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Cover Illustration by Dave Cutler for peerReview.
At the 2006 Association of American Colleges and Universities (AAC&U) annual meeting, Richard Florida, professor of public policy at George Mason University and author of *The Flight of the Creative Class*, articulated the cornerstone of his philosophy to a room filled to the brim with interested participants: “Every single human being is creative. The great challenge of our age,” he said, “is to tap and harness all of that creativity.” This call for recognizing and capitalizing on creative resources was issued not only at the AAC&U meeting, but concurrently at the 36th World Economic Forum Annual Meeting in Davos, Switzerland. The Davos meeting, convened under the title “The Creative Imperative,” called for business, political, and civil society leaders to harness creativity to provide new answers to the world’s problems. In Davos, Mukesh Ambani, chairman and managing director of Reliance Industries in India and cochair of the 2006 World Economic Forum meeting, told attendees that “the world has a real chance if we form global partnerships to banish poverty, and we need creative solutions.”

This issue of *Peer Review* is titled “The Creativity Imperative” because the roles of creativity and innovation in undergraduate education are essential if we are to prepare students to succeed and make a difference in today’s world. The issue had its genesis over a year ago at the AAC&U annual meeting in San Francisco when I first met with Joe Trimmer, who directs the Virginia Ball Center for Creative Inquiry at Ball State University. Joe proposed that *Peer Review* would be an appropriate place to bring together a collection of articles that would highlight the role of creativity on the college campus. Joe was inspired by the article “The Creative Campus: Who’s No. 1?” written by Stephen Tepper (who is also an author in this issue), which was published in the October 1, 2004, issue of *The Chronicle for Higher Education*. In his *Chronicle* article, Tepper states, “Creativity thrives on those campuses where there is abundant cross-cultural exchange and a great deal of ‘border’ activity between disciplines, where collaborative work is commonplace, risk taking is rewarded, failure is expected, and the creative arts are pervasive and integrated into campus life.”

Joe became such a champion for publishing an issue of *Peer Review* on the theme of creativity that he volunteered the Virginia Ball Center’s support to sponsor the issue, and we welcomed him as a coeditor and author. He worked with the editors to develop an author list that would recognize the range of good work on creativity occurring on many campuses. We also invited authors from outside of the academy to share their points of view on how creativity and innovation will determine our students’ future in the workplace and the larger community. The call for fostering a creative workforce becomes particularly meaningful when paired with an article on the Davos meeting in the January 30, 2006, issue of *Newsweek* by Richard Florida. In that article, Florida reports that presently “more than 40 million Americans work in the creative economy, which has grown by 20 million jobs since the 1980s and accounts for more than $2 trillion—nearly half—of all wages and salaries. Over the next decade, the U.S. economy will add some 10 million new creative-sector jobs, according to our calculations based on the latest Burea of Labor Statistics forecasts.”

Attendees at the 2006 AAC&U annual meeting were given a preview of “The Creativity Imperative” issue when authors Joe Trimmer, Steven Tepper, and Tori Smith-Haring presented their papers in a concurrent session called “The Creative Campus.” In the spirit of collaboration, those who attended the session were asked to submit words to the presenters that represent the key elements of creativity. As the session ended, a consensus was reached—the following words were chosen to reflect the arch of the creative process: *immerse, stretch, fail, improvise, collaborate, engage, integrate, persist, create, reflect, and transform*. These words, which are featured on the cover of this edition, represent the essential elements of creativity necessary to lift and propel students toward a future of unlimited possibilities.

—SHELLEY JOHNSON CAREY

To listen to the AAC&U Podcast feeds for “The Creative Campus” and “The Flight of the Creative Class,” from AAC&U’s 2006 Annual Meeting go to www.aacu.org/podcast.
Taking the Measure of the Creative Campus

By Steven J. Tepper, associate director of the Curb Center for Art, Enterprise, and Public Policy and assistant professor of sociology, Vanderbilt University

Four years ago, while still at Princeton University, I started teaching a course on the social conditions of creativity in art, science, and business. Teaching about creativity is a lot like teaching about health and nutrition—it has certain spillover effects outside the classroom. Nutritionists see “bad health” all around them—in grocery stores, in restaurants, and in their cupboards. Likewise, I started seeing obstacles to creativity all around me—especially on campus.

During this time, I was asked to help plan an American Assembly public affairs forum focusing on the creative campus. The meeting was intended to highlight the important role that colleges and universities play in the larger arts ecology—as commissioners of new work, as employers, as training institutions, and as presenters of performing arts. Rather than just celebrating and promoting the arts, I felt it was important that the assembly raise questions about whether campuses were truly creative places. And if they were, how would we know? My article for the Chronicle of Higher Education, “The Creative Campus: Who’s Number 1?” explored this question—focusing on the arts, but examining the conditions for creativity in other disciplines as well (Tepper 2004). Creativity thrives on those campuses where there is abundant cross-cultural exchange and a great deal of “border” activity between disciplines, where collaborative work is commonplace, risk taking is rewarded, failure is expected, and the creative arts are pervasive and integrated into campus life.

Beyond examining the conditions for creativity, it is important to think about how to explore and assess these conditions. What would a research agenda on the creative campus look like? In the absence of an established research community, what ideas, methodologies, and approaches might be useful in pursuing such an agenda?

Underlying Social Dynamics of the Creative Campus

Every April, the MacArthur Foundation awards $500,000 “genius” grants to twenty extraordinarily creative people—artists, scientists, and social entrepreneurs. The awards come with “no strings attached,” giving individuals the freedom and resources to pursue their talents and ideas. It is a remarkable program. But, from a sociological perspective, it reinforces the dominant myth of the individual creative genius (the scientist alone in her lab or the artist in his garret) and ignores the social structure that underlies creative work. It is important to recognize and support the creative luminaries, but it is equally important to understand the often invisible pathways along which creative work flows.

1 This will be the focus of a convening next year at Vanderbilt, supported by the Ford Foundation and cohosted with the University of Texas at Austin and the Association of Performing Arts Presenters.
As it turns out, the methodology that is most in vogue right now in the social sciences—network analysis—is well suited to help figure out the underlying social dynamics of the creative campus. Network analysis is used to map relationships or ties between people, ideas, organizations, products, or just about any other part of social life. Such analysis has been used to understand such diverse phenomena as micro-brew pubs, terrorist cells, and the friendship circles of high school teenagers as well as a variety of creative enterprises, from Broadway theatre to astronomy. These efforts to describe the linkages that lead to creative breakthroughs can identify important nodes in a network, such as the creativity brokers who connect artists and scholars who might not otherwise collaborate or even know of one another. Network analysis can also identify the gaps in a network, or the presence of multiple clusters of independent creative groups.

A rigorous network analysis of the creative activity of our campuses would reveal, I am sure, fascinating and unexpected patterns of activity. We would find robust creative work in unforeseen places, and creativity brokers who were not immediately obvious—a new assistant professor working in a nontraditional field or a campus “arts presenter,” for example, rather than a seasoned department chair or associate dean. In a well-known essay in the New Yorker, “Six Degrees of Lois Weisberg,” Malcolm Gladwell (1999) demonstrates that the self-effacing seventy-year-old grandmother and former cultural commissioner of Chicago is in the middle of a dense network of creative people as diverse as Dizzy Gillespie, Tony Bennett, Isaac Asimov, William Saroyan, and Lenny Bruce. Lois Weisberg is a creative “connector” who belongs to many different social worlds and, consequently, has been directly or indirectly involved in the development of literally hundreds of creative enterprises and the success of dozens of creative careers. Ultimately, network analysis can not only help identify the Lois Weisbergs on our campuses, it can also help university leaders identify the deep structure of creative activity so that they can better leverage resources to support and foster this work.

We want to understand broader patterns of creative work, but it is also important to understand the individual experiences of our students. Are they engaged in creative pursuits? When I arrived in Nashville last year, a colleague asked what I thought of the Vanderbilt students. I was teaching a freshman seminar on the culture wars and I remarked that I was impressed by the poise, curiosity, and engagement of these eighteen-year-olds. He told me to wait until I taught a class of upperclassmen, explaining that most students quickly lose that heightened inquisitiveness and begin to look for the shortest means to their intended ends—the least they need to do to get the “A.” By their senior year, students have been socialized to keep their curiosity in check. Moreover, they have filled their schedules with an overwhelming amount of cocurricular activity and part-time jobs. In short, many have lost their intellectual focus and creative passion.

