Connecting with others: Empathy in engineering and engineering education

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Overview

1. Why? What?
   • Why empathy in engineering?
   • What is empathy & can we learn it?

2. Let’s try it - Empathy module

New Study Reveals Engineering Schools Fail To Teach Empathy

Jon Marcus, PTC

With its relentless emphasis on technical problem-solving, engineering education may be overlooking something equally important according to a new study...


“The behaviors that create psychological safety – conversational turn-taking and empathy – are part of the same unwritten rules we often turn to... when we need to establish a bond. And those human bonds matter as much at work as anywhere else. In fact, they sometimes matter more.”
In which other aspects of engineering might empathy be relevant?
Can empathy be taught?
What is empathy?

‘Teaching’ empathy in a core mechanical engineering design course

Context: Interdisciplinary module development with engineering and social work

Engineering and Society Course:

- Open ended projects - Systems understanding and problem framing
- Critical readings and discussions
- Reflection exercises

Data:

- Observations
- Post-module reflection
- Final reflection
- Design artefacts

Module 1: Self awareness
Module 2: Affective sharing
Module 3: Affective responding
Module 4: Mode switching
The design of the modules

- Intro to empathy facet
- Skills exercises
- Debrief
- Application scenario: Roleplay
- Debrief & reflection

- 75 mins each
- Engineering and society course
- Connected to semester project
Let’s give it a try!

• Encountering Others (Commonality exercise)
• Role play – professional engineering scenario
Focus today:

Encountering Others

Self-Awareness

Intentional use of self
Commonality Exercise

Instructions:

1. Talk with two people who you don’t very well and uncover at least two things you have in common with each person (4 mins).

2. Debrief (5 mins):
   a) How did you approach people /what did you do?
   b) What signals did you pick up from your counterpart?
   c) How did you feel throughout the exercise?
the self

your most powerful tool in interpersonal communication
Role Play
A new round of PG&E power outages could put 500,000 Californians in the dark for days

John Bacon, USA TODAY  Published 8:17 a.m. ET Oct. 22, 2019 | Updated 11:01 a.m. ET Oct. 22, 2019

California counties face the prospect of more blackouts this week as Pacific Gas and Electric says up to 17 counties may be affected starting on Wednesday. Wibbbit

California's largest utility says it could shut off power to 500,000 people this week for two days or longer as wildfires again threaten to bring havoc to northern parts of the state.

The warning addressed residents in 15 counties, most in the Sierra foothills and the San Francisco Bay area. It came less than two weeks after gusty winds, high temperatures and parched conditions forced Pacific Gas & Electric to shut off power to 2 million people, many for several days.

That prompted a lawsuit by Public Safety Power Shutoffs, which led to widespread blackouts in the state.
Application to engineering work – scenario

You are an engineer working PG&E. You have been tasked to connect with a range of stakeholders around the power shutdowns. You are attending a range of community events. Today you are speaking to people at the Saturday morning farmers’ market.

Your goal is to make connections with stakeholders and start conversations that could potentially lead to some local residents serving on an advisory committee.
Your task...

• The engineer approaches community members (2) at the street festival to meet and establish a relationship with them (2 min)

• After the first round, select a new engineer, and repeat the role play (try to approach the conversation differently than the prior round(s))

• Total 5 minutes

Focus on: Awareness of self, Intentional use of body language, Awareness and regulation of own emotional reaction, & Focus on and interest in other person
what was it like?

To be the engineer? What did the residents say to you? What did you say/do in response?

To be the resident? What did you say to the engineer? What did they do? How did you feel?
Empathy & Engineering Formation

Variations in Self-Other relationships:

Disciplinary values and narratives:

- Factual objectivity
- Engineering Expertise
- Dispassionate neutrality
- Problem-solving
- Technology focus

“One doesn’t have to operate with great malice to do great harm. The absence of empathy and understanding are sufficient.”

— Charles M. Blow
Now what?

Discussion:
• What are places in the curriculum where empathy could be integrated?
• What can we do about disciplinary values and narratives that may be problematic in helping students develop empathy?
Thank You!

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