

Government Regulation of Biomedical Science
A cross-curricular examination of ethics in science
Research, Ethical Evaluation, Public Hearing

Authors: Courtney Ferrari & June Poling, Valley Catholic School, Beaverton, Oregon

Grades: 6-12

Subjects: Social Studies & Science

Overview of Lesson Plan: In this project, students use their knowledge of biological processes to work in groups researching and analyzing a controversial scientific question. Students consider the values of stakeholders and present solutions to the ethical question in a mock legislative hearing.

This project can be extended into a cross-curricular project between science and social studies. See extension ideas below.

Suggested Time Allowance: Ten 45 - minute classes

Objectives:

Students will:

- Learn how to effectively work in groups
- Learn the skills of analyzing the pros and cons of an ethical question
- Gain in-depth knowledge of the topic and issues surrounding their ethical question
- Use their knowledge of ethics to take on the role of a stakeholder in the question being posed
- Learn how to come to a group consensus in generating a solution to the ethical question
- Present their perspective and solution to a mock legislative committee consisting of members from the community

Resources / Materials:

Student handouts:

[Assignment Overview](#)

Introductory Background Packet: [Animal Research](#); [Stem Cell](#); [Performance Enhancing Drugs](#); [Sample Parent Letter](#)

[Daily Project Worksheet](#)

[Group Leader Worksheet](#)

[Decision Making Worksheet](#)

[Student Reflection Worksheet](#)

Other handouts

[Panel Instructions](#)

[Hearing Rubric](#)

Activities / Procedures:

Introduction

DAY 1 - An introduction to ethics

It is strongly recommended that you begin this project with a brief lesson on ethics. At the very least, students should become familiar with the vocabulary used to discuss ethical issues. The questions below can be used as discussion points with students to become familiar with ethics.

What is an ethical question?

How do ethical questions differ from other questions?

What are some examples of ethical questions?

What is a value?

How do our values influence our decisions?

Does everyone possess the same values?

What is a stakeholder?

Who might be a stakeholder?

Is ethics purely subjective, objective or somewhere in between?

A great resource for lessons that introduce ethics comes from the Northwest Association for Biomedical Research. These lessons are available for download from the following website: <http://www.nwabr.org/education/ethicslessons.html>

“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...The complete Ethics Primer is now available free for download. In order for us to measure how our curriculum resources are being used, we request that you please complete the brief information form before being directed to the download page. We will not share your contact information with anyone but may ask if you are willing to participate in the program evaluation conducted for our grant.”

Development of the Ethics Primer was made possible by 'Collaborations to Advance Understanding of Science in Ethics', a Science Education Partnership Award from the National Center for Research Resources, National Institutes of Health, 1R25RR016284-01A2.

DAY 2 Government workings – legislative committees

Although the content of the government hearing is largely scientific, the format in which it is presented requires some knowledge of the workings of American government. Students should understand the basic functions of the three branches of government—how each one brings about change in American life:

- The legislative branch, through legislation, can order the government to follow certain policies.

- The executive branch, following legislative orders, carries out those policies.
- The judicial branch, through litigation, decides on the constitutionality of policies

The mock hearing takes place in a Congressional committee. Committees are responsible for vetting bills before they get to the floor of Congress. When a committee or subcommittee favors a measure, it usually takes **four actions**.

1. It asks relevant executive agencies for written comments on the measure.
2. It holds hearings to gather information and views from non-committee experts. At committee hearings, these witnesses summarize submitted statements and then respond to questions from committee members.
3. A committee meets to perfect the measure through amendments, and non-committee members sometimes attempt to influence the language.
4. When language is agreed upon, the committee sends the measure back to the full House, usually along with a written report describing its purposes and provisions.

Students will participate in a mock committee hearing (action 2) using research skills and knowledge gained in science class. In small groups, they will study a controversial scientific issue. Students will identify stakeholders who are concerned with the issue, deliberate with their fellow students, and present a recommendation to the relevant committee.

See the [link below](#) for a lesson presenting this information.

Research and Preparation for Hearing

DAY 3

1. Break up students in each class into 6 groups of five.
2. Give each student the [“Assignment Overview”](#) page
3. Assign each group one of the following ethical questions:
 - a. In light of the recent developments in stem cell research, should the government modify the current regulations on stem cell research?
 - b. Should the government modify the current regulations on animals being used for biomedical research?
 - c. Should government impose stricter regulations on performance-enhancing drugs?
4. Give each student their [“Introductory Background”](#) packet which includes the [“Parent Letter”](#) (see the sample provided). Using the [“Assignment Overview”](#) sheet, discuss the project’s expectations with students.
 - a. Assign students the following homework: “Read the article about your ethical question. After you finish reading the article, discuss your ethical question with a parent or adult. Be sure to give your parents the letter as well. Then, answer the follow-up questions at the end of the article. ”
 - b. After their discussion, the students should answer the questions posed in the packet.

DAY 4

1. Students gather in their groups and discuss answers to the packet questions. By the end of the period, students should choose a group leader, the three stakeholders, and the scientist. If time permits, students may begin researching their topic based on their group assigned role.

DAYS 5 and 6

1. Have students research based on their assumed role. Each day of research, students are responsible for filling out the [“Daily Project”](#) worksheet. The group leader is responsible for summarizing the findings of their group by filling out the [“Group Leader”](#) worksheet.
2. NOTE: If you do not have time for classroom research or do not have access to computers you may prepare ahead of time packets of information for your students on the topics. Resource links are provided below for this purpose.

