Strategies to Support Ethical Reasoning in Student Argumentation

Joan Carlton Griswold
& Jeanne Ting Chowning
Northwest Association for Biomedical Research

Complex topics with social relevance can be engaging for students and provide a real-world context for learning classroom content. Yet, even the most experienced teacher may hesitate to incorporate potentially contentious issues into the classroom, envisioning a discussion degenerating into a battle of opinions or being dominated by a few strong, perhaps heated, voices. In addition, many socially relevant issues invite controversy and, as Zeidler and Sadler (2008) state, "tend to have implicit and explicit ethical components and require some degree of moral reasoning" (p. 800). Even teachers who express interest in fostering strong argumentation skills in their classrooms often tell us that it is difficult to support students in justifying their positions on socially complex issues. Many socially relevant issues are not only contentious but also require ethical considerations and moral reasoning. Further, ethics as a discipline is full of unfamiliar terms and its own jargon and can, therefore, be particularly daunting for teachers who receive little background in ethics. This combination of factors often presents a barrier for teachers who wish to provide real-world context in the classroom.

The Northwest Association for Biomedical Research (NWABR) has developed tools and strategies for teachers to help them to overcome

Joan Carlton Griswold is the curriculum design lead and Jeanne Ting Chowning is the director of education, both with the Northwest Association for Biomedical Research, Seattle, Washington. Their e-mail addresses are jgriswold@nwabr.org and jchowning@nwabr.org

these barriers to teaching ethics (Miller, 2008). NWABR is a non-profit organization that promotes an understanding of biomedical research and its ethical conduct through dialogue and education. To support teachers in introducing complex ethical topics in the science classroom, NWABR, in collaboration with teachers and ethicists, develops tools, strategies, and pedagogical techniques that help structure discussions about socio-scientific issues.[1] While the organizational mission and curricular materials of NWABR are focused on high school science education, the tools and strategies developed over the last decade in the *Ethics in the Science Classroom* curricula are widely applicable to other subjects, fields, and grade levels.

In this article, we discuss the importance and benefits of incorporating ethics into the classroom and present five strategies that both scaffold students' understanding of ethical issues and support students' abilities to come to a reasoned and well-supported decision about those issues.

Why Ethics?

To many people, *ethics* means trying to do the "right thing" or taking the moral high ground. Teaching ethics is often seen as a way to make students understand right versus wrong, as if providing a bullhorn for the angel on one shoulder while muting the devil on the other. This dichotomy, however, downplays the societal need to make sense of complex, nuanced issues about which reasonable people may disagree. A question with a purely right or wrong answer is often one of the easiest to answer. However, a question for which there is no one answer that will satisfy all parties who are affected by the outcome of the decision is much more difficult.

When addressing ethical issues, one has to consider such issues as all paths leading to unfortunate outcomes or that a choice may be between two "wrongs." While a decision about a complex ethical dilemma can be seen as *right* or *wrong* to individuals or groups involved in the decision, ethics as a field of study is about making decisions that affect others. An answer that satisfies one group may conflict with the values of another group or individual; this conflict is at the heart of an ethical dilemma. Ethics requires the thoughtful consideration of contradictory viewpoints and, to this end, provides a systematic, rational way to determine the best course of action in the face of conflicting choices. In short, ethics is about helping students build critical thinking skills while deliberating on how we should live together in a community.[2]

One of the best ways to support students' ability to think critically about important issues is to provide a scaffold for "reasoning through"

challenging problems (Chowning, 2009a). Although critical thinking is recognized as an important skill, students have little practice at the secondary level in engaging in argumentation (i.e., making a claim about an issue and using evidence in support of that claim; Bell, 2004; McNeill & Krajcik, 2008). The strategies described in the following section address some of the barriers to teaching ethics and set the stage for students to develop and discuss their arguments. Specifically, the strategies provide structured opportunities for students to take a position on an ethical issue (make a claim) and support that position with evidence in the form of ethical principles, stakeholder perspectives, and relevant factual background.

