LEAP

High-Impact
Educational Practices

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WHAT THEY ARE,
WHO HAS ACCESS TO THEM,
AND WHY THEY MATTER

BY GEORGE D. KUH

WITH AN INTRODUCTION BY CAROL GEARY SCHNEIDER
AND FINDINGS ON STUDENT SUCCESS FROM AAC&U'S
LEAP INITIATIVE

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LEAP

AAC&U
Association of American Colleges and Universities

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About Liberal Education and America's Promise (LEAP):

Excellence for Everyone as a Nation Goes to College

Liberal Education and America's Promise (LEAP) is a decade-long national initiative launched by the Association of American Colleges and Universities (AAC&U) in 2005 to align the goals for college learning with the needs of the new global century. Extending the work of AAC&U's Greater Expectations initiative, LEAP seeks to engage the public with core questions about what really matters in college, to give students a compass to guide their learning, and to make the aims and outcomes of a liberal education—broad knowledge, intellectual and practical skills, personal and social responsibility, and integrative learning—the expected framework for excellence at all levels of education. The LEAP initiative is especially concerned with students who, historically, have been underserved in higher education.

LEAP INCLUDES THREE PRIMARY AND CONCURRENT STRANDS OF WORK:

➤ a **research initiative** designed to provide evidence on the essential learning outcomes of a liberal education and periodic reports on progress in helping students meet twenty-first-century educational standards.

➤ the **Campus Action Network**, which comprises campuses of every kind from across the country that are working with LEAP to articulate high expectations for liberal education, connect educational practices and assessments to those expectations transparently, and ensure that all their students achieve the essential learning outcomes.

➤ a **public advocacy campaign** for liberal education, carried out nationally by the educational, business, community, and policy leaders in the LEAP National Leadership Council and regionally through advocacy initiatives in a set of partner states.

LEAP addresses the entire college curriculum, including both professional fields and the liberal arts and sciences. The overarching principles that define liberal education changed fundamentally in the early part of the twentieth century, when the academic disciplines displaced the classical "core" curriculum. In the twenty-first century, the principles of liberal education are changing once again. Contemporary liberal education has expanded to foster the deep learning and the practical skills and experience that all students need. It has become more powerful by bridging the traditional divides between "liberal" and "applied" learning in order to prepare all college students for success in a diverse democracy and an interconnected world.

Through LEAP, AAC&U is working with campuses to accelerate the pace of change and to organize local, regional, and national community and policy dialogues about the educational issues at stake. At a time when so many are seeking a college education, students deserve far better guidance on the kinds of learning that will serve them best in the era ahead. Highly intentional planning, teaching, and assessment to improve learning and sustain all students' engagement are needed to ensure that students achieve the sophisticated outcomes expected from a contemporary liberal education.

This publication is one in a series of publications supported by the LEAP initiative. The first LEAP publication, *Liberal Education Outcomes: A Preliminary Report on Student Achievement in College*, makes the case for the importance of a liberal education. Finding that national, standardized data present conflicting pictures of student learning, the authors of *Liberal Education Outcomes* suggest that campuses should focus on local efforts in teaching and assessment to significantly strengthen student learning.

The major national report published by the LEAP National Leadership Council in 2007, *College Learning for the New Global Century*, issued a call to educators and to the nation about the importance of a set of essential learning outcomes. It argued that we must fulfill the promises of education for all students who aspire to a college education, especially to those for whom college is a route, perhaps the only possible route, to a better future. Based on extensive input from both educators and employers, the recommendations in this report respond to the new global challenges today's students face. It describes the learning contemporary students need from college, and what it will take to help them achieve it.

This publication builds on this earlier work and addresses the specific educational practices that will enable students to achieve the outcomes they will need in this new global century.

OTHER TITLES FROM LIBERAL EDUCATION AND AMERICA'S PROMISE:

—*Liberal Education Outcomes: A Preliminary Report on Student Achievement in College* (2005)

—*Communicating Commitment to Liberal Education: A Self-Study Guide for Institutions* (2006)

—*Making the Case for Liberal Education: Responding to Challenges* (2006)

—*College Learning for the New Global Century* (2007)

—*Assessment in Cycles of Improvement: Faculty Designs for Essential Learning Outcomes* (2007)

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FOR MORE INFORMATION ABOUT LEAP AND TO PURCHASE LEAP PUBLICATIONS, VISIT WWW.AACU.ORG/LEAP.

Acknowledgments

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Introduction

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Liberal Education and High-Impact Practices
Making Excellence—Once and for All—Inclusive

Carol Geary Schneider
President
Association of American Colleges and Universities

This report on "high-impact educational practices" speaks directly to what is arguably our most important national challenge in higher education: helping America's extraordinarily diverse students reap the full benefits—economic, civic, and personal—of their studies in college. AAC&U is pleased to publish this report, which builds upon and more deeply probes themes we first explored in our major initiative, Greater Expectations (2000-06), and that we are advancing today through our ten-year successor initiative, Liberal Education and America's Promise (LEAP).

George Kuh, whose work stands at the center of this report, is a member of the LEAP National Leadership Council (NLC). In his NLC role, Kuh helped AAC&U spotlight and verify a set of "effective educational practices" that, according to a growing array of research studies, are correlated with positive educational results for students from widely varying backgrounds.

Summary descriptions of these effective educational practices were provided in an appendix to the signature LEAP report, *College Learning for the New Global Century* (AAC&U 2007). An updated version of that overview, with expanded supporting evidence, is presented in these pages (see "High-Impact Educational Practices: A Brief Overview," pp. 9-11).

Now, drawing on new research, Kuh takes the examination of effective educational practices to another level. Probing data collected through the National Survey of Student Engagement (NSSE), he shows that the practices the LEAP report authors initially described—with self-conscious caution—as "effective" can now be appropriately labeled "high-impact" because of the substantial educational benefits they provide to students.[1]

The results of participating in these high-impact practices, Kuh shows, are especially striking for students who start further behind in terms of their entering academic test scores. The benefits are similarly positive for students from communities that historically have been underserved in higher education.

The question, of course, is whether underserved students actually participate either frequently or equitably in these high-impact practices. Unhappily, as Kuh's analytic table 3 (p. 16) makes plain,

these high-impact practices still reach only a fraction of today's college students. And, on these metrics as with so many others, many subsets of college students are still waiting in line for full inclusion.

Kuh tells us in these pages "what works" for student success, and especially for underserved student success. Now it is up to the higher education community to make use of this emerging evidence.

Expanding the Markers for College Student "Success"

Conventionally, educational research has tended to report college student success—especially for students from underserved backgrounds—in terms of access, retention, graduation and, sometimes, grade point average. More nuanced student success studies probe deeper but nonetheless still work around the edges of students' actual learning. Such studies point to the retention effects of a welcoming campus climate, supportive mentoring, and cohort engagement. But they do not speak to students' cumulative educational achievements across the multiple levels of the college curriculum.

Retention and graduation are best described as partial indicators of student success—necessary, but scarcely sufficient. The college degree is meaningful, after all, only when it represents forms of learning that are both valued by society and empowering to the individual. Twenty-first-century metrics for student success need to capture that reality. They need to address evidence about the quality of learning as well as evidence about persistence and completion.

Some of the core elements in an excellent education are enduring in every era: the development of intellectual powers and capacities; ethical and civic preparation; personal growth and self-direction. But the particulars of educational excellence are necessarily always in flux—necessarily, because what counts as powerful knowledge must be periodically negotiated with the needs and realities of a changing world. Today we are in the midst of transformative changes—environmental, global, intercultural, technological, scientific—that have far-reaching implications for what counts as empowering knowledge. On every front, the world itself is demanding more from educated people. Across the nation (and around the globe), designs for college learning are changing in response.

In this context, the long-term "college success" question encompasses not only whether students have earned a degree, but also whether graduates are in fact achieving the level of preparation—in terms of knowledge, capabilities, and personal qualities—that will enable them to both thrive and contribute in a fast-changing economy and in turbulent, highly demanding global, societal, and often personal contexts. These questions drive the emerging discussion about "student learning outcomes." What do students need to know and be able to do? Did they succeed in meeting these expected standards?

And, as Kuh's important report makes clear, the new markers of student success also need to address the question of how students spend their educational time in college. How frequently, and with what results, do students engage in educational practices—curricular, cocurricular, and pedagogical—that provide them with realistic opportunities to actually develop the kinds of learning they need? How does such participation relate to expected learning outcomes?

These questions point us toward new and more comprehensive frameworks for judging student success. Persistence still counts, of course. But as Kuh's report demonstrates, a contemporary framework for student success also needs to address both student learning outcomes and the kinds of practices that foster intended outcomes.

LEAP and the Essential Learning Outcomes

AAC&U has been hard at work on all these core educational challenges for several years, initially through the Greater Expectations initiative (2000-06), and now through LEAP. Drawing on multiyear dialogues with faculty, employers, and accreditors, LEAP has identified a set of student learning outcomes that almost everyone regards as essential (see chart A).