DAY 7

1. Today, students should focus on developing a solution to the ethical question. Handout the [“Decision Making”](#) worksheet to guide them through the process of coming to a group consensus. Based on their group decision, they should begin working on their group’s presentation to the legislative public hearing.
2. Groups may want to divide up the presentation in the following manner:
 - a. Opening statement – 1 person
 - b. Body of presentation – 3 people (stakeholders’ perspectives)
 - c. Closing statement – your strongest speaker

OPTIONAL DAY 8

1. If needed, students can be given a seventh day to work on their 3 minute presentations. They should be thinking of possible questions that may be coming from the panel.

Public Hearing by Mock Legislative Committee

DAY 8 and 9

1. If possible, solicit help from parents or people from the community with backgrounds in the ethical topics to sit on the panel.
2. The hearings take place on two separate days. Two topics can be covered the first day. The second day, cover one topic and provide time for students to reflection on the project.
3. Set-up the hearing by having the volunteer legislative committee seated with their backs to the audience and the two student groups (one from each class) seated at separate tables facing the committee and audience.
4. Format of the hearing:
 - a. After being introduced by the moderator, each group will have 3 minutes to make its presentation to the panel
 - b. The committee and other group will then have 3 minutes to ask questions of the presenting group.

- c. Each group will have 1 minute to make a closing statement before the committee convenes to make a response.
 - d. Have the committee recess for 3 minutes to develop a response to the presentations and then present to the student groups and audience what they heard and offer feedback to the groups.
5. Audience members will be responsible for answering questions on each topic presented. See [“Student Reflection”](#) worksheet. This worksheet also includes a personal reflection section for the presenter to fill-in after their presentation.

Further Questions for Discussion:

In addition to students reflecting on what they learned from the activity, have students reflect on the whole project. What did they like the most about the project, what did they like the least.

Evaluation / Assessment:

Student daily tasks can be assessed by monitoring the leader and daily worksheets
Student presentations may be assessed using the [“Hearing Rubric”](#)

Vocabulary: Ethics, Values, Stakeholders

Extension Activities:

Depending on the focus of study, the ethical topics provided above can be changed or modified to include the following:

- 1) Should the government require dairy products to be labeled if the cattle were treated with artificial bovine growth hormone?
- 2) Should the government impose stricter regulations on the use of antibiotics in livestock?
- 3) Should the government further regulate genetically modified (GM) plants?

Condensing Activities:

This project can be extended into a cross-curricular project between science and social studies. The science teacher can take on the responsibility of teaching the ethics primer while the social studies teacher covers the government workings. Research can be conducted in each class – giving students more time for research. The hearings can be accomplished in one day instead of two. All in all, the project can be completed in fewer academic days.

Interdisciplinary Connections:

In addition to social studies and science, this project may also with standards covered in health class.

Supporting Information on the Web:

[Links to Biomedical Topics](#)

[Links to Agricultural Topics](#)

Academic Benchmarks/Standards:

SC.08.LS.01 Describe and explain the relationship and interaction of organ systems.

SC.08.LS.02 Describe and explain the structure and functions of an organism in terms of cells, tissues, and organs

SC.08.LS.02.04 Explain how our understanding of cells and microbes has changed over time.

SC.05.SI.04 Summarize, analyze, and interpret data from investigations.

SC.08.SI.04 Summarize and analyze data including possible sources of error. Explain results and offer reasonable and accurate interpretations and implications.

SC.CM.SI.04 Summarize and analyze data, evaluating sources of error or bias. Propose explanations that are supported by data and knowledge of scientific terminology.

SS.08.CG.05 Understand how citizens can make their voices heard in the political process.

SS.08.CG.06 Identify and give examples of how groups and organizations can influence the actions of government.

Future CCG Standards

- Understand that science is a human endeavor practiced by individuals from many different cultures.
- Understand that scientific knowledge is subject to change based on new findings and results of scientific observation and experimentation.
- Understand that scientific knowledge distinguishes itself through the use of empirical standards, logical arguments and skepticism.
- Describe the role of science and technology in local, national and global issues.
- Describe how daily choices of individuals, taken together, affect global resource cycles, ecosystems and natural resource supplies.
- Explain risks and benefits in personal and community health from a science perspective.

Government Regulation of Medical Science

An examination of ethics in science
Research, Ethical Evaluation, Public Hearing

Topics:

- 1) In light of the recent developments in stem cell research, should the government modify the current regulations on stem cell research?
- 2) Should the government impose more regulations on animals being used for biomedical research?
- 3) Should government impose stricter regulations on performance-enhancing drugs?

The class will be broken up into 6 groups – two groups for each topic above. In your group, each student will research the topic, but from different perspectives. Each member of the group will take on a role as follows:

- a) Three group members will take on a stakeholder role and research based on that particular viewpoint.
- b) Another student will assume the role of a scientist, and research the scientific information known about your topic. This student will act as the science expert adviser for the group.
- c) The fifth student will be a group leader, responsible for understanding the overall topic and coordinating the viewpoints of the other four members. The group leader will collect research worksheets daily from group members and write up the majority of the final presentation.
- d) Each member will complete a worksheet at the end of each research day.

At the conclusion of your research, the group will collaborate to make a recommendation for or against government action.

- Your group will take a position which answers the ethical question originally posed to your group.
- Your position must include supporting details which account for the science, context and positions of stakeholders.
- Your group should explore three possible approaches to the questions.
- The group will present its recommendation in a 3-minute presentation to a mock legislative committee composed of adult volunteers and actual members of the medical community.
- Visual aids are welcome in demonstrating your group's position, but they must be of a size that is accessible to a large room.