Addressing Barriers to Teaching Ethics

Strategy 1: Exploring Perceptions about Ethics

Something as seemingly subjective as ethics can be perceived as somewhat out of place in a science classroom, where the focus is ostensibly on objectivity. For example, in our Bioethics 101 curriculum (Chowning & Griswold, 2010a), we directly address objectivity and subjectivity by asking students to consider questions with answers based on fact, preference, or reasoned judgment. In this activity, students give examples of questions with purely subjective answers (e.g., "What is the best ice cream flavor?") and those with purely objective answers (e.g., "What is the capital of California?") and plot those answers on a subjective to objective continuum. Students then consider where *science* and *ethics* would fall along that continuum and mark their stance with a sticky note on a large classroom continuum, written on a chalkboard or made of painter tape attached to a wall. Students often place *ethics* toward the subjective end and *science* toward the objective end of the spectrum. This placement creates an opportunity to discuss the notion that, while the *facts* of science tend to be objective, the *process* of science is done by humans in a social context, which introduces some subjectivity. Values enter into questions related to what scientific research to fund, how to conduct science responsibly, and how to use new scientific discoveries and technologies appropriately.

Ethics, contrary to what many people think, is not purely subjective ("my opinion versus your opinion") but also has many elements from the objective end of the spectrum. Ethical questions involve critical thinking and tools of reasoned judgment and necessitate a thoughtful balance on the subjective-objective scale. In answering questions of reasoned judgments, ethicists rely on a number of ethical perspectives and theories to structure their thinking.[3]

Strategy 2:
Employing Structured Discussion Techniques

Many teachers are understandably reticent to engage in topics that can be divisive or contentious in the classroom. A socially relevant topic in a textbook is often accompanied with the entreaty to "*discuss*" without much support in how to do so in a regulated way. Our curricular materials include a number of structured discussion techniques that we have collected over the years across many educational disciplines, such as social studies, history, and civics. These techniques include discussion norm setting, silent debate, Socratic seminar, structured academic controversy, and chalk talk.

In discussion norm setting, teachers and students work together to create a set of discussion ground rules. A set of well-understood discussion norms can serve as a safety net for a difficult discussion. For example, if a discussion gets overly contentious at any time, one norm could be to stop (take a "time out") and to refer the class to the ground rules to assess whether they have been upheld.

In silent debate, two students debate an issue silently while writing their position and supporting arguments on a piece of paper that gets passed back and forth. After the debate, students can identify the strongest arguments and justifications as well as analyze what makes them so (Chowning & Griswold, 2010a). The silent debate strategy can be easily used in large classrooms to involve each student in the process of developing a position on an issue.

In a Socratic seminar, or group conversation, participants work together to achieve a deeper understanding about the ideas and values in a text. The students are largely responsible for the quality of the discussion and for the use of the text to support their ideas (Billings & Roberts, 2003; Chowning, 2009b).

In structured academic controversy, groups of four students consider pro and con stances on an issue while working through a series of scaffolded steps to come to a decision about the issue. This activity highlights both presentation and listening skills (Chowning & Fraser, 2008).

In chalk talk, students respond silently, in writing, to pictures, quotes, statements, and questions about an issue, on large blocks of paper posted around the room. The comments must be anonymous and respectful (Chowning & Griswold, 2012; National School Reform Faculty, n.d.).

Strategy 3:
Providing Ethical Background and Frameworks as Structure

An ethical framework through which to explore controversial issues in any subject can provide welcome classroom structure for both teachers and students. The history of philosophy provides many ethical frameworks from which to choose, including duties-based ethics, care-based ethics, feminist ethics, consequentialist ethics, and virtues-based ethics. While drawing on the richness provided by all of these can lead to a valuable classroom experience, teachers, especially those without prior training in ethics, are often overwhelmed by the variety of frameworks.[4]

To make teachers more comfortable in teaching ethics, we often suggest introducing ethics to students using the principles-based ethical framework developed by Beauchamp and Childress (2001). Principles-based ethics incorporates the following tenets:

- Respect for persons emphasizes the inherent worth and dignity of each individual and acknowledges a person's right to make his or her own choices (autonomy). It means not treating people as a means to an end.

