The Impact of College on Students: Myths, Rational Myths, and Some Other Things That May Not Be True

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Academia clings to several myths about higher education and its effect on students. This article outlines 10 of these popular myths–myths about effective teaching styles, indicators of quality education, and the value of faculty research for undergraduate education, to name a few. The authors cite extensive research calling these myths into question and challenge readers to rethink assumptions about higher education.

This paper is about the mythology that surrounds many popular notions of how college influences students. By mythology we are not talking about mystical and often beautifully lyrical notions of the earth suspended on the back of a giant tortoise or of a sun god that daily drove his war chariot from east to west across the sky. Rather, we are talking about what could be called the rational myths of higher education. Rational myths are unsubstantiated notions about college and its impact on students, myths that seem so axiomatic and logical that academics as well as the broader public assume them to be true. We're not going to try to *convince* you that these assertions are myths–we have no naive notions that we can change a great number of minds. After all, the academy has its own culture with its own set of dearly held cultural beliefs and rational mythologies.

No, the most we can hope for is that you might begin to question some of these rational myths in the face of evidence that does not support them. And, possibly, you might see when and how they can be misleading and dysfunctional in terms of how we think about undergraduate education.

Let us turn to a discussion of some of these rational myths.

Myth #1: Changes in test scores during college reflect the impact of college.

Perhaps 90% of all serious assessment efforts in higher education measure changes in students on some variable (e.g., critical thinking, moral development, cognitive development, or abstract reasoning) over a specified period of time (e.g., freshman year to senior year). Unfortunately, things other than college can influence change and development and confound our results (Astin, 1970a, 1970b; Pascarella, 1987). For example, many of the outcomes along which we like to measure the impact of an undergraduate education (e.g., cognitive development, critical thinking, and moral reasoning) are developmentally based. This means students get better simply by getting older, the vintage effect. (A nice thought for those of us who thought aging just meant more fiber in our diets.) It also means that people who don't go to college may also be changing–perhaps just as much as those who go to college. It's almost impossible to tell from simple change scores without a noncollege control group.

The lesson to be learned is that the fact that students mature and change during college doesn't mean that this change is caused by college attendance. And perhaps we should temper our claims from such evidence. Similarly, if people do not change or grow on certain dimensions during college, it doesn't necessarily mean that college isn't having an impact. Now we know this sounds paradoxical, perhaps even impossible. However, we would remind you that nothing in life is what it seems–with the possible exception of professional wrestling. Consider research on gains in quantitative skills during college. Most evidence suggests that college graduates, in general, leave college with roughly the same level of quantitative skills they had when they left secondary school. However, students whose formal education stopped with high school tend, over the same period of time, to lose many of the quantitative skills they had at high school graduation (Wolfle, 1983, 1987). Thus, on this dimension and perhaps many others, college has an important impact in anchoring development and preventing its retrogression.

Myth #2: College merely socializes adolescents to middle-class status. It has little or no unique impact on student development or maturity.

Since about 1975 there has been a growing concern with estimating the *net* or *unique* influence of college on student development and maturity. The results of this research are unequivocal in suggesting that, over the same period of time, col-

lege students make greater changes on a broad range of outcomes than similar individuals whose formal education ends with secondary school. These include (a) verbal and quantitative skills, (b) oral and written communication, (c) critical thinking, (d) reflective judgment, (e) intellectual flexibility, (f) principled reasoning in judging moral issues, (g) value placed on aesthetic and intellectual matters, (h) social and political liberalism, (i) acceptance of nontraditional gender roles, (j) intellectual orientation, (k) internal locus of control, and (l) a series of habits that enhance continued learning (e.g., reading, continuing education, and participation in cultural events).

The bottom line here is that college may indeed function to socialize adolescents into middle-class status, but the evidence clearly suggests that college does considerably more than allocate status with a bachelor's degree. It facilitates a broad range of desirable changes that don't occur to the same extent to similar individuals who don't attend college.

Myth #3: Institutional resources and prestige equal educational quality.

