CURRICULAR DESIGN AND ASSESSMENT IN PROFESSIONAL ETHICS EDUCATION: SOME PRACTICAL ADVICE

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“One good example is worth a dozen long discourses.”
-Anonymous

INTRODUCTION

Both of us, the philosopher as well as the educational psychologist, have helped professions, especially new scientific or technical professions, teach professional ethics. In the course of doing that, we have had to deal with the interrelated problems of curricular design, instruction, and assessment. We have each reported in detail elsewhere the results of that work. Our purpose here is to combine and generalize what we have learned about solving those problems in a way likely to be helpful to faculty in engineering and the sciences now struggling with them. What follows is, in effect, an extended commentary by the two of us on one set of assignments the philosopher has used over two decades, with appropriate changes, in several courses in professional ethics.

CURRENT STATE

The importance of teaching professional ethics has been widely recognized. There has been a significant increase in professional ethics instruction in science and engineering. But only in the last decade has there been any focus on assessment of ethics education. That focus has, it seems, been motivated, in large part, by efforts to justify the inclusion of ethics in the science and engineering curriculum. While justifying inclusion of ethics is an important task, one that has its successes and failures, that sort of assessment will not be our focus here.
Over the last two decades, there has been considerable progress in understanding how students learn and the instructional design that best fosters that learning (Resnick, 1987; How People Learn, 2008; Wiggans & McTighe, 2005). There has also been a significant increase in curricular materials available for ethics education (cases, commentaries, videos, etc.). Quite often, though, these are provided with little advice on how to use them. More to the point, there is significant evidence that many ethics courses using these materials are not adequately designed or assessed. Students in such courses will be uncertain of what they are supposed to be learning; their instructors will also lack opportunity to make informed improvements in their curricular design, instructional activities, and their assessment.

Evidence for these concerns comes from findings that suggest a great deal of variation of content of curricular materials, and instruction in ethics education, even within core areas. Recently, DuBois et al., (2010) conducted an extensive survey of mandated RCR instruction. They found that, while RCR instruction is indeed widespread (97% of those surveyed), there is “no unified approach”; instead there is “significant variation in scope, content, and approaches to RCR instruction” (DuBois, et al. 2010; p. 110). DuBois et al. also report that programs “lack a coherent plan for RCR instruction” which strongly suggests that these curricular and instructional activities are not adequately “aligned” (as educational theorists would say). Furthermore, 82% of respondents claim to be using “original” curricular materials, making the challenge of aligning curricular and instructional goals more challenging.

While DuBois et al. (2010) recommend greater continuity in RCR curriculum and alignment with RCR content and instruction, there is also need for understanding why alignment might be important. Even with greater quantity and better quality of curricular content and materials, many instructors will continue to be responsible for developing their own courses, often teaching a subject that is not in their specialty or even an area of competence.

The purpose of this paper is to offer some practical advice to instructors who have, and will probably continue to have, responsibility for designing, implementing, and assessing ethics education. Any practical advice must begin by considering what students should understand by the time they complete the course.
WHAT STUDENTS SHOULD UNDERSTAND

A key insight of standards-based educational reform is that the top priority when planning for learning is clarity about what we want students to know or understand (Resnick, 1987; How People Learn, 2008; Wiggins & McTighe, 2005). While this insight might seem obvious, deciding what students should know is also the first step in creating good curricular designs—and that is a step frequently skipped. Instructors often skip directly to finding some content to teach them (e.g., ethical theories) or straight to learning activities that they think might engage students. Thinking clearly about what we want our students to know requires that we think seriously about why we think they should know it, and what they could do if they did know it.

While the learning goals in a specific engineering or science ethics course will depend on a variety of factors (audience, time, etc.), there is some core knowledge that students should acquire. For example, knowledge of ethical standards or the code of ethics of a particular profession is generally important. Likewise, some knowledge of the history of the profession and the structure of organizations in which the profession works is generally useful. While such core knowledge is an important component of ethics education, the top priority must be to teach students to use that knowledge when they find themselves in situations where ethical conduct is called for. We therefore suggest the following four learning objectives (Davis & Keefer):

1. raising student sensitivity to ethical problems they may face in professional practice;
2. providing them with information that should help them resolve those problems (including ethical standards, history of the profession, and structure of organizations in which the profession works);
3. improving ethical judgment (that is, increasing the likelihood that students will develop a good plan of action in response to an ethical problem); and
4. increasing ethical commitment (that is, increasing the likelihood that a student will carry out a good plan once developed).

We believe that the presentation of ethical materials should be structured with one or more of these aims in mind. Designing courses or curricula to address these objectives requires pedagogical methods that are notoriously difficult to implement and assess. We will now provide an
example of an instructional activity that addresses all four of these learning goals. The example (from a course in Engineering Ethics) follows:

**RESOLVING REALISTIC ETHICAL PROBLEMS WITH THE HELP OF PROFESSIONALS**

The goal of this assignment is to apply what you have learned to create a problem of ethical responsibility that an engineer might face. You may develop the case on your own or working together with up to two other students from this class (all of whom would then be acknowledged as co-authors of the case). You may develop the case entirely out of your own imagination, out of some experience you (or someone you know) had, or even out of cases you have read about. After creating the problem you will then interview an engineer and present your findings to the class. Use the following checklists to (1) create your case, (2) conduct your interview, and (3) analyze your engineer's response.

