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Kelly C. Smith
Clemson University, kcs@clemson.edu

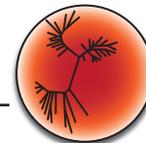Follow this and additional works at: https://tigerprints.clemson.edu/phil_pubs

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Kelly C. Smith
Departments of Philosophy & Religion and Biological Sciences, Clemson University, Clemson, SC 29634

INTRODUCTION

The purpose of the Rutland Institute for Ethics at Clemson University is to encourage discussion on campus and beyond about how ethical decision making can be the basis of both personal and professional success. In the last 15 years, our fellows have, among other things, served as co-PIs on a wide range of grants, produced Responsible Conduct of Research training for science and engineering graduate students and faculty, managed the ethics curriculum at a medical school, and produced a variety of pedagogical materials on ethics for undergraduate science majors.

But the effort that has had the greatest impact is likely our *Ethics Across the Curriculum* program, affectionately known as "ethics boot camp." Each year, we bring faculty from all corners of the disciplinary spectrum together and teach them how to have rich ethical discussions in their own classes with the students from their majors. The program has been well received by the faculty participants (see Table 1) and, through them, has touched the lives of many more students than we could have interacted with directly ourselves.

We have learned two important lessons from working with faculty from other disciplines. First, anyone can do this—ethics is not rocket science, after all. On the other hand, faculty who have never been trained in ethics are no more ethically sophisticated than the average undergraduate. Thus, while anyone can be taught to have good ethical discussions with their students, there are a few things they need to learn first to avoid common pitfalls. What they need is a training program that concentrates on the pragmatic details of leading ethical discussions, avoiding abstract theory entirely, and this is what the Rutland Institute has produced. We bring interested faculty from across the university together for 12 to 15 hours of instruction, which provides the participants with the three basic requirements for leading fruitful ethical discussions on their own:

1. An ethical "toolbox" that will allow them to orient their pedagogical interventions within a larger ethical framework. This is essentially "ethical theory lite" as we cover only those aspects of ethical theory which are directly relevant to classroom discussion and, even then, we avoid technical terminology and unnecessary detail wherever possible.
2. An understanding of the sorts of challenges they will encounter in the course of an ethical discussion with their students as well as practical methods to avoid or defuse them when they occur.
3. Hands-on experience leading ethical discussions with their peers under the guidance of seasoned veterans. These discussions reliably reproduce the kinds of dynamics the faculty will later encounter in their own classes and thus are an excellent tool to cement the other lessons in place.

The purpose of this paper is to provide a very abbreviated version of the Institute's *Ethics Across the Curriculum* material to a wider audience of science educators. It is our hope that this will inspire more science educators to introduce ethics into their classes as well as provide them with the basic tools they will need to make this experience fruitful for all concerned.

WHY HAVE ETHICAL DISCUSSIONS IN A SCIENCE CLASS?

There are really two questions we need to address before talking about specific approaches. First, why should we take valuable time away from "hard science" to teach ethics in a science class? There are three basic reasons for this:

1. We are not doing a very good job. There is widespread agreement on the importance of producing students capable of high-order critical thinking, of which ethical reasoning is an example (25), yet it seems clear that our educational system is not very successful in this area (16, 10, 14).
2. We should be doing it well. There is a growing consensus on the need to improve the way we conduct ethics training, especially in science fields, which face increasingly complex ethical challenges (17). To the extent that our science majors constitute the next

Corresponding author. Mailing address: Departments of Philosophy & Religion and Biological Sciences, Clemson University, Hardin Hall, Clemson, SC 29634. Fax: 864-656-2858. E-mail: kcs@clemson.edu.

generation of scientists, we have a responsibility to ensure that they are proficient at ethical reasoning. And, even if our students do not go on to become scientists, others will defer to them as relevant experts on issues relating to science, whether those issues are strictly empirical or involve complex ethical dimensions.

3. Many of our students are getting no training at all. It is a dangerous assumption that students are getting ethics training "somewhere else." In many colleges and universities, science majors are required to take only one or two humanities courses and they are increasingly reluctant to stray from the minimal requirements. And humanities courses, however many they take, may or may not deal with ethics in a systematic fashion.

Therefore, if science educators take their responsibility to produce exemplary scientists and public citizens seriously, they must shoulder some of the responsibility for teaching ethics.

The second question is this: If we agree that we should be teaching ethical reasoning in science classes, why use a discussion-based approach? There are three basic reasons for this:

1. The evidence suggests it is more effective. Much of what passes for ethics training in science is better at fostering mastery of factual content than really changing skills or attitudes (18). The most promising approaches, in contrast, tend to be case based and interactive (4, 1).