The public hearings by mock legislative committees will take place on two separate days. Two topics will be covered the first day. The third topic will be covered the next day with time to personally reflect on the hearing process. The hearings will run in the following manner:

- 1) Volunteer legislative committee members will be seated at the front of the room.

- 2) The two groups who are making recommendations on a given topic will be seated facing the committee.
- 3) After being introduced by the moderator, each group will have 3 minutes to make its presentation to the panel committee.
- 4) The committee and other group will then have 3 minutes to ask questions of the presenting group.
- 5) Each group will have 1 minute to make a closing statement before the committee convenes to make a response.

Sample format for Topic 1

Moderator's intro (about 1 minute)

Group 1 presentation: 3 minutes

Q&A for group 1: 3 minutes

Group 2 presentation: 3 minutes

Q&A for group 2: 3 minutes

Group 1 closing statement: 1 minute

Group 2 closing statement: 1 minute

Total: 14 minutes

Audience members will be responsible for answering questions on each topic presented by the other five groups.

Schedule

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Should the government modify the current regulations on animals being used for biomedical research?

Adapted from Science, Medicine, and Animals National Research Council

The lives of humans and animals have been intertwined since the beginning of civilization. Early humans learned to raise animals for food as well as to live alongside them as companions. Humans and animals develop strong interactions and lasting bonds to their mutual benefit. It is because of our close ties with animals that many people have mixed feelings about the use of animals in biomedical research – even scientists. In an ideal world, scientists would never need to use animals as research subjects. Because we do not live in an ideal world, some difficult ethical and moral questions arise.

First and foremost, is it ethical to allow humans and animals to suffer from injury and diseases when treatments and cures can be discovered through animal research? Public opinion polls have consistently shown that a majority of people approve of the use of animals in biomedical research that does not cause pain to the animal and leads to new treatments and cures. However, another difficult question is whether it is morally acceptable to perform research on animals that is painful, if it leads to new and better treatments such as new anesthetics and painkillers. Or, is it acceptable to perform any research on animals if new treatments or cures resulting from the research might not be apparent for decades, if ever?

A minority of people polled thought that experiments should be done on humans rather than animals. To some extent this does occur during clinical trials, but only after extensive animal testing to ensure that harmful drugs are not given to humans. In our society, most people consider it morally wrong to use humans as subjects for basic research, under the premise that humans deserve higher moral consideration than animals.

Some people also claim that it is not necessary for animals to be used as research subjects and that computer or other nonanimal models could be used instead. In some cases this is true, and scientists strive to use computer models and other nonanimal methods whenever possible; however, many of the interactions that occur between molecules, cells, tissues, organs, organisms, and the environment are too complex for even the most sophisticated of computers to model. At present, it is impossible to advance biomedical science without the use of animal subjects for some aspects of research.

Should the government modify the current regulations on animals being used for biomedical research?

Assignment due _____

- *Discuss this issue and the questions with a parent or adult*
 - *After your discussion, answer, on your own, the following questions.*
 - *Use your inference skills to read between the lines of the article. Not all answers will be apparent.*
1. What are some of the different public viewpoints on how animals should be used in biomedical research?
 2. Identify the stakeholders in this controversial issue.
 3. Why do you think scientists need to use laboratory animals, instead of other models, to conduct basic research?
 4. What types of diseases justify animal research? Explain your answer with examples
 5. What is the bias of this paper?
 6. What ethical perspectives did you use to answer the above questions?

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In light of the recent developments in stem cell research, should the government modify the current regulations on stem cell research?

Adapted from http://www.pbs.org/newshour/bb/health/jan-june02/scells_4-8.html - Online NewsHour April 8, 2002 – go to the link to see streaming video of interview

Fred de Sam Lazaro of Twin Cities Public Television reports from India on progress in stem cell research.

Background: A year ago, Abishek Sharma was almost completely blind from a degenerative corneal disease found mostly in the tropics. Surgeon Virender Sangwan decided the last hope was a stem cell transplant. Doctors at the L.V. Prasad Eye Institute cultured donor stem cells in the lab. These were then sutured on his damaged eyes. The stem cells used in this operation were from adult tissues, not the controversial ones from human embryos. Still, the pioneering experiment is one of the earliest indicators of the immense promise of stem cells. They are human physiology's most basic starting point, from which grow all the body's various tissues and organs. Three months later, Dr. Sangwan says, the grafted stem cells, taken from Sharma's parents to lessen the chance of rejection, seem to be working.

FRED DE SAM LAZARO: “Is he out of the woods, doctor?”

DR. VIRENDER SANGWAN, L.V. Prasad Eye Institute: “It's not really out of the woods, but we have to be on our own watch, and he has to be on a treatment to prevent rejection.”

ABISHEK SHARMA, Patient: “Dr. Sangwan is really God for me. He make me able to see, and now I can see and I can read. I can ride my bike, and I have come back to my normal life.”

FRED DE SAM LAZARO: “About three dozen patients have undergone the procedure at the Prasad Institute in the south Indian city of Hyderabad. It's one of a handful of Indian facilities doing stem cell research, operating in relative obscurity until developments last summer in the U.S.”

U.S. objections

PRESIDENT GEORGE W. BUSH: “Good evening. I appreciate you giving me a few minutes of your time tonight so I can discuss with you a complex and difficult issue.”