- Maximizing benefits and minimizing harms asks how we can do the most good and the least amount of harm. It considers how one would directly help others and act in their best interests, while "doing no harm."

- Justice considers how we can treat people fairly and equitably. It involves the sharing of resources, risks, and costs according to what is "due" to each person.

There is deep historical basis for these principles. We find references to fairness and justice in Aristotle's writings, and the Hippocratic Oath entreats physicians to, "First, do no harm." The Nuremberg Code (Trials of War Criminals before the Nuremberg Military Tribunals under Control Council Law No. 10, 1949) was created in response to World War II atrocities in which prisoners were used for experimentation without their consent. The Code built on the concept of "Respect for Persons" and includes guidelines for conducting ethical human clinical trials. The principles were further refined in the 1970s in a document that contains guidelines for research, known as the Belmont Report (U.S. National Commission for the Protection of Humans Subjects of Biomedical and Behavioral Research, 1978). The advent of new life-saving technologies

such as dialysis machines and organ transplantations created a need to develop policy about the fair distribution of scarce resources and to understand how to balance the benefits and burdens of the applications of this new research.

The underlying concepts in the principles-based ethical framework are not new to high school students; most are already acutely aware of notions of "fairness" and "respect." Because students already have a conceptual familiarity, a number of our curricular materials introduce the terminology of the framework to students through student skits. In these skits, a group of student actors receive a slip of paper that contains, for example, a request to act out a scenario in which a parent is supporting a child's career choice. Another group may be asked to show a parent's *not* supporting a child's career choice. After performing the skits, the class derives the ethical ideas (respect for persons, in this case) during a teacher-led discussion.

We have found that, when students are given the vocabulary and historical context to engage with ethical theories, they are better able to analyze a case and make well-justified decisions (Chowning, Griswold, Kovarik, & Collins, 2012). Student argumentation that was previously opinion-based ("because I think so") can be supported and strengthened by drawing on ethical principles.

Additionally, the use of ethical principles to structure a conversation allows for people with opposing views to see the strength in their opponent's argument. When the discussion is elevated from "it's just my opinion versus your opinion" to a discussion in which two widely recognized and respected overarching principles clash, the discussion participants no longer have to defend their own position as a personal view. While seeing strength in another's argument may not change one's position on an ethical issue, we have found that it allows for a richer, deeper, and more respectful discussion. Once teachers become familiar with a principles-based approach, they often draw in additional ethical frameworks to support students in their ethical reasoning.

Strategy 4: Applying Ethical Principles to a Case Study

The use of case studies can be a powerful tool to engage students and encourage them to think differently about an issue (Herreid, 2005). A case study can provide the context through which students apply ethical reasoning. For example, students involved in our bioethics curriculum (Chowning & Griswold, 2010a) consider the case of Dennis, a hospitalized 14-year-old boy who steadfastly refuses a series of blood transfusions after chemotherapy to treat leukemia because the transfusions conflict

with his faith. He is aware that he will die without the transfusions and is willing and ready to accept this outcome.

The majority of students will be able to come to a position on this issue in regard to whether Dennis should, or should not, be allowed to refuse medical treatment. Most students, however, will need more assistance in supporting and justifying their position. Employing principles-based ethics to structure the conversation allows students to support their claim by referring to principles that uphold their stance as well as to consider how other principles apply to the case. Student discourse begins to expand when answering the question, "How does the principle of respect for persons apply to this case?" or "How can harms be minimized and doing good be maximized?" Students may see that this case highlights a conflict between respect for persons, specifically in regard to the issue of autonomy (Dennis's right to make choices and take actions based on his personal values and beliefs) and maximizing benefits/minimizing harms (the medical staff's ability to do good by providing medical treatment).

In addressing the main ethical considerations for this case, students may see that principles-based ethics can be helpful in analyzing an issue and provide structure for thinking about different ethical concerns. Importantly, viewing a case from different ethical perspectives primes students to be able to consider different stakeholder views.

