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A New College Science Prize

TO START THE NEW YEAR, *SCIENCE* IS PLEASED TO ANNOUNCE THE “SCIENCE PRIZE FOR INQUIRY-BASED INSTRUCTION” to highlight outstanding “modules” for teaching introductory college science courses that can readily spread to other settings and schools. Therefore, a unit can neither be unusually expensive nor require highly specialized expertise. To be eligible, a module must provide a coherent piece of coursework in a field such as biology, chemistry, physics, or earth sciences and require 8 to 50 hours of student effort. It should also be free-standing: that is, suitable for teaching as a discrete unit, independent of other modules in the course. How do inquiry-based science modules differ from other science lessons, and why does *Science* care enough about them to create a special prize?

Inquiry-based classes focus on activating students’ natural curiosity in exploring how the world works, differing from traditional lectures that focus on transmitting facts and principles derived from what scientists have discovered. Inquiry-based teaching is often associated with hands-on activities. But not all hands-on activities involve inquiry. Consider the laboratory work that traditionally accompanies an introductory college science course. As a science major, I spent three afternoons a week in such laboratories throughout my first 2 college years. Most of us who later became scientists recall these laboratories as tedious “cooking classes,” where we learned to follow directions. True, we encountered various pieces of scientific apparatus, such as measuring devices for weights and liquids, and we learned how to keep a laboratory notebook. But we gained neither any real understanding of the nature of science nor experience in generating and evaluating scientific evidence and explanations—two central elements of a modern definition of “science education.”* Many college laboratory exercises remain deficient in precisely these ways today.



Science is looking for lessons in which students become invested in exploring questions through activities that are at least partially of their own design. Instead of a typical laboratory exercise that begins with an explanation and results in one correct answer, an inquiry-based lesson might begin with a scenario or question and then require students to propose possible solutions and design some of their own experiments.

In addition to honoring the 12 winning modules, we will attempt to disseminate them as widely as possible. To this end, each winner will write a brief essay describing the module, to be published in *Science*, with complete details in the supporting online material that accompanies the printed article. Direct applications from the course organizers are welcome, as are nominations from former students and colleagues. Different submission forms have been provided for these two groups, posted at <http://scim.ag/inquiryprize>, along with instructions describing the information required by our judges. The deadline for receiving the short nomination form is 28 February 2011; the longer application form is due from the course organizers on 15 April.

The 1990s science education standards movement in the United States revealed that teachers at the precollege level cannot be expected to teach “science as inquiry” unless they themselves have previously participated in such inquiry as students. Incorporating inquiry into college science teaching will thus be critical for the future teachers of science in all nations. But it will also be crucial for many other adults, because successful modern societies need large numbers of citizens who are skilled, rational problem-solvers—both in the workplace and in their daily lives. Every society also requires citizens who understand the nature of science and value “science as a way of knowing” about important issues. In fact, our new award has been stimulated by the fact that the world badly needs a revolution in science education—a revolution that must begin at the college level.

— Bruce Alberts

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*B. Alberts, *Science* 323, 437 (2009).