FRED DE SAM LAZARO: In August, President Bush announced a compromise plan on federal funding for embryonic stem cell research. Most scientists feel stem cells removed from embryos are more versatile than adult ones, but they are also more controversial.

DEMONSTRATORS SINGING: “What a mighty God we serve.”

FRED DE SAM LAZARO: That's because embryos don't survive the extraction. Opponents say destroying embryos-- human life, in their view-- is morally unacceptable.

PRESIDENT GEORGE W. BUSH: “We should not, as a society, grow life to destroy it.”

FRED DE SAM LAZARO: The president approved 64 stem cell lines, or colonies, worldwide. He said these were already in existence, the life-and-death decision already made. Ten of the cell lines are in India, seven at the Bombay-based Reliance Life Sciences, a private lab headed by Dr. Firuza Parikh.

DR. FIRUZA PARIKH, Reliance Life Sciences: “Well, our immediate goals are for peer review, for establishing efficient collaboration, and for putting India on this global scenario of biotech, especially in this field of stem cell research.”

FRED DE SAM LAZARO: The stem cell lines at Reliance are in an early phase, not fully cultured into self-sustaining colonies, a delicate, uncertain process. Parikh plans to develop additional lines, and says she does not need U.S. Government funds to do so. Her lab is owned by a multibillion-dollar Indian conglomerate.

DR. FIRUZA PARIKH: “At this point in time, what we are looking at for the next at least three or four years, is pure research. We are not looking at numbers that are generated commercially. Of course in the long run, when this research fits into hospitals and goes on to the patients, we would certainly look at revenue.”... “The relatively recent arrival on the scene of embryonic stem cell research, particularly in commercial labs, has led to concern that there aren't adequate regulations to prevent abuses. Could embryos be sold, for example, or eggs removed from a woman without her consent? Could embryos be cloned?”

Should government impose stricter regulations on performance-enhancing drugs?

Adapted from http://www.drugstory.org/feature/foul_play.asp

Foul Play: Sports, Doping and Teens

A Roundtable Discussion

A group of leading experts, doctors and student athletes gathered recently in Los Angeles, California to participate in a roundtable discussion about the use of anabolic steroids and other drugs among student athletes.

Anabolic steroids are drugs that build lean muscle mass, along with strength and stamina. The discussion focused on how peer pressure and the pressure to win drives some student athletes to use steroids, and how coaches often seem to ignore warning signs of steroid use among their players and the risks associated with using the drugs.

The National Youth Anti-Drug Media Campaign and The Hollywood Reporter sponsored the event, which was held at 20th Century Fox Studios. Television writers, network executives and sportswriters attended the session. Panelists included:

- **Bob Dowling**, *Hollywood Reporter* Publisher and Editor in Chief who hosted the event;
- **Dr. Linn Goldberg**, M.D., executive director of Portland, Ore-based Athletes Training and Learning to Avoid Steroids (ATLAS), who moderated the discussion;
- **Dr. Gary Green**, M.D., a specialist in internal and sports medicine at the UCLA Department of Family Medicine and chairman of the NCAA Drug Test Committee;
- **Greg Schwab**, associate principal of Tigard (Oregon) High School and a former professional football player and former steroid user;
- Two Los Angeles area high school students: female athlete **Aziza**, and male athlete **Darian**.

What follows are excerpts from their conversation:

Dr. Linn Goldberg: "Studies indicate that anabolic steroids are used by up to 11 percent of teenage male athletes, but female athletes are the fastest growing group using the drug. Most steroid users are polydrug abusers. They are not 'clean' kids. Steroids produce testosterone levels up to 100 times the normal natural level, which can lead to liver damage, high blood pressure, depression, mood swings and shrunken testicles. They also can irreversibly stunt growth in adolescents."

Dr. Gary Green: "Anabolic steroids are Controlled substances. Yet, through a quirk in the 1994 drug law, some are (allowed to be put in) over-the-counter dietary supplements. These are easily available in stores and over the Internet. Some of these supplements will cause an athlete to test positive for steroids. One of these, Androstine, was popularized by St. Louis Cardinal first baseman Mark Maguire. Maguire's use of Androstine (led to) quadrupled sales of Androstine. As chairman of the NCAA Drug Test Committee, I can tell you that most 'positives' result from the use of supplements. Athletes lose one year of eligibility for testing positive. I'm also concerned about the widespread use of Creatine, which is an amino acid that is unregulated. We don't know the long-term effects, especially on kids. There are potential problems with kidneys and with electrolytes."

Darian: "I didn't even know Androstine contained a steroid. And coaches and athletes think Creatine is okay because it's over-the-counter. There are ads for it plastered all over the gym walls."

Schwab: "Kids are under pressure from their peers, their parents and their coaches to excel, so some turn to performance enhancing drugs. That pressure to succeed is communicated to the athlete. You want to please the coach. When I had done everything my body could do naturally, it wasn't enough. I wanted to play pro football, so I went to the strength coach and I asked him about steroids. He gave me a book. He never said, 'no, you don't want to do that.'"

Dr. Green: "If coaches don't want you to do something, they usually make it very clear."

Greg Schwab: "That's right. Coaches are, by nature, Control freaks. It's hard to miss athletes who you believe are on steroids. They have all the symptoms: erratic behaviors, weight gain, strength gain ...puffy appearance. So in my opinion, coaches usually know what's going on."

Dr. Goldberg: "We need more training for coaches. Often the kids know a little more than the coaches. Most states do not require that coaches be certificated teachers."

