Resources and Methods to Incorporate Ethics into Curriculum

Rebeca G. Book
Pittsburg State University

Abstract

What is ethics? Can students be indoctrinated? How can we incorporate information and get students to engage and critically think about ethics? Academia, industry, and communities desire ethical behavior, but how do we teach it?

Non-traditional methods such as card games and an OER textbook will be presented along with more traditional methods of papers, professional society codes of ethics, and applications of ethics in group projects.

This paper presents a variety of methods to present ethics concepts and meet different student learning needs.

Introduction

Academia, industry and communities desire ethical behavior, but teaching students to be ethical is complicated. It would be nice if educators could simply lecture, give a simple test, and students could be deemed ethical if they passed the test. While this might be considered a traditional method of teaching ethics, critical thinking and assessment need to be incorporated.

Professional codes of conduct has been around for decades, but ethics education is a newer component of engineering programs. In 2000, ABET outcomes criteria were revised to require "an understanding of professional and ethical responsibility"[1].

This paper presents a variety of methods, both traditional and non-traditional, to present ethics concepts and meet different student learning needs. Application of some of these methods have been incorporated in my senior engineering economics curriculum and others introduced in a general freshman foundation course.

Traditional Methods

Definitions and Student Codes of Responsibilities and Ethics

Some of the more traditional methods used in my freshman course are assessing student understanding of the definitions of ethical issues, and having students analyze students' codes of responsibilities, and conduct at our university[2]. Our university posts these codes on the home website. Students are given assignments to define academic dishonesty and list four examples. A

definition of plagiarism is also part of the assignment and then students are asked to list the penalties if the codes of responsibilities and conduct are not followed.

Also discussed in my freshman course are ethical behaviors that are captured online and that can reflect badly on the students. These are unruly actions, situations and language that are exhibited on social media with an online presence. In the classroom, it is stressed to students that behaviors reflect on them, family, school and employers, and posting must be done cautiously and with ethical consideration. Students are asked in an assignment to highlight the four ways to use social media professionally: minimize their profiles, create the presence wanted, make it private and Google themselves. The students are asked to reflect on what their digital footprint says about them and list the steps to take to change or enhance their professional profile.

Papers and Industry Codes

In my higher level course, papers are assigned that address ethical practices and situations. Additionally, professional codes of ethics are studied to inform students and familiarize them with the codes, emphasizing that industry does require and expect ethical behavior. The codes are studied and also applied to a video. The main industry set of ethics reviewed is the National Society of Professional Engineers Code of Ethics for Engineers with six canons:

Fundamental Canons

Engineers, in the fulfillment of their professional duties, shall:

1. Hold paramount the safety, health, and welfare of the public.
2. Perform services only in areas of their competence.
3. Issue public statements only in an objective and truthful manner.
4. Act for each employer or client as faithful agents or trustees.
5. Avoid deceptive acts.
6. Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession [3].

Rubrics for Evaluating Ethics within Group Projects

Students completing groups projects are evaluated with rubrics in order to check if ethical behavior is being exhibited in dealing with peers. In the higher-level course, a rubric is used for assessment. Each of the students, after the project is completed, gives anonymous feedback about themselves and colleagues using the following rubric:

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Name :_____
Please circle the number that best represents.        Never        Sometimes        Always
Completes assigned work:                               1      2      3      4        5

Meets deadlines:                                       1      2      3      4        5

Cooperates/good attitude:                              1      2      3      4        5

Communicates:                                          1      2      3      4        5

Respects others/good ethics:                           1      2      3      4        5
Comments:
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Fig. 1. Example of group project rubric.

Each student's grade is based on the percentage of the rubric averages of all the group members, so not behaving in an ethical manner within the group has consequences on each individual's grade. Completing the assignment and giving feedback within the group is required. Notes and comments are also taken into consideration, and the professor should have a good understanding of the dynamics of the groups and if it is skewed or not.

Videos

Some videos that have been incorporated in my engineering economy course include Technology, Entertainment & Design (TED) videos and a video, "Professionalism and Ethics"[4].