As we have written elsewhere,[2] these essential learning outcomes demonstrably build on the enduring aims of a liberal education: broad knowledge, strong intellectual skills, a grounded sense of ethical and civic responsibility. But the essential learning outcomes also move beyond the traditional limits of liberal or liberal arts education, especially its self-imposed "nonvocational" identity and its recent insistence on learning "for its own sake" rather than for its value in real-world contexts.

Informed by vigorous faculty and campus dialogue across the nation, the LEAP vision for student learning places strong emphasis on global and intercultural learning, technological sophistication, collaborative problem-solving, transferable skills, and real-world applications—both civic and job-related. In all these emphases, LEAP repositions liberal education, no longer as just an option for the fortunate few, but rather as the most practical and powerful preparation for "success" in all its meanings: economic, societal, civic, and personal.

In principle, if not yet in practice, this vision challenges higher education to "make excellence inclusive," by reaching out with data-informed intentionality to the kinds of students who have the most to gain from this kind of learning, but who frequently are steered toward much narrower and more limiting degree programs. It is not enough to report liberal education outcomes for the fortunate while tracking college completion for everyone else, LEAP insists. Making excellence inclusive means setting empowering educational goals for all students and not just for some of them.

Through the LEAP e-portfolio project, Valid Assessments of Learning in Undergraduate Education (VALUE), AAC&U also is working on ways to assess students' cumulative achievement of these essential learning outcomes. Both in the articulation of essential student learning outcomes and in the VALUE strategies for assessing authentic samples of student work, LEAP is building on faculty and campus leadership across the nation.[3] LEAP thus reflects and projects the best thinking of the higher education community as a whole about what matters in college and about ways to help students prepare for a volatile and challenging environment.

Essential Learning, Uncertain Achievement

Naming something as essential does not mean that it is necessarily or easily achieved. Faculty know very well that, even when students do cross the stage to receive their diplomas, not all of them possess the full set of learning outcomes faculty themselves consider "essential." Derek Bok, president emeritus of Harvard and member of the LEAP National Leadership Council, shows in considerable detail just how far students fall short on many of the LEAP essential learning outcomes in his prize-winning 2005 book, *Our Underachieving Colleges*.

Employers, of course, are the constituency that many college students most want to impress. Today employers are weighing in with their own perceptions of graduates' underachievement. In increasingly urgent tones, they are making plain their view that the college degree needs to comprise something much more than forty courses and a major.

Chart A

The Essential Learning Outcomes

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Beginning in school, and continuing at successively higher levels across their college studies, students should prepare for twenty-first-century challenges by gaining:

★ **Knowledge of Human Cultures and the Physical and Natural World**

➢ Through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts

Focused by engagement with big questions, both contemporary and enduring

★ **Intellectual and Practical Skills, including**

➢ Inquiry and analysis
➢ Critical and creative thinking
➢ Written and oral communication
➢ Quantitative literacy
➢ Information literacy
➢ Teamwork and problem solving

Practiced extensively, across the curriculum, in the context of progressively more challenging problems, projects, and standards for performance

★ **Personal and Social Responsibility, including**

➢ Civic knowledge and engagement—local and global
➢ Intercultural knowledge and competence
➢ Ethical reasoning and action
➢ Foundations and skills for lifelong learning

Anchored through active involvement with diverse communities and real-world challenges

★ **Integrative and Applied Learning, including**

➢ Synthesis and advanced accomplishment across general and specialized studies

Demonstrated through the application of knowledge, skills, and responsibilities to new settings and complex problems

Note: This listing was developed through a multiyear dialogue with hundreds of colleges and universities about needed goals for student learning; analysis of a long series of recommendations and reports from the business community; and analysis of the accreditation requirements for engineering, business, nursing, and teacher education. The findings are documented in previous publications of the Association of American Colleges and Universities: Greater Expectations: A New Vision for Learning as a Nation Goes to College (2002), Taking Responsibility for Quality of the Baccalaureate Degree (2004), and Liberal Education Outcomes: A Preliminary Report on Achievement in College (2005).

Chart B
Employer Views on Achievement of Essential Learning Outcomes:
2008 NATIONAL SURVEY FINDINGS

	Very Well Prepared (8-10 ratings)★	Not Well Prepared (1-5 ratings)★	Mean Rating*
Global Knowledge	18%	46%	5.7
Self-direction	23%	42%	5.9
Writing	26%	37%	6.1
Critical Thinking	22%	31%	6.3
Adaptability	24%	30%	6.3
Self-knowledge	28%	26%	6.5
Oral Communication	30%	23%	6.6
Quantitative Reasoning	32%	23%	6.7
Social Responsibility	35%	21%	6.7
Intercultural Skills	38%	19%	6.9
Ethical Judgment	38%	19%	6.9
Teamwork	39%	17%	7.0

★ ratings on 10-point scale: 10 = recent college graduates are extremely well prepared on each quality to succeed in entry-level positions or be promoted/advance within the company

Note: These findings are taken from a survey of employers commissioned by the Association of American Colleges and Universities and conducted by Peter A. Hart Associates in November and December 2007. For a full report on the survey and its complete findings, see www.aacu.org/leap.

The nation's future, employers contend, depends on the United States' ability to help a much larger fraction of Americans achieve high levels of knowledge and skills. As a group, employers endorse the economic value of the LEAP essential learning outcomes. But in their view, higher education needs to place more emphasis on virtually all of these educational goals.

In AAC&U's 2006 LEAP-commissioned survey of employers,[4] 63 percent reported that too many college graduates lack the skills they need to succeed in the global economy. In 2007, in a follow-up LEAP-commisioned survey,[5] employers were asked to grade—on a scale of one to ten—college graduates' achievement of key learning outcomes (see chart B).

As chart B suggests, employers give graduates decidedly low marks on many outcomes they consider very important, with global learning the most striking area of underpreparation. While the majority of those surveyed view college graduates as ready for entry-level jobs, employers report that many graduates lack the skills they need to be promoted.[6]

Chart C

Achieving the Goals of Liberal Education:

Connecting Essential Learning Outcomes with High-Impact Practices

Fostering Broad Knowledge of Human Cultures and the Natural World

➤ Common intellectual experiences (exploring "big questions" in history, cultures, science, and society)

➤ Undergraduate research

➤ Learning communities (multiple courses linked to a "big question")

➤ Diversity, civic, and global learning

➤ Capstone courses

Strengthening Intellectual and Practical Skills

➤ First-year seminars and experiences

➤ Writing-intensive courses (across the curriculum)

➤ Skill-intensive courses (quantitative reasoning, oral communication, and information literacy across the curriculum)

➤ Collaborative assignments and projects

➤ Undergraduate research

➤ Internships

Deepening Personal and Social Responsibility

➤ Common intellectual experiences (exploring "big questions" in history, culture, science, and society)

➤ Diversity, civic, and global learning

➤ Ethics-intensive courses

➤ Collaborative assignments and projects

➤ Service and community-based learning

Practicing Integrative and Applied Learning

➤ Learning communities (multiple courses linked to a "big question")

➤ Undergraduate research

➤ Service and community-based learning

➤ Internships

➤ Capstone projects and culminating experiences

How Can We Raise Students' Level of Learning?

All these findings set the stage for the set of questions that George Kuh's report now addresses: How do we help students actually achieve the forms of learning that serve them best, in the economy, in civic society, and in their own personal and family lives? How do we dramatically lift the levels of college engagement and achievement for students who, two decades ago or more, would not have been in college at all? How do we effectively raise the levels of accomplishment for all students, with special attention to those whose life circumstances—first generation, low income—may put them at particular educational risk?

For the past few years, the nation has been obsessively engaged in the search for new systems of assessment and accountability for what students are learning in college. Much of this discussion has proceeded as though the only task at hand is the selection of the right measures and formats for making college achievement "transparent."

Yet reading ahead in this unfolding narrative, all the available evidence suggests that, whatever measures we use, including the old-fashioned but still essential metric of faculty members' considered judgment, many students are, in fact, underachieving.

In this context, the question to be asked is not how we are doing but rather, how do we improve? Or, more precisely, how do we create educational contexts and practices that help our students improve?

As George Kuh kept reminding LEAP's leaders through the many drafts of the 2007 LEAP report, if the essential learning outcomes are goals, then our curricular, cocurricular, and pedagogical practices need to be recognized as the means to achieving these larger educational ends. We can help our students improve by making these kinds of practices the norm, rather than the exception.

But emphasizing high-impact practices is only part of the solution. The next step is to create clear connections between intended learning outcomes and specific high-impact practices. As we connect goals and practices, we can construct more "purposeful pathways" for students and more "intentional institutions" in which all units work together to ensure that all students achieve the outcomes they need and deserve. AAC&U, in fact, titled one of its Greater Expectations publications *Purposeful Pathways*[7] (2006) to emphasize this point—and to call for a much greater level of coordination and intentionality not only within individual colleges and universities but also across that all-too-gaping chasm between K–12 and higher education.

