

How-To-Do-It

Teaching Bioethical Decision Making in High School

A Lesson Plan

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The success of any democratic society relies on the ability of its individual members to understand, and collectively solve, the society's problems. History teaches that whenever the power to make important human moral and ethical decisions is concentrated in the hands of a few, a diminished quality of human life cannot be far behind. As the exponential growth of biological knowledge makes possible what once seemed miraculous and sacred, new moral and ethical problems promise to become commonplace. Democratic solutions to such problems demand that a population keep current with both the technology and the moral and ethical dilemmas implicit in its application. The task falls upon the shoulders of education, yet, according to McCormack (1983), "Scientists, and science teachers, have traditionally remained aloof from such [moral/ethical] matters." The solution? We must reconsider the traditional relationship between science, ethics and the classroom. "The development of skills and courage to make well-considered, logical, non-self-centered decisions should be given highest priority in all our school science programs." (McCormack 1983)

This solution, however, will create new problems. Society has rarely kept pace with its intellectual leaders. Men like Pasteur and Darwin, later revered for their perseverance and insight, were ridiculed and censured at first. To a lesser extent, such is the predicament of the modern science teacher. Many people believe our curricula already usurps the power of God, yet we understand both how little we really know and what potential benefit exists for all mankind. Vaccines that once were considered tampering with God's will are now considered a birthright. Though controversial,

human genetics suggests a future free of many of the scourges that plague mankind. Yet McCormack (1983) says, "The 'goodness,' 'beauty,' or 'ethics' of new knowledge cannot be established by scientific method." If the lay public is to put this vast new knowledge to wise and fruitful use, we must try to allay the fears and prejudices that hinder such use. In addition to teaching the new technology, we must have the courage to teach how to examine and solve the accompanying moral and ethical problems. We need not and should not pass judgment on particular values; however we must provide a *process* through which students, and thus society, may begin to identify values and examine the problems likely to be faced.

This task is not without risks, yet the potential benefits far outweigh them. Traditionally, morality has been considered the responsibility of the family. Yet, parents raised in simpler times often lack the experience and confidence to teach their children how to make these decisions. A science curriculum that complements the family process would fill this need and will help produce future parents more able to adjust to an accelerating rate of change.

An ultra-conservative community may consider such a curricula to be an infringement on their constitutional rights. In the defense of such, they will try to censor ideas that seem to threaten them. We must respect their right as individuals to refuse participation in such a study, but we must insist that such participation not be denied for others. We must stand up to those who would belittle, censor and accuse us of moral corruption. Only in this way can our free society prosper. And only in such a society can the free and unlimited access to knowledge benefit all. If McCormack (1983) is

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right that "the problems now confronting all inhabitants of our fragile planet can only be dealt with through value judgments," then we, who promote the technology, would be morally negligent not to promote the ethical analysis of our product.

Initially, some biology teachers may find this intrusion of bioethical decision making into their classes somewhat uncomfortable. The concern may be that high school students are not ready to face these kinds of decisions. We should wait until they are adults. "I must ask, 'When, then, are they going to be ready?' Maybe no one is ever totally 'ready' to make difficult decisions, but such decisions must be made. At age 18, the student is a legal adult able, through the voting booth, to influence the direction of society. 'Being ready' means that the student knows how to combine his knowledge and values to make a decision. That process should be in place by the time a student graduates from high school." (DeDecker 1986)

Teaching Strategy

The general structure for my one-week unit on Bioethical Decision Making is derived from Barman and Cooney's "... instructional strategy appropriate to the students' stages of both mental and moral development," which incorporates Kohlberg's theory of moral development. Barman and Cooney (1986) explain:

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Kohlberg's theory can give us a general idea of the type of moral reasoning to expect from students of different ages. Young elementary students, for example, would generally reason on a basis of self-centered needs. Older elementary and middle/junior high students would solve moral problems in a more conventional way, influenced by their peers and the rules of society. Some high school students would reason this way also, while others might be able to solve moral problems by considering the rights of others and by relying on their own intellects."

Kohlberg contends that a person progresses from one stage to another through active involvement with issues that demand moral problem solving. Through this type of interaction, individuals are forced to rethink their positions on a moral issue. If they are mentally ready, they may discover some inconsistencies in their logic and modify their original reasoning about the issue. In situations like these, Kohlberg believes, individuals may form the basis to progress from one stage of reasoning to the next.

Barman and Cooney's three-step approach includes: 1) Motivational exercises; 2) Information expansion; and 3) Culminating activities. I have found this technique to be very effective.

