Evaluation and the Pilot Curriculum Experiment

The Pilot Curriculum is a long-range experiment by means of which Penn’s College of Arts and Sciences seeks to acquire information to be used in determining the configuration of its next undergraduate curriculum. Developed by the Committee on Undergraduate Education (CUE) during the academic years 1998 to 2000 and introduced with freshman classes starting in 2000, the experiment tests an alternative to the College’s current general education curriculum with a subset of students in each class. By tracking and evaluating the academic programs of those students over their entire undergraduate careers compared with students enrolled in the regular curriculum, the experiment seeks to understand the effects of the two curricula on the educational choices students make and on their academic achievements over the course of their entire undergraduate careers.

Experimental Design

It is somewhat unusual for a college to implement a new curriculum on an experimental basis for subset of potential students. It is, perhaps, unique that the College at Penn chose to implement this curriculum as a true, randomized experiment. Each May starting in 2000, the College sent brochures to the approximately 1600 matriculating freshmen describing the Pilot and the regular curricula and inviting them to apply for the Pilot Curriculum or to indicate that they would pursue the regular curriculum. The brochure explained that 200 students admitted each year to the Pilot Curriculum would be selected at random from the applicants. Comparison of the applicants versus the non-applicants revealed no significant differences in the standard academic indicators (SAT-V, SAT-M, a “Predictive Index” computed by the Penn Admissions Office to predict students’ first semester GPAs). No bio-demographic differences (sex, ethnicity, etc.) were evident except for a slightly higher proportion of first-year Pilot applicants whose country of origin was outside the United States.

Each year, the goal was to recruit a pool of 400 applicants, from which to randomly select 200 for the Pilot Curriculum and 200 for the primary control group, namely, those who applied for the Pilot Curriculum but who were not selected at random. The selection method was in each year by simple random sampling (without blocking).

Although the virtues of a randomized experiment will be evident to many, it is worth emphasizing what this methodology accomplishes. If we had merely selected the first 200 applicants in each cohort and compared them with all other students in their cohort, any differences we observed in their educational outcomes could potentially be attributed to differences in such things as attitudes, motivations, and abilities that existed prior to their arrival at Penn. On the other hand, since participants in the Pilot Curriculum were randomly chosen from among all who applied, differences between them and the applicants who were not chosen can be attributed only to their differing experiences at Penn.

Among the educational outcomes we have been interested in studying are the following:

How do students respond to the types of general requirement courses that distinguish the two curricula? Are the general education courses in one curriculum more effective that those in the
other in helping students shape interesting and coherent programs of study through the combination of those courses, their major, and their free electives?

Are the general education science courses in one curriculum more effective than those in the other in promoting science literacy, especially among non-science majors?

Does one curriculum enable academic advisors to be more effective in guiding students to make the most of the tremendous educational opportunities available to them at Penn?

Do the undergraduate careers of students in the two curricula exhibit different patterns of course choices, including the majors and other program options students choose and the use they make of their free electives?

Do students in the two curricula graduate with different attitudes toward their educational experiences or different appraisals of their educational gains?

Does a requirement that students engage in research enable students to take best advantage of the educational opportunities offered at a research university and lead students to create stronger educational programs for themselves?