Purposeful Pathways reported, however, that its four separate research and advisory forums

> …discovered few purposeful pathways throughout the college years that draw together both general education and the majors and almost none that bridged high school and college. Rather, the forums uncovered "faint trails" that only hint at what might emerge in the future.[8]

Since 2006, progress has certainly been made in developing and expanding access to the practices described in this publication. We have made far too little progress in bringing all the pieces together for all students.

The research Kuh presents in the following pages can help us turn those existing "faint trails" into purposeful pathways that help more and more students move forward toward the learning they

need and the successful futures they hope to create. Pointing to the multiple educational benefits of high-impact practices, Kuh recommends that each institution take action to ensure that all students participate in at least two of these practices. As he reminded me firmly when we discussed this publication, it would take a "leap" indeed to achieve even this much.

These cautions notwithstanding, I would set our aspirations significantly higher.

If our goal is to help students achieve the essential learning outcomes that both educators and employers endorse, then the long-term challenge is to transparently connect these intended outcomes with students' successful engagement in a thoughtfully planned sequence of high-impact practices. Chart C shows how we can deploy selected high-impact practices to foster particular sets of essential learning outcomes. It also reminds us of the fundamental educational truism that repeated practice—at progressively higher levels of challenge and engagement—is the surest key to high levels of achievement. And, encouragingly, chart C also reminds us that specific high-impact practices can foster multiple learning outcomes.

Institutional leaders may protest nonetheless that the practices recommended in these pages are labor-intensive and therefore costly. But concerns about cost need to be set in a larger context. We live in a demanding, increasingly competitive global environment. The quality of citizens' learning has become our most important societal resource. If students leave college without the preparation they need for this complex and volatile world, the long-term cost to them—and to our society— will be cumulative and ultimately devastating.

Conversely, if these high-impact practices support both student persistence *and* heightened achievement on essential learning outcomes, then wise leaders will find both the will and the wallet to make them a top priority. With so much at stake, how can we not?

High-Impact Educational Practices

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A Brief Overview[9]

THE FOLLOWING TEACHING AND LEARNING PRACTICES have been widely tested and have been shown to be beneficial for college students from many backgrounds.[10] These practices take many different forms, depending on learner characteristics and on institutional priorities and contexts. On many campuses, assessment of student involvement in active learning practices such as these has made it possible to assess the practices' contribution to students' cumulative learning. However, on almost all campuses, utilization of active learning practices is unsystematic, to the detriment of student learning. Presented below are brief descriptions of high-impact practices that educational research suggests increase rates of student retention and student engagement. The rest of this publication will explore in more detail why these types of practices are effective, which students have access to them, and, finally, what effect they might have on different cohorts of students.

First-Year Seminars and Experiences

Many schools now build into the curriculum first-year seminars or other programs that bring small groups of students together with faculty or staff on a regular basis. The highest-quality first-year experiences place a strong emphasis on critical inquiry, frequent writing, information literacy, collaborative learning, and other skills that develop students' intellectual and practical competencies. First-year seminars can also involve students with cutting-edge questions in scholarship and with faculty members' own research.

Common Intellectual Experiences

The older idea of a "core" curriculum has evolved into a variety of modern forms, such as a set of required common courses or a vertically organized general education program that includes advanced integrative studies and/or required participation in a learning community (see below). These programs often combine broad themes—e.g., technology and society, global interdependence—with a variety of curricular and cocurricular options for students.

Learning Communities

The key goals for learning communities are to encourage integration of learning across courses and to involve students with "big questions" that matter beyond the classroom. Students take two or more linked courses as a group and work closely with one another and with their professors. Many learning communities explore a common topic and/or common readings through the lenses of different disciplines. Some deliberately link "liberal arts" and "professional courses"; others feature service learning (see p. 11).

Writing-Intensive Courses

These courses emphasize writing at all levels of instruction and across the curriculum, including final-year projects. Students are encouraged to produce and revise various forms of writing for different audiences in different disciplines. The effectiveness of this repeated practice "across the curriculum" has led to parallel efforts in such areas as quantitative reasoning, oral communication, information literacy, and, on some campuses, ethical inquiry.

Collaborative Assignments and Projects

Collaborative learning combines two key goals: learning to work and solve problems in the company of others, and sharpening one's own understanding by listening seriously to the insights of others, especially those with different backgrounds and life experiences. Approaches range from study groups within a course, to team-based assignments and writing, to cooperative projects and research.

Undergraduate Research

Many colleges and universities are now providing research experiences for students in all disciplines. Undergraduate research, however, has been most prominently used in science disciplines. With strong support from the National Science Foundation and the research community, scientists are reshaping their courses to connect key concepts and questions with students' early and active involvement in systematic investigation and research. The goal is to involve students with actively contested questions, empirical observation, cutting-edge technologies, and the sense of excitement that comes from working to answer important questions.

Diversity/Global Learning

Many colleges and universities now emphasize courses and programs that help students explore cultures, life experiences, and worldviews different from their own. These studies—which may address U.S. diversity, world cultures, or both—often explore "difficult differences" such as racial, ethnic, and gender inequality, or continuing struggles around the globe for human rights, freedom, and power. Frequently, intercultural studies are augmented by experiential learning in the community and/or by study abroad.

Service Learning, Community-Based Learning

In these programs, field-based "experiential learning" with community partners is an instructional strategy—and often a required part of the course. The idea is to give students direct experience with issues they are studying in the curriculum and with ongoing efforts to analyze and solve problems in the community. A key element in these programs is the opportunity students have to both *apply* what they are learning in real-world settings and *reflect* in a classroom setting on their service experiences. These programs model the idea that giving something back to the community is an important college outcome, and that working with community partners is good preparation for citizenship, work, and life.

Internships

Internships are another increasingly common form of experiential learning. The idea is to provide students with direct experience in a work setting—usually related to their career interests—and to give them the benefit of supervision and coaching from professionals in the field. If the internship is taken for course credit, students complete a project or paper that is approved by a faculty member.

Capstone Courses and Projects

Whether they're called "senior capstones" or some other name, these culminating experiences require students nearing the end of their college years to create a project of some sort that integrates and applies what they've learned. The project might be a research paper, a performance, a portfolio of "best work," or an exhibit of artwork. Capstones are offered both in departmental programs and, increasingly, in general education as well.

PART 2

High-Impact Educational Practices

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Who Has Access to Them And Why They Matter for All Students

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Chancellor's Professor and Director

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> More than anything else, being an educated person means being able to see connections that allow one to make sense of the world and act within it in creative ways. Every one of the qualities I have described here—listening, reading, talking, writing, puzzle solving, truth seeking, seeing through other people's eyes, leading, working in a community—is finally about connecting.
> [William Cronon, "Only Connect: The Goals of a Liberal Education," *Liberal Education* 85, no. 1 (1999): 12]

I'VE VISITED DOZENS OF CAMPUSES OVER THE PAST DECADE TO MEET WITH FACULTY, ADMINISTRATORS, STUDENT AFFAIRS STAFF, TRUSTEES, and—on fewer occasions than I would like—students. Across all of these groups, the most-asked question is, what is the one thing we should do to increase student engagement and success on our campus?

Until recently, I avoided answering this question for two reasons. First, we hadn't yet learned enough from the National Survey of Student Engagement (NSSE) and other sources to be confident about whether some educational programs and activities were more important to student success than others. Just about all the behaviors and institutional conditions represented on the NSSE survey are positively linked to desired outcomes of college, so calling attention to one set of activities seemed counterproductive. A second reason for hedging on an answer was that decades of research showed that student development is a cumulative process shaped by many events and experiences, inside and outside the classroom. Recent research on the relationships among student characteristics, engagement, and outcomes adds an additional layer of complexity to our understanding. Many of the effects of college are conditional[11] in that some students appear to benefit more than others from the same educational programs or practices, all things considered.[12]

At the same time, there is growing evidence that—when done well—some programs and activities appear to engage participants at levels that elevate their performance across multiple engagement and desired-outcomes measures such as persistence. The Association of American Colleges and Universities listed ten of the more promising "high-impact" activities in its 2007 report, *College Learning for a New Global Century.* These activities are described here on pages 9-11. They include first-year seminars, common intellectual experiences, learning communities, service learning, undergraduate research, study abroad, and other experiences with diversity, internships, and capstone courses and projects.

Table 1 summarizes the strong positive effects associated with participation in six of these high-impact activities in terms of first-year and senior student self-reported gains in three clusters of learning and personal development outcomes, and in engaging in deep approaches to learning (see appendix A for details on deep/integrative learning). In contrast to surface-level learning, deep-level processing emphasizes both acquiring information and understanding the underlying meaning of the information. Deep approaches to learning are important because students who use these approaches tend to earn higher grades and retain, integrate, and transfer information at higher rates.[13] Students who have these experiences are also more engaged overall in the clusters of effective educational practices represented by the NSSE (see table 2).

Why Some Educational Activities Are Unusually Effective

What is it about these high-impact activities that appear to be so effective with students?

