

Editorial

“The Most Terrifying Problem in American University Education...”

C. C. Chancey
University of Northern Iowa
Cedar Falls, Iowa 50614-0150 USA

“The most terrifying problem in American university education is the profound lack of scientific literacy for the people we give diplomas to who are not scientists or engineers. The hidden Achilles’ heel is that while we’ve found ways to educate scientists in the humanities, the reverse has never really happened. Everybody knows this, but nobody wants to do anything about it.”¹

Leon Botstein, president of Bard College

President Botstein serves as the music director and conductor of the American Symphony Orchestra, so he speaks as an artist. Bard College, located 90 miles north of New York City, typically attracts students interested in the arts and humanities, and the sciences do not loom large. The general education requirements at Bard historically have required only one semester of a science.

To help redress this imbalance, Bard is running a test program that requires every one of its 480 freshmen to take an intensive science course during the January inter-session between the fall and spring semesters. The goal is to emphasize hands-on science activities rather than lectures. Bard students are immersed for six hours each day for 2½ weeks, 60 hours total.

Dr. Botstein hopes that these activities will break through students’ apathy toward science and help them to be more engaged citizens in public policy debates involving science and technology. This is



Phil Mansfield for the New York Times. Freshmen at Bard College spent part of their winter break in the laboratory, participating in a mandatory new science course.

the first year of the program, and determining whether it is successful will require several years’ efforts.

Bard is to be commended for its attempts. Inquiry and activity-based science courses are the best way to learn science—maybe the only way.

Education research on learning shows that science lectures, even engaging lectures, do not significantly help students become active learners. This should not surprise professional scientists and engineers. We know that science is a *process*, not a block of facts.

Sometimes we as scientists forget what we know in our bones: that science is *doing*. It is easy to be shocked at the level of scientific ignorance in society, and it is especially galling in college graduates. The urge is to tell people what they should know. Let us resist this urge. Only activity-based and inquiry-intensive science courses can begin to correct the science deficit in our society.

¹ Lisa W. Foderaro, “An Infusion of Science Where the Arts Reign,” *New York Times* (January 21, 2011)