.edu)

Attached Resources

- [Applying Phenomonegraphy to Understand Practicing Engineers' Lived Experiences About Ethics in Engineering and its Implications for Ethics Education](#)

Rights

Use of Materials on the OEC

Resource Type

Projects

Parent Collection

STEM Ethics Projects (2017-Present)

Topics

Organizational Climate

Workplace Ethics

Discipline(s)

Engineering

Research Ethics