First, these practices typically demand that students devote considerable time and effort to purposeful tasks; most require daily decisions that deepen students' investment in the activity as well as their commitment to their academic program and the college. Consider, for example, a writing-intensive first-year seminar with twenty-five or fewer students that is team-taught by a faculty member (who also is the adviser for the students in the seminar) and an upper-division peer mentor or instructor. The composition of the instructional team coupled with the size of the course ensures that every student will get to know at least one faculty member well in the first year of college, in addition to the other students in the class. Advising is no longer a once-a-semester meeting with a person the student hardly knows, but an ongoing set of conversations about issues students are facing in real time. Because the seminar is writing-intensive, students must also put forth more effort. They benefit more, especially when they get frequent feedback from the faculty member, peer mentor, and other students in the course. Similar patterns of benefits are reported by students who study abroad, in that they engage more frequently in educationally purposeful activities upon returning to their home campuses and report gaining more from college compared with their peers who do not study abroad.

Second, the nature of these high-impact activities puts students in circumstances that essentially demand they interact with faculty and peers about substantive matters, typically over extended periods of time. A human-scale first-year seminar makes anonymity impossible, fosters face-to-face interaction, and fuels feedback. Students who do research with a faculty member spend a fair amount of time with that faculty member; as a result, students learn firsthand how a faculty member thinks and deals with the inevitable challenges that crop up in the course of an investigation. Students who do research with faculty also are more likely to persist, gain more intellectually and personally, and choose a research-related field as a career.[14] Collaborative problem-based assignments in the context of a course set the stage for developing a meaningful relationship

Table 1

Relationships between Selected High-Impact Activities, Deep Learning, and Self-Reported Gains

	Deep Learning	Gains General	Gains Personal	Gains Practical
First-Year				
Learning Communities	+++	++	++	++
Service Learning	+++	++	+++	++
Senior				
Study Abroad	++	+	++	
Student-Faculty Research	+++	++	++	++
Service Learning	++	+++	+++	++
Senior Culminating Experience	++	++	+++	++

+ p < .001, ++ p < .001 & Unstd B > .10, +++ p < .001 & Unstd B > .30

Table 2

Relationships between Selected High-Impact Activities and Clusters of Effective Educational Practices

	Level of Academic Challenge	Active and Collaborative Learning	Student-Faculty Interaction	Supportive Campus Environment
First-Year				
Learning Communities	++	+++	+++	++
Service Learning	++	+++	+++	++
Senior				
Study Abroad	++	++	++	+
Student-Faculty Research	+++	+++	+++	++
Service Learning	++	+++	+++	++
Senior Culminating Experience	++	++	+++	++

+ p < .001, ++ p < .001 & Unstd B > .10, +++ p < .001 & Unstd B > .30

with another person on campus—a faculty or staff member, student, coworker, or supervisor. These and other high-impact practices put students in the company of mentors and advisers as well as peers who share intellectual interests and are committed to seeing that students succeed.

Third, participating in one or more of these activities increases the likelihood that students will experience diversity through contact with people who are different from themselves. Study abroad or other cross-cultural experiences are natural venues for this. But so are learning communities, courses that feature service learning, and internships and other field placements such as student teaching. These experiences often challenge students to develop new ways of thinking about and responding immediately to novel circumstances as they work side by side with peers on intellectual and practical tasks, inside and outside the classroom, on and off campus.

Table 3

Percent Participation in High-Impact Activities by Institutional and Student Characteristics

	First-Year Students		Senior Students				
	Learning Community	Service Learning	Research with Faculty	Study Abroad	Service Learning	Internship	Senior Experience
2005 Basic Carnegie							
Doc RU-VH	20	33	23	18	40	57	29
Doc RU-H	18	37	19	14	44	51	33
Doc DRU	18	39	17	13	52	51	33
Masters-L	16	35	16	10	47	48	30
Masters-M	16	39	17	11	51	52	30
Masters-S	14	44	18	14	53	51	36
Bac-AS	13	43	29	33	53	66	55
Bac-Diverse	13	41	18	11	55	60	37
Other	13	29	15	8	38	49	29
Sector							
Public	17	34	18	12	44	50	29
Private	16	44	22	21	53	61	42
Barron's Selectivity							
Less Selective	16	36	16	10	47	48	30
More Selective	18	37	23	21	45	59	35
Ethnicity							
African American/Black	18	40	17	9	51	45	27
Asian/Pacific Islander	17	37	22	14	49	50	28
Caucasian/White	17	36	19	15	45	56	34
Hispanic	20	36	17	11	47	45	26
Other	15	38	19	18	46	46	31
Enrollment							
Part-time	10	26	12	7	37	38	22
Full-time	17	37	21	16	48	56	35
First-Generation							
No	18	37	22	19	46	57	36
Yes	15	35	16	9	46	48	29
Transfer							
Started Here	17	37	23	19	49	61	38
Started Elsewhere	13	32	14	9	43	43	25
Age							
Under 24 Years	17	37	23	18	49	61	37
24 Years & Older	10	24	13	7	41	40	24
Overall Participation	**17**	**36**	**19**	**14**	**46**	**53**	**32**

Fourth, even though the structures and settings of high-impact activities differ, students typically get frequent feedback about their performance in every one. Working with a faculty member on research, having a paper checked by a peer writing tutor prior to turning it in, and having one's performance evaluated by the internship supervisor are all rich with opportunities for immediate formal and informal feedback. Indeed, because students perform in close proximity to supervisors or peers, feedback is almost continuous. In addition, NSSE 2007 results show that students who receive feedback during or after working on a research project with a faculty member are more likely to report that their relationships with faculty are friendly or supportive.

Fifth, participation in these activities provides opportunities for students to see how what they are learning works in different settings, on and off campus. These opportunities to integrate, synthesize, and apply knowledge are essential to deep, meaningful learning experiences. While internships and field placements are obvious venues, service learning and study abroad require students to work with their peers beyond the classroom and test what they are learning in unfamiliar situations. Similarly, working with a faculty member on research shows students firsthand how experts deal with the messy, unscripted problems that come up when experiments do not turn out as expected. A well-designed culminating experience such as a performance or portfolio of best work can also be a springboard for connecting learning to the world beyond the campus. NSSE results show a net positive relationship for students who have had some form of culminating experience after controlling for a host of student and institutional variables (see tables 1 and 2; also appendix B).

Finally, it can be life changing to study abroad, participate in service learning, conduct research with a faculty member, or complete an internship. That is why doing one or more of these activities in the context of a coherent, academically challenging curriculum that appropriately infuses opportunities for active, collaborative learning increases the odds that students will be prepared to—in the words of William Cronon—"just connect." Such an undergraduate experience deepens learning and brings one's values and beliefs into awareness; it helps students develop the ability to take the measure of events and actions and put them in perspective. As a result, students better understand themselves in relation to others and the larger world, and they acquire the intellectual tools and ethical grounding to act with confidence for the betterment of the human condition.

The Compensatory Effects of Engagement

The effects of participating in high-impact practices are positive for all types of students (see appendix B). But, historically underserved students tend to benefit *more* from engaging in educational purposeful activities than majority students.[15] Sadly, as table 3 shows, some groups of historically underserved students are less likely to participate in high-impact activities—those first in their family to attend college and African American students in particular.

Figures 1, 2, and 3 illustrate the boost underserved students receive from engagement relative to other students. The vertical axis in figure 1 represents first-year grade point average, and the horizontal axis represents engagement based on nineteen items from the NSSE survey (appendix C). The colored lines represent students with different average ACT scores, a measure of precollege achievement. The gradual left-to-right rise in the lines correlated with engagement indicates that students who devote more effort to educationally purposeful activities earn higher grades in the first college year. However, the slope of the line for students with the lowest average ACT score level is somewhat greater, suggesting that as they become more engaged they make up ground in terms of their grades in the first college year. In this sense, engagement has a conditional,

Figure 1

Impact of Educationally Purposeful Activities on First Academic Year GPA by Precollege Achievement Level
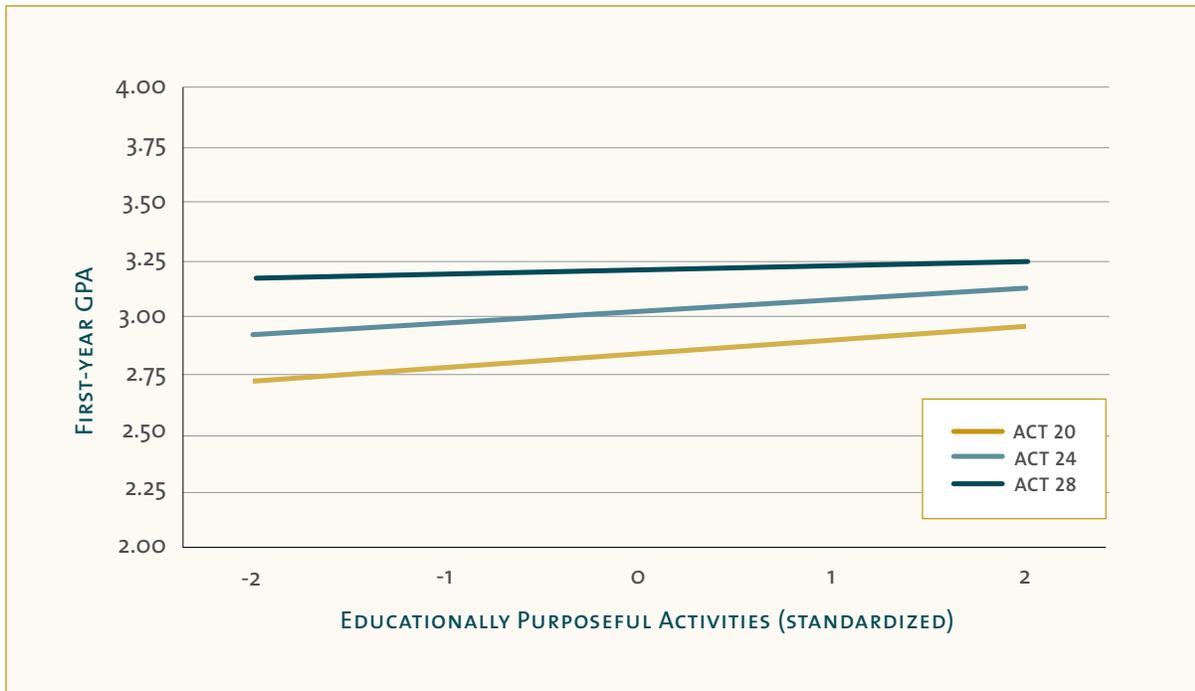

