Equity education in engineering: developing and implementing equity, diversity and inclusion (EDI) content for the second-year mechanical engineering program

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EDI Importance in Engineering
Equity, diversity, and inclusion (EDI) education is critical for engineering, as inequity in engineering projects can have long-lasting impact.

Motivations for this project were:
• Canadian Engineering Accreditation Board Graduate Attribute in equity [1];
• Institutional strategic plans focused on EDI;
• Moral and ethical drive to address inequity.

Mech 2 Program
• Immersive 40-credit program taken by all entering MECH students (early exposure).
• Cohort-based program (integrated across multiple courses, two terms, covering wide range of Graduate Attributes).
• Unique scheduling format and integrated curriculum, with regular guest speakers.

Strategies
Our strategies in the development of this curriculum were to:
1. Link EDI to engineering
2. Frame EDI as a professional skill
3. Have engineering instructors teach content (some evidence content taught by regular instructors may increase student buy-in [2])
4. Make content:
   (a) Introductory (get on the same page)
   (b) Easy to complete (low stress, async, etc.)
   (c) Required (must pass EDI to pass course)

Changed course syllabi for 4 courses (2 terms):
1. Equivalent EDI weight to ¼ of 3-credit course
2. Two 1-credit courses (one per term) required passing EDI content (>50%) to pass course.

Discussion
Students agreed that they
• were familiar with most concepts (71%), and
• learned a lot (74%).
Possibly because applying EDI concepts in engineering contexts was new.

Students agreed the content would help in their professional lives (88%). When asked about the most impactful thing learned, >50% of open-ended responses explicitly mentioned engineering, professional life, and/or workplaces. This indicates our goal of tying EDI content to engineering was successful.

“I think that the topics presented in EDI were relevant to engineering as a profession, and constructive for developing a well-rounded perspective.” - student survey response

“I really liked how our own engineering professors taught us the EDI content and made the videos. I think the topics/issues covered in EDI are really important to teach young students.” - student survey response

Survey Results
Post-survey results related to familiarity, usefulness, and self-reported learning (n=27).

References

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