Darian: "I never heard of people around me using it until I started to lift weights for the football team. Then I was exposed to other guys on the team who used steroids. High school sports are a proving ground for college. So kids feel like they need to impress everyone who is watching. It's about body image. It's about getting huge. If you're not getting larger, you're not going to play. For a lot of kids, an athletic scholarship is the only way they're going to go to college. They'll try anything to get an edge, to please the coach."

Dr. Goldberg: "Athletes are risk takers, sensation seekers. We had a Portland State University student who was trying out with an NFL team. He called me two weeks before the try-out and asked if he should take steroids. I said, 'no.' His wife later found a vial of steroids with his jersey number on it."

Aziza: "For female athletes at my high school, weight is a big issue. Steroids produce a lean, muscular appearance. I know girls who go days without food. I've never taken any drugs because I've seen what it does to people. I've had friends messed up. But I've been on some kind of a diet for sports ever since I was eight years old. It's all about recognition and scholarship money."

Dr. Green: "Most athletes want sports clean. They are the biggest advocates for a level playing field. Athletes have the lowest drug use of any group. They are the greatest advocates against steroid use."

Aziza: "Most athletes I know want to feel good about their performance. To me it's a matter of integrity...that I can do all this without steroids. I believe in myself. I'm running 100 percent. But the other guy is running 100 percent on steroids."

Dr. Goldberg: "The internet is rampant with misinformation. There is a steroid 'Bible' available on line on how to use steroids 'safely.' Steroids are thought of differently from other drugs. We use them as advertising parlance. We give them positive language value... "

Dr. Green: "Students interested in taking steroids 'research,' the drug. But they never talk to anyone who says 'no.' The problem is steroids 'work.' You do get bigger. You can train harder. There was a lot of bad publicity over Ben Johnson's use of steroids, but he did win races until he was caught. Kids think they won't get caught, and they definitely don't think of the long-term physical consequences. They just think steroids will help them win races."

Dr. Goldberg: "We have not really addressed the demand issue. We may not be able to easily change the drug culture, but we can change the norms of a team's own culture."

Should government impose stricter regulations on performance-enhancing drugs?

Assignment due _____

- *Discuss this issue and the questions with a parent or adult*
 - *After your discussion, answer, on your own, the following questions.*
 - *Use your inference skills to read between the lines of the article. Not all answers will be apparent.*
1. What types of performance enhancing drugs are being used?
 2. What are some of the positive and negative consequences of taking these drugs?
 3. What are some of the pressures athletes feel that promotes the use of performance enhancing drugs?
 4. What are some of the pressures athletes feel that would prevent them from using performance enhancing drugs?
 5. What is the bias of this article?
 6. Who are the stakeholders in this issue?
 7. What ethical perspectives did you use to answer the above questions?

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Dear Parents,

Over the next few weeks, the 8th grade class will be working on a cross-curricular project involving their Social Studies and Science classes. For this project, students will be working in teams to research an ethical question in the area of agricultural science or biomedical science. Ms. _____ will be giving students the historical/sociological background in these areas. In science, students have been preparing for this project by discussing and gaining understanding of the concepts surrounding ethics and the methods necessary to answer ethical questions.

As part of the project, students are asked to discuss their ethical question with a parent or adult. Students realize that their values, a component of ethical decision making, often come from their families. Don't feel like you need to come up with an answer to the question. The goal is to provide students a starting point from which they can explore the intricacies of the question.

We would also like to elicit help for the final component of the project. As teams, students will make a decision about their ethical question. They will then prepare a presentation to promote their decision and rationale to a mock congressional committee. We would like to have parents with backgrounds or interest in the ethical question areas sit on the committee panel to listen and comment on the group presentations. The public hearings by mock legislative committees will take place on two separate days for 90 minutes each. Tuesday, May 27th will be dedicated to the three medical topics and Wednesday, May 28th to the three agricultural topics. The hearings will take place during 3rd and 4th periods on those days—approximately 10:30 am - 12:45 pm. We will send a follow-up letter next week with more details. If you are interested in participating in the hearings, please e-mail either Ms. _____ or myself and we will give you further details.

Thank you for your support and consideration for this cross-curricular project.

Sincerely,

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Daily Project Worksheet

Name _____ Period _____

Date:

Ethical Question:

Stakeholder/Scientist Ethical Perspective Today

Important Facts and Interesting Ideas Found Today (Don't forget to cite your sources)

Facts Supporting Perspective

Facts Opposing Perspective

Areas of Agreement in My Group

My Personal Opinion

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Group Leader's Daily Worksheet

Name _____ Period _____

Date:

Ethical Question:

<p>1. Relevant Facts Gathered From Group (known)</p>	<p>2. Questions that remain (unknown, need to know)</p>
<p>3. Stakeholders</p> <p>..... →</p> <p>..... →</p> <p>..... →</p>	<p>4. Values/concerns of each stake holder</p> <p>.....</p> <p>.....</p> <p>.....</p>
<p>5. Possible Solutions to ethical question</p> <p>a.</p> <p>b.</p> <p>c.</p>	
<p>6. Decision to ethical question today</p> <p>Justification</p> <p>Back to top</p>	

Decision Making Worksheet

Name _____ Period _____

Date:

Ethical Question:

1. List at least five possible actions or solutions to the problem, even if your group does not agree with some. **BE SURE TO CONSIDER METHODS OF CHANGE**

_____ 1. _____

_____ 2. _____

_____ 3. _____

_____ 4. _____

_____ 5. _____

_____ 6. _____

_____ 7. _____

2. Rank these alternatives in order of preference by placing numbers beside them.

3. Take your #1 solution and describe why it is your number one solution. How does it reflect your group's values?

4. What ethical perspective is given priority in your solution? (For example, is your group mostly concerned with outcomes or with following a moral rule?)