Figure 2

Impact of Educationally Purposeful Activities on First Academic Year GPA by Race/Ethnicity
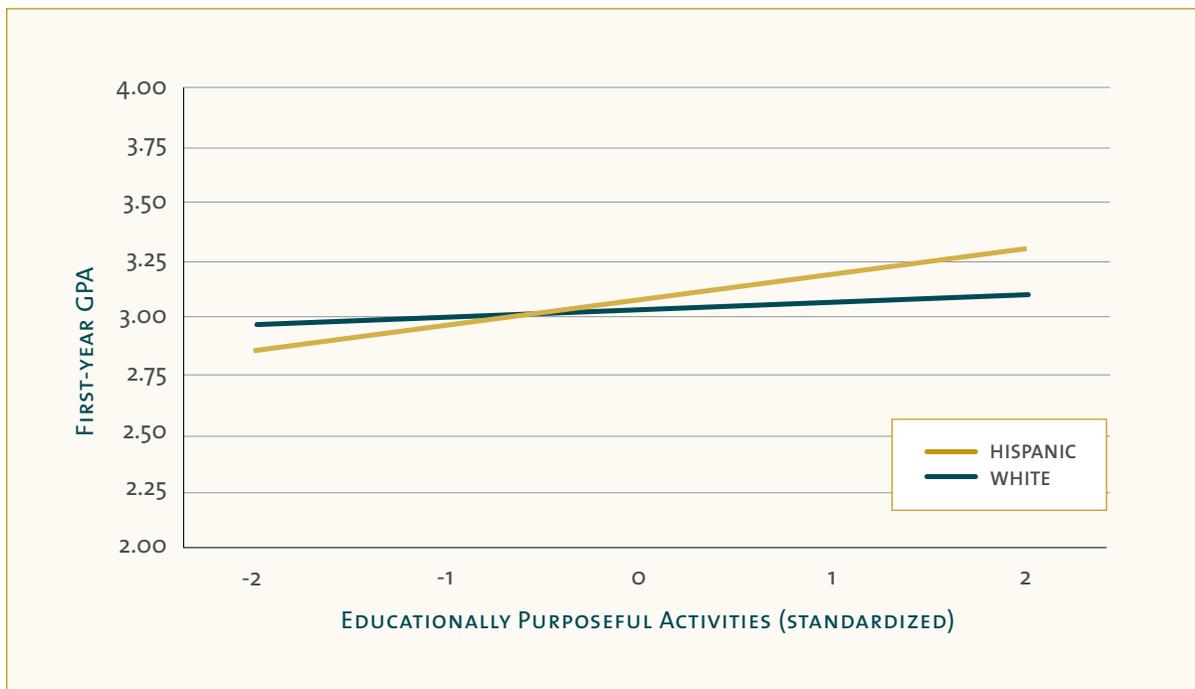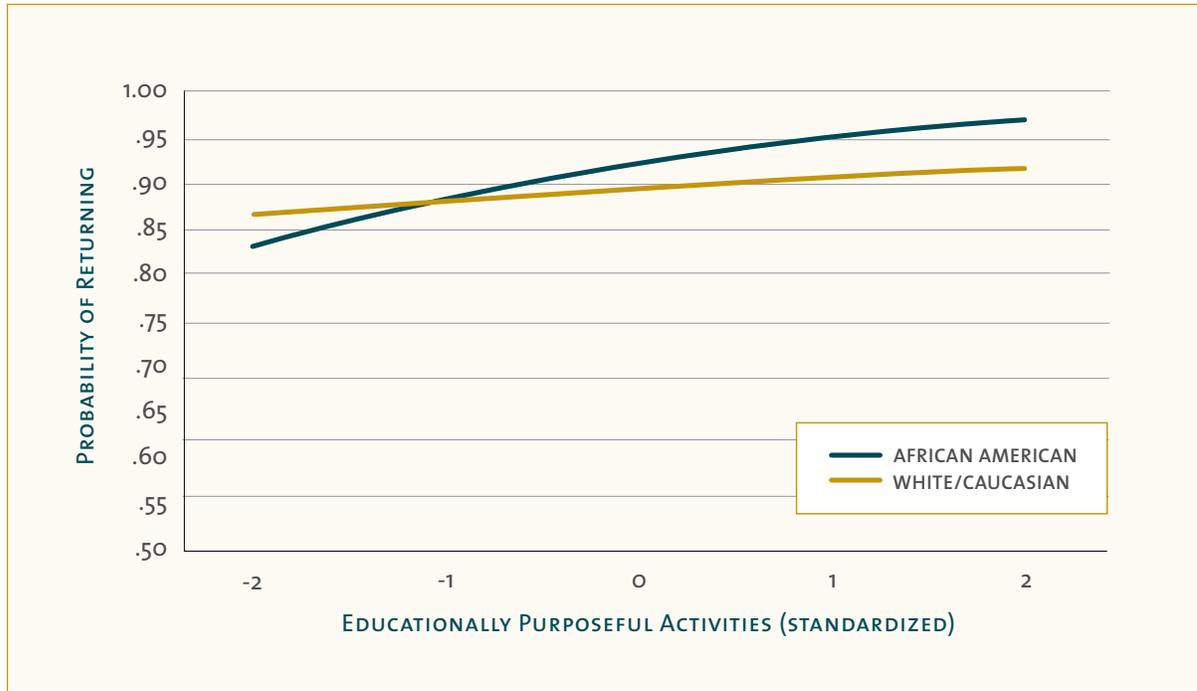
Figure 3

Impact of Educationally Purposeful Activities on the Probablility of Returning for the Second Year of College by Race

compensatory effect on their first-year grades. Figure 2 shows a similar compensatory effect for the grades of Hispanic students compared with their white counterparts.

A similar effect exists between engagement and the odds that a student will return to the same institution for the second year of college (figure 3). That is, while engagement and persistence are positively correlated for all students, engagement has a compensatory effect for African American students relative to white students in that as the African American students become more engaged, they also become more likely to surpass white students in the likelihood they will persist.

Thus, while participation in effective educational activities generally benefits all students, the salutary effects are even greater for students who begin college at lower achievement levels, as well as students of color, compared with white students.

HOW DO WE RAISE ACHIEVEMENT?

So, today when I am asked, what one thing can we do to enhance student engagement and increase student success? I now have an answer: make it possible for every student to participate in *at least two high-impact activities* during his or her undergraduate program, one in the first year, and one taken later in relation to the major field. The obvious choices for incoming students are first-year seminars, learning communities, and service learning. Common intellectual content should be a nonnegotiable organizing principle for these early college experiences; when students have read and discussed some of the same material in one or more classes, they are more likely to talk with their

peers about these ideas outside of class, which infuses a measure of intellectual vitality into the campus culture. In the later years of college, study abroad, internships and other field experiences, and culminating experiences are all possible.

Ideally, institutions would structure the curriculum and other learning opportunities so that *one high-impact activity is available to every student every year*. This is a goal worth striving for, but only after a school has scaled up the number of students—especially those from historically underserved groups—who have such experiences in the first year and later in their studies. In the short term, making high-impact activities more widely experienced should have a demonstrable impact in terms of student persistence and satisfaction as well as desired learning outcomes.

Certainly students can do other things during college that confer benefits similar to those of high-impact activities—writing for the student newspaper, working in an office or program on campus, participating in an honors program, being a leader for a student organization or campus committee, and playing intercollegiate athletics, to name a few. But these opportunities—with the exception of working on campus—too often are limited to small numbers of students, especially on large campuses.