2. It will enrich other aspects of the course in important ways. Ethical discussion fosters aspects of the learning environment known to be important for effective learning. First, it provides a real world example of a complex, context-sensitive, metacognitive skill of the sort that is widely recognized as being critical to high-quality learning (2, 6, 22, 26). Second, it engages the students in active learning, which has been shown to be a far more effective means of teaching even basic content knowledge (7). Finally, discussion is an excellent way to foster a collaborative spirit in the classroom, particularly in this situation, since it is fair to say that neither the students nor the instructor are ethical experts. Such a spirit is conducive to an inquiry orientation on the part of students, which in turn enhances learning (23).

3. It is enjoyable. Classroom discussion of important ethical issues is typically rated as one of the most enjoyable aspects of ethics training for scientists (21, 9, 13, 3).

In light of these considerations, we advocate a *sensemaking approach* to ethical discussion, where the emphasis is on

TABLE 1.
Attendee satisfaction with *Ethics Across the Curriculum* workshop: 2010–2014.

Prompt	Weighted Mean (4-point scale)
Overall satisfaction with the workshop?	3.90
Satisfaction with workshop format?	3.83
Met personal objectives for attending?	3.85
Overall quality of materials?	3.77
Overall quality of session content?	3.94

Faculty participant responses to satisfaction questionnaire upon completing the *Ethics Across the Curriculum* workshop. Responses represent 52 faculty from a wide variety of disciplines covering four summer workshops (2010–2014).

shared inquiry centered around a series of ambiguous and complex ethical case studies (see 12, 5, 11). The basic idea is that participants are forced to develop and apply their own ethical models to real world problems, with minimal guidance from "on high." There is evidence this approach is especially effective in teaching ethics to science students (15).

Ethical theory lite

Generally speaking, it's not necessary for someone to know much about ethical theory to lead successful ethical discussions. Indeed, since the idea behind the sensemaking approach is to force students to develop their own ethical models, the instructor should supply only enough of a framework to scaffold that process. We typically teach students only enough to avoid some of the more predictable problems that plague ethical discussions. What follows is a collection of concepts which can be useful for the instructor to have, whether they teach them to the students explicitly or simply have them on hand to manage issues as they arise.

The elements of ethics. James Rest (20) argues that being ethical involves (at least) three distinct elements. *Ethical commitment* refers to the desire to be an ethical person. If you ask the question, "Should we care about being ethical?" you will get universal assent. It is easy to commit to being ethical in the abstract, when there are no costs, but real ethical situations are not like this. In a discussion, students will often take a position in the abstract but immediately reverse course when things "get real." For example, they may say one should blow the whistle on a company acting against the public interest, but change their minds if you make it clear that doing so may cause you to lose your job. The instructor has to be clear that there is no value to being ethical only when it is easy. One simple way to do this is to wait for an especially frustrating situation to arise and then say, "If being ethical were easy, we wouldn't need to talk about it, right?"

Ethical sensitivity is the ability to spot ethical issues in a situation. This is an absolutely critical skill, because no degree of facility with ethical reasoning will be helpful if the person does not even realize they are facing an ethical decision. Not everyone is innately good at this, but students regularly exposed to complex ethical issues will become better and better at it. Introducing the concept of ethical sensitivity can be useful in dealing with one of the most common problems we encounter (in class and real life): ethical complacency. This is essentially the idea that ethics is so easy that any reasonable person can do it without training. In general, we find that if you do not address this idea explicitly, it erodes the motivation for ethical discussions in ways that may not be immediately apparent. It is a good idea to point out that, when people behave badly, it is typically the case that they do not realize their actions are unethical. The problem is not that they have explicit evil intent, like some character from a James Bond movie, but that they fail to see the ethical implications of their actions. One good technique to help students appreciate this fact is to give them a difficult ethical situation and have them take an initial stance before discussion begins. After they explore all the issues for a while, ask them whether they would act differently now that they have had a chance to think carefully about the situation. If their position has changed, clearly their initial impression was not definitive.

Ethical reasoning is the process by which we attempt to find "the right answer" to ethical questions. In our *Ethics Across the Curriculum* workshop, we provide a series of three "ethical perspectives" that can be helpful in responding to certain types of student questions. However, even this simplified approach would take more time to discuss than the present article allows. Fortunately, one can get a lot of mileage out of the concept of rational convergence. This implicit assumption lies behind any ethical discussion and simply states that, when reasonable people get together and discuss an issue openly and honestly, they tend to converge on what they believe is the right thing to do. Rather than try to defend this at the outset, it is best to make students aware of it and then ask them to wait and see if they find it to be true in subsequent discussions (they will, far more often than not).