**Checklist for Case Construction**

1. Choose a problem the engineer you interview could face.
   - The problem may concern client confidences, conflict of interest, sharing of responsibility or credit, duty to the public, or any of the other facets of engineering we have discussed this semester.

2. Make your problem open-ended.
   - When writing it avoid having one clear solution in mind.
   - Do not write a complete scenario; rather, leave things open so there are several different possible actions and solutions available. E.g., do not say that “no one in the company will listen... etc.” as you will want the person you interview to fill in detail from his or his own company's perspective.

3. Make the problem as realistic as you can.
   - Realistic problems usually have more than a single responsibility or issue at stake and they most often involve ‘trade offs’. E.g., trade offs between cost and safety.
   - Realistic problems rarely require ethical behavior from only a single individual, so allow for consideration of the responsibilities of different professionals, stakeholders, companies, etc. E.g., it is best if no one person (or company) is made out as the ‘bad guy’.
• Avoid making the problem too dramatic or one-sided. E.g., if there is an issue of safety, avoid having a company ‘ignore’ the issue but rather, have it consider an action, such as issuing a warning that may not be adequate.

4. Make additional resources and technical issues important.

• Complex ethical problems are likely to require additional information and support. E.g., try to make the problem difficult enough that the interviewee will require additional information and support.

• Consider technical issues carefully and state them accurately without exaggeration. E.g., a very small degree of error can result in a very significant safety risk.

5. Consider the consequences (long and short term) of your problem.

• In addition to relatively immediate consequences for individuals, stakeholders you identify, realistic ethical problems also may have significant long-term consequences. E.g., product defects, inaccuracies, error in data.

When you have a problem that you are satisfied with, you will need to prepare for your interview by creating a list of questions that will help your professional best respond to the case. It should also be designed to help you examine the engineer’s thinking about how to respond to the case and not just the solution they arrive at.

Checklist for Interview Questionnaire

1. Breaking the ice:

• Introduce yourself and ask your professional to describe his or her education, experience, and job

2. Start off with an open-ended question.

• This is useful as it allows an opportunity for responses from the interviewee that might be unanticipated. E.g., “What do you think [your main character] should do in this situation?” Or, “If I were working in this company, what would be the best way for me to resolve the problem?”

3. Ask if there is any additional information or resources that could be useful to resolve the problem.

• Is there any important knowledge or information that, if acquired, would clarify the severity of the problem or help suggest how to solve it?
• Is there anywhere the professional might go for advice either inside or outside the company?

• Additional questions here might include: “Does the firm have its own code of ethics?” “Does the firm or any of the relevant principals have an ‘open door’ in response to problems like these?” “Or does one just pick a colleague to ask for advice?” “Has your interviewee ever heard ethics discussed at the office?” etc.

• Are there any other resources that might be useful, e.g., ethics codes or rulings for resolving ethical problems in your company?

4. (If they haven't already been discussed), ask about the role or responsibilities of other stakeholders in the problem, i.e., individuals, groups, societies, companies, etc. that might be affected.

5. (If they haven't already been discussed), ask about the short and long term consequences of the proposed resolution.

Note: your interview plan should be flexible and open-ended. It should not determine every question that you ask. You should feel free to ask a follow-up question or add a question suggested by a previous response. You may wish to provide your professional with an advance copy of your problem (without the interview questions). Take abbreviated notes and after the interview ‘write up’ as much as you can remember (don’t wait too long!).

6. Finally, you will be required to evaluate and discuss the quality of the interviewee’s response to the case.

Case Response Checklist

1. Ethical issues/professional responsibilities identified:

• Have the primary and secondary stakeholders been identified? Stakeholders can include, i.e., individuals, groups, societies, companies, etc.

• Have the ethical issues been identified and how they relate to various stakeholders been considered?

2. Additional information Identified:

• Has additional useful knowledge or information concerning the problem been identified?

• Are any additional resources identified that could help in developing a solution to the problem?
• Have actions been taken that could provide additional useful information or provide additional resources?

3. Consideration of the actions taken in response to the case:
• How well do recommended actions address the concerns of primary and secondary stakeholders?
• How well do the recommended actions address the ethical issues identified?
• Are there any imaginative courses of action that can address more than one ethical issue?

4. Consideration of long and short-term consequences of proposed solutions:
• Is there consideration of how the proposed solution might affect the stakeholders in the problem over time?
• Have any morally significant longer-term consequences of the proposed solution been considered (including possible accidents, misuses, etc.)