If faculty and staff made these and other effective educational activities commonly available to every student, perhaps colleges and universities could do a better job in helping students compensate for shortcomings in academic preparation and create a culture that fosters student success. But left to their own devices, many students and faculty members may not do these things. Educationally effective institutions recognize this and create incentives to induce purposeful behavior toward these ends. Depending on the circumstances, some institutions, for example, assign all students to a learning community; require two or more writing-intensive courses in all majors; and expect students to participate in some form of culminating senior experience, such as a field placement, internship, or capstone project or paper. My coauthors and I provided examples of what these look like in different institutional settings in *Student Success in College: Creating Conditions That Matter*.[16] AAC&U has provided many other examples in *Peer Review* and on the LEAP Web site (www.aacu.org/advocacy/leap/index.cfm).
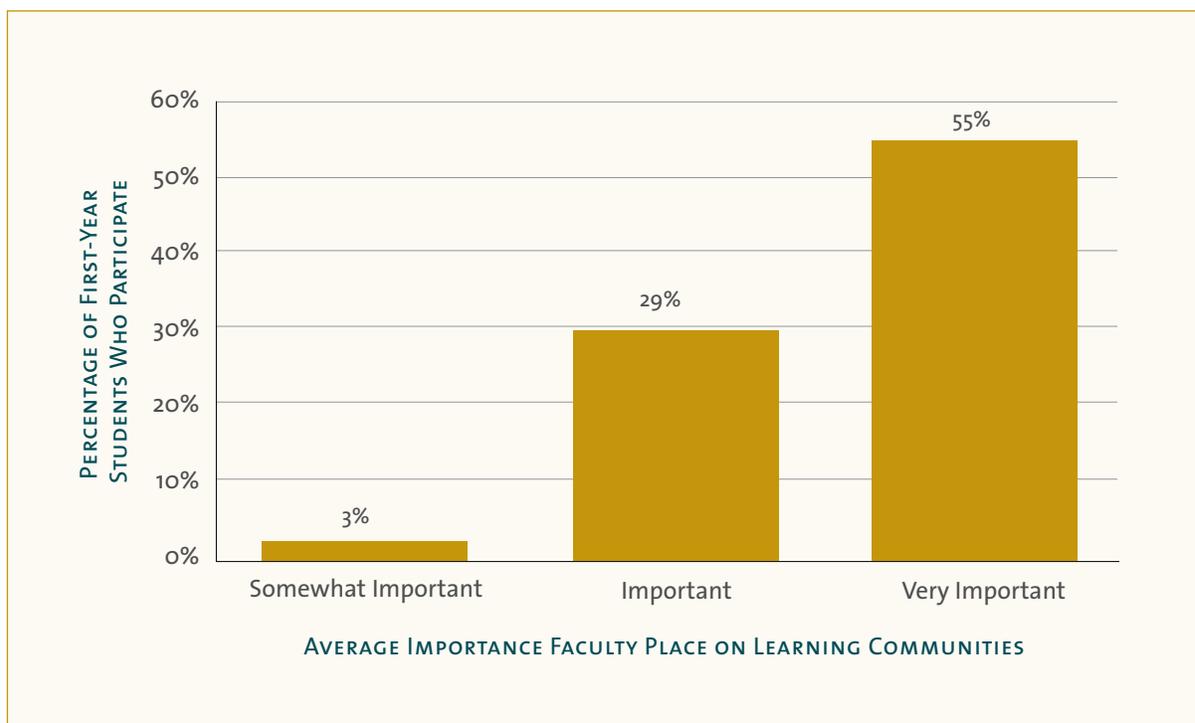
While high-impact activities are appealing for the reasons just outlined, to engage students at high levels, these practices *must be done well*. In addition, institutions must scale them up so that enough opportunities are available in each activity area and every student has a real chance to participate.

Although these and other high-impact activities are promising, more information is needed about their structural features, and whether certain types of students are more likely to take advantage of them and how they benefit from the experience. For example, in *Experiences That Matter: Enhancing Student Learning and Success*, NSSE[17] reported that

> ➢ students who do a capstone seminar that requires a final product or performance gain more in desired areas compared with their peers whose capstones do not require a final product or performance

> ➢ students who devote more time to an inquiry activity benefit more

> ➢ faculty guidance and feedback in the course of an independent or collaborative research project enriches learning as represented by student self-reported gains

Figure 4

Learning Community Participation

Figure 4 bar chart:
- Somewhat Important: 3%
- Important: 29%
- Very Important: 55%

Y-axis: Percentage of First-Year Students Who Participate (0% to 60%)
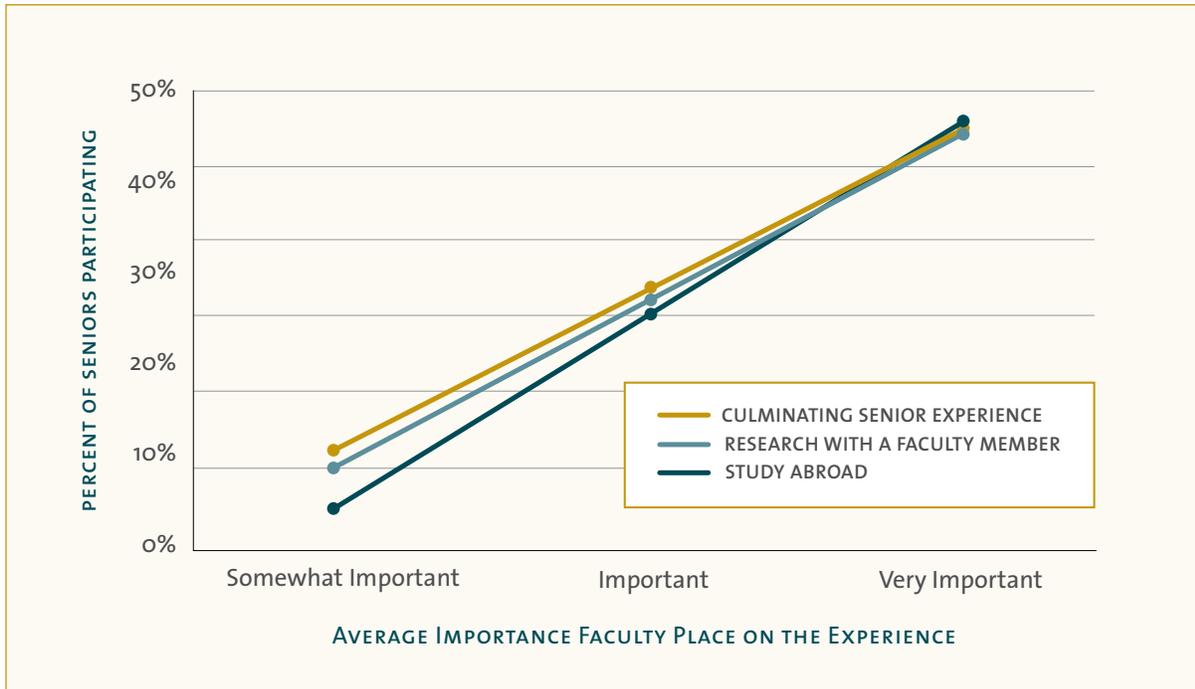X-axis: Average Importance Faculty Place on Learning Communities

The last bullet is a reminder of the important role faculty members play in creating a climate conducive to engagement and learning. Other research has demonstrated the positive relationships between faculty teaching practices and student engagement, learning, and persistence.[18] We know from NSSE data and results from the Faculty Survey of Student Engagement (FSSE) that at institutions with better-than-expected graduation rates, faculty members are more likely to use engaging classroom pedagogical practices.[19]

What faculty *think* and *value* also makes a difference, especially as to whether students will participate in high-impact practices. Figure 5 illustrates this by showing that the more faculty members at a given school *value* an activity and think it is important that students at their institution participate in it, the more likely it is that students will participate. For example, an analysis of 2007 NSSE and FSSE results indicate that on a campus where the average faculty member believes undergraduate participation in learning communities is only *somewhat* important, only 3 percent of first-year students become involved in this activity (figure 4). In contrast, at institutions where the typical faculty member agrees that learning communities are *very* important, 55 percent of first-year students participate. This also holds for student participation and the importance faculty place on culminating senior experiences, research with a faculty member, and study abroad (figure 5). For each activity, an increase of one category in the average importance faculty place on the activity—from somewhat important to important or from important to very important—corresponds to about a 20 percent increase in student participation.

Figure 5

Senior Participation in High-Impact Activities

Chart showing the percent of seniors participating against the average importance faculty place on the experience (Somewhat Important, Important, Very Important) for three activities: Culminating Senior Experience, Research with a Faculty Member, and Study Abroad.

Y-axis: PERCENT OF SENIORS PARTICIPATING (0% to 50%)

X-axis: AVERAGE IMPORTANCE FACULTY PLACE ON THE EXPERIENCE

Legend:
— CULMINATING SENIOR EXPERIENCE
— RESEARCH WITH A FACULTY MEMBER
— STUDY ABROAD

Of course, what faculty think and value does not necessarily impel students to take part in high-impact activities or engage in other educationally purposeful practices. Rather, when large numbers of faculty and staff at an institution endorse the worth of an activity, members of the campus community are more likely to agree to devote their own time and energy to it, as well as provide other resources to support it—all of which increases the likelihood that the activities will be available to large numbers of students and that the campus culture will encourage student participation in the activities.