Three common challenges. There are also three sorts of challenges that are so common that any extended discussion of ethics is almost certain to encounter them. If left untreated, they will quickly send ethical discussions off into unproductive territory, so it is important for the instructor to know what to look for and how to respond.

Legalism is the idea that one need only look to the law to discover what is ethical. People will not say this explicitly, since it is so obviously simplistic, but they will often imply it by saying things like, "We shouldn't clone human embryos—that's illegal!" When this happens, it is usually best to avoid taking the bait and discussing what the law says, since this is not the point. After all, there are things which are legal but unethical and vice versa. Try to get the students to see the big picture by asking something like, "Suppose it were legal—would that settle the ethical question?" They will soon see that, although legality is a consideration, it is not the whole story. Another amusingly effective way to make this point is to ask how much faith they have in their legislators. After the predictable ranting subsides, ask them why they think we should rely on such disreputable types for ethical guidance.

Religious justifications will almost always make an appearance in any prolonged ethical discussion. An effective instructor (whatever their personal views) must make this principle clear at the outset: religious justifications are neither good nor bad simply because they are religious. The problem with the type of religious justifications that often come up in class is not that they are religious, but that they are offered in such a way that they shut down discussion. This cannot be allowed, because without open discussion, there can be no rational convergence. Thus, a student may say, "Well, that's just my religious belief," in a tone that makes it clear they have said their last word on the subject. They must be made to realize that, if they actually wish to influence others, they need to say more. It does little good to know the right thing to do if you cannot get anyone to follow your advice and if only people who share your precise religious views will find the mere fact of your belief compelling. That means the religious student cannot accomplish their ethical goals without having some more general justification that appeals to those outside their narrow religious community. Once they see this, even the most religious student will begin to discuss general principles behind their views. They may still employ religious language—for example talking about what God desires—but this in itself is not a problem.

Ethical relativism is the view that there is no such thing as "truth" in ethics. Put another way, it is the view that there is nothing more to ethics than personal opinion or, at best, social mores. When you hear students say things like, "Who's to say what is right or wrong?" or "Well, that's right for them in their society, but it's not right for us," they are implying a relativistic position. While this is an extremely common view in the modern Western world, it is also poisonous to serious ethical discussion. After all, if all we are doing is trading unfounded opinions, why bother? Unfortunately, it is very difficult to defuse this view quickly, so your best option is probably to address it briefly whenever it comes up in class—with repeated correction, students will begin to back away from the more vehement types of relativism. To this end, there are two "quick and dirty" points you can make.

The first is that the argument people think leads to this position is a truly terrible one. Consider:

- People have thought about ethics for thousands of years.
- But they have never found answers we can all agree to.
- Therefore, there are no such answers.

This argument is so bad it's almost silly. First, universal assent is not a very good criterion for truth—there are many well established scientific findings that are not universally accepted (e.g., human evolution) but this is not good evidence that they are wrong. Second, the fact that we have not *found* an answer does not imply that there *is no* answer. Again, a great many scientific questions have been pondered for thousands of years without resolution (e.g., the age of the universe), but we still believe in our eventual success.

The second arrow in your quiver is to point to the implications of believing in relativism. The relativist is essentially saying that all ethical claims are just matters of taste. So, "It's wrong to kill babies for fun" is the same kind of claim as "Dark chocolate tastes better than milk chocolate." The problem is that we may think these are similar sorts of claims in a very superficial way, but we cannot actually believe this. We routinely treat ethical issues as matters of great concern and feel there are better and worse answers, whether we are certain we have them or not. To get your students to see this, have them provide an example of an irredeemably evil action, then ask them if they truly believe that someone who loves to do this every day is no more unethical than Mother Teresa. Anyone who refuses to bite that bullet is not really a relativist.

Neither of these moves will kill the relativism lurking in your students' breasts, but it will give them something to think about and make them less confident in their relativistic assertions. It can be very useful in a science class to suggest that they should think about ethical claims in roughly the same way they think about scientific claims: first, we put forward a hypothetical answer, then we look for evidence to support it. We always apportion our belief to the available evidence, so success is a matter of being confident rather than certain.