5. List 3 reasons why others might not agree with your solution to the problem.

1.

2.

3.

6. How would you address their concerns?

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Student Reflection on Committee Hearing - Name _____ Period _____

Presenter's Reflection

After extensive research and discussion of this ethical issue, my position is:

The main facts that lead me to this position are:

1.

2.

3.

What I learned from the hearing about this issue

New questions I have after the hearing

Based on my reflections on the hearing, as well as my prior knowledge, I now conclude that:

On the back of this page, express your thoughts about this project.

Student Reflection on Committee Hearing –

Name _____ Period _____

Audience Reflection – **Collect information during group presentations**

Ethical Question:

Group 1

Intro and Conclusion	Stakeholder	Stakeholder	Stakeholder	Stakeholder
Facts	Facts ↓	Facts ↓	Facts ↓	Facts ↓

Group 2

Intro and Conclusion	Stakeholder	Stakeholder	Stakeholder	Stakeholder
Facts	Facts ↓	Facts ↓	Facts ↓	Facts ↓

Audience Reflection continued – **Fill-in this section while the panel is out deliberating.**

What was the most compelling fact from group 1

What was the most compelling fact from group 2

What were some interesting questions raised by the panel?

What questions do you still have?

What new insights did you gain on this issue?

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Government Regulation of Medical Science
Panelist Schedule and Instructions
Tuesday, April 17
12:30-2:15 pm

Dear Panelist,

Thank you for volunteering to serve as a committee member at the mock hearing on government regulation of medical science at Valley Catholic School on Tuesday, April 17th.

Address and directions to school

Please check in at the school office by 12:30 that day.

You will be directed to the Howard Room to wait and have refreshments. Students will assemble in the choir room at 12:42 and we plan to start a few minutes later.

For each topic, there will be two groups of students making a recommendation to the congressional committee, of which you are a member. Students have learned in social studies how legislative committees work. Before a bill is sent to the Congress for a vote, proposals for government action go to the appropriate committee. That committee collects and reads relevant written documents from executive agencies, then holds public hearings of expert testimony, then amends or rewrites parts of the bill. Only if the bill survives this process does it proceed to Congress for a vote. The hearing you will moderate represents the second step in this process.

Attached to this letter are three documents, one for each proposal (in our students' case, an ethical question resulting in a recommendation for government action). These are the introductory materials which students received before beginning their research. They are not neutral documents, but are intended to introduce the controversy and get students thinking about the topic before diving into the research. We have provided these papers for you to familiarize yourself with each of the three topics.

The hearings will proceed as follows:

Ms. will introduce the proceedings, each panelist, and the topics under discussion

Each of the three topics will have 20 minutes of floor time, with a 5-10 minute break between topics.

During the short breaks (5-10 minutes), we would like to ask that committee members briefly discuss the recommendations and comments that were presented by student groups. When the hearing reconvenes, and before the next topic is presented, please have one panelist give a response that includes the following:

- 1) What you heard from the students (acknowledging their recommendations) and some persuasive arguments that supported them.
- 2) What facts or arguments were missing and need to be addressed before the bill can move forward.

On the following pages, you will find a proposed agenda, with space for your written notes as students present their arguments.

12:50-1:10 Topic 1

Should the government continue to impose strict regulation on stem cell research?

Group 1 presentation: 3 minutes
Q&A for group 1: up to 5 minutes

Group 2 presentation: 3 minutes
Q&A for group 2: up to 5 minutes

Group 1 closing statement: 1 minute
Group 2 closing statement: 1 minute
Total: 20 minutes

1:10-1:20 Break for committee discussion

Committee representative gives response to recommendation and arguments for topic 1

1:20-1:40 Topic 2

Should the government impose more regulations on animals being used for biomedical research?

Group 1 presentation: 3 minutes
Q&A for group 1: up to 5 minutes

Group 2 presentation: 3 minutes
Q&A for group 2: up to 5 minutes

Group 1 closing statement: 1 minute
Group 2 closing statement: 1 minute
Total: 20 minutes

1:40-1:45 Break for committee discussion

Committee representative gives response to recommendation and arguments for topic 2

Topic 3 (1:45-2:05)

As genetic technology improves, should the government continue screening newborn children for genetic diseases or defects?

Group 1 presentation: 3 minutes

Q&A for group 1: up to 5 minutes

Group 2 presentation: 3 minutes

Q&A for group 2: up to 5 minutes

Group 1 closing statement: 1 minute

Group 2 closing statement: 1 minute

Total: 20 minutes

2:05-2:10	Break for committee discussion
2:10	Committee remarks on Topic 3
	Closing and thanks
2:16	Dismissal

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Name _____

Ethical Question _____

Committee Hearing Rubric

The group information presented was accurate and detailed with examples or explanations to effectively make a strong point. The information was relevant to the topic and included facts and statistics. Sources were cited for statistics effectively.

20 18 16 14 12 10 8 6 4 2 0

The group information presented demonstrates a thorough examination of perspectives on the ethical issue.

20 18 16 14 12 10 8 6 4 2 0

The group information was organized with like information grouped together. The audience could easily understand the information presented.