This pattern, of course, is not unique to Vanderbilt. In an effort to get a national picture of student engagement, scholars at the Center for Postsecondary Research at the University of Indiana have been examining the extent to which U.S. college students are engaged both inside and outside of the classroom. The National Survey of
Student Engagement (NSSE), which is administered each year by the center to more than 300,000 students across several hundred campuses, provides insight into how students spend their time (whether attending arts events, playing sports, or volunteering), whether and how often they interact with faculty, and whether they talk about school material outside of class. These are extremely important questions, and schools can certainly make better use of NSSE in assessing the creative climate of their campuses. But are there other ways of measuring less tangible student outcomes—like creativity, curiosity, and a passion for learning?

It turns out that a group of educational psychologists at James Madison University’s Center for Assessment and Research Studies, led by T. Dary Erwin, have created a new measure called the “curiosity index.” The index consists of sixteen self-reported items that measure both breadth (seeking out new information from multiple sources) and depth (exhibiting sustained inquiry about a certain topic). Curious students would likely rate high on such statements as “I find myself fascinated by lots of different things” (breadth), or “When learning something, I try to gain the fullest possible understanding of the phenomenon” (depth).

In addition to survey research, there are other methods for assessing creative engagement on college campuses. For example, Mihaly Csikszentmihalyi (1990) has advanced a very influential theory of creative activity based on the notion of “flow”—the sensation that individuals feel when they are fully engaged with a task in which they experience a sense of exhilaration and deep enjoyment while working through a challenge or puzzle with poise, skill, and some level of mastery. Scholars have attempted to measure flow among students, scholars, and artists. The technique typically involves giving a sample of individuals beepers that go off at random intervals throughout the course of day. When their beepers sound, these individuals record in a diary or journal what they were doing at the time of the beep and reflect upon the perceived challenge of the activity, their sense of efficacy, and the emotional and intellectual “affect” resulting from the activity.

To the extent that colleges and universities are interested in fostering more “flow-like” experiences among their faculty and students, it might make sense to employ Csikszentmihalyi’s journal technique on a regular basis among a sample of faculty and students. What types of experiences lead to heightened intellectual and creative engagement? In what contexts and under what conditions? Do students achieve a state of flow when listening to music, watching a theatrical presentation, talking to classmates, or listening to a lecture? Like network analysis, flow diaries can, over time, begin to identify where the creative synapses of campus life are firing and where they are not.

If we look beyond the walls of the academy, we will find that management scholars and consultants have been trying to measure the climate for creativity and innovation within such industries as aerospace, high-tech electronics, consulting, information systems, and engineering, and at other “creative economy” firms. These studies, using a variety of methods, have much to offer those of us interested in the creative campus. Perhaps the best known instrument is KEYS: Assessing the Climate for Creativity, which was developed by Harvard professor Theresa Amabile (Amabile et al. 1996).

KEYS, along with several other similar assessments, examines whether an organization encourages risk taking, whether creativity is adequately recognized and rewarded, whether resources are available to move new ideas forward, whether there is unhealthy internal competition or a negative political climate, and other environmental factors. Many instruments also measure the “creative
"vibe" of an organization, capturing such attributes as the liveliness or dynamism of a place, or levels of playfulness and humor. In fact, some of the most interesting recent work attempts to measure the “creative energy” in an organization by first mapping all interactions between workers (network analysis) and then figuring out which of those interactions produce feelings of high energy and which are energy detractors (Cross, Baker, and Parker 2003).

**The Nature of Art and Creativity**

I would like to argue that the arts provide a particularly useful window into the creative campus. The arts have long been recognized as important catalysts for creative work across domains. I believe that a network analysis of the artistic life of the campus will reveal artists, artistic brokers, and arts enthusiasts working in unexpected places throughout a campus. In fact, the relationships formed because of and through the cultural life of a campus may well serve as conduits for other types of creative flows and ideas. Likewise, I think a study of student engagement, “curiosity,” or “flow” on a college campus will be intricately connected to artistic and expressive activity. And certainly the arts create the dynamism, playfulness, humor, and “high energy” that organizational scholars have been searching for and measuring in the world of business.

Of course, the “big research agenda” would not only look at the conditions for creative work, but would also examine how the creative or artistic life of a campus contributes to the educational and social life of a university or college. How does artistic and creative expression produce social capital, build trust, increase tolerance, and produce a sense of community? In what ways do the arts (or other creative outlets) help students forge a sense of identity and develop their own unique worldview? There are also questions about the link between the creative life of universities and the larger cultural, social, and economic milieu. How do the artistic and creative skills learned in college help train future knowledge workers for the creative economy? And in what ways do college campuses serve as catalysts in the larger arts ecology—as incubators of new work and as sources for the diffusion of new artistic or aesthetic ideas?

The creative campus is not just a fashionable alliteration. Universities and colleges have established task forces on creativity (the University of Alabama is one example); hired arts “czars” (as at Columbia University and the University of North Carolina at Chapel Hill); created new trans-institutional or cross-domain centers and institutes (as at Vanderbilt University and the University of Illinois, Urbana-Champaign); and adopted courses, fellowships, or learning experiences focused on creativity (as at the State University of New York at Stony Brook and Ball State University). These actions are predicated on the belief that creativity may be an underappreciated and underutilized asset on college campuses. If the right social conditions, institutional structures, personal relationships, and opportunities for personal expression can be created, stimulated, and nurtured, then we can make our campuses more invigorating places to work and learn. But we must match our entrepreneurial zeal to create new programs and new structures with an equal commitment to use our campuses as laboratories to learn more about the nature of art and creativity—both the conditions that foster it and its consequences for our intellectual, social, emotional, and political lives.

**References**


Creativity in the World of Work

By Michael Devine, Devine Designs, Savannah, Georgia

The high prize of life, the crowning glory . . . is to be born with a bias to some pursuit which finds him in employment and happiness—whether it be to make baskets, or broadswords, or canals, or statues, or songs.

—Ralph Waldo Emerson

Like many of my fellow travelers, I have seen enormous and ever-accelerating changes in how we work and perceive our future. My particular perspective has been as a “creative”—that strange breed lurking at the fringes of corporate America that is a necessary but hardly integrated part of the business tribe. From that unique vantage point, I have formed a few thoughts and opinions about the essential role of creativity in the workplace, and more than a few questions about the future of that workplace. There appear to be no clear answers to these questions—only exciting possibilities.

Describing the Elephant

My years in the workplace have caused me to reflect more than once upon those delicate strands that form the strongest, most rewarding, and most enduring work environments (like silk, seemingly fragile but incredibly strong). The slender thread that has held together the most successful project teams and bound together the most dynamic corporate environments is the recognition that creative ideas are the most precious commodity, and that those who stimulate and create and manage to nurture those ideas are to be valued, no matter what their official job description or title, no matter what their level in the workplace.

Conversely, I have worked in environments where creative input or ideas were regarded as a challenge to the prevailing way of working—a breach of the “command and control” hierarchy. Those who put forward creative ideas were regarded with suspicion, at best, and at worst were ostracized.

Creativity Defined and Described

The ability to make or otherwise bring into existence something new, whether a new solution to a problem, a new method or device, or a new artistic method or form.

—Idea of “creativity” in Encyclopedia Britannica Online

I’m always thinking about creating. My future starts when I wake up every morning. Every day I find something creative to do with my life.

—Miles Davis

I’ve noticed an interesting bit of word play during my career that I’d like to share in hopes of lending clarity to one part of the divide between the creative folks and the rest of the world. The fork in the road might begin with the word “creativity” itself. In the workplace, creativity often has a pejorative meaning stemming, I think, from the popular notion that it equates to “arty,” which for many corporate managers or lead
foremen conjures up images of berets and feathers and dissolute, impulsive, and irresponsible behavior. There are certain jobs where, admittedly, the word carries other unwanted connotations. The proximity of “creative” and “accounting” and “Enron,” for instance, or “creative” and “brake repair,” spring to mind.

Change the word from creativity to innovation, however, and managerial shoulders might begin to relax considerably around the workplace. No matter what the term, I believe that creativity in the workplace is here to stay and I believe wholeheartedly that, as Jan Kilby (2001) stated in the *San Antonio Business Journal*, “In globally competitive organizations, creativity occurs in every department at every level.”

The Creative Workplace—What It Ain’t (or, In the Valley of the Hats)

Early in my working life I took a job in a mid-sized steel foundry (long since shut down and moved offshore) that made giant cast-steel pulleys used in industrial elevators and drawbridges. My job was to shovel burning hot sand back into the casting molds in between pours. It was as close to the vision of Dante as I ever hope to come. I bring this up here as an example of the workplace at its least productive.