One of the most persistent rational myths in American higher education is that attending a college with all or most of the conventionally accepted earmarks of quality or prestige (e.g., bright student bodies, big libraries, Nobel laureates, lots of educational resources, and large endowments—the kinds of things that lead to high *U.S. News & World Report* rankings) will lead to greater learning and development during college. In fact, a rather large body of evidence across a wide range of intellectual and developmental outcomes suggests that this is not necessarily true. After taking into account the characteristics, abilities, and backgrounds students bring with them to college, how much students grow and change has only inconsistent, and perhaps trivial, relationships with such popularly accepted measures of institutional quality as educational expenditure per student, student/faculty ratio, faculty salary, faculty research productivity, library size, admissions selectivity, graduation rate, and prestige rankings.

Now let us be very clear about what we are *not* saying here. First, we're not suggesting that graduates of all colleges have reached the same levels of intellectual or psychosocial development. Graduates of some colleges reach a level of achievement or development approximately equal to that of first-year students at other institutions. However, what needs to be remembered is that differences among institutions in various student outcomes are probably attributable substantially more to differences in the kinds of students admitted than to dramatic differences in institutional impact.

Second, we are not saying that all institutions have the same educational impact. It is likely that some institutions stand out as being particularly potent in their impact on student intellectual and personal development. Our point is that it is probably not possible to identify these educationally effective institutions merely by relying on the resource dimensions popularly used to rank institutions on educational quality. These so-called quality indicators may be more appropriately considered as measures of institutional advantage; they may reveal little of substance in terms of educational impact.

There is a corollary to Myth #3: The best measure of the educational quality of a college is the accomplishments of its graduates. We do it all the time. But, in fact, if we simply look at the accomplishments of graduates without taking into account where those individuals were when they entered college, our conclusions will simply reflect what kinds of students enroll at different institutions, not what differences exist in the educational value added by various college environments.

If an institution's stock of human, financial, and educational resources is of questionable value in identifying its educational impact, what does matter? (Note that we are not saying that resources don't matter but that they may often matter considerably less than the programmatic efforts of an institution.) Particularly important are such factors as:

1. the nature and cohesiveness of students' curricular experiences and general education,
2. their course-taking patterns,
3. the quality of the teaching they receive and the extent to which faculty members involve students actively in the teaching-learning process,
4. the frequency, purpose, and quality of students' nonclassroom interactions with faculty members,
5. the nature of students' peer group interactions and extracurricular activities, and
6. the extent to which institutional structures promote cohesive environments that value the life of the mind and facilitate high degrees of student academic and social engagement.

Myth #4: Two-year college attendance penalizes a student.

There has been a widespread belief that somehow two-year, community colleges offer equal access to higher education but don't provide equality of benefits—in short, that they offer a second best educational experience that penalizes a student educationally, occupationally, and economically when compared to those students who attend four-year colleges. Much of this perception probably springs from the often replicated finding that students who start at two-year colleges are about 15% less likely to complete a bachelor's degree in the same period of time as similar students who start at four-year institutions (Dougherty, 1987, 1992). However, there is a growing body of evidence to suggest that two-year colleges may be quite competitive with four-year institutions along a variety of dimensions. For example, in studies of 6 two-year and 7 four-year institutions from 12 U.S. states conducted by the National Center on Postsecondary Teaching, Learning, and Assessment, we found that when controls are made for such factors as initial ability, academic motivation, age, family social origins, work responsibilities, and extent of enrollment, there were only trivial two-year versus four-year college differences in first-year changes on such cognitive skills as reading comprehension, quantitative reasoning, and critical thinking (Bohr et al., 1994; Pascarella, Bohr, Nora, & Terenzini, 1995). Similarly, we also found only trivial two-year/four-year college differences in first-year gains made in such orientations to learning as (a) enjoyment of intellectual challenge and diversity, (b) enjoyment of higher order cognitive tasks, and (c) internal attribution for academic success or failure (Pascarella et al., 1994).

There is also increasing evidence to suggest that any relative disadvantages in bachelor's degree attainment accruing to two-year college students do not necessarily translate into occupational or economic disadvantages. For those two-year college students who can overcome the obstacles of transfer and complete their bachelor's degree, there is essential parity with similar four-year college students in such areas as job prestige, level of employment, job satisfaction, and earnings (Smart & Ethington, 1985; Whitaker & Pascarella, 1994). This set of findings is perhaps more significant when one considers the relatively low costs of community colleges as compared to their four-year counterparts. Thus, community colleges may provide a cost-effective way for students to obtain the first two years of effective postsecondary education without necessarily sacrificing either the intellectual rigor of their college experience or relative competitiveness in the marketplace.

