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# Bioethics 101

## CURRICULUM OVERVIEW

Most of the secondary science teachers who shy away from incorporating ethics into their curricula are quite clear about the reasons they do so. First, they are uncomfortable with teaching ethics, a subject that science teachers often have very little experience with. Ethics as a discipline is full of unfamiliar terms and its own jargon. Secondly, teachers fear classroom discussions “getting out of control,” degenerating into a battle of opinions, or having parents and administrators confuse teaching about values and morals with teaching **particular** values and morals. Lastly, 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: “Why are we studying values in science class?” Ethics seems like just one more element in already crowded programs. The *Bioethics 101* curriculum focuses on tools and strategies for overcoming these barriers.

*Bioethics 101* provides a systematic, week-long introductory course for the teacher who would like to incorporate ethics into the classroom through the use of sequential, day-to-day lesson plans. This curriculum is designed to help science teachers guide their students to analyze issues in light of the scholarly discipline of ethics.

Teachers who have incorporated ethics into their science classrooms have reported a number of gains. Students have become more engaged with the science content, have become better discussion participants, and have shown a better understanding of the way science impacts everyday life. In addition, students have gained valuable critical thinking skills as they learn to “think through” complex problems and justify their position on an issue.

The *Bioethics 101* curriculum is based on *An Ethics Primer*, NWABR’s resource guide of lesson ideas and ethics background. Teachers in the NWABR educational community have been using *An Ethics Primer* for a number of years as a flexible, wide-ranging, mix-and-match teaching resource. Teachers familiar with the *Primer* were asked for their “all time favorite” introductory lessons that would be compiled and rewritten to create a focused, week-long introductory unit. This “best of” compilation of introductory lessons and activities is this curriculum: *Bioethics 101*.

## CURRICULUM FRAMEWORK

This unit builds sequentially from *Lesson 1* to *Lesson 5*. **Concepts** are introduced early in the unit and students are given the opportunity to practice those concepts using a variety of **techniques**. Please refer to the *Concept Introduction and Reinforcement* section of this *Curriculum Overview*.

**Concepts:** Students are first introduced to **ethics** as a discipline, what constitutes an **ethical question**, and the idea that **values** serve as a basis for behavior and contribute to decision-making. The **Principles of Bioethics** are then introduced, followed by the concept of **stakeholders**. Students learn how to generate **options** to resolve an ethical dilemma and learn how to write a strong **justification** for their position. New concepts are layered on in each lesson; students practice known concepts while being introduced to new ones. In the last lesson, students synthesize all the concepts and apply them to a new case study.

**Techniques:** The curriculum employs case studies throughout. By reading and analyzing different cases, students practice the concepts they have learned in concrete scenarios. Students are asked to think about concerns related to the case from the perspective of different stakeholders. The curriculum also makes use of structured Decision-Making Frameworks and graphic organizers to help students “reason through” complex issues.

## INSTRUCTIONAL COMPONENTS

**The Curriculum:** The *Bioethics 101* curriculum consists of five sequential lessons plus a pre/post-test option.

**Time Requirement:** Each lesson requires at least one 55 minute class period. The entire curriculum module should take between five to seven class periods.

**Target Audience:** The target audience is 10th grade Biology class, although the curriculum could be modified for other age and content groups.

**Pre-/Post-Test:** The impact of the curriculum on students is assessed through a pre- and a post-test. The pre- and post-tests consist of a case study with accompanying questions. The case study, questions, grading rubric, and additional teacher resources can be found in the *Appendix*. Teachers should allow 15–30 minutes for the test.

**Discussion Norms:** Teachers should review or create classroom discussion ground rules (norms) before beginning the unit. Instructions for doing this can be found in the *Appendix*.

## ESSENTIAL UNDERSTANDINGS

There are several “essential understandings,” or core concepts, that are important for communicating with students about ethics. We hope to foster among students an understanding of the **importance of well-reasoned judgments**, combined with a **respect and empathy for other approaches**.

### Intellectual Rigor: The Importance of Well-Reasoned Judgments

Students need to learn to differentiate between opinions based on emotions and those supported by evidence and logical argument. A key misconception among students is that ethics is a matter of opinion (the issue of moral relativism), and that therefore ethical issues are not worth discussing or cannot be resolved. The discipline of ethics stresses an analytical approach to evaluating issues. Successful arguments are both well-reasoned and clearly articulated. A **solid understanding of science content** provides the foundation from which students can develop their positions. What matters most is not which position students take, but how thoroughly they have analyzed the ethical dilemma and how well-justified and supported their arguments are.

### Citizenship in a Democratic, Pluralistic Society: Respect for Alternate Approaches and Viewpoints

Ethics allows students to gain greater understanding and respect for other positions and approaches, even if they do not agree with them. It enhances their ability to understand the issues and values informing different points of view, and thus makes them better citizens of our democratic and pluralistic society.