The workers were organized into castes according to job and rank and identified by the color of their hard hats (Gold Hats were executives, White Hats floor managers, Red Hats foundry men, Green Hats machinists, and so on down the food chain to my group—Blue Hats, cleanup crewmembers and laborers). It was a classic top-down management structure with the added onus of a caste system created by hat color. Not only did the Red Hats not talk to or socialize with the Green Hats (and so on), but all color hats would scuttle away at the sight of a Gold or White Hat. Not just “them and us” but them and them and them . . . and us. God knows what the productivity rate was in our workplace, but I can assure you that it stunk.

I have not seen a more divisive workplace since, but I have often detected faint wisps of that “hat” behavior permeating the workplace—whether on a shop floor or in a well-carpeted office space. As the workplace changes, the worker caste system becomes less and less of an effective option in running a company. There is a discernable change a-coming.

The Workplace (as it Just Was)

It seems moments ago that the college graduate stepped forward into the cadre known, thanks to Peter Drucker, as “knowledge workers.” This modern workforce, the dream of middle-class parents everywhere, was composed of doctors, lawyers, accountants, software engineers, aerospace engineers, and the omnipresent MBA graduates. The distinguishing characteristic of this group was, according to Drucker, their “ability to acquire and to apply theoretical and analytic knowledge”. These sorts of talents, asserts Daniel H. Pink, “were the sorts of linear, logical, analytical talents measured by SATs and deployed by CPAs” (Pink 2005).

The Workplace as It Often Is (Right Now)

In the course of my career, I have seen a slow shift from ghettoizing creative talent (those hats again) to integrating creative thinkers into the mainstream of corporate culture. Moving creative departments, media production, and creative directors more closely to the corporate bosom, or at least inviting their input and extending inclusion earlier in the decision-making processes, is the next step needed to fully realize the value added by the creative thinkers in the workplace.

All my previous discussion serves as a prologue to the question at hand—why is a creative workplace important? It’s about us, our self esteem, part of our internal weave, the Emersonian individual in all of us. We don’t willingly train at university to enter an unhappy, unrewarding, unfulfilling career. We aspire. It is our nature. We are creative beings, after all.
The Workplace as It Can Be (or, In the Bosom of the Mouse)

I can attest to the excitement of working in a creative workplace. Walt Disney Imagineering was like that when I worked there from the late 1980s through the mid-1990s—the environment was electric for designers and managers alike. People at all levels of the project team (in this case, the $3 billion Tokyo Disney Seas project) were immersed in the process of generating ideas. No relevant idea went unexplored, regardless of its origin. No team member was excluded from developing ideas, regardless of his or her job description. Respect for one’s fellows was the unspoken code under which we all worked. The result was a spectacular park for the company and a profound sense of achievement for the team.

What occurred, I believe, was a working model of Richard Florida’s “creative class,” where the creativity of both “key players” and “bit players” was maximized by, in his words, “the cultivation of distinct patterns of thought and behavior in an environment that broadly supports it.” The six-year project met the three criteria of Florida’s theory of the three T’s, technology, talent, and tolerance:

Technology: The technology base available to the park creators ran the gamut from aerospace to Silicon Valley to the resources of a world-famous in-house research and development department.

Talent: The company was able to assemble the team from the deep talent pool nationwide, drawing architects from New York, engineers from CalTech, artists from all over, and the best designers in the Hollywood entertainment community. The junior staff represented some of the best and brightest graduates of dozens of colleges and universities around the country.

Tolerance: Lastly, the team was a mini UN, with members from over thirty countries represented. Tolerance was not something anyone worked at; it just was part of the fiber of our workplace.

I have seen a micro-version of Florida’s creative new world and it works. It is exciting to ponder the possibilities expanding outward as the new model emerges. If, in fact, the workplace becomes a place of mutual understanding and respect—where creative thinking is regarded less as a necessary evil and more as an essential part of strategic planning, where the ideas of MFAs and MBAs and, yes, GEDs are equally regarded—what sort of person will occupy the catbird chairs in the future, and how will they be trained?

How the Disney team was selected may give some insight into the preparation necessary to enter the creative class described by Florida. Given the universally high level of skills available to the company, what were the distinguishing characteristics of the individuals chosen for the project team?

First, without exception team members had a strong sense of the world around them, had interests far beyond the scope of their work, and displayed a real desire to know more about a wide range of subjects. They also had the ability and need to see something through and keep making it better as it evolved. They respected the goals of the project and respected their colleagues in the workplace. They were able to work unsupervised and efficiently, but sought help when it was needed. They also had poise and were able to remain calm in a crisis. Lastly, and most importantly, they had a sense of humor.

Lessons from the Workplace

Things are not difficult to make. What is difficult is putting ourselves in the state of mind to make them.

—Constantine Brancusi

How these “distinct patterns of thought and behavior” are developed remains the baseline of a successful educational experience at the college and university level. Higher education is the strongest tool for preparing the creative workforce of the (very) near future. I believe that there are some important lessons to be drawn from the workplace environments described above that might be applied to the training of students who are about to enter the changing world of work.

Lose the hats. Challenge hierarchies of certainty and caste. By that I mean do not let students assume a fixed pattern of thought. Ask for opinions, not just answers. Lose the internal hat culture within the faculty ranks. Treat each other “collegially,” if you will. Seek and give help to one another. Yes, the academic
rank divide does trickle down to the students, believe me. Create an atmosphere where open discourse on all levels is encouraged and respectful challenge is the norm. It will be pure oxygen for students and faculty alike.

**Keep digging.** Create learning situations that have more than one outcome and require multiple approaches to solutions.

**Work in groups.** In my experience, some of the most successful and creative workers were performing arts majors in college. I have come to believe that there are several reasons for their success. The performing arts major’s training involves intense individual study (role memorization, dance steps, music memorization, and solo practice) combined with the interdependence of rehearsal and performance as part of an ensemble effort—in other words, training in self-sufficiency and group dynamics. Forming small groups to solve complex problems is the best “real-world” training you can give.

**Be a mentor.** Working with a mentor can be a critical fulcrum in a student’s life. This is the point where self-esteem is nurtured and where the “life stuff” that absorbs so much of the student’s time and energy can get an airing. It is the time when the professor steps off Mt. Olympus and assumes human garb. It is just not the professor that mentors. In a healthy climate, advanced students can play a critical role in guiding those who are less far along in their college careers. Again, this breaks down the hierarchy and invites participation by all.

**Show your respect.** Aretha got it right, baby. Respect is the drive wheel of the creative engine. Respect of self and respect for others are the heart and soul of the creative workplace. Respect can and must be taught. Insist upon respectful behavior from all parties, faculty, staff, and students, and higher education will be well on its way to becoming the cornerstone of the creative workplace.

And a final quote from Florida: Creativity is not a tangible asset like mineral deposits, something that can be hoarded or fought over or even bought or sold. We must begin to think of creativity as a common good like liberty or security. It’s something essential that belongs to all of us, and that must always be nourished, renewed, and maintained—or else it will slip away.

... and the choir says, “Amen.”

**References**


In addition to its annual meeting, AAC&U offers a series of working conferences and institutes each year. Additional information about the upcoming meetings listed below is available online at www.aacu.org/meetings.

### Network for Academic Renewal Meetings

**April 20–22, 2006**
**Learning and Technology:** Implications for Liberal Education and the Disciplines
Seattle, Washington

**October 19–21, 2006**
**Diversity and Learning:** A Defining Moment
Philadelphia, Pennsylvania

**November 9–11, 2006**
**Faculty Work in the New Academy:** Emerging Challenges and Evolving Roles
Chicago, Illinois

### Summer Institutes

**June 9–14, 2006**
**The Institute on General Education**
Washington, DC

**June 21–25, 2006**
**The Greater Expectations Institute**
Snowbird, Utah
Many of the other essays in this issue look at the importance of creativity from the perspectives of students, faculty members, and educational institutions. And clearly, each of these constituencies has a stake in encouraging creative behavior. My interest, however, lies in the connection between creativity and national prosperity. Creativity and innovation have become essential to generating the jobs that we will need in order to sustain our standard of living over the coming decades. And as the process of innovation itself evolves and demands new skills, our colleges and universities must rise to the task of fostering creativity among students, faculty, and the broader community. Creativity may be about fun and games, but it is also America’s single greatest comparative advantage in an increasingly competitive global marketplace.

At one of our recent meetings, John Young, the founder of the Council on Competitiveness and former CEO of Hewlett Packard, explained, “Our standard of living is not a birthright. We have to earn it in the marketplace every day.” Today the United States has the highest standard of living in the world. The flip side of this is that we also have very high labor costs compared to other countries. We will never be able to compete directly with countries like China and India on the basis of cost, and, as low-wage nations around the world develop skilled workforces and adopt cutting-edge technology, we can no longer assume that we will win on quality either.