Myth #5: Historically Black colleges do not provide as effective an education for African American students as predominantly White institutions do.

A long-standing critique of historically Black colleges (HBCs) suggests that, as a group, they lack the educational resources (e.g., laboratories, libraries, distinguished faculties, and educational funds) to provide the same intensity of educational experience as predominantly White or non-Black institutions (Bowles & DeCosta, 1971; Jencks & Reisman, 1968; Sowell, 1972). But when we look at the evidence on college impact, we get what is perhaps a different picture. A large body of evidence, for example, suggests not only that African American students attending HBCs perceive lower levels of stress, isolation, and racism on campus than their counterparts at predominantly White institutions but also that the former are more likely than the latter to persist and obtain the bachelor's degree. When student socioeconomic backgrounds, aptitudes, and aspirations are taken into account, the weight of evidence also suggests that attendance at, or graduation from, an HBC does not significantly disadvantage African American students occupationally or economically (Pascarella & Terenzini, 1991)—and African American students at HBCs appear to make about the same level of cognitive and intellectual gains during college as similar African American students at White institutions. In this regard, consider the following recent evidence from the first year of the National Center on Postsecondary Teaching, Learning, and Assessment study. When controls were made for factors such as precollege aptitude, gender, academic motivation, age, socioeconomic status, and on- or off-campus residence, there were only small differences between African American students at HBCs and African American students at predominantly White institutions in first-year gains made in reading comprehension, quantitative reasoning, and critical thinking. The differences that did exist tended to favor African American students at HBCs (Bohr, Pascarella, Nora, & Terenzini, 1995).

Clearly there has been a strong press to increase the student racial and ethnic diversity within American colleges and universities, and recent evidence presented by Alexander Astin (1993) suggests the positive developmental impacts of student body diversity. But perhaps not all African American students benefit equally from racially diverse institutions. The ability of HBCs to create a supportive psychosocial environment for African American students without sacrificing intellectual rigor (along with similar findings about the developmental benefits for women of women's institutions; see Pascarella & Terenzini, 1991) suggests, perhaps, that within the current trend toward increasing institutional diversity, we need to reserve a place in the American postsecondary system for the continued existence and nurturing of those educationally effective homogeneous institutions. In short, even as we seek to increase student body diversity *within* institutions, we need to balance this against preserving the rich diversity *between* American colleges and universities.

Myth #6: Traditional and long-standing methods of instruction provide the most effective ways of teaching undergraduate students.

In the American postsecondary system, lecturing students is still the dominant mode of instruction. Much of the research suggests that teachers in typical undergraduate classes spend 75-80% of their time lecturing or presenting content to students and that, on average, students are attentive to what is being said only about 50% of the time and retain only about 50% of what they actually pay attention to (Pascarella & Terenzini, 1991). When you also consider the often touted finding that in any class of 25 or more 18- to 22-year-olds, no 30-second period passes without at least one of them having a thought about sex, you can see why the lecture method can have its problems.

Now the aforementioned is not to say that lecturing cannot be an effective instructional technique. We probably all remember undergraduate teachers who were exceptional in their ability to motivate, inform, and even inspire with a graceful, lucid, and penetrating presentation of information and ideas. Yet, if you're like us, you probably also remember a far greater number of undergraduate teachers who missed that standard by a considerable margin. Traditional lecturing and lecture-related methods of instruction are often like the little girl with the curl in the middle of her forehead—when she was good, she was very, very good, but when she was bad, she was *horrid*!

The fact is that there are instructional approaches that, under experimental conditions, have been shown repeatedly to be more effective in facilitating subject-matter learning than more traditional approaches. These more effective approaches (e.g., the personalized system of instruction, audiotutorial instruction, computer-based instruction, and cooperative/collaborative learning) differ in some ways, but they seem to stress certain elements:

1. small modular units of instruction,
2. student mastery of one unit before moving on to the next,
3. timely and frequent feedback to students on their progress, and
4. active student involvement in learning rather than passive learning.