10 9 8 7 6 5 4 3 2 1 0

The group speech included a clear strongly stated introduction and conclusion.

10 9 8 7 6 5 4 3 2 1 0

The group speech was within the five minute time frame.

10 9 8 7 6 5 4 3 2 1 0

The individual speech was delivered with enthusiasm and the proper pace for effective listening by the audience. The speaker made eye contact with the audience. The student spoke loudly and clearly, pronouncing all words correctly with a clear understanding of the topic.

20 18 16 14 12 10 8 6 4 2 0

The individual student participated in the Q&A session.

10 9 8 7 6 5 4 3 2 1 0

All individual statements, body language, and responses were respectful and used appropriate language. The speaker showed the utmost respect for others during the hearing by not interrupting, and listening to other speeches without distracting anyone in any way.

10 9 8 7 6 5 4 3 2 1 0

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Internet Resources for Research on Biomedical Topics

Assembled by Sue Osborne, Valley Catholic School Librarian, Beaverton, Oregon

Topic #1: Should the government modify the current regulations on stem cell research?

Search words : pluripotent

Stem Cell Information	From the NIH. Gateway site
Advancing Stem Cell Science Without Destroying Human Life	An April 2007 report from the White House
Do No Harm: The Coalition of Americans for Research Ethics	Objects to destruction of human embryos for research
Stem Cells in the Spotlight	From the Univ. of Utah, basic descriptions, issues, & the future of stem cells in our society.
Stem Cells at the National Academies	Full-text pamphlets & books. Use the tool bar at the top to better see what's here.

Topic #2: Should the government impose more regulations on animals being used for biomedical research?

Search words: Genetically modified animals

Biomedical Research: FAQ's	From the Univ. of Oxford in England
Animals in Biomedical Research	A statement for the Biotechnology Industry Organization.
Animal Welfare Information	This page provides information on federal laws, and regulations that govern animals used in research, testing, teaching, and exhibition. Policies of the US government
Science, Medicine & Animals	An online book. Use the RIGHT frame to navigate. Start at pg. 29. Be sure to look at "Resources & Web Links" at the end.
The Care of Use of Animals in Biomedical Research	From a biomedical research company (NCABR)
Raising Questions and Finding Answers: The Oregon National Primate Research Center	Mrs. experiences at Oregon National Primate Research Center; includes observations about animal research.

Topic #3: Should the government impose stricter regulations on performance-enhancing drugs?

Search words: steroids, ritalin, provigil, gene doping

Performance Enhancing Drugs/Steroids	Gateway site for this topic.
Poll: Scientists Using Brain-Boosting Drugs	Not just athletes use drugs to enhance performance.
Genetically Modified Athletes: Biomedical Ethics, Gene Doping & Sport	"The site has been created to provide a greater awareness of the issues surrounding the use of genetic technologies in sport."

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Internet Resources for Research on Agricultural Topics

Assembled by Sue Osborne, Valley Catholic School Librarian, Beaverton, Oregon

Topic #1: Should the government require dairy products to be labeled if the cattle were treated with artificial bovine growth hormone?

Search words: Bovine somatotropin, rBGH (recombinant bovine growth hormone), rBST, posilac,

[rBST Adoption in the United States: A Retrospective Look at a "Juggernaut" Agricultural Biotechnology](#)

A PDF article from the Univ. of Wisconsin-Madison. Presents a summary of the controversy & tables that help in determining the impact of rBST.

[rBST Controversy Gives Dairy Farmers Marketing Advantage](#)

A 3/5/07 podcast interview with Blair Thompson, a member of the Washington Dairy Products Commission. The Capital Press, Oregon's agriculture newspaper which is based in Salem, conducted the interview.

[Dairy Research & Bovine Somatotropin](#)

Basic information & issues; from the Univ. of Minnesota

Topic #2: Should the government impose stricter regulations on the use of antibiotics in livestock?

Search words: industrial farm animal production (IFAP), antimicrobial resistance

[Antibiotics in Our Livestock](#)

LA Times article. Click on links within the article.

[Animal Health](#)

From the USDA. Includes animal diseases, well-being, stress management and veterinary medicine.

[Animal Production](#)

From USDA. Links to data on specific animals

[Routine Feeding Of Antibiotics To Livestock May Be Contaminating The Environment](#)

An online article from Science Daily, "Your source for the latest research news."

Topic #3: Should the government further regulate genetically modified (GM) plants?

Search words: GMO's, genetically modified organisms, genetically engineered crops

[What Are GMO's?](#)

From the USDA Agricultural Research Service

[Biotechnology FAQ](#)

From the USDA. Defines biotechnology and addresses the issues around it, including the government's position

[genetic engineering](#)

From The Union of Concerned Scientists. Reliable facts but separate the science from their comments & recommendations.

[Heads Monsanto Wins, Tails We Lose; The Genetically Modified Food Gamble](#)

From Common Dreams.org News Center. This article by Robert Weismann is unabashedly against GM crops and gives some clear

	explanation of reasons for opposition. The blogs that follow the article contain additional thoughts to consider.
<u>Plant Biology: Genetically Modified Organisms</u>	A project similar to yours. Find information using their links.
<u>Genetically Modified Foods: Harmful or Helpful?</u>	An information company's article on GM foods. (Proquest)
<u>Say No to GMOS!</u>	It's pretty clear where they stand.
<u>Genetically Modified Foods & Organisms</u>	Benefits, controversies & links.
<u>World's Poor Pay Price as Crop Research Is Cut</u>	This article gives a sense of the impact of GMOs by showing what can happen when funding for modified strains of rice and other subsistence crops falls through.

