After this workshop, participants will have the knowledge and skill to:

- Identify the goals of professional ethics in STEM education;
- Facilitate open-ended discussions for students to clarify their own values;
- Guide students through analyzing professional codes of ethics; and
- Organize case studies to increase awareness of ethical challenges in the field.

Demo Case Study[1]

"I spend probably 1-2 hours per week on my job for which I am getting a full time wage."[2]

The anonymous person (whom we'll call Eve) making this post to TheWorkplace website explains that she was hired as a programmer to support a legacy system. Her job is to take a batch of requirements, stored as data in spreadsheets, and write SQL scripts to configure the system based on the requirements. It's a complicated process, and the analysts creating the spreadsheets *"spend a fair bit of time verifying"* Eve's work to ensure that the SQL scripts are correct *"because the process is so tedious that it's easy to make a mistake."*[2] Although it's boring work, it is a full-time job with a good salary, and it allows Eve to work from home and take care of her son.

It took Eve about a year to figure out all the complications and write software that can remove errors from the spreadsheet and produce the SQL scripts. She can now do in 10 minutes what took the previous employee a month to do. When Eve gets a new set of spreadsheets, she quickly produces the scripts. Every week, she tells her employer that she's completed another part of the job and asks the analysts to verify the SQL scripts. She inserts *"a few bugs here and there to make it look like it's been generated by a human."*[2] The company has never indicated any dissatisfaction with her job performance.

Nonetheless, she feels uneasy and questions the ethics of the situation, especially regarding her transparency with her employer. *"I really enjoy the free time but would it be unethical to continue with this arrangement without mentioning anything? It's not like I'm cheating the company."*[2]

Discuss the following in your small groups:

1. As a result of Eve developing the job-automating software, what are the **benefits** and **harms** to Eve, the analysts, and her employer?
2. Is Eve **deceiving** her employer? Does that matter? Why or why not?
3. In which respects does Eve exemplify the characteristics of a **good employee**? In which respects does Eve **fail** to exemplify the characteristics of a good employee?

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[1] Michael J. Quinn. 2018. Automating Her Own Job. Online Ethics Center. DOI: https://doi.org/10.18130/nzpx-b435. Reprinted at Online Ethics Center: https://onlineethics.org/cases/automating-her-own-job.
[2] "Is it unethical for me to not tell my employer I've automated my job?" The Workplace (website), July 2017. https://workplace.stackexchange.com/questions/93696/is-it-unethical-for-me-to-not-tell-my-employer-i-ve-automated-my-job

<u>Additional Resources for Finding Case Studies</u>

1. HHS Office of Research Integrity

Responsible Conduct of Research Casebook, with stories about research worth discussing:

- Authorship and publication
- Research Misconduct
- Collaboration
- Data Acquisition and Management
- Conflicts of Interest
- Peer Review
- Mentor and Trainee Relationships
- Social Responsibility
- <u>plus</u> an Instructors' Manual

More here: https://ori.hhs.gov/rcr-casebook-stories-about-researchers-worth-discussing

2. NSF Online Ethics Center for Science and Engineering

Case studies and scenarios for many disciplines, including the following (and more):

- Aerospace engineering & Astrophysics
- Applied mathematics
- Biochemistry & Chemical Engineering
- Biomedical Engineering & Biotechnology
- Civil & Industrial Engineering
- Computer Science & Information Technology
- Earth & Environmental Sciences
- Economics & Management
- Electrical Engineering
- Mechanical & Nuclear Engineering
- Psychology & Cognitive Science
- Statistics & Probability

More here: https://onlineethics.org/resources?combine=&field_resource_type_target_id=13236

3. NMT Office of Research Compliance

Case studies for use with the RCR Training plan including,

- Plagiarism & Misconduct
- Gender Bias in Academia
- Approaches to Disabilities in the Workplace
- Using AI to Write a Manuscript

More here: https://www.nmt.edu/research/responsible-conduct-of-research.php),