Students should also be aware that in certain contexts, well-reasoned judgments can sometimes be used to support morally unacceptable practices. The ethical perspectives of some stakeholders may be morally reprehensible to others. It is important to stress that at the community and societal levels not all values are deemed equally defensible.

## UNIT OBJECTIVES

Students will be able to:

1. Identify the characteristics of an ethical question and recognize an ethical question embedded in a case study.
2. Distinguish different types of questions (subjective, objective, and those of reasoned judgment) and understand that each requires a different type of answer.
3. Describe major bioethical principles and accurately apply those principles when evaluating a case study.
4. Recognize stakeholder individuals or groups and articulate their concerns and values.
5. Apply their understanding of the elements of a strong justification when creating a strong justification for their own position.
6. Reason through a case study using a decision-making framework.

## SOURCE MATERIAL

The source material for many of the lessons, activities, student handouts, and teacher resources is *An Ethics Primer: Lesson Ideas and Ethics Background* by Jeanne Ting Chowning and Paula Fraser, produced through the Northwest Association for Biomedical Research. The complete *Ethics Primer* is available free for download from <http://www.NWABR.org>.

The *Ethics Primer* provides engaging, interactive, and classroom-friendly lesson ideas for integrating ethical issues into a science classroom. It also provides basic background on ethics as a discipline, with straightforward descriptions of major ethical theories. Several decision-making frameworks are included to help students apply reasoned analysis to ethical issues.

Although the *Ethics Primer* is designed for secondary school science classrooms, it has been used by teachers in a variety of classes and grade levels. It is particularly suited to social studies and integrated/interdisciplinary classrooms. It has also been used with adults. The *Ethics Primer* is not designed to be used cover to cover. Teachers should review materials and select lessons that fit their needs. The *Ethics Primer* is also intended to be used as a general resource, with a wide variety of topics.

## LESSON OVERVIEW

### Lesson One: Introduction to Bioethics

In this lesson, students are introduced to the characteristics of an ethical question and learn to distinguish ethical questions from other types of questions, such as legal or scientific questions. Students then identify an ethical question and participate in an ethical dilemma involving the distribution of a scarce resource—a flu vaccine—during a flu outbreak. Students are asked to determine the best course of action in the face of conflicting choices, while examining the underlying themes that serve as a basis for their reasoning. Lastly, students experience how relevant facts influence decision-making.

### Lesson Two: Principles of Bioethics

Students consider questions with answers based on fact, preference, or reasoned judgment, and determine where those questions fall along the range of purely subjective to purely objective. Students then improvise short skits to illustrate familiar concepts such as fairness, respect, and “doing good.” This sets the foundation for the **Principles of Bioethics: Respect for Persons, Maximize Benefits/Minimize Harms, and Justice**. Students then apply these bioethical principles to the pandemic flu ethical dilemma they were introduced to in *Lesson One*.

### Lesson Three: Finding the Stakeholders

Students read a case study about Dennis, a 14-year-old boy who has been diagnosed with leukemia. The doctors treat the leukemia with chemotherapy, which dramatically reduces the number of Dennis’s blood cells; Dennis, however, refuses life-saving blood transfusions because they conflict with his faith. Students identify an ethical question to explore, and consider how the **Principles of Bioethics (Respect for Persons, Maximizing Benefits/Minimizing Harms, and Justice)** relate to the case. Students then identify the stakeholders—the people or institutions that are affected by the outcome—and work in small groups to clarify stakeholder values, interests, and concerns. After stakeholder groups present their positions to the class, the class generates options for possible resolutions to the case.

### Lesson Four: Making a Strong Justification

In this lesson, students learn the characteristics of a strong justification and apply them to a decision about an ethical question. Students brainstorm what makes a **weak** justification, and are then primed to identify what makes a **strong** justification through their participation in a silent debate. Students refer to the *Case Study: Dennis’s Decision* from *Lesson Three*, and evaluate a number of pre-written justifications for that case. For each justification, students consider whether: a decision has been made, scientific facts have been included, stakeholder views are represented, there is reference to bioethical principles, and alternate solutions are considered. Once students understand the elements of a well-crafted justification, they come to their own decision about Dennis and write their own justification.

### Lesson Five: Putting it all Together

In this lesson, students consider the case of a young doctor hired by a U.S. pharmaceutical company to test a new antibiotic in Nigeria during a meningitis epidemic. Students work through a **Decision-Making Framework** in small groups, in which they identify the ethical question, determine which facts are known or unknown, consider the values of different stakeholder groups, generate possible solutions, and then make and justify a decision about the case. This is a jigsaw exercise, in which students first meet in “like” stakeholder groups to become experts in the values and concerns of that group. Teams are then rearranged so that each new group has students from different stakeholder viewpoints. After sharing the views and values of each stakeholder group with their peers, groups work together to generate options for solutions to the case study. Lastly, students come to individual decisions about the case and write a thorough justification.