My specific strategy is to:

- 1) Sensitize the students to the topic.
- 2) Help students identify their personal values.
- 3) Have them examine their values in relationship to those of others, and in group discussions, try to reach a consensus.
- 4) Have students apply their values in a decision making process.
- 5) Using a step-by-step decision making procedure, and their new understanding of their values, have students make a decision on a real and/or fictional but realistic, moral problem.

Active student involvement with the issues comes initially from a list of "Quick Value Judgments" that I present. From these impulsive reactions students are led through a sequence of progressively more complex issues, culminating in fictional, yet realistic case studies that present a moral dilemma relevant to students.

At important points along the way, we stop and examine the values that underlie the various options available. I emphasize the relationship between the often subtle values, and the overt acts in which they are manifest. Students are required to record the values they identify, their reactions and deci-

sions at critical points so a record of progress may be examined.

The frequent efforts to arrive at small group consensus create an environment wherein immature, or ill-considered values may be reviewed without adult judgment. Often students who have rarely considered these moral dilemmas benefit more quickly from listening to their peers than they would from a teacher. The patience, communication skills, and cooperative techniques necessary for reaching a consensus are invaluable assets gained by these young people.

From my approximate ten years' experience developing this unit, two very important points must be made.

1. It is imperative that the teacher *not* be judgmental of student responses. Students must feel free to explore their feelings without fear of condemnation. Remember, we are seeking process, not specific values.
2. It is necessary that students understand that the *values* identified, and *decisions* made during this unit *are subject to change*. They are *not* to be considered lifelong commitments. Students must realize they are not locked into any decisions that are made. Circumstances and values may change. Remember, we are seeking a means, not an end.

Bioethical decision making strategies can be incorporated easily into most any topic in the high school biology curriculum, but perhaps ecology and genetics, because of their personal and social impact, may be foremost choices. This particular lesson plan is designed to follow a genetics unit.

Preparation

Preparation for this unit takes two distinct directions. The teacher must prepare both him/herself and material for the students.

Initially, the best teacher preparation is a college level class in bioethical decision making. Given the unavailability of such a course, I would suggest several workshops and extensive reading, including the sources mentioned in this article.

Material preparation for students shall be our more immediate concern here. The following lesson plan calls for:

Quick Value Judgments: This is a list of briefly stated situations, each requiring a value judgment. The situ-

ation is described briefly and the students agree or disagree with the statement immediately and individually. The purpose is to expose students quickly to several different simple situations in order to heighten their awareness of the values implicit in their decisions.

Hammer Exercise: This is a list, in ascending order, of phylogenetic groups used similarly to the "Quick Value Judgments." Students are presented with the imaginary opportunity to hammer (kill with a hammer) each organism. At some point, as we ascend the order, this becomes a morally objectionable act. The point at which this occurs reveals something of the values of the participant. A continuation of this exercise allows the student the choice of hammering an organism previously not hammered or a non-living object. The teacher can manipulate these choices in a manner that clarifies the values implicit in such choices.

Case Studies: Case studies are various "real life," but usually fictional, situations used by students to identify their values and define concepts. They begin with an in vitro fertilization case (to help define when life begins), progress through a patient-in-a-coma situation (to help define when life ends), to a life and death problem of which patient shall receive the one available organ for transplant (to help identify values). These studies offer students bioethical dilemmas in sequence of increasing moral complexity and human significance. Numerous other case studies are available for students to select for use with the decision-making model. Some students prefer to write real case studies of their own.

The organ transplant study is sometimes called a "lifeboat ethics" problem because it is analogous to the situation in which the lifeboat has room for one more person without itself sinking, yet there are five people to save. Such studies may draw the ire of more conservative elements and the teacher may wish to exercise some discretion in the use of this or any other extremely controversial case study.

Decision-Making Model: Decision making strategies ought to include a step-by-step process to help the student learn a methodology by which a decision can be made. Many decision making models exist that provide for some degree of personal choice; Kieffer (1979) offers a six step model; Barman and Hendrix

(1983) outline an "instructional model" which includes the use of the "Bioethical Value-Clarifying, Decision-Making Model" developed by Jon Hendrix; and BSCS (1984) outlines a decision making model on page 45.

The decision making model used in the following unit was developed by Clague, DeDecker, Morgan and Renk (unpublished) during the 1985 National Science Foundation-sponsored "Honors Workshop on Human Genetics and Bioethical Decision-Making" at Ball State University. This step-by-step worksheet begins by defining the problem and listing five possible courses of action to solve it. The pros and cons of each choice are listed, and the courses of action are ranked in a preliminary order of desirability. The top ranked course of action is evaluated by comparing personal values with it. If the values in accordance outweigh the values conflicting with it, then this would be the decision of choice. If not, the same is done with the course of action ranked second, etc. After choosing a course of action, students rank, on a continuum, their confidence in this choice. Finally, students analyze the long-term consequences of their decisions.