The solution involves one of the basic tenets of corporate strategy—focus on what you do best and do it better than anyone else. And what we in America do best is to innovate—to generate new ideas, design new products, deliver sophisticated services, and introduce new business strategies. The jobs that are most vulnerable to low-wage competition tend to be the least creative. If it is routine or rule-based, if it can be digitized or reliably codified, then it can be “offshored” to a location with lower labor costs.

Thankfully, despite the concerns raised in many of the essays in this issue, America’s colleges and universities are some of the best in the world when it comes to encouraging creativity, innovation, risk taking, and entrepreneurship. But we can do better, and we must do better as the rest of the world builds up capacities that were once our unique advantage.

The Global Innovation Race

The world has changed dramatically over the past two decades. Many nations have embraced market economies and moved toward political democratic norms. Billions of people have joined the global trading system. And this is a good thing. Despite the sometimes dislocating effects of global trade, overall standards of living are rising rapidly around the world. Opportunities that were once undreamt of are now within reach for millions of people.

Taking their cue from America’s success, countries around the world have also realized that they must focus on innovation by investing in education, research, and infrastructure. In the 1980s, the United States faced almost no competition in the
arena of innovation. Even today, with only 5 percent of the world's population, we employ nearly one third of all science and engineering researchers, account for 40 percent of global research and development spending, and publish 35 percent of all scientific articles in the world. But our lead is narrowing. We have seen the rapid rise of advanced manufacturing in places like Korea, Taiwan, and China. Recently, China even surpassed the United States in exports of advanced technology products. And, as high-technology production has moved overseas, research and development activities have begun to follow.

Now, even the service sector has opened up to global competition. Widespread deployment of high-speed telecommunications combined with rising levels of education and falling trade barriers mean that white-collar work that once had to be physically located in the United States can now be performed overseas—not just technical support and software development but even financial research, legal services, or x-ray analysis.

While some people see offshoring as a "hollowing out" of the U.S. economy, I see a rapid ascent up the value chain. Activities that were once considered highly sophisticated, like manufacturing electronic components or developing custom software, have become routine and commoditized. As India, China, and others move up the value chain, it is imperative that we continue to find new ways to generate value that cannot be generated elsewhere. We need to add new rungs to the ladder as others move up behind us. In today's economy, that means focusing on the most creative aspects—generating intellectual property, emphasizing design, and taking risks on completely new ways of doing business. This does not mean abandoning traditional industries like manufacturing; rather, it means finding innovative ways to create value within those industries.

**Innovating on Innovation**

For this reason, we at the Council on Competitiveness believe that innovation will be the single most important factor in determining America's success through the twenty-first century. Two years ago we launched the National Innovation Initiative to better understand the importance of innovation for U.S. competitiveness and to identify a set of actions that the public and the private sector should take to increase our innovation capacity. The result is laid out in our National Innovation Initiative’s report, *Innovate America: Thriving in a World of Challenge and Change*.

Our research indicates that innovation has changed tremendously from the days of large industrial research laboratories and ivory tower universities. Where, how, and why innovation occurs are in flux—across geography and industries, in speed and scope of impact, and even in terms of who is innovating. We see this transformation in a number of areas.

For example, while in the past large corporations pushed out innovations that they hoped customers would buy, now the customers are getting involved and suggesting (or demanding) new directions for companies to pursue.

As the complexity of technology increases, we also see that innovation is becoming more collaborative. Each new product or service now requires a range of organizations and individuals with different assets and skills to come together. The rise of open-source methods in software development illustrates just one of many new models for collaboration. This rapid rise in complexity requires collaboration not only across organizations but also across established academic disciplines. Cross-disciplinary teams are now essential to tackle the most critical problems confronted by business, academia, and society.
It is important to recognize that while science and technology are critical to the innovation process, innovation is not the sole preserve of scientists and engineers. A truly cross-disciplinary team must span the arts, humanities, and social sciences as well as the sciences. And that is why creativity must be a fundamental goal of liberal education. Not only must scientists and engineers learn to think creatively in a range of areas, but also all liberal arts students need to learn how to think about problems with a scientific or technological component.

Educating Innovators

While these trends that I have described—the growing importance of innovation for our national prosperity and the changing nature of innovation itself—have opened up exciting opportunities, they also challenge existing institutional structures. Our educational institutions were created in a world defined by boundaries that are now dissolving—disciplinary boundaries, organizational boundaries, national and regional boundaries, even boundaries between teachers and students or professors and entrepreneurs. While they have evolved significantly from their origins as seminaries and professional schools, few colleges or universities today see their role as the education of truly creative, entrepreneurial innovators.

And yet, while our colleges and universities perhaps were not designed for the tasks that lay ahead, they are better positioned than any of our other institutions to meet the needs of an innovative society. They are the institutions that we rely on for nurturing talent, performing frontier research, and generating breakthrough ideas. They serve as the epicenters for regional innovation hotspots, linking together small and large businesses, state and federal initiatives, entrepreneurs, and researchers. Critical to their ability to play this role—both in their local communities and at the national level—will be the degree to which creativity can become a central value in a liberal education.

The United States has many advantages when it comes to creativity, including freedom of thought and speech, a diverse population, an open society, capital markets that quickly move to support new and exciting ideas, and a heritage of risk taking and pushing back frontiers. For these reasons, the changes in the global environment play to our strengths. We are well positioned to maintain and even increase our prosperity over the coming decades, and colleges and universities will play a critical role in this national endeavor as centers for a creative liberal education.

In the early 1990s, I worked with Lucius E. Burch III, a major benefactor of the University of North Carolina (UNC) at Chapel Hill, to set up a new fellowship program for undergraduates. Inspired by the MacArthur Foundation “genius” grants and my own experience as a Watson Fellow in the early 1970s, the Burch Fellows program allows students with a passionate interest in a particular endeavor to design an intensive, individual, experiential learning project. The fellowship provides them a budget of up to $6,000 to pursue their passion wherever in the world is most appropriate. Most Burch Fellows have undertaken their projects during the summer, but a few have taken a semester off from coursework. Fellows do not receive course credit for their projects, and there is no paper due at the end. Over the eleven years of the fellowship’s operation, the fifty or so projects have included bicycling across China, studying jazz in Havana, helping a Oaxacan village document its language, and mounting a one-person show at the Edinburgh Fringe Festival.

“Doing a Burch”

The influence of the program has been disproportional to the relatively small number of students who directly benefit from it each year. Campus tour guides routinely mention the program to groups of prospective students and their parents. A few years ago, the undergraduate admissions essay topic asked prospective students to describe the project they would pursue if they were awarded a Burch Fellowship. “Doing a Burch” has become a part of the campus vernacular.

The Burch Fellowship program has been generative of another transformative learning model—this one also built upon an off-campus, project-based, integrative experience, but designed to join students and faculty in small-group learning. At Burch’s urging, a few years after the fellowship program was in operation I began work on establishing the Burch Field Research Seminar program, which allows a faculty member and a seminar-sized group of undergraduates to spend an academic semester in “the field” (defined as any place beyond daily driving distance from the Chapel Hill campus). The university agreed to forgive on-campus tuition and allowed us to substitute a program fee for participants. The organic learning experience in the field is disaggregated into academic credits when the student returns to campus, depending upon the student’s major. For each of the past eight years, an average of four Burch Field Research Seminars have been mounted on subjects ranging from plate tectonics to oral history and in destinations from the Outer Banks of North Carolina to Beijing.

In addition to providing a life-changing experience for some of the fifty fellows and a singular learning opportunity for all of them, the fellowship program has validated and underwritten an alternative model of self-pedagogy. This model is premised upon the belief that students want to learn about things they care about. By greatly expanding the range of people, experiences, and materials they can learn from, students learn how to learn. This encourages students to challenge themselves and to learn from their mistakes as well as their successes. It relocates the motivations for learning from...
external institutional rewards and parental coercion to internally measured personal growth and accomplishment. It not only blurs the distinction between work and play, but also transforms the work of learning into play: an endeavor pursued for its own sake rather than in pursuit of an externally imposed goal or reward.

Making the Creative Leap

Because the Burch Fellows program can support only a half-dozen or so fellowships in any given year, the selection process is rigorous. But overall academic performance in university courses is not a criterion. We wanted the program to have a reach well beyond honors and dean's list students. Despite the fact that the program is open to over 10,000 first-, second-, and third-year undergraduates every year, an average of only twenty-five to thirty completed applications are received. Many students, I am sure, do not see themselves as competitive for a fellowship that recognizes extraordinary potential in and passion for some endeavor. Others decide not to devote the considerable time it takes to devise a project, prepare a budget, and secure letters of support. Still others cannot afford the luxury of spending a summer or semester doing something that will not earn them any money or advance their progress toward graduation.