Final Words

Student engagement is not a silver bullet, and there are limits to what colleges and universities can realistically do to help students overcome years of educational disadvantages. At the same time, engaging in educationally purposeful activities helps level the playing field, especially for students from low-income family backgrounds and others who have been historically underserved. Moreover, engagement increases the odds that any student—educational and social background notwithstanding—will attain his or her educational and personal objectives, acquire the skills and competencies demanded by the challenges of the twenty-first century, and enjoy the intellectual and monetary gains associated with the completion of the baccalaureate degree.

Most institutions can increase student engagement and success by more consistently using what the research shows are promising policies and effective educational activities and practices. Almost every college or university offers some form of every high-impact practice described here. But at too many institutions, only small numbers of students are involved. The time has come for colleges and universities to make participating in high-impact activities a reality—and a priority—for every student.

Appendix A

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

NSSE Deep/Integrative Learning Scale

➤ Integrating ideas or information from various sources

➤ Including diverse perspectives in class discussions/writing

➤ Putting together ideas from different courses

➤ Discussing ideas with faculty members outside of class

➤ Discussing ideas with others outside of class

➤ Analyzing the basic elements of an idea, experience, or theory

➤ Synthesizing and organizing ideas, information, or experience

➤ Making judgements about the value of information

➤ Applying theories to practical problems or in new situations

➤ Examining the strengths and weaknesses or your own views

➤ Trying to better understand someone else's views

➤ Learning something that changed how you understand an issue

Source: Thomas F. Nelson Laird, Rick Shoup, George D. Kuh, and M. J. Schwarz, "The Effects of Discipline on Deep Approaches to Student Learning and College Outcomes," Research in Higher Education *49, no. 6 (2008): 469–494.*

Appendix B

Table A

Relationships between Selected High-Impact Activities, Deep Learning, and Self-Reported Gains by Student Background Characteristics

MALE

	Deep Learning	Gains General	Gains Personal	Gains Practical
First-Year				
Learning Communities	+++	++	++	+++
Service Learning	+++	++	+++	++
Senior				
Study Abroad	++	++	++	+
Student-Faculty Research	+++	++	++	++
Internship	++	++	++	++
Service Learning	+++	++	+++	++
Senior Culminating Experience	+++	++	++	++

+ p < .001, ++ p < .001 & Unstd B > .10, +++ p < .001 & Unstd B > .30

FEMALE

	Deep Learning	Gains General	Gains Personal	Gains Practical
First-Year				
Learning Communities	+++	++	++	++
Service Learning	+++	++	++	++
Senior				
Study Abroad	++	+	+	
Student-Faculty Research	+++	++	++	++
Internship	++	++	++	++
Service Learning	+++	++	++	++
Senior Culminating Experience	++	++	++	++

+ p < .001, ++ p < .001 & Unstd B > .10, +++ p < .001 & Unstd B > .30

FIRST GENERATION

	Deep Learning	Gains General	Gains Personal	Gains Practical
First-Year				
Learning Communities	+++	++	+++	++
Service Learning	+++	++	+++	++
Senior				
Study Abroad	++	+	++	
Student-Faculty Research	+++	++	+++	++
Internship	++	++	++	++
Service Learning	+++	++	+++	++
Senior Culminating Experience	+++	++	++	++

+ p < .001, ++ p < .001 & Unstd B > .10, +++ p < .001 & Unstd B > .30

AFRICAN AMERICAN

	Deep Learning	Gains General	Gains Personal	Gains Practical
First-Year				
Learning Communities	+++	++	++	++
Service Learning	+++	++	+++	++
Senior				
Study Abroad	++		++	
Student-Faculty Research	+++	++	+++	++
Internship	++	++	++	++
Service Learning	+++	++	++	++
Senior Culminating Experience	+++	++	++	++

+ p < .001, ++ p < .001 & Unstd B > .10, +++ p < .001 & Unstd B > .30

HISPANIC

	Deep Learning	Gains General	Gains Personal	Gains Practical
First-Year				
Learning Communities	+++	++	++	++
Service Learning	+++	++	+++	++
Senior				
Study Abroad	++		++	
Student-Faculty Research	+++	++	++	++
Internship	++	++	++	++
Service Learning	+++	++	++	++
Senior Culminating Experience	++	++	++	++

+ p < .001, ++ p < .001 & Unstd B > .10, +++ p < .001 & Unstd B > .30

WHITE

	Deep Learning	Gains General	Gains Personal	Gains Practical
First-Year				
Learning Communities	+++	++	++	++
Service Learning	+++	++	+++	++
Senior				
Study Abroad	++	+	++	
Student-Faculty Research	+++	++	++	++
Internship	++	++	++	++
Service Learning	+++	++	+++	++
Senior Culminating Experience	++	++	++	++

+ $p < .001$, ++ $p < .001$ & Unstd B > .10, +++ $p < .001$ & Unstd B > .30

ASIAN / PACIFIC ISLANDER

	Deep Learning	Gains General	Gains Personal	Gains Practical
First-Year				
Learning Communities	+++	++	+++	+++
Service Learning	+++	++	++	++
Senior				
Study Abroad	++		++	
Student-Faculty Research	+++	++	++	++
Internship	++	++	++	++
Service Learning	+++	++	++	++
Senior Culminating Experience	+++	++	++	++

+ $p < .001$, ++ $p < .001$ & Unstd B > .10, +++ $p < .001$ & Unstd B > .30

Appendix C

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

SCALE OF EDUCATIONALLY PURPOSEFUL ACTIVITIES

A summative scale of nineteen NSSE items measuring student interaction with faculty, experiences with diverse others, and involvement in opportunities for active and collaborative learning

➢ Asked questions in class or contributed to class discussions

➢ Made a class presentation

➢ Prepared two or more drafts of a paper or assignment before turning it in

➢ Come to class without completing readings or assignments

➢ Worked with other students on projects during class

➢ Worked with classmates outside of class to prepare class assignments

➢ Tutored or taught other students (paid or voluntary)

➢ Participated in a community-based project as part of a regular course

➢ Used an electronic medium (listserv, chat group, Internet, etc.) to discuss or complete an assignment

➢ Used e-mail to communicate with an instructor

➢ Discussed grades or assignments with an instructor

➢ Talked about career plans with a faculty member or advisor

➢ Discussed ideas from your readings or classes with faculty members outside of class

➢ Received prompt feedback from faculty on your academic performance (written or oral)

➢ Worked harder than you thought you could to meet an instructor's standards or expectations

➢ Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)

➢ Discussed ideas from your readings or classes with others outside of class (students, family members, coworkers, etc.)

➢ Had serious conversations with students of a different race or ethnicity than your own

➢ Had serious conversations with students who differ from you in terms of their religious beliefs, political opinions, or personal values

Cronbach's Alpha Coefficient for Internal Consistency: .818

NSSE Response Set: 2000 = 'Very often,' 'Often,' 'Occasionally,' 'Never;' 2001-2003 = 'Very often,' 'Often,' 'Sometimes,' 'Never'

Source: George D. Kuh, Jillian Kinzie, Ty Cruce, Rick Shoup, and Robert M. Gonyea, Connecting the Dots: Multi-Faceted Analyses of the NSSE, and the Institutional Practices and Conditions that Foster Student Success *(Bloomington, Indiana: Center for Postsecondary Research, 2006). nsse.iub.edu/pdf/Connecting_the_Dots__Report.pdf*

Notes

1   An earlier version of the present study was published in *Experiences That Matter: Enhancing Student Learning and Success*, a fall 2007 report from the National Survey of Student Engagement.

2   *Greater Expectations: A New Vision for Learning as a Nation Goes to College*, (Washington, DC: Association of American Colleges and Universities, 2002); Carol G. Schneider, *Practicing Liberal Education: Formative Themes in the Re-invention of Global Learning*, (Washington, DC: Association of American Colleges and Universities, 2003); Carol G. Schneider, "Making Excellence Inclusive: Liberal Education and America's Promise," *Liberal Education* 91, no. 2 (2005): 6–17; *College Learning for the New Global Century* (Washington, DC: Association of American Colleges and Universities, 2007); Carol G. Schneider, "Liberal Education Takes a New Turn," *The NEA 2008 Almanac of Higher Education*, (Washington, DC: The National Education Association, 2008), 29–40.

3   Association of American Colleges and Universities is conducting a research and campus-based initiative designed to make the essential learning outcomes central to the educational experience. For more information about this initiative, visit www.aacu.org/value.

4   "How Should Colleges Prepare Students to Succeed in Today's Global Economy?" Survey among employers and recent graduates by Peter D. Hart Research Associates, Inc., conducted on behalf of Association of American Colleges and Universities, December 2006, www.aacu.org/leap/documents/Re8097abcombined.pdf.

5   "How Should Colleges Assess And Improve Student Learning? Employers' Views on the Accountability Challenge," Survey of employers by Peter D. Hart Research Associates, Inc., conducted on behalf of Association of American Colleges and Universities, January 2008, www.aacu.org/leap/documents/2008_Business_Leader_Poll.pdf.