Strategy 5: Introducing Stakeholder Views

A stakeholder is any person, institution, or entity that is interested in, invested in, or will be affected by, the outcome of an ethical decision. A strategy that has been successful in helping students see the complexities of an ethical case is to ask them to consider the values and concerns of different stakeholder groups. This entails "stepping into someone else's shoes" so as to be able to view dilemmas from different perspectives. Doing so allows students to examine the range of positions taken by individuals or organizations on an issue and consider viewpoints that may be different from their own.

For example, in *The Science and Ethics of Stem Cell Research* curriculum (Chowning & Griswold, 2010b), students are introduced to a wide variety of viewpoints from real people who have publicly commented on stem cell research. These individuals include actors, senators, religious leaders, politicians, business executives, and even ethicists, from whose perspectives students can see the many shades of gray in the debate on embryonic stem cell research. Moreover, such examples show students that an individual's position on the issue cannot always be predicted

by his or her political party or religious affiliation. Students are often surprised when a stakeholder's position on the issue does not fit their preconceived ideas for that stakeholder. For example, two ethicists might hold disparate views on embryonic stem cell research.

One advantage of incorporating a wide variety of stakeholder views on a certain topic is that a broader range of views can be presented than would otherwise be expressed in a typical high school classroom. In the absence of a wide range of views, the classroom discussion may hinge on the views of a few vocal students, without any source of alternate viewpoints. Asking students to represent individual stakeholder views that may not be their own also serves to engage students without strong views on the subject as well as to temper the potential impact of those who may have strong views.

An additional benefit of presenting a topic through the eyes of different stakeholders is that students are offered a diversity of opinions about the issue without the views' being personal to those students. The stakeholder views may, indeed, represent the student's own position on an issue and help the student clarify his or her own stance, but the student does not need to defend that position as his or her own to their peers.

Integrating Strategies to Support Student Justifications

Woven together, the strategies presented above can provide a powerful way to help students to structure their thoughts and justify their positions about challenging issues. When asked to come to a decision about a socially relevant case study, news article, film, or other narrative, students can consider the values and concerns of different stakeholder groups and explore the ethical principles involved. Students can use these elements as evidence to support their claim, thereby strengthening their justifications. Analyzing a case study through the eyes of stakeholder groups also allows students to see how various ethical principles might be given priority by different factions. From this vantage point, students see that, often, no one decision satisfies all parties involved in a dispute about a complex social issue. Consideration of stakeholder views also supports students in proposing alternate options to resolve a complex issue as well as rebuttals to others' arguments.

Asking students to take a position on a challenging issue drives the "need to know," thereby whetting a student's appetite to explore the facts, understand the science (or other specific content), and recognize the ethical and social context of a situation. In justifying their own decisions, students will recognize the usefulness of these types of credible

evidence. A rubric that can be used to support students' well-reasoned justifications is presented in Table 1.

Our research has shown that students who experience these integrated strategies show a significantly increased ability to analyze socioscientific issues and to make well-justified decisions ($p < .001$; Chowning et al., 2012). As a result of the incorporation of these strategies, students also reported significant increases ($p < .001$) in their awareness of ethical issues, understanding the connection between science and society, and the ability to list and discuss viewpoints different from their own.

Teacher Preparation and Professional Development

Offering ethics-based professional development for teachers is a key factor in bringing discussion of ethics-related topics into classrooms. Both pre-service and in-service teachers may be challenged by how to incorporate ethics in their practicums and classrooms. In our experience with workshop participants, we find that ethics subject matter is not widely taught in teacher education foundations curricula or content methods classes, nor do many participants have a strong background

Table 1
Elements of a Strong Justification

A good justification includes:	Which means:
A Decision	A position (claim) has been clearly stated. The decision relates directly to the ethical question.
Facts	The facts and content can be confirmed or refuted regardless of personal or cultural views. This is evidence that can be used to support the claim.
Ethical Considerations	Ethical considerations may include *Respect for Persons*, *Maximize Benefits/Minimize Harm*, and *Justice*, in addition to others. This is evidence that can be used to support the claim.
Stakeholder Views	There are a variety of views and interests in the decision and more than one individual or group will be affected by the outcome.
Alternative Options and Rebuttals	No one decision will satisfy all parties. A thorough justification considers strengths and weaknesses of various positions.