But I suspect there's another reason why the application rate is 0.3 percent. Many students come to the university ill-prepared to make the paradigm shift or, if you like, the creative leap from a learning model based upon standardized curricula, high-stakes end-of-year tests, and grade-point averages parsed to the thousandth of a point to one predicated upon passionate interest. Ironically, the students with the most conspicuously successful high school records might be least likely to have developed and nurtured a passionate interest in anything. Karen Arnold's study of high school valedictorians found that the pressure to master all areas of the set curriculum stunted the growth of intense interests and enthusiasms well before these high-achieving students ever got to college (1995).

In the early years, I used to conduct the information sessions for the program. Some students “got” the spirit of the program immediately and were clearly excited by the prospect of living on the rim of an active volcano for a month or taking chess lessons from a grand master. But others, including a fair number of honors students, just couldn't seem to grasp the program’s intent or purpose. One student asked if his project topic had to be approved by his major adviser. Others kept quizzing me about the nature and scope of the “deliverable” that was expected from the fellowship experience, despite my having told them several times that there wasn't the expectation of any material product. For these students, the prospect of becoming their own teacher and of making the world their classroom was just too daunting.

It might also have seemed to some of them bewilderingly counterintuitive that such a program would have a place at a major research university. After all, why had the university invested hundreds of millions of dollars in equipping the campus with state-of-the-art labs, classrooms, and computing facilities and in hiring and cultivating world-class expertise in hundreds of specialized subjects only to reward students who proposed spending some of their precious time as undergraduates some place away from campus learning from people who weren't being paid by the university to teach them?

Although it is by no means singular in this respect, the Burch Fellows program contributes to the creative environment at UNC by nurturing this counterintuitive, playful model of self-rewarding autodidacticism as a potential element of the educational experience at a great research university. It carves out an intellectual space within which young people can do what they love and then gives them the resources to do it in whatever physical space they want. It encourages overreaching: proposing to hike a medieval pilgrimage trail or winning a role in an off-Broadway musical. It allows interests that are segregated into different courses, curricula, and academic units to be commingled and cross-fertilized: microfinance and painting in Samoa, for example. It accommodates the grand gesture and the self-gauged failure without putting either on the student's "permanent record." And, most importantly, perhaps, it facilitates connections—between self and world, passion and cognition, work and play, aspiration and possibility, and among disparate ways of knowing and learning.

Reference

Creative Thought Matters in Framing a Campus Strategic Plan

By Charles M. Joseph, vice president for academic affairs, Skidmore College

Colleges and universities expend considerable energy extolling their individual strengths. Each wishes to be viewed as distinctive, and campus strategic plans often can best articulate and personalize an institution’s identity. Skidmore College’s recently endorsed strategic plan, Engaged Liberal Learning: The Plan for Skidmore College: 2005–2015, envisages a future full of ambitions and aspirations. But what makes our strategic plan distinctive? The answer resides in the college’s young history.

A century ago, Lucy Scribner Skidmore founded a small club that eventually would become Skidmore College. In empowering young women, she realized that an education would be necessary if her students were to overcome the impediments that sometimes conspire against accomplishment. She understood that risk taking steeped in creative thinking would be demanded. Tomorrow’s Skidmore will chart its future upon the grounds of our past—a past proclaiming that then as now, creative thought matters, and can act as a powerful change agent.

The prominence of the arts, which at Skidmore are embedded within a broad liberal arts curriculum, continues to shape the college’s character. In designing our strategic plan, we sought to map creativity’s lessons onto the natural and social sciences and into our general education requirements, and to draw on those lessons in forging new collaborative bridges and in reinventing old models. The following are a few examples of how we have applied what we have learned about creativity to transform institutional thinking.

Engaging First-Year Students

If there is a lesson that resounds in addressing engagement, it is that timing is everything. The earlier students grasp the emancipating powers of learning, the better. First-year students must be drawn in immediately and passionately through a life-altering learning experience. Yet this in itself is hardly innovative. It is the form that engagement takes that best individualizes an institutional approach.

In Skidmore’s First-Year Experience, not only do students complete a summer reading—this year’s assignment was The Burial at Thebes (Seamus Heaney’s translation of Sophocles’s Antigone)—but they also have direct contact with the material in several ways. Students from the first-year class will actually stage the play, and rehearsals throughout the semester will be open so that students can follow the creative process of producing the play as it unfolds. Such “close-up” contact enables students to move from a traditional textual analysis to the culminating theatrical production while witnessing, discussing, and participating in the actual evolution of the work from the abstract to the visible. The contact becomes collaborative, and collaboration is surely the most vigorous form of engagement. Direct contact, therefore, and even more precisely, making abstraction visible, constitutes the college’s core approach to engagement.

Artists-in-Residence Program

Another occasion for such direct contact is provided by our Office of Special Programs, which provides programs...
that enable students to interact with some of the country's most prominent creative writers, jazz artists, dancers, and actors. As part of our strategic plan, we intend to expand residencies such as those that have brought former poet laureate Robert Pinsky and preeminent jazz artist Joshua Redman to campus.

Providing such opportunities during the regular academic year for undergraduates to work closely and directly with such luminaries as collaborators rather than observers carries the promise of a transformative experience. Moreover, such collaboration facilitates the development of a creative mind by requiring students to make the all-important transition from listener to active thinker.

While in residency, writers and artists offer their own readings and performances. They speak to the creative process of writing or improvising. They testify to their investment, exertion, and travails in creating something from nothing. (“A lot of time I struggle for inspiration. It takes courage,” commented Redman in a recent seminar.) By modeling the creative process, resident artists give students insider knowledge that excites and challenges them to expand their thinking.

**Exhibiting Creative Interdisciplinarity**

The opening of the Frances Young Tang Teaching Museum five years ago heralded the beginning of a remarkable experiment in creative interdisciplinarity at Skidmore. By frequently promoting active engagement through the intentional fusion of seemingly disparate elements, the museum's exhibits promote confrontation, and confrontation quickly draws students into dealing with conflict. Termed a “teaching museum,” the Tang is rethinking, and even rejecting, traditional museum models. Skidmore's Engaged Liberal Learning plan places the Tang at the nexus of the campus by encouraging new instructional models based on direct encounters with objects and exhibitions. Serving as a crossroads, Heaven—an exhibition curated together by a Skidmore astrophysicist, a member of the studio art faculty, and the Tang’s curator—the museum examined attempts to study and chart the stars, time, and the cosmos. The exhibition featured a range of objects, from Galileo’s first published books on the heavens to a series of three spectacular meteorites.

In such exhibits, the lines differentiating art and science are purposely blurred, and it is the student who must struggle with disentangling the two—if in fact such delineation seems wise. Since both artists and scientists must develop an acute sense of perception, and even interpretation, one discipline informs the other. And here again students must actively cross back and forth between artistic and scientific observations in ascertaining the meaningfulness of what they see. That process demands that students creatively assemble an array of observational experiences in making sense of what they are viewing. They have no choice but to be involved.

One current installation, Michael Oatman’s A Lifetime of Service and a Mile of Thread, offers fascinating, concatenate collages that instantly engage students and trigger a thought process that moves from observation to a deeper analysis of each object’s underlying structure. Oatman himself has taken a participatory role by working with students directly and sharing his own sketchbooks and drafts, which help make clear the internal workings of his own creative process.

Such collaboration facilitates the development of a creative mind by requiring students to make the all-important transition from listener to active thinker.
An upcoming installation, entitled Weapons of Mass Dissemination: The Propaganda of War, will speak intensely to the two physical world wars, and the separate, but no less influential, psychological war that was waged publicly through posters, paintings, housewares, children’s books, and other media. Many Skidmore courses offered across campus will employ materials that address the social, cultural, political, and economic questions raised by wartime propaganda. The exhibition will allow students from across campus to view the show as if they were looking through a prism, with each discipline providing a different perceptual view. Discussing those sometimes consonant and sometimes oppositional views often leads to spirited discourse.

**Fostering Visually Engaged Inquiry**

Our First-Year Experience initiative, as well as our offerings through the Office of Special Programs, push our students to engage actively in shaping their experiences—something that is absolutely fundamental to the beliefs articulated in our strategic plan. Likewise, in challenging faculty to break new ground in teaching, and in challenging students to process images and objects that stand right before their eyes in a starkly dynamic and palpable way, the Tang fosters a visually engaged model of inquiry that is at times self-directed and at times conversational—an excellent synergy with Skidmore’s Engaged Liberal Learning.

