Improving the Science Curriculum with Bioethics

BY CATHY LUNDMARK

Biology teachers are in a real bind. With the current emphasis on high-stakes standardized testing, they have less and less time to teach more and more information, leaving very little opportunity to ensure that students are learning what’s important.

“Look at how many times controversial [biomedical] issues make the cover of magazines,” says Carolyn Landel, education program manager for Washington Association for Biomedical Research (WABR), based in Seattle. “Kids want to know about these issues, but they don’t have the tools to evaluate them. When you give them the decisionmaking tools they need,” Landel continues, “kids get involved.”

Teachers are beginning to realize just how interested students get and how meaningful their subject becomes when they incorporate bioethical discussions into the curriculum, thanks in part to experiences that prepare teachers to effectively use ethics to teach science. Landel is the project director of Ethics in the Science Classroom, an innovative five-day professional development workshop WABR hosts each year (www.wabr.org/education/prodev.html), supported by funds from the Washington Office of the Superintendent of Public Instruction, and the National Institute on Drug Abuse at the National Institutes of Health (NIH).

The WABR workshop kicks off with a provocative keynote address by Bruce Fuchs, director of NIH’s Office of Education. Fuchs has been teaching ethics to graduate and medical students since the late 1980s and was influential in the development of curricular materials to help science teachers improve their courses (http://science-education.nih.gov/supplements). Most of the teachers who came to the first WABR workshop in 2000 had used the NIH materials in their classes.

“The National Science Education Standards were released before these [supplements] were, but they were ignored or addressed superficially by textbook publishers,” Fuchs explains. “We wanted to create life science materials that incorporated...standards-based practices, so that they not only look different, they are taught differently. The national standards encourage science to be taught in a social context, so students learn to use science and apply it to ethical problems.”

Teachers who attend the WABR workshop come from high schools and middle schools located mostly in Washington, though some come from neighboring states as well. “We get a variety of teachers,” says workshop leader Lola Szobota. “Many of them tend to be risk takers who are creative and willing to do something different in their classrooms.” Szobota herself is a high school teacher, and she gained a great deal of experience as a teacher trainer in the use of ethics from the Kennedy Institute of Ethics at Georgetown University, and from a program in New Jersey. “These teachers are willing to try to engage students in classroom discussions that are controversial, but they need structure, they want to do it the right way,” As district science supervisor at Northern Valley Regional High School District, New Jersey, Szobota also trains teachers through a three-day in-service program, New Choices, New Responsibilities: Ethical Issues in the Life Sciences, sponsored by the New Jersey Science Education Leadership Association and Roche Pharmaceuticals.

The first day of the WABR workshop is spent laying the groundwork of what ethics is, what science is, and what questions each can and can’t answer. Teachers are given a six-step framework for how the two are used together to evaluate a bioethical issue, and they spend the next three mornings seeing how it is applied to various case studies, in genetics (day 2), addiction and drug abuse (day 3), and research using animal subjects (day 4). Afternoons are spent working in groups, exploring case studies in detail to see how discussions can be handled in class, how these teaching methods are aligned with the national standards, and what students are expected to learn. On the last day workshop participants present overviews of the studies they’ve examined.

“The case studies cover a host of issues,” Landel says, “from genetic testing, cloning, stem cells, and the use of human subjects for research to the environmental issues that are important in a particular region. We look at anything with an edge of controversy and make sure teachers get the tools they need to handle an issue and negotiate a discussion.”

How do teachers fit another topic into an already packed curriculum, particularly when they’re under pressure to “teach to the test”? “It’s a mistake to think of this as supplemental,” Fuchs insists. “What we offer is a replacement series; we want teachers to try one in place of an existing unit and see if it improves student learning or makes materials more meaningful to students.”

“People need a reason for learning facts,” Szobota says. “Facts are just facts until you attach them to real people and real situations.” Landel echoes the thought: “The Tuskegee syphilis study, for example, gives students a motivating reason to learn anatomy and physiology.” The benefits of this kind of learning go well beyond mastering information for a test; students gain life-long skills from a conceptual understanding of science and from thinking about issues that matter to them.

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