The increased cognitive effectiveness of these instructional methods over lecturing and other traditional methods of college teaching probably has multiple sources, but the evidence suggests the following are particularly important.

First, many of these nontraditional instructional methods reverse the time/achievement relationship of lecturing and traditional instruction. In traditional instruction, time in covering content is constant but course learning varies. In the alternative methods, time covering the material varies (i.e., students cover content at their own pace), and attempts are made to make achievement more constant by requiring student mastery of the content. In short, these alternative instructional methods (as opposed to traditional methods) are sensitive to individual student differences in speed of acquiring content.

Second, in contrast to the passive roles students are encouraged to play in most lecture/discussion/recitation classes, individualized and collaborative teaching approaches require active student involvement and participation in the teaching-learning process. Such methods encourage students to take greater responsibility for their own learning; they learn from one another, as well as from the instructor. The weight of evidence indicates that active learning produces greater gains in course content, and recent evidence clearly supports efforts to employ various forms of collaborative learning.

Please note that we are not suggesting that the kind of alternative individualized and collaborative instructional approaches we have briefly

described are any panacea. We only suggest them as potentially effective approaches to undergraduate instruction that are far less frequently employed than more traditional, but perhaps less effective, teaching.

Myth #7: Good teachers have to be good researchers.

One of the most frequent attacks on the quality of contemporary undergraduate education is that faculty members spend so much time on their research and scholarship that it detracts from the time they spend on undergraduate teaching. A major defense against this attack is that faculty members must conduct research or be engaged in scholarship in order to be good teachers. Faculty members actively engaged in research and scholarship, so the argument goes, are more likely to be on the cutting edge in their disciplines; they pass their enthusiasm for learning and the life of the mind on to their students. This fervent belief in the instructional benefits of faculty engagement in research and scholarship is, of course, reflected in our dominant faculty reward structures. Find and reward good scholars and researchers, these structures suggest, and chances are higher that you'll also find and reward good teachers. (We all know first rate scholars who are outstanding teachers–perhaps outstanding at everything they do professionally–though one wonders whether exposure to these exceptional individuals is a common part of an undergraduate's experience in most institutions.)

The systematic evidence, and it is a large and consistent body of research, calls the "good researcher = good teacher" argument sharply into question. Our best estimate from this body of evidence is that the correlation between scholarly productivity and ratings of undergraduate instruction (on those dimensions closely related to student achievement) range from .10 to .16. Put another way, scholarly productivity accounts for between 1 and 2.5% of the differences in undergraduate teaching effectiveness–between 97 and 99% of the differences in teaching effectiveness are due to things other than scholarly productivity (Feldman, 1987). Although such a trend in the research does not support the claim that doing research detracts from being an effective teacher, it certainly calls into question the academic shibboleth that scholarly or research productivity is a required skill for effective undergraduate teaching. Indeed it may well be that effectiveness in these two central dimensions of academic life is largely independent of each other. This being the case, perhaps we need to spend a little more time nurturing and evaluating good teaching (we already are quite good at nurturing and evaluating good research) and not assume that when we tenure, promote, and evaluate good scholars (in the traditional sense), we are probably tenuring, promoting, and evaluating effective undergraduate teachers. This leads to the next myth.

Myth #8: You can't teach people to become good teachers.

In some ways we look at this myth as a logical extension of academic Darwinism: You hire talent–you don't train it. Thus, we've heard many academics dismiss teacher development programs at universities as a waste of resources because good teachers are born (i.e., it's in their genes) not made. Perhaps one reason many faculty members believe this is that American graduate schools have historically done precious little to train Ph.D. students in instructional or teaching methods. If we're lucky, we find a good mentor and perhaps model our teaching after his or hers.