**Importance of Close Attention to Learning Objectives, Curriculum Design, and Assessment**

What is the point of providing all of this support ‘up front’ through the use of these informal checklists (otherwise known as formative assessments)? Most importantly, they provide enough information about the purpose of assignments for students to be successful. They also provide a clear correspondence with the targeted learning outcomes. In this example, the case construction checklist aligns with learning objective (LO) #1; the interview and the interview questionnaire checklist with LO #2; the case response checklist with the written report to #3 and; and the report to the class to #4.

In addition, these formative assessments should help students understand how each of the components of the assignment supports one another and, importantly, how they relate to the overall learning objectives. In the case construction part of this example (LO #1), students should notice that the sample interview questions recommended only work if their case scenario is realistic, i.e., if it accommodates different reasonable responses, succeeds at requiring further investigation, considers various consequences, etc. These kinds of connections can extend to the other learning objectives as well. Applying the case response checklist to a case response (LO #3) will return a good
assessment only if the case scenario (LO #1) provides opportunity for complex and realistic responses (i.e., consideration of competing values, alternative responses, further investigations, seeking resources, etc.). Formative assessments such as these provide students with the opportunity to demonstrate their ethical knowledge in realistic contexts. Research has shown that this makes it more likely that they will transfer this knowledge to other contexts (HPL, 2008). Students who, through class reports, have learned both that interviewees generally take ethics seriously and that the response of interviewees makes sense, should be more likely to raise ethical concerns when they begin practicing their profession. They will not automatically feel alone. (LO #4)\(^4\)

As we hope this example shows, careful consideration of what students should know and what they could do with this knowledge are important considerations when designing learning activities and their assessments. Providing support for student learning is, however, not the only benefit of these formative assessments. When designed properly these assessments should also help instructors determine how well their curricular designs are meeting their learning objectives. ‘Closing the loop’ is educational terminology for tying all this together in a way that provides instructors opportunity for continuous feedback and improvement. Perhaps the most important contribution of formative assessments of student learning is providing opportunity to evaluate and make improvements on how our learning designs (i.e., learning materials and course assignments, etc.) are or are not meeting our learning objectives.

**GOOD CURRICULAR DESIGN AND ASSESSMENT—CONCLUDING REMARKS**

Most ethics instructors would agree that successful acquisition of students’ ethical sensitivity, knowledge, and judgment will depend importantly on the quality of instruction. What may be less appreciated is how effective instruction is determined by the quality of one’s curricular design and by careful assessment of what students are learning from it. That is, an ethics curriculum needs to be carefully crafted, appropriately aligned, and adequately assessed in order to provide opportunity for an iterative process for reflection and adjustment—a critical prerequisite for its improvement.

While it is useful to understand why the work ‘up front’ is important to any pedagogical design, there are (at least) two reasons why it is
especially important for ethics pedagogy. The first is that the learning objectives in professional ethics education are ambitious. They require, if successful, applying domain-specific content practically in complex social and institutional contexts. The second reason is related to the first. We now know that ambitious practical learning goals require creative curricular designs that can deliver problem-based learning opportunities, such as case-based discussion and other collaborative learning activities (Keefer, Zeitz, & Resnick, 2000; HPL, 2008). The designs are complicated: students are required to engage with realistic ethical problems, what cognitive scientists call “ill-structured problems”. Ethical problems are “ill-structured” because there is often no clearly specified goal, only incomplete information, several possible solutions, and several paths to reach each. Since a single, simple response is not an option (or at least not a good one), students must investigate the problem, seek relevant information, consider alternative possible solutions, and evaluate short and long-term consequences. It is easy to see why curricular designs capable of accommodating these performances make the assessment of student learning especially difficult. As the problem space expands, good student responses can lead in quite different directions (while remaining ethically defensible or even good). They also make curricular alignment harder. These considerations suggest that the pedagogical challenges facing ethics educators should be clearly recognized and not minimized.

NOTES

1 An earlier version of this paper was presented at the Thirteenth Annual Conference of the Society for Ethics Across the Curriculum, St Louis, MO, November 4, 2011.

2 See, for example, Davis and Keefer, (2011) Science and Engineering Ethics

3 The authors would like to acknowledge Caroline Whitbeck who, to our knowledge, was the first instructor to give students an assignment like this. The 2nd author has used a version of this assignment in ethics classes since 1990. The first author collaborated with Whitbeck on NSF Grant No. 0428286.

4 While we think that ethical commitment is a key learning objective for ethics education, we agree with the reviewer who pointed out the difficulty of
assessing success in enhancing ethical commitment in the way we can assess success in the enhancing sensitivity, knowledge, and judgment (for example, ordinary classroom tests). We do not, however, agree that assessment of success in enhancing ethical commitment is impossible. The assessment of success in enhancing ethical commitment might, for example, involve longitudinal comparison of populations on relevant behavioral measures. There is considerable educational research that demonstrates that learning outcomes are most likely to transfer to new contexts if acquired in contexts that are similar (HPL, 2008). We defend the inclusion of ethical commitment as learning objective because the assignment discussed here is designed to maximize just this likelihood.

REFERENCES