Note. For classroom use, the justification for the decision is more important than the position on the decision.

in ethics. NWABR's curriculum development efforts support the professional development outreach designed to prepare teachers to integrate ethical and social dimensions with their curricula. We use a number of instructional techniques, presented below, to help both pre-service and in-service teachers incorporate the aforementioned strategies.

- Give participants the opportunity for authentic experience with NWABR materials. With even a one-hour workshop or class, we often begin by asking teachers to wrestle with an ethical question, such as a scenario (Chowning & Fraser, 2008) in which participants are asked to practice reasoning skills in a difficult, hypothetical situation for which there is no clear answer. As students participate in various exercises, teachers become more familiar with the potential ambiguity, conflicting perspectives, and different forms of reasoning that students also experience.

- Give participants the opportunity to practice teaching the materials to others. One approach that we have used successfully is to split participants into small groups to teach their peers one of the lessons from our *Bioethics 101* curriculum. Having the opportunity to lead lessons, as well as to watch how their peers do so, has proven to be invaluable to our workshop participants.

- Collaborate with experienced master teachers. During workshops or classes, master teachers can share their own experiences in using the strategies and speak to the variety of contexts in which they can be used. Master teachers also play an important role in modeling the use of strategies.

- Facilitate ample opportunities for reflection. We use the "What? So What? Now What?" framework for reflection, described by Rolfe, Freshwater, and Jasper (2001), that asks teachers to describe the strategy and think about what about it resonates most deeply with them, reflect on ways in which their new learning is important, and envision how they might incorporate elements of what they have experienced into their own practice.

- Encourage participants to implement just one ethical component, strategy, or lesson. Pre-service and in-service teachers may be understandably overwhelmed by the thought of incorporating all of the strategies into their practicums or classrooms. It is important to make a start, but it can be a small start. Once teachers see improved student engagement, they will be encouraged to persist in teaching ethics.

During NWABR workshops or classes, we often combine several of these techniques when teaching a strategy. For example, in teaching how to conduct Socratic seminars, we first discuss the overall approach and then model how teachers can develop appropriate norms with students. Next, we show a video that features an experienced teacher's leading an actual class discussion, using the technique. Participants practice writing questions that might be used in a seminar and give each other feedback on the questions that they have developed. Then, they participate as students in an actual seminar led by an experienced educator. Afterwards, they split into small groups and take turns leading a seminar themselves to practice the teacher role. Finally, they are given the opportunity to reflect on their learning and to consider how seminars might be appropriate for their own particular contexts.

Curricular Resources Available

Through nearly ten years of funding from the National Institutes of Health (NIH) via two Science Education Partnership Awards (SEPAs), and funding from the National Science Foundation through an Innovative Technology Experiences for Students and Teachers (ITEST) award, NWABR developed a number of instructional materials that provide subject content, ethical background, and structured analysis tools for teachers who wish to incorporate ethics into the classroom. While most of the materials focus on issues related to the life sciences, the strategies included can be used across the curriculum. Strategies such as structured academic controversy and Socratic seminar have their roots in the educational disciplines of history, social studies, civics, and language arts. The lessons, written with high school students in mind, have been successfully applied in middle school, community college, and university classes, and with other audiences. NWABR curricular materials include, among others, *An Ethics Primer* (Chowning & Fraser, 2008). Educators are invited to access these NIH-supported curricular resources on our website.

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Notes

[1] NWABR is a membership organization with over 55 institutional and associate members who conduct or are involved closely with biomedical research. NWABR draws widely on the expertise of its member base, including educators, in creating ethics-infused curricula. The curricular resources are all available free of charge from our website, www.nwabr.org

[2] Our synthesis of ethical philosophies are drawn from the extensive background on the scholarly study of ethics, ethical theories, and perspectives found in NWABR's *An Ethics Primer* (Chowning & Fraser, 2008).

[3] Suppositions about ethics are based on documents found in *An Ethics Primer* (Chowning & Fraser, 2008).

[4] Ethical frameworks and perspectives referenced are detailed in *An Ethics Primer* (Chowning & Fraser, 2008).

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