6   "How Should Colleges Assess and Improve Student Learning?" January 2008. The survey found that only 6 percent of employers reported "all" of the recent graduates at their company had the skills they needed to be promoted beyond entry-level work; 57 percent of employers said "about half" of graduates had these skills, while 27 percent of employers said "only some/very few" of the recent graduates at their company had the skills to be promoted beyond the entry level.

7   Andrea Leskes and Ross Miller, *Purposeful Pathways: Helping Students Achieve Key Learning Outcomes* (Washington, DC: Association of American Colleges and Universities, 2006).

8   Andrea Leskes and Ross Miller, *Purposeful Pathways: Helping Students Achieve Key Learning Outcomes* (Washington, DC: Association of American Colleges and Universities, 2006), iv.

9   This section is a revised version of an appendix originally published in *College Learning for the New Global Century*, published by Association of American Colleges and Universities in 2007.

10   An extensive literature has established the value of active, engaged, and collaborative forms of learning for students. The effective educational practices described in here reflect more than two decades of work on campus to translate these broad research findings into curriculum and pedagogy. The recommended practices, while not exhaustive, provide a "cornerstone to capstone" framing that potentially fosters active intellectual engagement and practice across the entire educational experience. Research findings on the benefits of first-year experiences, learning communities, diversity learning, service learning, undergraduate research, and collaborative/cooperative learning are summarized in Ernest T. Pascarella and Patrick T. Terenzini, *How College Affects Students (Volume 2) A Third Decade of Research* (San Francisco, CA: Jossey-Bass, 2005). Results of a study testing the active learning findings in liberal arts education are reported by Ernest T. Pascarella, Gregory C. Wolniak, Tricia A. D. Seifert, Ty M. Cruce, and Charles F. Blaich in *Liberal Arts Colleges and Liberal Arts Education: New Evidence on Impacts*, ASHE Higher Education Report vol. 31, no. 3 (San Francisco, CA: Jossey–Bass, 2005). For the value of a common intellectual experience in general education, see Alexander W. Astin, *What Matters in College? Four Critical Years Revisited* (San Francisco, CA: Jossey-Bass, 1993), 331–32, 424–28. For the value of writing-intensive courses, see Richard J. Light, *Making the Most of College: Students Speak Their Minds* (Cambridge, MA: Harvard University Press, 2001), 54–62; Derek Bok, *Our Underachieving Colleges* (Princeton, NJ: Princeton University Press, 2006), 82–101. For experiential learning, see John D. Bransford, Ann. L. Brown, and Rodney R. Cocking, eds., *How People Learn: Brain, Mind, Experience and School* (Washington, DC: National Academies Press, 1999); K. Patricia Cross, *Learning Is About Making Connections, The Cross Papers, Number 3* (Phoenix, AZ: League for Innovation in the Community Colleges, June, 1999). For the role of reflection in service learning, see Patricia M. King and Matthew J. Mayhew, "Moral Judgment Development in Higher Education: Insights from the Defining Issues Test," *Journal of Moral Education* 33, no. 3, (2002): 247-270; Patricia M. King and Matthew J. Mayhew, "Theory and Research on the Development of Moral Reasoning among College Students," *Higher Education: Handbook of Theory and Research*, vol. XIX, (2004): 375-440. For "science as science is done," see Judith A. Ramaley and Rosemary R. Haggett, "Engaged and Engaging Science: A Component of a Good Liberal Education, *Peer Review* 7, no. 2 (2005), 8–12; Eugenia Etkina, Jose P. Mestre, and Angela M. O'Donnell, "The Impact of the Cognitive Revolution on Science Learning and Teaching," in *The Cognitive Revolution in Educational Psychology*, James M. Royer, ed. (Greenwich, CT: Information Age, 2005), 119–64. While the research on capstone experiences is scant, Pascarella and Terenzini report that "[intellectual development] is stimulated by academic experiences that purposefully provide for . . . integration." *How College Affects Students: Findings and Insights from Twenty Years of Research* (San Francisco, CA: Jossey-Bass, 1991), 619. See also *How College Affects Students, Volume 2, A Third Decade of Research*, 608. For two influential summaries that helped to accelerate campus-based work on engaged and active learning and its assessment, see Study Group on the Conditions of Excellence in American Higher Education, Involvement in Learning (Washington, DC: U.S. Department of Education, 1984); Arthur W. Chickering and Zelda F. Gamson, eds., *Applying the Seven Principles for Good Practice in Undergraduate Education*, New Directions for Teaching and Learning, no. 47 (San Francisco, CA: Jossey-Bass, 1991). The National Study of Student Engagement provides a set of metrics that enables a campus to indicate the extent to which its students are participating in various forms of active practice, such as extensive writing, integrative learning assignments, and capstone/culminating projects.

11   Ernest T. Pascarella and Patrick T. Terenzini, *How College Affects Students (Volume 2), A Third Decade of Research* (San Francisco, CA: Jossey-Bass, 2005).

12   George Kuh, Jillian Kinzie, Jennifer A. Buckley, Brian K. Bridges, and John C. Hyek. *Piecing Together the Student Success Puzzle: Research, Propositions, and Recommendations*, ASHE Higher Education Report vol. 32, no. 5 (San Francisco, CA: Jossey-Bass, 2007).

13   Thomas F. Nelson Laird, Rick Shoup, George D. Kuh, and M.J. Schwarz, "The Effects of Discipline on Deep Approaches to Student Learning and College Outcomes," *Research in Higher Education* 49, no. 6 (2008): 469–494.

14   George Kuh, Jillian Kinzie, Jennifer A. Buckley, Brian K. Bridges, and John C. Hyek. *Piecing Together the Student Success Puzzle: Research, Propositions, and Recommendations*, ASHE Higher Education Report vol. 32, no. 5 (San Francisco, CA: Jossey-Bass, 2007).

15   George D. Kuh, Ty Cruce, Rick Shoup, Jillian Kinzie, and Robert M. Gonyea, "Unmasking the Effects of Student Engagement on College Grades and Persistence," *Journal of Higher Education* 79 (2008): 540–563; see also Ty Cruce, Gregory C. Wolniak, Tricia A.D. Seifert, and Ernest T. Pascarella, "Impacts of Good Practices on Cognitive Development, Learning Orientations, and Graduate Degree Plans During the First Year of College," Journal of College Student Development 47 (2006): 365-383; George D. Kuh, Jillian Kinzie, Ty Cruce, Rick Shoup, and Robert M. Gonyea, *Connecting the Dots: Multi-Faceted Analyses of the Relationships Between Student Engagement Results from the NSSE, and the Institutional Practices and Conditions that Foster Student Success* (Bloomington, Indiana: Center for Postsecondary Research, 2006); Kenneth I. Maton and Freeman A. Hrabowski III, "Increasing the Number of African American PhDs in the Sciences and Engineering: A Strengths-Based Approach," *American Psychologist 59*, no. 6 (2004), 547–56. For an analysis of the extent of minority and low-income student participation in high-impact learning practices, see Kathleen M. Goodman, Tricia A. Seifert, James D. Jorgensen, Ernest T. Pascarella, Gregory C. Wolniak, Charles F. Blaich, and Carol Geary Schneider, "How Do Race and Socioeconomic Background Influence Experiences of Good Practices in Undergraduate Education?" (Paper presented at the Association for the Study of Higher Education Annual Conference, Anaheim, CA, November 4, 2006).

16   George D. Kuh, Jillian Kinzie, John H. Schuh, Elizabeth J. Whitt, et al., *Student Success in College: Creating Conditions That Matter* (San Francisco: Jossey-Bass, 2005).

17   National Study of Student Engagement, *Experiences That Matter: Enhancing Student Learning and Success* (Bloomington, IN: Indiana University Center for Postsecondary Research, 2007).

18   Ernest T. Pascarella and Patrick T. Terenzini, *How College Affects Students (Volume 2) A Third Decade of Research* (San Francisco, CA: Jossey-Bass, 2005).

19   Thomas F. Nelson Laird, Daniel P. Chen, and George D. Kuh, "Classroom Practices at Institutions with Higher-than-expected Persistence Rates: What Student Engagement Data Tells Us," in *The Role of the Classroom in Student Persistence*, ed. John M. Braxton. (San Francisco: Jossey-Bass, forthcoming).

About the Authors

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Association of American Colleges and Universities

AAC&U is the leading national association concerned with the quality, vitality, and public standing of undergraduate liberal education. Its members are committed to extending the advantages of a liberal education to all students, regardless of academic specialization or intended career. Founded in 1915, AAC&U now comprises more than 1,150 accredited public and private colleges and universities of every type and size.

AAC&U functions as a catalyst and facilitator, forging links among presidents, administrators, and faculty members who are engaged in institutional and curricular planning. Its mission is to reinforce the collective commitment to liberal education at both the national and local levels and to help individual institutions keep the quality of student learning at the core of their work as they evolve to meet new economic and social challenges.

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