Educational Leadership / Service #25

Connecting Science and Citizenship

Teaching and Learning About Science in a Science/Technology/Society (STS) Context

Project Mission

This planning grant is funded as one of the UMBC Straus Foundation initiatives. The planning grant is designed to bring together and educate a core interdisciplinary faculty team who will provide the leadership in embedding Science/Technology/Society (STS) tenets in their courses and create a strategic action plan for implementing an STS program at UMBC.

Key Tenets of Science/Technology/Society (STS)

- The most powerful learning experiences are those which actively involve students with questions, problems, and issues related to their daily lives.

- Understanding involves more than memorizing information. It is in the application of knowledge that true understandings emerge.

- Students who are challenged to use what they know are empowered to become active and involved citizens better able to make informed decisions.

The Project Plan

A Science/Technology/Society (STS) workshop series is planned for the 1997-98 academic year. These workshops will be held in November and March. 20 faculty stipends are available for the participants in the workshops. These workshops are designed to provide STS insights and experiences and create a support system for faculty as they develop STS facets in their own courses.

Invitation and Application Process

All interested faculty and administrators can contact either Phillip G. Sokolove - Department of Biology - sokolove@umbc.edu or Susan M. Blunck - Department of Education - blunck@umbc.edu for additional information and an application.

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FAQs About Science/Technology/Society (STS)

What is Science/Technology/Society (STS)?

Science/Technology/Society (STS) is a set of teaching strategies that have been shown to be effective in leading students to approach and to learn about science in the context of their lives and through application of scientific concepts and principles to real-world problems. Over a period of almost three decades, STS approaches have been successfully implemented at the K-16 levels. Colleges and universities are coming to recognize the power of STS as a vehicle for teaching science in a variety of contexts linked to many different disciplines. This student-centered, problem-based approach to teaching stimulates critical thinking and informed decision making in students.

Why consider using an STS approach?

Many college and university students, science majors as well as non-majors, fail to understand the ways in which science and technology connect to their daily lives and personal decision-making. A Science/Technology /Society framework that promotes the teaching and learning of science in the context of human experience can encourage such connections while at the same time allowing science concepts and processes to be learned through application to real-world problems. The STS movement has been promoted for over two decades at K-16 levels. STS has been endorsed by the National Science Teachers Association both as an appropriate science education context for all students, and as a means of preparing students for current and future citizenship roles. The STS emphasis is on inquiry and informed decision making in the real world of the student where science and technology are significant components. Research has shown that learning science in an STS context results in students with improved creativity skills, a more positive attitude toward science, and the ability to apply scientific concepts and processes in their daily living and in responsible personal decision-making.

How does STS work?

In an ideal STS program, learning is student-centered and opportunities are provided for students to extend beyond the classroom to their local communities. STS students learn about science not merely by memorizing facts or algorithmic approaches to problem solving, but rather by using their understandings in identifying local, regional, and national problems, planning for individual and group activities that address them, and moving to actions designed to resolve the problems. A basic goal of STS efforts has been the production of informed citizens who are capable of making crucial decisions and taking action on current problems and issues.

Is any STS teaching going on at UMBC?

In all likelihood, there are many UMBC faculty using STS approaches. The goal of this project is to bring these people together to learn from one another. In a recent freshman honors biology course at UMBC, students were asked to pose a question or set of questions centered on a significant biological problem with local, statewide, regional, national or worldwide implications. In their team-authored final project they were expected: (a) to describe the current state of knowledge related to the problem (citing supporting evidence), (b) to suggest two or more options for dealing with the problem, (c) to discuss the societal implications of each option, including the social and monetary impact (costs and benefits), and (d) to select an option for future action to correct the problem along with an evidence-based justification of their choice. (Example question: Why has there been a drastic decline in the bluecrab harvest in the Chesapeake Bay in the last 100 years? What, if anything, can be done to restore the bluecrab population and to increase future harvests?) The point should be made that though this is an example from an honors/science course, STS is designed to be used with students in all disciplines. Through this project, other STS stories like will come to life and be told.