The TED video , "Creating Ethical Cultures in Business: Brooke Deterline at TEDxPresidio" [5], can be found on YouTube. This video highlights the need for a person to simply stop and reflect on a given situation and what action should ensue. Brooke gives two different personal examples of situations. The video is shown and discussed in class. One of the main points of the video is that it takes courage to make the right choices ethically.

Another YouTube video that is used is "Citicorp Center | NYC Skyscraper Saved by a Student's Question" [6]. This video highlights the need to make sure that work is reviewed for possible ethical lapses and extreme consequences before proceeding on projects. The video also points out that if a mistake is made, it is important to admit it, report it, and correct it. Students are asked to discuss on how they would feel if they worked in the building highlighted in the video and what steps they might have taken to deal with the ethical lapses shown in the video. An important factor in preventing a tragedy in this scenario was that someone tactfully questioned a procedure or project and this is discussed after reviewing the video.

"Professionalism and Ethics" video is a drama with actors role-playing displaying both good and bad ethical behavior in an engineering-type environment. The video allows students to see possible real-life scenarios dealing with ethics that they might not otherwise come across. The students discuss and are given an assignment to list situations from the video and if the

situations/characters follow or violate the National Society of Professional Engineers Code of Ethics for Engineers.

Non-Traditional Methods

OER Textbook

An excellent resource for ethics was found in a recent workshop attended by this author. The textbook is an Open Education Resource (OER) through OpenStax and has information management content free of charge following the loosest Creative Commons license. Even though the textbook is called *Business Ethics* [7], it has great content for both engineering and engineering technology. Chapters cover the history of ethics, culture, stakeholders, work environments as well as current issues. It can be easily incorporated into higher-level courses as a resource.

Business Ethics can easily be imported into the learning management system Canvas. It also includes a summary, key terms, assessment questions, and end notes. For my upper level course, I imported the modules as resources. At our institution, emphasis has been placed on using OER resources in order to help lower the cost of higher education textbooks.

Card Games

For both lower and higher-level courses, three instructional ethics games have been developed. These games were presented at the 2021 ASEE Annual Conference in the paper, "Let's Play! Gamifying Engineering Ethics Education through the Development of Competitive and Collaborative Activities"[8] and also presented in the ASEE Prism. The information is stored on the following website: https://sites.google.com/view/engineering-ethics/home

 Unfortunately, the only game that I have been able to obtain was the *Cards Against Education Ethics*. After reaching out to the authors and filling out the Google submission form, I still have not been contacted. The games do sound like engaging and critical thinking avenues for ethics, and the games are explained below.

The first game is *Mars: An Ethical Adventure*. This game is an interactive story-based adventure game with different ethical situations. Similar games could be produced but would require time and programming skills with gaming background.

The second game presented was a card game called, *Cards Against Engineering Ethics*, and faculty and students from the University of Connecticut created it. It is a simple card game that has the intention of making students critically think and expose them to ethics in a fun and unusual way. I downloaded *Cards Against Education Ethics* and would imagine that the engineering cards would be valuable. The cards would be rather simple to produce and could be done as an assignment.

The third game presented was *Toxic Workplaces*. This game exposes students to ethical situations that engineers might face and ranks their different responses to the situations. The premise behind these games is if students can be made to think and talk about ethical issues, then

the hope is that they will be exposed and act in accordance when coming across ethical situations.

Summary

A good understanding of ethics is required for both society and industry. For academia to incorporate ethics, it can use traditional methods such as definitions and student codes, papers, rubrics, and videos. Non-traditional methods such as OER textbooks, and card games might also fill the void to successfully meet these needs and get students to critically think about their choices and the consequences of their actions.

References

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Biography

REBECA G. BOOK is a professor at Pittsburg State University. She has taught in the Plastics Engineering Technology Program for 25 years. Her undergraduate degree is in Plastics Engineering Technology from Pittsburg State University and her master's degree is in Engineering Management from the University of Colorado, Boulder, Colorado. Rebeca worked in industry for 5+ years with Lucent Technology.