Let us be clear in admitting that there are some natural-born superlative teachers–we've probably all seen them (though, to be realistic, they probably represent a small percentage of our professional ranks). However, the notion that you can't teach people to become more effective teachers simply flies in the face of a rather large and convincing body of evidence to the contrary. In our synthesis of the vast body of evidence on teaching, we found that student learning in a course is unambiguously linked to the ways students themselves describe effective teaching–and we know much about what effective teachers do and how they behave in the classroom (Pascarella & Terenzini, 1991). Although a number of teacher behaviors are positively linked with student learning (e.g., rapport with students, interpersonal accessibility to students, feedback to students, enthusiasm, and the like), two highly related dimensions stand out as being strongly linked to how much students learn. These are instructor skill (particularly clarity of presentation) and course structure (e.g., class time that is structured and organized efficiently and course goals, objectives, and requirements that are clear). What is perhaps most important is that many of the elements of both of these dimensions of effective teaching can themselves be learned.

Recent evidence from the National Center on Postsecondary Teaching, Learning, and Assess ment study of 23 institutions around the country suggests that the positive influence of at least one of these dimensions of teaching effectiveness extends beyond simple course achievement. Using a sample of nearly 2,600 students, we found that the more students reported high levels of course organization in the overall teaching they received at their institution, the more likely they were to make the largest first-year gains in ACT-developed standardized measures of reading comprehension, quantitative reasoning, and critical thinking–and this effect persisted even after controls for the pattern of courses taken and precollege ability on those outcomes (Pascarella, Edison, Nora, Hagedorn, & Braxton, 1995).

Thus, the teachable and learnable elements of effective teaching appear not only to enhance specific course learning; at least one of them also appears to have potential positive impacts on more general dimensions of cognitive and intellectual development during college.

Myth #9: Faculty members' impact on student development and learning resides in the classroom.

Many of us in academia have a rather narrow view of a faculty member's sphere of influence on students. We think that influence, and therefore the faculty obligation to contribute to the education of undergraduates, begins and ends at the classroom or laboratory door. The research evidence on the impact of faculty, however, does not support this narrow view of their influence. What a large body of studies demonstrates is that faculty also exert considerable educational influence in their out-of-class contact and interaction with students.

Consider that as much as 80 to 85% of a student's waking hours are spent outside a classroom, and it has become increasingly clear that a large part of the educational and developmental impact of college can take place during that nonclass time. Obviously, interaction with peers plays a major role in the educational impact of nonclassroom (as well as classroom) experiences. But faculty members also appear to be potentially important agents of nonclassroom socialization on campus. Indeed the literature is compelling that faculty educational potency is significantly enhanced in those campus settings where their contacts with undergraduate students extend beyond the classroom to informal, nonclassroom settings.

Specifically, the evidence is quite clear that even when we control for important student background characteristics, aspirations, and other confounding influences, the extent of students' informal, nonclassroom contact with faculty is positively linked with a broad array of outcomes (Pascarella & Terenzini, 1991). These include:

1. perceptions of intellectual growth during college,
2. increases in intellectual orientation and curiosity,
3. liberalization of social and political values,
4. growth in autonomy and independence,
5. orientation toward scholarly careers,
6. interpersonal skills and sensitivity,
7. educational aspirations,
8. persistence in college and educational degree attainment, and
9. women's interest in, and choice of, sex-atypical (male-dominated) career fields (e.g., law, business, medicine, engineering, and academia).

Interestingly, but not surprisingly, it also appears that the impact of student-faculty informal contact on student development is determined by its content and focus, as well as by its frequency. The most influential forms of interaction appear to be those that focus on ideas or intellectual matters–thereby extending and reinforcing the goals of the academic program.

The fact that faculty members have important educational impact on students beyond the classroom leads to our final myth, although we're not sure whether this is simply a myth or a combination of myth reinforced by bureaucratic expediency. At any rate, we seem to have structured our colleges and universities as though it were true.

Myth #10: Students' academic and nonacademic experiences are separate and unrelated areas of influence on learning and development.

Most theoretical models of learning and student development of which we are aware in no way suggest, much less argue forcefully, that any single experience–or class of experiences–during college will be a crucial determinant of educational impact on students. Rather, our review of a substantial body of evidence suggests that the unique impact of any particular experience during college (e.g., courses, major, residence

arrangement, interactions with peers, and so on) tends to be markedly smaller than the overall net effect of attending (vs. not attending) college (Pascarella & Terenzini, 1991). The same evidence also suggests that a majority of the important changes that occur during college are probably the cumulative result of a set of interrelated and mutually supporting experiences, in class and out, sustained over an extended period of time.

