

Ethical Decision Making in Engineering

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Context: In-class; Introduction to Engineering 100

Keywords: ethics, first-year experience

Student Activity Time: 50 minute class period

After reviewing scenarios of ethical dilemmas, students reflect on the dilemmas and discuss in small groups and as a class.

Introducing the Reflection Activity

Teaching ethics in engineering is an important topic, yet typical approaches can often seem distant for students. In the Introduction to Engineering course, the educator gave a brief overview of the concept of ethics and their applicability in engineering followed by a group activity. After providing a basic framework and several ethical scenarios that are relevant to students' day to day lives, the students reflect on their likely choices for each scenario. The purpose of this activity was to introduce the concept of ethical decision making and its relevance in engineering.

In the beginning of the class session, the educator gave a short overview of ethics and the role of ethical decision making in engineering. Specific attention was paid to highlighting small decisions that can lead to significant compromises in the future. The educator provided students with a handout that included Blanchard and Peale's three questions for ethical management and some detailed explanation:

1. **Is it legal?** Will I be violating civil law or company policy? Will I be violating the student code of conduct?
2. **Is it balanced?** Is it fair to all parties concerned, both in the short-term as well as the long-term? Does it promote win-win relationships?
3. **How will it make me feel about myself?** Will it make me proud? Would I feel good if my decision was published in the newspaper? Would I feel good if my family knew about it?

The case scenarios that the educator selected are relevant to student life. Topics such as the opportunity to park in a handicapped parking space when running late, access to a final exam before it is administered, and returning a textbook to use the free, PDF version, are the kind of scenarios that students were given. The students were separated into groups of three to five and prompted to discuss the first scenario. After 10 to 15 minutes, each group reported out their conversation to the class. This process was repeated for the duration of the class meeting time. Throughout the process, students were reminded to reflect on their likely decisions and the framework for ethical decision making.

During and after this activity, students gained an appreciation for their peers' views on ethical dilemmas. One anticipated outcome of this activity was that students would begin to examine their day to day behavior through an ethical perspective. In the future, students are likely to recall the course conversation and consider the ethical implications of their decisions as students and engineers.

Recreating the Reflection Activity

	Description
1	Discuss the purpose of ethics in engineering and the small compromises that lead to more significant compromises.
2	Separate students into groups of 3-5.
3	Introduce the case scenarios and directions. Give students about 10 minutes to discuss one case scenario.
4	Request that groups report out their discussion.
5	Allow groups a chance to discuss the next case scenario.
6	Use the remaining class time to discuss the remaining scenarios and report out.
7	Ask students to continue to consider the topic of ethics in engineering.

DIGITAL LIBRARY CONTENT

2.1 Ethical decision making activity sheet

In the Words of the Educator: Tips and Inspiration

Prepare for the unexpected. When you go down this road, you don't know what you're going to get. Every class is different and you start to expect the kind of responses students have after a few iterations, but there's always a curve that you can't exactly anticipate. It's learning experience for the instructor as well as an exciting experience for students. Majority of students don't pick the ethical response, so it's kind of surprising.

Timing of the activity matters. We have students from all over the world and because of that they have very different values, histories, and experiences that influence their perspectives on everything that happens in the class. It makes the discussion even livelier, but it matters when you do this in the term. Typically, I do this toward the end of the term when students already know each other and have been working on reflective activities. It's not out of the blue so they know each other—first and last names of everyone in the class and they work in different groups throughout the term. This way, they are comfortable sharing, and it's an open environment where you can share ideas throughout the term. Most educational research says that culture, experience, and prior knowledge really have an impact on learning new information and you can definitely see it in this exercise.

What was the inspiration for the reflection activity? A lot of educators in different disciplines teach ethics using case studies, so that is where I started looking for models. I looked at the kind of case studies that were given to students, but I thought the topics were so distant and irrelevant to my students that I needed

something better. I took that idea along with Blanchard and Peale's three questions about ethical decisions to help the students easily grasp the concept. The scenarios are things that they deal with every day.

To me, teaching to engage students in ways that cause them to think about their own values and belief systems, and articulate them, is much more exciting and has a much greater impact than a PowerPoint presentation on engineering ethics. Engaging their minds and personal values with discussion with their peers on these topics is just more exciting for the students. As an instructor, it is much more exciting to me to have the class session spent on case studies, than 50 minutes of slides on engineering ethics. When we have to reflect on our values and ideals, we're more likely to learn.