PEDAGOGICAL DO'S AND DON'TS

This last section covers some specific pieces of pedagogical advice to help make your ethical discussions fruitful:

Do's

1. Be willing to take risks. Scientists typically have less experience than their humanities counterparts in non-didactic classroom techniques, but great teaching, like great science, requires experimentation.
2. Be patient. While this is something anyone can learn, it will probably take some time to get comfortable with it. You will have to learn not to worry so much about facts and micromanaging the class, while your students will have to learn to speak up and tell you what they really think.
3. Think carefully about how you want to structure ethical discussions in your course. There are two basic options: you can schedule a series of explicit class periods to be devoted to ethics or you can design the syllabus with enough "slack" that you can handle ethical questions as they arise "on the fly." The latter is ideal in terms of the impact on the students, since it provides repeated examples of an instructor taking ethics seriously and spending time to deal with such issues even though they are not on the syllabus. On the other hand, this is the most challenging, since you will be less than certain on any given day how much of the "hard science" you will be able to cover or what issue may arise. You may want to start with explicit ethics class periods and migrate to "on the fly" discussions when you are sufficiently confident of your new abilities.
4. Devote sufficient time to discussion. Always keep in mind that students are very sensitive to the implicit signals you send, so if you talk about how important ethics is but then devote little time to it, they will hear your real message loud and clear. This applies both in the aggregate, across the entire semester, and for particular discussion tasks. For the course as a whole, you probably need to set aside at least five to ten percent of the class time for discussion. This comes out to two to four hours in a typical semester, which is enough for several extended discussions or many shorter, "on the fly" mini-discussions. Any particular discussion activity should be allowed to go on for at least 15 minutes. This can be a challenge for classes that are heavily oriented toward content mastery, as instructors have an incentive to "get on with it" and may not work hard to keep discussion going. Keep in mind, though, that any "discussion" which lasts for only five minutes does nothing to really challenge students to examine their own thinking—all it accomplishes is the illusion of having done something worthwhile.
5. Have a portion of the students' grade determined by ethical activities, in proportion to the time spent in class. Again, students will pay more attention to how you assess them than to anything you say.[a] There are a number of ways to do this, from giving them participation points to assigning debates or papers. It is even possible (though difficult) to design objective test questions that probe metacognitive tasks like ethical reasoning.
6. Experiment with activities beyond lecture and open-ended discussion. It can be very powerful to have students read a prompt and respond in writing (even with just a sentence or two) before

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[a] A dichotomy between what instructors feel they are teaching and the message they send students is not unique to ethics. There was a very interesting study on critical thinking pedagogy (8), where researchers first asked instructors if they structured their classes to emphasize critical thinking. Most reported that they did, but when the actual assessment tools were examined, it was clear that the vast majority of them were objective "regurgitation" type of assignments. The instructors' perceptions of the course simply did not match the reality.

discussing, for example. It can also be helpful (especially in large classes) to break the students up into small groups and do the bulk of their discussion there.

7. Prepare cases and prompts, as well as questions that will probe students' understanding in uncomfortable ways, in advance. It is very difficult to come up with very good material like this on the spur of the moment, so invest sufficient time outside of class to make it look easy when you are in front of your students.

8. Always be prepared to play Devil's advocate—your job is to force them to examine how they are thinking, not let them be complacent. People do not like to think about complex issues and will avoid them if you let them, so do not let them. Whenever discussion seems to have come to a premature conclusion, ask a provocative question to get things started up again. If your students are not a little frustrated with the complexity, you are not challenging them enough.

Don'ts

1. Never reveal your own opinion about an ethical issue too quickly (or at all). Students will want to know what you think and, if you tell them, they will all conclude that this is what you want to hear them say back to you.

2. Avoid "slam dunk" cases and examples—that is, cases where there is an obviously correct course of action (e.g., a particularly egregious case of scientific fraud). This is a popular approach, because it makes the ethics part of the course much more predictable. But not only will students see this as a waste of their time, it actually reinforces a dangerous misconception discussed earlier: that ethics is easy.

3. Do not invite outside experts, especially philosophers, unless you know them well. All experts tend to teach material in the same way they deal with it in their own classes and this often does not translate well into a guest lecture format. Philosophers will often want to talk about the minutiae of ethical theory, for example, while lawyers will stress the details of the law. Remember that you are the primary role model for your students and the one who is evaluating them. They will therefore take what you do and say much more seriously than what an outside expert has to say.

4. Do not portray yourself as an ethics expert. It can be a powerful pedagogical tool to tell students explicitly, "Look, I don't have all the answers, but these are important questions, so let's figure them out together." Is this not the kind of shared inquiry that students should learn in a science class?

ADDITIONAL RESOURCES

There is an extended version of the Rutland Center's approach to *Ethics Across the Curriculum* (25) that we will provide free of charge to anyone interested. The author is also happy to provide more detailed information on these techniques or consult on specific challenges. Rachels and Rachels (19) is an excellent, yet very approachable and concise, introduction to ethical theory that should be on the bookshelf of anyone who does this on a regular basis. Finally, a truly excellent resource on the ethical culture of science, particularly as it relates to research ethics, is Sigma Xi's *Honor in Science* (24).

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