

Hands-Off Science

If you're fortunate enough to attend this year's annual meeting of the National Association of Biology Teachers in Charlotte, you'll hear lots of stimulating discussions about hands-on science and quality laboratory activities. High school biology teachers have done a remarkable job of emphasizing such activities during the past decade or so, despite budget cuts and inadequate facilities. Unfortunately, many colleges and universities have taken a different approach: Slowly but surely, they have eliminated hands-on laboratories in their core curriculum (i.e. introductory) courses. Two recent reports¹ document the story:

Between 1964 and 1993, the percentage of colleges and universities with natural science requirements that demanded some laboratory work dropped from 80% to 30% (during the same period, the average credit-weight of natural science requirements at colleges and universities dropped by half). Despite claims that laboratories are "critically important" and that "biology should be taught as biology is done," meaningful laboratories and hands-on experiences have all but disappeared from the core curriculum.

At many schools, laboratories and field trips—each traditionally an important part of virtually all biology courses—have been replaced by activities such as "recitation periods"

and "problem-solving" sessions. Administrators and faculty try to make these activities sound credible by claiming that they involve skills such as "critical thinking." Whether they do, of course, is debatable. One thing that the substitute activities do not involve is hands-on work with and a self-discovered appreciation of living organisms.

Many colleges no longer require nonscience majors to take the same introductory courses that science majors take, allowing them instead to take "non-majors" courses such as "rocks for jocks," "baby biology" and "physics for poets." These watered-down courses seldom involve laboratory work and are often a joke, even to students. Moreover, these courses fail to provide students with a basic understanding of science. According to the National Science Foundation, most students in these programs are left "homeless in the universe."

Teacher-education programs at colleges and universities remain a fundamental part of the problem. Little has been done to address the vicious cycle that exists between poor teacher-education programs and weak science education in grades K–12.

These reports document our dirty little secret: namely, that science departments at many colleges and universities have largely abandoned their core curriculum courses. These courses have become orphans, often given to part-time faculty or assigned as punishment to faculty who teach poorly, do not publish, or fail to win grants. This produces the sad reality: Although core curriculum courses are the most important science courses offered by colleges and universities, faculty at

many schools are insulted by being asked to teach such courses.

University faculty should learn a lesson from K–12 science teachers: We should re-energize our core curriculum courses with meaningful laboratories. Nothing should excuse us from having students discover—first-hand—the wonder of life.

Randy Moore
Editor

Letters

PopGenetics on WWW

Dear Editor:

This letter is to inform anyone who might be interested that *PopGenetics*, the Macintosh software that illustrates some basic population genetics concepts (*The American Biology Teacher*, April 1995, pp. 212–219), can now be downloaded from the World WideWeb at the following location: <http://www.seinan-gu.ac.jp/~djohnson/PopGen>.

Thank you.

David A. Johnson
Department of Biology
Samford University
Birmingham, AL 35229

All material that appears in *The American Biology Teacher* (including editorials, letters, articles, etc. . . .) reflects the views of the author(s) and/or advertisers, and does not necessarily reflect the views of the National Association of Biology Teachers.

¹ *The Dissolution of General Education: 1914–1993*, available for \$12.00 (\$6.00 for members) from the National Association of Scholars, 575 Ewing St., Princeton, NJ 08540-2741; *Shaping the Future: New Expectations for Undergraduate Education in Science, Mathematics, Engineering, and Technology*, available free from the National Science Foundation, Undergraduate Education Division, 4201 Wilson Blvd., Arlington, VA 22230.