For example, students not only become more cognitively and intellectually complex and advanced between the freshman and senior years (e.g., as critical and reflective thinkers), but they also demonstrate *concurrent* changes in values, attitudes, and psychosocial development that are consistent with and probably reciprocally related to cognitive change. Thus, although we can't demonstrate strict causality, it is quite clear that documented change in nearly every outcome area appears to be embedded within an interconnected and perhaps mutually reinforcing network of cognitive, value, attitudinal, and psychosocial changes–all of which develop during the student's college experience. In short, the student changes as a whole, integrated person during college. (All these changes *may* be independent of each other, but we doubt it.)

To further support this notion, we are beginning to see a cumulative body of evidence to suggest the importance of extracurricular involvement and activities in a student's cognitive and intellectual development (Kuh, 1993; Baxter Magolda, 1992). Similarly, other recent work suggests that first-year critical thinking is most affected by the *breadth* of student involvement in the intellectual and social experiences of college and not by any particular type of involvement (Pascarella, 1989). Thus, the greatest college impact on intellectual and cognitive (as well as personal) development may stem from the student's total level of campus engagement, particularly when academic, interpersonal, and extracurricular involvements are mutually supporting and relevant to a particular educational outcome.

The myth that students' academic and nonacademic experiences are separate and independent sources of influence on student learning has been reinforced in most American universities ever since 1870 when Harvard President Charles William Elliot appointed a student dean so he wouldn't have to deal with student discipline. Since then the academic affairs and student affairs functions of most institutions have been running essentially on parallel but separate (and perhaps uneven) tracks: academic affairs tends to cognitive development while student affairs ministers to affective growth.

This bureaucratization of collegiate structures is a creature of administrative convenience and budgetary expedience. It surely has not evolved from any conception of how students learn, nor is it supported by research evidence. Organizationally and operationally, we've lost sight of the forest. Enhancing the effectiveness of undergraduate education may require new forms of collaboration among faculty, academic administrators, and student affairs administrators with the purpose of delivering undergraduate education in a manner that recognizes the comprehensive and integrated ways in which students actually learn. New perspectives from these important constituencies may be needed to capitalize on the interrelatedness of the in- and out-of-class influences on student learning and the functional interconnectedness of academic and student affairs.

This may start with faculty and academic affairs administrators recognizing the substantial contribution of student affairs to student cognitive and intellectual, as well affective, development. Conversely, as American College Personnel Association President Charles Schroeder (1994) recently pointed out in his perceptive presidential address, it is clearly time for student affairs administrators to recognize their contributions to student learning and focus more of their professional effort and expertise in this arena. They should see themselves as educators whose primary responsibility is to promote student learning and personal development. To this end, it may be well to keep in mind the trenchant proverb that "it takes a whole village to raise a child."

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Ernest T. Pascarella presented a version of this paper as the NACADA Journal's featured speaker at the 1995 NACADA annual meeting in Nashville. An abbreviated version appeared in Change (Jan./Feb. 1994), and an earlier version was presented as the Chester E. Peters Lecture at Kansas State University (April 1994). Work on this paper was supported by a grant from the U.S. Department of Education to the National Center on Postsecondary Teaching, Learning, and Assessment. Pascarella is professor of higher education at the University of Illinois, Chicago. Patrick T. Terenzini is professor and senior scientist in the Center for the Study of Higher Education at Pennsylvania State University. Address correspondence concerning this article to Ernest T. Pascarella at the College of Education (M/C 147), University of Illinois, 1040 West Harrison Street, Chicago, IL 60607-7133.

A Myth of Higher Education?—You Be the Judge

During a first-day-of-class discussion of the course syllabus in Newswriting and Reporting, the professor comments that students are expected to read the local paper and one national paper daily. The syllabus states, "Two mid-term exams, one final, 15 news articles and columns. No unannounced quizzes." On day 10 of class the students file into the newswriting lab, and the professor announces, "Clear your tables. You have 20 minutes to complete this quiz."

The students are shocked; they protest, "Your syllabus says, 'No unannounced quizzes'!"

The professor responds, "Did you read tomorrow's events in yesterday's paper?"