Outline for Writing and Grading the Report: This details what the teacher expects in the final report and describes how the report will be graded.*

The Lesson Plans

Day One

Objectives: At the end of this lesson the student will be able to:

1. Acknowledge that an individual's values are his own and may differ from the values of others;
2. Identify his idea of what human life is compared to nonhuman life;
3. Define a moral/ethical problem.

Materials:

1. Quick Value Judgments list.
2. Hammer Exercise List.
3. Case study: *In Vitro* Fertilization.

Procedure:

The teacher shall:

1. Provide a definition for the terms "ethics," "bioethics" and "morality."
2. Explain briefly what individual values are and how they are developed.
 - A. Kieffer (1979) identifies these characteristics of values:
 1. Values indicate what is judged to be "the good."
 2. Values imply preference.
 3. Values are supported by rational justification.
 4. Values countenance strong feelings or intense attitudes.
 5. Values specify a course of action.
 - B. Students must understand that each person's values are unique.
3. Instruct students to develop a list of the personal values and definitions which they identify and definitions which they make as the lessons progress.
 - A. Title this list: "Personal Reference Sheet."
4. Sensitize students to value decisions from the list of "Quick Value Judgments."
 - A. Have students quickly indicate their position on each statement by thumbs-up/thumbs-down vote.
 - B. Discuss how decisions were made and why?
 - C. Students should note that their own personal value choices differ from the value choices of others.
5. Increase awareness of value significance using the "Hammer technique."
 - A. Students should note their own personal choices.
 - B. Use democratic methods in an attempt to reach consensus.
 - C. Discuss choices made and the value placed on living things and on living things vs non-living things.
6. Lead a discussion to generate (brainstorm) characteristics that distinguish human life from non-human life.
 - A. Each student is to include a personal definition on their Personal Reference Sheet.
7. Define a moral problem.
 - A. McConnell (1982) defines a moral problem as "... a situation in which there are moral considerations to support one action, say act A, yet there are moral considerations to support another ac-

tion, act B. Act A and act B cannot both be done, but it must be known which is more important morally—which is the right act."

8. Hand out case study and, as homework, assign students to make individual decisions and list their reasons relevant to the case.

Day Two

Objectives: At the end of this lesson students will be able to:

1. Identify personal values used to make a decision on a case study.
2. Identify in their own terms, "when they think life begins."

Materials:

1. Case study: Patient in a Coma.

Procedure:

The teacher shall:

1. Briefly discuss with students the results of their homework assignment.
2. Arrange the class into groups of five students and ask the group to come to a consensus decision on the case study assigned as homework.
 - A. Group should list the reasons supporting the decision.
 - B. Although group consensus will be requested, each student must not compromise his or her values.
 - C. These decisions most likely will not be the same for each group.
3. Conduct a full class discussion to identify what values were expressed in the reasons given for group choices.
 - A. Write the reasons given on the board.
 - B. As a conclusion, identify the values implicit in each reason given by the class.
4. Lead brainstorm session to generate characteristics that distinguish when human life begins.
 - A. List characteristics on board.
 - B. Each student is to include a personal definition on the Personal Reference Sheet.
5. Hand out the Coma case study and, for homework, assign students to make a decision and list the supporting reasons.

Day Three

Objectives: At the end of this lesson students will be able to:

1. Define in their own terms "when life ends."
2. Identify some personal values.

*Copies of these materials, or a floppy disk containing the Appleworks files for these materials, may be obtained from the author for a fee equal to duplicating costs, postage and handling.)

Materials:

1. Case Study: Organ Transplant Recipient Selection.

Procedure:

The teacher shall:

1. Briefly discuss with students the results of their homework assignment.
2. Arrange the class into groups of five students and ask each group to come to a consensus decision on the case study assigned as homework.
 - A. Group should list the reasons supporting the decision.
 - B. Each group should note dissent to consensus.
3. Conduct a full class discussion to identify what values were expressed in the reasons given for group choices.
 - A. Write the reasons given on the board.
 - B. As a conclusion, identify the values implicit in each reason given by the class.
4. Ask each student to write an opinion of "when life ends" on the Personal Reference Sheet.
5. Assign, as homework, the case study: Organ Transplant.
 - A. Each student should choose which individual on the list should receive the organ and why.
 - B. Include why others were rejected for the transplant.