The museum compels students to focus in ways that are highly specific by looking very intently at individual objects. They must make the transition from observation to intellection. Students must relate objects analytically while pursing research that helps locate the objects in the context of their history. Exploring what one sees, rather than what one reads, builds a visual literacy that is evolving as a primary aspect of museum learning. And forming an interpretation of what one sees, touches, and processes clearly requires creative thought. Such literacy complements the more traditional ways of “knowing” typically offered in the undergraduate curriculum. In this sense, the Tang’s purpose is nothing less than refashioning museum education as a tool in the undergraduate curriculum of the twenty-first century.

Implementing strategic plans is both daunting and intriguing. At Skidmore, we have begun with the foundation of our historical traditions. We believe that seeing things in different ways allows us to remove the obstacles that often block our vision of the future. For us, creativity is reflexive, and we believe that it will serve us well as we strive to equip our students with the intellectual tools and creative thinking needed to meet the challenges of the new century.
The Virginia Ball Center for Creative Inquiry was founded at Ball State University in 2000 to enable faculty to design and implement interdisciplinary, collaborative, project-driven, and community-based immersion seminars for undergraduates. In the center's six-year history, the faculty and students in each seminar have worked together with community partners to create nationally acclaimed educational products such as museum exhibits, documentary films, theatrical productions, television shows, radio programs, interactive Web sites, digital textbooks, and scholarly publications. Several of these seminars have featured an international component as faculty and students have conducted research in Dublin, London, and Paris and collaborated with faculty and students in Argentina, Australia, and Denmark.

Because a Virginia Ball seminar is their only academic responsibility for an entire semester, both the faculty and students inevitably question the fundamental assumptions of teaching and learning. What is a class? What is an assignment? Who is responsible for teaching? What is the purpose of learning? The complexity of collaboration and the necessity for creative production quickly transform these questions into “we” questions. What are we trying to do? How can we do it more creatively? Who owns our work? How does it compete with similar work? Who should see it? How will we know if it’s any good?

As these questions suggest, teaching and learning at the Virginia Ball Center is a truly creative enterprise that encourages risk and tolerates failure while assuming that everyone will exceed their highest expectations. The collective energy devoted to such work leaves faculty and students exhausted and exhilarated, convinced that they have created something of real significance and certain that they have become the authors of and authorities on their own education.

Reentering the Conventional Classroom

The trouble starts when faculty and students leave this privileged environment and return to conventional college classrooms. The Virginia Ball Center has studied this “reentry” process to understand and help facilitate the strategies faculty and students use to cope with the creative challenge of teaching and learning “back inside the box.”

Reentry is marked, initially, by frustration, disappointment, and nostalgia. Faculty are frustrated by the rigidity of disciplinary boundaries, disappointed by the apparent disengagement of their students, and nostalgic for those wonderful days when everyone was invested in and engaged by an all-consuming creative project. Similarly, students are frustrated by the maze of graduation requirements, disappointed by the seemingly inconsequential work they are expected to produce, and nostalgic for the small group of students whose talent and dedication they learned to admire and trust. But brooding and complaining, while certainly understandable and possibly therapeutic, do not help sustain the creative energy that was unleashed at the Virginia Ball Center. Most former
seminar participants make efforts to recapture and build upon those earlier experiences.

Faculty and students try to recapture some of that energy by teaching or taking special courses that offer a similar form of experiential learning. Faculty offer Honors College colloquia and capstone seminars that enable them to teach interdisciplinary material, design creative assignments, extend the learning environment into the community, and select the students with whom they wish to work. Students try to recapture their experience by shopping for such innovative courses and by applying for fellowships, internships, and study abroad opportunities.

But faculty and students cannot avoid the traditional teaching assignments and course requirements that still characterize a large portion of the undergraduate curriculum. The large classes, filled with students of mixed ability and questionable commitment, are designed to build skills and cover content. These classes reward efficiency rather than experimentation. Teachers in such classes are experts dispensing information in an environment they control, and students are novices consuming knowledge. Innovation in such a setting is unsettling for both—teachers cannot give up control without losing credibility and students cannot assume responsibility without confronting ambiguity.

Lobbying for Classroom Innovation

For former Virginia Ball seminar faculty and students, such courses present a creative challenge. Although faculty realize that introducing or lobbying for innovation in such courses invites risk and failure, they are eager to experiment. Some faculty break large lecture classes up into smaller groups, assigning each group responsibility for developing and teaching a portion of the syllabus and inviting the rest of the class to assess their achievement. Faculty also enfranchise students by asking them to present lectures, design assignments, and evaluate examinations on certain topics. And all former Virginia Ball faculty find ways to invite community experts to talk to their students and arrange for their students to present their work in some kind of public forum.

Former Virginia Ball students lobby for and set extraordinarily high standards for collaborative work. If given a choice, these students create groups whose members have demonstrated talent, cooperative personalities, and a strong work ethic. And if they are assigned to a group with obvious slackers, they assume responsibility for explaining the ground rules and establishing expectations. Everyone must contribute. The disinterested will not be able to slide by on the work of others. In classes where some students lack commitment and skill, former Virginia Ball students often volunteer to serve as tutors, collaborating with teachers to provide motivation and supplemental instruction.

These faculty and student initiatives, although admirable and engaging, rarely match the productivity achieved at the Virginia Ball Center. A class that meets three times a week for an hour and must compete for the attention of faculty who are teaching other classes and serving on various committees and students who are taking four other classes and working at various part-time jobs cannot achieve the creativity of a seminar that focuses student and faculty attention on one project all day, every day, for a whole semester. Furthermore, students in conventional college classes have been conditioned by years of test-driven curricula, repackaged instruction, and minimal expectations. Students in conventional college classes have been conditioned by years of test-driven curricula, repackaged instruction, and minimal expectations.
often seem perfunctory in conventional college classrooms, mimicking the middling performances of former teachers and fellow students. Nevertheless, many former Virginia Ball faculty and students remain true believers. They have worked hard to integrate the distinctive features of the Virginia Ball experience—interdisciplinary study, collaborative learning, creative production, and community engagement—into the university curriculum. As a result of their efforts on various task forces and committees, the university’s new strategic plan includes a commitment to experiential learning; the new core curriculum embraces the concept of immersion seminars; the new women’s studies program is based on a rigorous examination of integrative learning; the new telecommunications curriculum enables students to collaborate in the creation of digital products that have won national awards; and the new Business Fellows program has teamed faculty and students from different disciplines to solve problems for businesses and organizations in more than twenty-five communities across the state.

Working Outside and Inside the Box

Such changes suggest that by working outside the box and then working back inside the box, Virginia Ball faculty and students have helped the university promote a creative culture that encourages faculty to pursue innovative teaching, inspires students to learn through creative inquiry, and prompts administrators to explore corporate and community connections. But despite these transformations within Ball State University’s culture, many Virginia Ball faculty and students still feel compelled to find another box. Faculty have changed career paths, reshaped their professional identities, and acquired external funding to support entrepreneurial endeavors outside the university, such as theatrical productions, documentary films, and book projects. Similarly, after graduation, students from various Virginia Ball seminars have found other like-minded young professionals in strange cities and formed production companies, design teams, and educational partnerships. These responses to life after the Virginia Ball Center reveal what faculty and students have learned about the creative process. It has a rhythm. It has pulses and pauses. No one can run on the high octane provided by the Virginia Ball Center forever without burning out. Everyone must discover that the natural rhythm of teaching, learning, and living requires some balance. Virginia Ball faculty and students have learned how to experiment inside traditional structures and how to search for new ventures outside the university. They have learned that there is a time for concentration and creation and a time for restoration and reflection. Reentry, in the final analysis, is about teaching and learning the value of these stressed and unstressed moments.

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The publication of Richard Florida’s *The Rise of the Creative Class* delivered a clarion call to American higher education. Members of the “creative class,” in Florida’s description, are like those students we all love to teach: intelligent, open-minded risk-takers who have self-confidence, enjoy tackling challenges, value domestic and global diversity, and engage in synthetic, flexible, and creative problem solving. When these students graduate, they will earn on average twice as much as members of the other two dominant American classes: the service class and the working class. Florida’s description of the kind of place the members of the creative class seek sounds remarkably like the ideal college campus: “environments that let them be creative—that value their input, challenge them, have mechanisms for mobilizing resources around ideas and are receptive to both small changes and the occasional big idea” (2002, 40). In short, the fusion of Puritan work ethic and bohemianism that characterizes the creative class sums up the ideal college experience that allows the nonconformity of the 1960s to be transformed into an economic manifesto for the 1990s.

