Science

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Societal Issues at the Heart of the Science Curriculum

Every day we hear complaints that schools lack relevance. One way to capture the excitement and relevance of the scientific enterprise is to focus on current issues. According to one estimate, over 90 percent of all issues facing our society today are related to or based on science and technology. If this estimate is accurate, teachers and schools using such issues as organizers are eliminating many problems caused by standard programs that are less relevant and contribute much to student disinterest in science and technology.

Schools organizing their programs around issues report that students learn as much (and, in some cases, more) about typical concepts, facts, and terms while gaining in other ways. Greater student involvement (more time on science) becomes evident as more students elect science study; activity increases within communities on science/technology issues; and community resources and leaders become involved in the schooling processes. As a result, more students *use* their skills and information from science classes in daily living.

Goals in a variety of areas are approached more directly and with greater ease when issues become the organizer and decision making, application, and personal use become the ends. In fact, teachers who organize their instruction with issues often *begin* with applications rather than hoping they can eventually end up with them.

Eva Kirkpatrick's 9th grade course in Imperial, Missouri, provides a timely example. Her students decided to investigate the issues involved in using a public landfill for city development. After some difficulties, a year-long investigation and a subsequent trial, which the students won, a judge was imprisoned and a scandal uncovered. The students learned more basic science from this experience than would have been possible had they followed a standard course outline.

At Hazen High School in Renton, Washington, teachers weave a societal problem into each chemistry unit and use it to introduce new chemistry material. Students discuss the issue, how to collect data, and find solutions. Often, at the end of a unit, students are able to find how the issue was actually resolved, comparing their ideas to those of others who had opportunities for action.

When teachers consider departing from standard textbooks and course outlines, they are often concerned about how students will perform on standard examinations. The information seems clear on this point. Measures of the acquisition of science concepts and knowledge show that students gain as much in issue-centered courses as in topic-centered courses.

The gains favor issue-centered science, however, when we consider the positive changes in students' attitudes, their ability to make decisions, and their ability to understand, appreciate, and use science later on.

For education leaders concerned with the affective domain, the development of skills such as decision making, and with students' ability to use science actively and wisely, the evidence is clear: teachers who place science-related societal issues at the center of the science curriculum attract more students to science, and students who learn and do more with science are better prepared for the future.□

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Social Studies

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Critical Thinking

A serious and longstanding contradiction is that there has never been a goal so persistently promoted yet so largely missing from social studies lessons as the development of students' ability to think critically. Here is a perennial trend that seems never to settle into practice. It is now receiving a new wave of interest and support,[1] but, if the past predicts, we should not expect much in the way of successful implementation. What accounts for this predicament, and how might it be overcome?

Underlying Conditions

Three conditions may help to explain the poor implementation record of critical thinking skills. The first is definitional. Critical thinking is not a set of discrete skills that add up to a composite labeled "critical thinking." Rather it