

## WHAT MATTERS IN COLLEGE

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Most faculty lounge discussions of educational matters are not exactly models of rigorous logic. The “everyone knows” argument offered with no substantiation whatever is perhaps the most common gambit (“Student evaluations don't mean anything—everyone knows the highest student ratings always go to the easiest graders”), and the straight line through one data point is a close second (“Herman Frobish in Mechanical Engineering published 18 papers last year and also won an outstanding teaching award, which proves that the best researchers are also the best teachers.”)

If you occasionally get into discussions about education and would like to buttress your arguments with something a bit more substantial, I recommend that you keep within easy reach a monumental work by Alexander Astin entitled *What Matters in College*.<sup>1</sup> No single data point here! Astin collected longitudinal data on 24,847 students at 309 different institutions and determined the influences of a host of institutional characteristics on the students' college experience. The data include 146 input variables that characterize the entering students, including demographic measures, information about parental education and socioeconomic status, precollege academic performance measures, and self-predictions of a number of outcome variables; 192 environmental variables relating to institutional and faculty characteristics, including measures of the size and type of the institution, faculty demographics and attitudes, institutional emphasis on research, and the nature and extent of student-faculty and student peer group interactions; and 82 outcome variables, including measures of academic achievement, retention, career choice, self-concept, patterns of behavior, self-reported growth in skills, and perceptions of and satisfaction with the college experience.

Several results that I find particularly noteworthy are listed below. All of the cited correlations are positive (unless otherwise noted) and significant at a level  $p < .0001$ .

The quality of the college experience is strongly affected by student-faculty interactions. The frequency with which students talk with professors outside class, work with them on research projects, assist them in teaching, and visit their homes, correlates with student grade-point average, degree attainment, enrollment in graduate or professional school, every self-reported area of intellectual and personal growth, satisfaction with quality of instruction, and likelihood of choosing a career in college teaching [pp.383-384].

A frequently debated issue is whether institutional size affects educational quality. Astin's findings indicate that smaller may indeed be better. Smaller enrollments and lower student/faculty ratios both correlate with satisfaction with instructional quality, enrollment in

graduate school, interest in college teaching careers, and self-reported increases in overall academic development, cultural awareness, writing skills, critical thinking, analytic and problem-solving skills, leadership skills, public speaking ability, and interpersonal skills [pp. 326-329]. The better showing of smaller institutions is undoubtedly due in part to the greater incidence of personal student-faculty contacts at such institutions, suggesting the desirability of trying to increase such contacts at large universities.

Astin concludes, however, that as important as the student-faculty relationship may be, "...the student's peer group is the single most potent source of influence on growth and development during the undergraduate years." [p. 398] Frequency of student-student interactions (including discussing course content with other students, working on group projects, tutoring other students, and participating in intramural sports) correlates with improvement in GPA, graduating with honors, analytical and problem-solving skills, leadership ability, public speaking skills, interpersonal skills, preparation for graduate and professional school, and general knowledge, and correlates negatively with feeling depressed [p. 385].

Many of the study findings specifically point to the benefits of cooperative learning—students working in teams toward a common goal. Frequency of group work has positive correlations with most areas of satisfaction, all self-ratings, and all areas of self-reported growth except foreign language skills. Tutoring other students—which may be done formally but also occurs in a natural way when teams of students work and study together—has positive correlations with all academic outcomes and with choice of careers in college teaching [p. 387]. As Astin notes, "Classroom research has consistently shown that cooperative learning approaches produce outcomes that are superior to those obtained through traditional competitive approaches, and it may well be that our findings concerning the power of the peer group offer a possible explanation: cooperative learning may be more potent...because it motivates students to become more active and more involved participants in the learning process. This greater involvement could come in at least two different ways. First, students may be motivated to expend more effort if they know that their work is going to be scrutinized by peers; and second, students may learn course material in greater depth if they are involved in helping teach it to fellow students." [p. 427]

A number of results illustrate how emphasis on research at an institution affects the quality of that institution's instructional program. Astin's conclusion is that "Attending a college whose faculty is heavily research-oriented increases student dissatisfaction and impacts negatively on most measures of cognitive and affective development. Attending a college that is strongly oriented toward student development shows the opposite pattern of effects." [p. 363]

A disturbing finding is that majoring in engineering correlates negatively with students' satisfaction with the quality of their instruction and overall college experience and positively with feeling overwhelmed and depressed. "Clearly, these findings indicate that the climate characterizing the typical institution with a strong emphasis on engineering is not ideal for student learning and personal development." [pp. 360-361]

In the concluding chapters of the book, Astin proposes possible solutions to the educational quality problems raised by his study, suggesting that the first step is having an

institutional leadership that understands the problems and is willing to do something to deal with them. “As long as faculty in the research universities are expected simultaneously to perform research, teaching, advising, university service, and outside professional activities, teaching and advising will continue to receive low priority.” He proposes negotiated contracts with faculty members that would provide for a better institutional balance among the different functions of the professoriate [p. 421]. He also suggests that curricular planning efforts will pay off better if they focus less on formal structure and content and put more emphasis on pedagogy and other features of the delivery system [p. 427].

This brief synopsis—which is intended only to whet your appetite—should raise all sorts of questions in your mind about the data and statistical methodology that led to the stated conclusions, how possible variable interactions and competing effects were accounted for, and what else Astin discovered. I encourage you to get the book and find the answers.

## **Reference**

1. A.W. Astin, *What Matters in College: Four Critical Years Revisited*. San Francisco, Jossey-Bass, 1993.