Florida’s subsequent book *The Flight of the Creative Class* (2005)—along with other studies like Joel Mokyr’s *Lever of Riches* (1990), which links creativity to technological innovation and American global economic superiority—provide a strong mandate for colleges and universities to nurture creativity in their students. What college or university would not want to recruit and graduate “the natural—indeed the only possible—leaders of twenty-first-century society” (Florida 2002, 315)?

As Steven Tepper (2004) has pointed out, many colleges and universities are taking up the gauntlet thrown down by Florida, Mokyr, and others by creating centers and programs designed to foster creativity among their students. He has suggested, in fact, that colleges should be encouraged to create these centers by the institution of a national “creativity index” to rank schools by how well they foster innovation among faculty and students.

Given this mandate, how can research into creativity help guide college and university initiatives of the kind Tepper wants to see? There was relatively little research into creativity until the 1950s, largely, one suspects, because popular descriptions of the creative act as a visitation of the muse or serendipitous inspiration removed the topic from scientific consideration. Think of Archimedes jumping from his bath to shout “Eureka!” or Coleridge writing “Kubla Khan” in an opium-induced reverie. It would be hard enough to investigate scientifically, much less to teach, creativity conceived of in this way.

**Early Research on Creativity**

Only in the past fifty years have scholars begun to study the act of creativity rigorously, first in the realm of psychology and later more broadly in areas like sociology and economics. This research, most scholars agree, was initiated by J. P. Guilford in his 1950 American Psychological Association presidential
address, which challenged his colleagues to study the neglected but important field of creativity. Before 1950, by Guilford’s count, only 0.2 percent of the entries in Psychological Abstracts pertained to creativity.

Early research focused mostly on identifying individuals who were exceptionally promising as creative leaders (Guilford 1950; Torrance 1962; Barron 1955). This approach to creativity, treating it as distinct from but analogous to intellectual ability, produced attempts to identify personality traits that enhanced creativity or to measure creativity in the way that intelligence was being measured with an IQ test. Although such research advanced the scientific exploration of creativity, it did little to encourage educators to attend to creativity research since it emphasized nature rather than nurture.

But in the last quarter of the twentieth century, creativity research began to demystify the creative act by exploring the cognitive processes that constitute creativity and by examining how creative individuals are stimulated or restricted by their environments. Today, creativity is conceptualized more like athletic ability—it is something anyone can display, but some individuals are shaped both by nature and nurture to be more successful in that domain. No longer do teachers have to hope that they will be blessed with creative students. If all individuals have the potential to be creative and if creativity is a process that can be dissected and therefore taught, then colleges and universities can work to create curricula, pedagogies, cocurricular programming, and a general institutional environment to support creative development.

Although Arthur Koestler’s groundbreaking book The Act of Creation characterized the “decisive phase” of creative thinking as subconscious (1964, 208), his work did identify bisociation (“perceiving a situation or event in two habitually incompatible associative contexts”) as the basic process of creative thought (95). For Koestler, “The creative act . . . does not create something out of nothing; it uncovers, selects, re-shuffles, combines, synthesizes already existing facts, ideas, faculties, and skills” (120).

This belief that most creative activity can be explained by reference to ordinary mental processes was supported by researchers like David Perkins, who in The Mind’s Best Work (1981) focused on skills like pattern recognition, creation of analogies and mental models, the ability to cross domains, exploration of alternatives, knowledge of schema for problem solving, and fluency of thought as aspects of creativity. Margaret Boden in The Creative Mind (1990) extended this argument to contend that many features of creativity could even be replicated by machines—the major missing ingredient being the intention to be creative. Perhaps the most complete discussion of these processes can be found in Finke, Ward, and Smith’s Creative Cognition (1992), which proposes a model for the creative process based on generating ideas and exploring them to determine which should be developed. Biographical studies of creativity, meanwhile, have dissected the “magic” of remarkable creation, tracing lines of influence and showing connections to previous paradigms that make remarkable creative masterstrokes seem almost mechanical.

**Fostering Creativity**

Because bringing together ideas that are “habitually incompatible” is a key element in creativity, keeping an open mind seems to be essential. Surveying research on cortical activity, hemisphere activation, and frontal lobe activation, Colin Martindale concludes that creativity seems to occur in “a mental state where attention is defocused, thought is associative, and a large number of mental representations are simultaneously activated” (1999, 149). This biological research is supported by the study of student artists that Jacob Getzels and Mihaly Csikszentmihalyi (1976) conducted, in which students whose work was judged to be more creative were more adept at remaining open to alternatives, even as they solved the problems of creating art. Gregory J. Feist’s (1999) review of personality research on creativity uncovers numerous studies that show the importance of imagination and nonconformity to the creative personality. While there may be biological aspects of personality development, certainly it is also nurtured. Those wishing to create a supportive environment for creativity, then, would want to encourage risk taking, independence, and flexibility. Such a conclusion has implications for pedagogy (favoring discovery methods
rather than declarative teaching), for curricular structure (allowing students to think in multiple modes and through the lenses of multiple disciplines for as long as possible), and for the structure of student research (allowing for problems to develop and grow even as their solutions are explored).

Teresa Amabile’s extensive work on creativity and motivation would also point to the importance of giving students and faculty as much free reign as possible in their endeavors. Amabile’s research (1983) concludes that creative people produce better work when they are motivated by personal commitment rather than extrinsic rewards like contests or requirements (a conclusion with interesting implications for our grading systems and complex graduation requirements, as well as our means of evaluating faculty for promotion and tenure). As Robert S. Albert (1990) and Mihaly Csikszentmihalyi (1990) show, creative people who are intrinsically motivated also choose to pursue difficult, challenging tasks—just the behavior we wish to foster in college students. Personality studies contain some warnings for colleges and universities as well, however. Feist’s research review echoes Florida’s admission that creative people tend to be driven, often to the point of anxiety or depression. What Florida calls “weak ties” can produce isolation and alienation. For these reasons, colleges and universities must be reminded that the creative class requires careful tending through student life programming and the support of counselors familiar with the stresses of college life.

But creativity cannot be predicted or promoted solely by examining the cognitive processes and personality traits of an individual. Increasingly, researchers are focusing on the social and environmental factors that promote or retard creative activity. (See, for example, Amabile 1996; Csikszentmihalyi 1999; Gardner 1993; Wallace and Gruber 1989; and Simonton 2000.) Only by taking what Mihaly Csikszentmihalyi (1999) calls a “systems perspective” can the complexity of creativity be appreciated. In cultural terms, creativity relies upon a sufficiently developed society that relieves individuals of the need to focus continually on survival needs. (A good justification, I suppose, for the elaborate restaurants, residence halls, and fitness centers that colleges are quickly being expected to offer.) More importantly, a culture must encourage both specialization for the development of deep knowledge and diffusion so that knowledge can be shared. Both quantitative studies like Dean Keith Simonton’s (1984) and qualitative studies like Doris Wallace and Howard Gruber’s (1989) demonstrate how a range of influences, including political violence, predominant aesthetics, working style, and educational level, affect the potential for an individual or a society to be exceptionally creative. “In the last analysis,” Csikszentmihalyi concludes, “it is the community and not the individual who makes creativity manifest” (Csikszentmihalyi 1999, 333).

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Diversity, Collaboration, and Interdisciplinarity

This new focus on community and environmental factors in creativity provides strong support for some of higher education’s most cherished initiatives: diversity (both domestic and international), collaboration, and interdisciplinarity. Research studies from a wide variety of fields converge on this point. Creativity thrives in
an unbounded arena where what David Bohm and F. David Peat (1987) call “free dialogue” can exist among people who have different frames of reference. While expert knowledge is necessary for creativity, being too comfortable with a field can deter innovation. Lurking in the background of this argument is Thomas Kuhn’s *The Structure of Scientific Revolutions* (1962), a book that argues that existing, well-entrenched paradigms can often blind potential innovators to the need for a new paradigm.

In business, as Richard Lester and Michael Piore (2004) have demonstrated, truly innovative products like cell phones (a combination of telephone and radio) were developed when industrial innovators talked with people outside of their fields in order to develop new products. They liken innovative business management to hosting a cocktail party in which people from different circles are brought together, conversation is spurred, viewpoints exchanged, and new friendships formed. A similar picture develops in Jennet Conant’s *109 East Palace: Robert Oppenheimer and the City of Los Alamos* (2005), where the commitment to secrecy within Los Alamos allowed scientists from different disciplines to talk freely with one another in an open atmosphere. One could argue that fields like semiotics and gender studies have made intellectual breakthroughs through similarly rich interdisciplinary conversations.

