Pioneering in STS: The Trail Blazing of Nancy Van Vranken

by Sara F. Anderson

In the Spring 1988 issue of the Teachers Clearinghouse *Newsletter*, Nancy Van Vranken observed how the view of STS she noted at the NSTA conference that year contrasted with that at TLC III (the third Technological Literacy Conference, the name used for these conferences in their early years). At NSTA, STS was evident in sessions specifically classified as such and in many other content and pedagogical sessions. In these sessions, focus on STS "was a vehicle for teaching science and basic concepts in a more interesting or . . . relevant way."

Nancy made clear her preference for using STS content as a vehicle for making the study of science and technology more enticing to students, many of whom, she noted, do not automatically buy into education. One reason for her view is that at that time, STS was used as the focus for courses for less able students. Nancy stressed that STS was not watered-down science, nor did using an STS approach change the principles or processes of science. Good science teachers had always used it, for example, by mentioning the hole in the ozone layer when teaching about atmospheric gases, or including the bomb when presenting nuclear fission.

In the nearly 20 years since then, STS has emerged as a field of study, especially at the college level. Students take courses, and even major, in STS. These courses use a wide variety of sources of information to engage students in exploring the ways in which technological innovation is used by and affects societies. Thus, STS has become a subject, not in the trivializing way Nancy feared it was in 1988, but as a multidisciplinary field of student demanding understanding of scientific principles and processes as well as of cultures and societies and how they operate.

On the other hand, Nancy maintained, STS at the elementary and secondary levels can and should still be used as a vehicle for "making the principles and processes of science and technology more palatable and comprehensible to today's student[s], and thereby available to all, providing knowledge essential for an educated voting citizenry."

STS in Peace and War

In an earlier article (in the May 1984 issue), Nancy reported on presentations at an Independent School conference on "Teaching About Issues and Concepts of A Nuclear Age." An extensive summary of her report will enable us to see how Nancy's work is relevant to us today. Two of the speakers mentioned the kind of educational goals teachers need to adopt when teaching complex information and complex issues. Andrew Sankowski, Head of the Resource Center at Columbia Teachers College Milbank Memorial Library stated that our goal should be "to lead students to analyze alternatives, rather than force them to choose between extremes." Betty Reardon, Coordinator of Teachers College's Peace Education Program, listed four learning objectives appropriate for the study of *all* issues: 1) controversy, 2) problem analysis, 3) moral

decision-making, and 4) nurturing and encouraging imagination and creativity. The latter is essential so students of all types can imagine and invent a new world.

A subsequent speaker, Professor Willard Jacobson of Teachers College, mentioned some aspects of studying nuclear issues that make fulfilling that goal difficult. One is the problem of scale, of helping students grasp the enormity of megaton bombs and the destruction they can potentially cause. A second is the fact that nuclear technology is with us forever. Nancy wrote, "These two issues combined make it necessary for us to prepare children for the real world of the future in which they must live."

Reardon emphasized that the nuclear question must be put in the context of the global situation, national and global security, and the ethics of developing and using nuclear weapons. She went on to emphasize the importance of getting to know about the Russians' views and values and responsibilities in the world.

Kathleen Karnet of the Intercommunity Center for Justice and Peace suggested that teachers can include concepts related to peace and justice. She commented on the importance of tailoring the content to the oral and chronological age of the students and to avoid an unpatriotic view of peace.

Nancy's observation that nuclear issues are permanent was certainly right. Here we are in 2007, facing even greater nuclear threats, with an even greater need to learn about our adversaries, and devise ways to enable young people to grasp the complexities of both the technology and the social, political, and economic contexts in which those technologies are being employed.

But how, you are probably asking, can we do this when we are under pressure to prepare students for standardized tests? Let's look at Sankowski's goal of leading students to analyze alternatives instead of choosing between two extremes. The Virginia Standards of Learning for physics state that students "will investigate and understand that extremely large and extremely small quantities are not necessarily described by the same laws as those studied in Newtonian physics." One such small quantity is the atomic nucleus. The Standards for Social Studies include for World History that "the student will analyze major historical developments of the 20th century, [including] new technologies, including atomic power, and their influence on the patterns of conflict; . . . the beginning and end of the Cold War and the collapse of the Soviet Union."

Clearly, a teacher in Virginia could incorporate the content and goals described in Nancy's 1984 article and also meet the Standards of Learning listed above. A specific instructional objective might read, "The student will be able to list four goals in nuclear weapons development of the Soviet Union, and four goals of the United State, and write a position paper for one side or the other delineating at least four policy options that side might have adopted, evaluating the one that was actually chosen."

To achieve this objective in a realistic context, a simulation could be created in which the class is divided into sides, one Soviet and one U.S., to research and present authentic information from

the era. They would need to locate both scientific and diplomatic sources to find out what the options were, which were considered, and the reasons why one policy was chosen.

Reflections

As I searched my file of back issues of the Clearinghouse *Newsletter*, I was struck by several thoughts:

• In 1984 scientists were speaking out about the truly extensive damage a nuclear confrontation would have, arguing against the view that survival of such a confrontation would be possible. In 2007, there is growing concern that nuclear weapons could be used by one of the increasing number of states possessing them.

• The political, economic, and cultural context in which nuclear issues are discussed is vastly more complex than in the bipolar world of the 1980s. The educator's task of making these issue somewhat comprehensible to young people is correspondingly more difficult.

• Despite, or perhaps as a result of that increasing complexity, the mass media present issues as two-sided, pro *v.* con, thus oversimplifying them and obscuring the complexities. Sankowski's call for enabling students to imagine various solutions to multisided issues is thus more important, yet more difficult than it was in 1984.

• Nancy Van Vranken was speaking out and disseminating information about nuclear, climate, pollution, and other issues at a time when most others in education, industry, and government were ignoring them or questioning the validity of the science. We now have two and a half decades' worth of additional research most of which supports the basic conclusions available in the 1980s. We must delay no longer. As educators, it is our duty to engage our students in acquiring research and analytical skills, group process techniques, and critical thinking habits of mind to enable them to become more effective in confronting issues head-on than was our generation.

(*Editor's Note*: Sara Anderson's reminiscences about Nancy Van Vranken were presented at a special session at the Twenty-Second Science, Technology, and Society Meeting (STS-22) at the Radisson Hotel, Baltimore, MD, 3 February 2007.)