Day Four

Objectives: At the end of this lesson the students will be able to:

1. Identify some of their values.
2. Understand a procedure for decision making.
3. Identify a moral/ethical problem.

Materials:

1. Decision Making Model worksheet.
2. Two Additional Case Studies.

Procedure:

The teacher shall:

1. Conduct a class discussion of the "lifeboat ethics" inherent in the assigned case study.
 - A. Option: Analyze the number of students choosing each fictional person on the transplant list. Discuss the implications.
3. Arrange the class into groups of five students and ask each group to come to a consensus decision on the selection of the individual for the transplant.
 - A. Each individual in the group should defend his/her choice and provide reasoning.

- B. Each group should list reasons to support their selection and reasons for not selecting others on the list.

4. Conduct class discussion of the consensus decisions.
 - A. List on chalkboard reasons given for group choices.
 - B. Note variations and discuss why they occur.
 - C. Recognize the legitimacy of each decision.
5. Summarize and identify both the desirable characteristics of those individuals selected for the transplant, and the undesirable characteristics of those not chosen.
 - A. Explain that if students agree that certain characteristics listed are desirable and others are undesirable, they have then identified some personal values.
 - B. Remind students to include these on their Personal Reference Sheet.
6. Introduce a "Decision Making Model" and explain its use.
7. Hand out the two new case studies. Assign students to use the decision making model to make a decision regarding one case study.
 - A. Students are to select one case that presents a moral/ethical problem for them.
 1. Students should be prepared to explain why it is a moral/ethical problem for them.

Day Five

Objectives: At the end of this lesson the students will be able to:

1. Apply their values in decision making.
2. Analyze a bioethical case study.
3. Recognize a moral/ethical problem.
4. Use a decision making model to justify a decision.

Materials:

1. Decision Making Model.
2. Several case studies.
3. Outline for Writing and Grading the Report.

Procedure:

The teacher shall:

1. Review the use of the decision-making model and answer questions about its use.
2. Briefly discuss decisions made on assigned case studies.
 - A. Outline any correlations or patterns that seem to emerge.

"This unit helped me to identify my own values, and it taught me to respect the values of other human beings. Bioethics must be taught every year."

3. Using the "brainstorming" technique, develop a class list of "Value" terms and phrases. Students can compare this list with their Personal Reference Sheet.
4. Assign: Bioethical Decision Making Report and explain the procedure for the report. Students are assigned to make a decision from one of the case studies and write a report following these directions:
 - A. Choose one case study from those provided, or write a case of your own, that presents a moral problem for YOU. Include this case study in your report.
 - B. Use the decision making model worksheet for your decision process.
 - C. Make a concluding statement, separate from the decision making model. Begin this statement as follows: "I believe (state your decision) is right because . . .". Defend your decision using your values and any other evidence you can find to support your reasoning.
 - D. Include your Personal Reference Sheet with your report.

Evaluation

Evaluation of the student's final report must be based on the student's ability to follow the procedure for writing the report, and the application of values and definitions listed on the individual student's "Personal Reference Sheet." (*Do not judge the decision made by the student!*) Always remember, the goal is process. Did the student understand and conscientiously follow the process?

I believe it is educationally important to provide an opportunity for students to write an evaluation individually and anonymously to help modify and/or support this unit. To conclude, these are a small sample of quotes from tenth grade college-prep student evaluations received by the author at the end of this lesson last year:

"I had never really sorted out my values or done anything like this before and I thought it helped me a lot."

On the decision making model where we had to figure out five courses of action, at first I thought on some of the decisions that there was no way I could come up with five, but once I really got into it and did some thinking I could. Before I would have had less choice."

"I really liked working together because you get more ideas and you can see the problems more clearly. I thought with the decision making model it was a lot easier to justify a decision, because you just had to go step by step."

"It treated us like adults and in the 'real' world. It also taught us to work with one another."

"This unit helped me to identify my own values, and it taught me to respect the values of other human beings. Bioethics *must* be taught every year."

"My parents and I talked about some of the case studies and together we decided as a family on our decision to solve the problem. This unit made it easier for me to talk to my parents about uncomfortable situations."

"In the case study I did, my parents, boyfriend and I did some role playing. That seemed to help me put myself in Susan's place alot better."

"This is an *excellent* unit because it made me dig deep down inside myself and find out what I really do value. Thanks for not influencing your values on us and helping me realize how lucky I am to be 'normal'—but not perfect."

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