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Intro to Congressional Committees

Overview of Lesson:

Although the content of the government hearing is largely scientific, the format in which it is presented requires some knowledge of the workings of American government. This portion of the lesson introduces students to a narrow, but important part of the legislative process.

Suggested Time Allowance: 1-2 45-minute class periods

Objectives:

Students will generate methods of societal change and apply these to an example of industrial pollution.

Students will identify the stakeholders in the example of industrial pollution.

Students will learn that a congressional committee is a forum in which scientists and stakeholders can influence government action.

Resources/Materials: None

Activities/Procedures: Text in a normal font indicates a procedure. Text in italics indicates information to convey to students, adapted to your own teaching style.

1) Introduce students to the idea of change in American society:

America prides itself as a society, which follows the rule of law, defends the equality of its citizens, and tackles tyranny around the world. Although imperfect, Americans have a history of identifying problems and trying to fix them. Americans have identified institutional (top-down) as well as grass-roots (bottom-up) approaches to change, to making a difference.

2) Write the following question on the board:

How does change happen in American society?

3) Ask students to draw on their knowledge of American history to make a list of some ways in which change is brought about. Write their comments on the board. Below are some examples:

Civil disobedience

Nonviolence

Advocacy

Education

Battle of ideas (i.e. science)

Social movement

Technological

Revolution

War

Terrorism

Market-based change

Make sure the following three examples of government action come up. When they do, write them on a separate part of the board from your other list. Ask students why these are placed apart. Students should figure out that these are examples of institutional change. (War, an example of government action, belongs here as well.)

Litigation (courts)

Legislation (Congress)

Government action (Executive branch)

4) Tell students to imagine that a factory is leaking toxic pollution into a nearby river. Elicit from students how the methods above could be applied to the problem:

Nonviolence/civil disobedience—boycott company's goods, protest in front of factory

Education—make sure companies & consumers understand the danger

Advocacy—speak on behalf of victims, write opinion pieces, lobby for legislation

Litigation—sue for damages

Legislation—secure law against a chemical's use

Terrorism—bomb the factory

Market-based change—identify companies' interests (profit, reputation, client satisfaction), then offer incentives to influence positive behavior (i.e. other companies can advertise that they don't use that chemical.)

Students should be able to see how multiple methods could work best together.

- *Without advocates representing victims, their cases may not be brought to court.*
- *Without education and advocacy, a bill might never make it to law.*
- *Without protests or letter-writing campaigns, the government may not realize that a problem is occurring.*

*Our government depends on **citizen participation** in the form of advocacy to get things done. One way is that individuals, organizations, businesses, and industries **lobby** Congress to achieve institutional change. They encourage action, suggest bills, and educate legislators. It's not enough to tell the government to just pass a law.*

5) In order to solve the problem of toxic waste coming from the factory, ask students what questions need to be addressed. They should consider the environment, economics, public health, current law, and citizens' rights. These are some possible questions that could be posed:

What is the science behind the threat?

What are impacts on ecosystems, public health?

What is the economic cost of ending use?

What is the economic cost of doing nothing?

What benefits does the chemical have?

Does a potential bill risk violating someone's constitutional rights?

Would a potential bill contradict other laws already on the books?

6) Ask students where these questions can be raised? What branch of government might hear these questions and respond to them?

There is an argument to be made for all three branches:

Courts—if victims are making a claim against the factory

Executive—if a regulatory agency has authority over the factory in question

Legislative—if the chemical in question is not already regulated

Lead students to the legislative option, as the hearing activity concerns regulation.

Legislators, who each represent about 700,000 people in one state and who are asked to consider several thousand bills in a two-year Congress, are supposed to consider all of those issues, find answers and make an educated decision. How do they do that?

Legislators are assigned by their party leaders to committees.

Congressional Committees

*Currently, the House divides its tasks among 20 committees, many subcommittees, and 2 joint committees (including representatives and senators). Committees decide which bills will be voted on by the House. They have areas of expertise, such as Agriculture, Science and Technology, and Foreign Affairs. Several thousand bills and resolutions are referred to committees during each 2-year Congress. Committees select a **small percentage** for consideration, and those not addressed often receive no further action.*

*When a committee or subcommittee favors a measure, it usually takes **four actions**.*

- 1. It asks relevant executive agencies for written comments on the measure.*
- 2. It holds hearings to gather information and views from non-committee experts. At committee hearings, these witnesses summarize submitted statements and then respond to questions from committee members. **ADVOCACY***
- 3. A committee meets to perfect the measure through amendments, and non-committee members sometimes attempt to influence the language.*
- 4. When language is agreed upon, the committee sends the measure back to the full House, usually along with a written report describing its purposes and provisions.*

7) Now go back to the example of the toxic spill at the factory. In action #2, Congressional committees hear from witnesses who have information or opinions about the proposed legislation. We call those people stakeholders, because they have a stake in the outcome. Elicit from students a list of stakeholders and experts who could provide information. Below are some examples:

Ecologist	Factory worker
Chemist	Resident who lives near the factory
Wildlife biologist	Environmental activist
Doctor	State economist
Factory owner	

8) Show students the purpose in learning this information:

Students will participate in a mock committee hearing (action 2) using research skills and knowledge gained in science class. In small groups, they will study a controversial scientific issue. Students will identify stakeholders who are concerned with the issue, deliberate with their fellow students, and present a recommendation to the relevant committee.

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