## CONCEPT INTRODUCTION AND REINFORCEMENT

	<i>Students are <b>introduced</b> to:</i>	<i>Students <b>practice</b>:</i>
<b>Lesson 1</b>	Ethics and bioethics by discussing a scenario containing an ethical dilemma.  Identification of an <b>ethical question</b> .	
<b>Lesson 2</b>	Subjective and objective questions.  <b>Bioethical principles.</b>	Application of <b>bioethical principles</b> to a specific ethical dilemma in a story.
<b>Lesson 3</b>	<b>Stakeholders</b> and their <b>values</b> and concerns.  Generation of <b>options</b> for resolving an ethical dilemma.	Identification of an <b>ethical question</b> rooted in a story/scenario.  Application of <b>bioethical principles</b> to a specific ethical dilemma in a story.
<b>Lesson 4</b>	<b>Justification</b> of the resolution to an ethical dilemma.	Identification of an <b>ethical question</b> rooted in a story/scenario.  Application of <b>bioethical principles</b> to a specific ethical dilemma in a story.  Identification of <b>stakeholders</b> and their <b>values</b> and concerns.  Generation of <b>options</b> for resolving the ethical dilemma.
<b>Lesson 5</b>		Identification of an <b>ethical question</b> rooted in a story/scenario.  Application of <b>bioethical principles</b> to a specific ethical dilemma in a story.  Identification of <b>stakeholders</b> and their <b>values</b> and concerns.  Generation of <b>options</b> for resolving the ethical dilemma.  <b>Justification</b> of the resolution to an ethical dilemma.



## CORRELATION TO NATIONAL LEARNING STANDARDS

### National Standards Alignment: Science (Grades 5-12)

	<b>Lesson One:</b> Introduction to Bioethics	<b>Lesson Two:</b> Principles of Bioethics	<b>Lesson Three:</b> Finding the Stakeholders	<b>Lesson Four:</b> Making a Strong Justification	<b>Lesson Five:</b> Putting it All Together
<b>A. Science as Inquiry</b>					
Abilities necessary to do scientific inquiry.					
Understandings about scientific inquiry.		•			•
<b>E. Science and Technology</b>					
Abilities of technological design.		•	•	•	•
Understandings about science and technology.		•	•	•	•
<b>F. Science in Personal and Social Perspectives</b>					
Personal and community health.	•	•	•	•	•
Science and technology in local, national, and global challenges.	•	•	•	•	•
<b>G. History and Nature of Science</b>					
Science as human endeavor.	•	•	•	•	•
Nature of scientific knowledge.	•	•	•	•	•
Historical perspectives		•		•	•

National Research Council. (1996). *National Science Education Standards*. Washington D.C.: National Academies Press.

## Common Core State Standards

For English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

	<b>Lesson One:</b> Introduction to Bioethics	<b>Lesson Two:</b> Principles of Bioethics	<b>Lesson Three:</b> Finding the Stakeholders	<b>Lesson Four:</b> Making a Strong Justification	<b>Lesson Five:</b> Putting it All Together
<b>Comprehension and Collaboration, Grades 9-10</b>					
1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.	•	•	•	•	•
a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.			•	•	•
b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.	•	•	•	•	•
c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.	•	•	•	•	•
d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.	•	•	•	•	•

National Governors Association Center for Best Practices, Council of Chief State School Officers. (2010). *Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects*. Washington D.C.: National Governors Association Center for Best Practices, Council of Chief State School Officers.

## Framework for K-12 Science Education

	<b>Lesson One:</b> Introduction to Bioethics	<b>Lesson Two:</b> Principles of Bioethics	<b>Lesson Three:</b> Finding the Stakeholders	<b>Lesson Four:</b> Making a Strong Justification	<b>Lesson Five:</b> Putting it All Together
<b>Scientific Practices</b>					
Asking questions.	•	•	•	•	•
Developing and using models.		•	•	•	•
Analyzing and interpreting data.				•	•
Constructing explanations.	•	•	•	•	•
Engaging in argument from evidence.	•	•	•	•	•
Obtaining, evaluating, and communicating information.	•	•	•	•	•
<b>Crosscutting Concepts</b>					
Systems and system models.		•	•	•	•
Stability and change.				•	•
<b>Core Ideas: Life Sciences</b>					
LS 1: From molecules to organisms: Structures and processes.			•		
LS 2: Ecosystems: Interactions, energy, and dynamics. D: Social interactions and group behaviors.			•	•	•

Committee on Conceptual Framework for the New K-12 Science Education Standards, National Research Council. (2011). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Washington D.C.: National Academies Press.