Given the importance of boundary-crossing to creative thinking, it is clear that true diversity—diversity of race, national origin, class, sexuality, religious and political persuasion, geographic origin—is essential because students’ creativity is stimulated by encounters with views different from their own. In terms of the faculty and the curricula, creativity research would support increased emphasis on interdisciplinary approaches to learning. Furthermore, the lack of hierarchy implicit in faculty-governed institutions and the casual interactions that occur in the hallways and the cafeteria should create an environment where creativity can thrive.

Leading the effort to study interrelated influences on creativity is the team of David Feldman, Mihaly Csikszentmihalyi, and Howard Gardner, whose book *Changing the World* (1994) lays out “a framework for the study of creativity.” This group proposes a three-part, interactive model for exploring creativity by examining the relationships between the individual, the domain (a “formally organized body of knowledge” like algebra), and the field (“all those persons who can affect the structure of a domain” like critics and luminaries who control the boundaries of knowledge and allow boundary-crossing). Only by looking at the integration of these influences can one capture the complexity of the creative act, they argue. Robert Sternberg and Todd Lubart (1996) echo this conclusion by noting that adopting a single disciplinary approach to the study of creativity can lead researchers to confuse part of the creativity puzzle for the whole, distorting their findings. Accordingly, they call for a “confluence” of approaches.

**And so the field of creativity research has come full circle. Once described as mystical, creativity has once again been recognized as a complex subject, one that no single field of inquiry can illuminate.**

**Coming Full Circle**

And so the field of creativity research has come full circle. Once described as mystical, creativity has once again been recognized as a complex subject, one that no single field of inquiry can illuminate. The difference is that now we can describe and analyze the various discrete elements that interact with one another in often unpredictable ways to engender a supportive environment for creativity. Even so, as David Feldman admits, “There is still the question of where in the midst of the many strands of development...”
the novel idea comes from and how it is produced; about this deep question, we still have relatively little to say” (1999, 182). I, for one, doubt we will ever fully penetrate the mystery of inspiration.

For many years, the educational enterprise has been criticized for dampening creativity rather than feeding it. By focusing almost exclusively on traditional academic skills based on logical analysis and familiar habits of thought, rather than balancing attention to these cognitive skills with attention to other kinds of intelligence (kinesthetic, associative, visual), educational institutions may have impeded the ability of faculty and students alike to be creative (Gardner 1983; Kuhn 1962; Weisberg 1999; Simonton 1984; Robinson 2001; Bohm and Peat 1987). But with this new research on the complexity and importance of the creative act, we in higher education have new reasons to pursue important initiatives that promote diversity, cross-cultural contacts, interdisciplinary conversations, inquiry-based learning, collaborative research and teaching opportunities, opportunities for students to engage in independent research, and student-life programming that will encourage risk taking while also providing support for the driven, anxious, ambitious members of the creative class. We may never be able to test incoming students to predict their capacity for creativity, but given the wealth of research on creativity, we should be able to design college environments that foster this essential capacity. ■

References


Liberal Education and America’s Promise: Excellence for Everyone as a Nation Goes to College (LEAP)

Liberal Education and America’s Promise (LEAP) initiative is a campus action and advocacy campaign that champions the value of a liberal education—for individual students and for a nation dependent on economic creativity and democratic vitality. The campaign centers on what really matters in college—the kinds of learning that will empower today’s students to succeed and make a difference in the twenty-first century. The campaign focuses on ensuring that by college graduation, all students achieve a set of learning outcomes that will enable them to apply what they learned in a knowledge-intensive economy, a globally engaged democracy, and a society where innovation is the key to progress and success. The LEAP campaign will be designed to

■ spark public debate about the kinds of knowledge, skills, and values needed to prepare today’s students—from school through college—for an era of greater expectations in every sphere of life;

■ challenge the widespread belief that students must choose either a practical education or a liberal education, by building widespread support for educational changes that already are producing a new synthesis of liberal and practical education;

■ make visible the inherent inequities in current practices that steer low-income students to college programs that teach narrow job skills while more advantaged students reap the full benefits of a first-rate liberal education;

■ document national and state progress in providing every student with access to a high-quality education that develops intellectual and ethical capacities, expands cultural, societal, and scientific horizons, cultivates democratic and global knowledge and engagement, and prepares graduates for successful participation in a dynamic and rapidly evolving economy;

■ work in selected states to create and implement action plans—organized in partnership with both employers and public schools—to help college and college-bound students understand, prepare for, and achieve a challenging, public-spirited, and practical liberal education.

Greater Expectations Forum on Twenty-first Century Liberal Arts Educational Practice

As part of Greater Expectations: The Commitment to Quality as a Nation Goes to College, a national AAC&U initiative, the Greater Expectations Forum on Twenty-first Century Liberal Arts Educational Practice examined practices that fostered the achievement of four important liberal learning outcomes— inquiry capacity, global preparedness, civic engagement, and integrative learning. A working group for each outcome was charged with discovering promising practices from across the country and ways to improve student learning in these areas from high school through college. Each working group held regional seminars of faculty and administrators from both high school and colleges to discuss the creation of purposeful pathways to these outcomes. Many practices highlighted in the project fostered creativity and innovation among students. The regional seminars organized by the forum working groups found exciting examples of innovative teaching and learning both at the individual course and the programmatic levels. The final publication from this initiative, Purposeful Pathways: Achieving Critical Learning Outcomes, examines each outcome and features examples of promising practices designed to reach these outcomes.

Selected Publications

Peer Review Spring 2005
Liberal Education and the Entrepreneurial Spirit
Sponsored by the Kauffman Consortium for Liberal Education and Entrepreneurship, housed at the College of Charleston, this issue explores how entrepreneurial ideas and values, especially those tied to a sense of social responsibility, might reinvigorate and complement contemporary understandings of liberal education across multiple disciplines.

Peer Review Summer/Fall 2005
Integrative Learning
Integrative abilities are among the most important goals of a twenty-first century liberal education. Articles in this issue explore how integrative learning fosters connections among disciplines and cocurricular experiences and transcends academic boundaries.
“And Creativity Is What?”

By Barbara Couture, senior vice chancellor for academic affairs, the University of Nebraska–Lincoln

The question posed in my title—“And creativity is what?”—could reflect the wistful musings of a philosopher conducting a Socratic dialogue with attentive followers on a lofty hill overlooking the Aegean. Or it could be the puzzled query of a chief academic officer from University of Nebraska—reminded today by one of her colleagues that there are still some in the east who are not certain whether Nebraska is a state or a football team, let alone the home of a great research university teeming with, well, creativity.

Just what is creativity in the heartland, in Lincoln, Nebraska, where the university has been home to the Huskers, Willa Cather, Johnny Carson, Ted Kooser, and Warren Buffett? I ask this question because we know that public education—including the work of great universities—is a local enterprise in America, with its outcomes dependent on taxpayers in the cities and states that support it.

Many of us at universities are fortunate to have endowed programs that spur creative energy. The University of Nebraska–Lincoln, for instance, is blessed with several. Among them is the J. D. Edwards Program in computer science and business—recently touted by Bill Gates as the most innovative program of its kind that he has seen—which brings together top students in a project environment to solve business problems. And we have our U-Care program, which provides scholarships for hundreds of students, enabling them to conduct research with faculty members and gain first-hand experience of creating new knowledge, scholarship, and art. But special programs like these and the others described in this issue beg the question: can we support creativity with public funding? We can, I say, if we can tell the public what they’re paying for and why.

Accrediting agencies and boards of regents remind us all the time that colleges and universities must be accountable for student performance. But we are learning, too, that they and American businesses and industry hold us accountable for developing, quite literally, creativity—for producing an American workforce that can outdo any other in innovation, entrepreneurship, and technical and scientific discovery. It is our problem to tell our public what creative performance is and what we can do to develop it. We have in this issue of Peer Review an action plan for the creative imperative. Let’s apply it.

Tori Haring Smith informs us that creative people are “remarkably like those students we all love to teach: intelligent, open-minded risk-takers who have self-confidence, enjoy tackling challenges, value domestic and global diversity, and engage in synthetic, flexible, and creative problem solving.” Stephen Tepper identifies creativity in action, citing Csikszentmihalyi’s finding that creativity is about “flow”—the sensation that individuals feel when they are fully engaged with a task in which they experience a sense of exhilaration and deep enjoyment while working through a challenge or puzzle with poise, skill, and some level of mastery.” Michael Devine tells us to “lose the hats,” in other words, get rid of the hierarchical structures that create less open—and less creative—environments for faculty and students alike. We now know what creative performance is, so let’s teach it in our basic programs.
We have at hand the tools in our great colleges and universities to make this happen, if we are bold enough to use them. We can
■ develop partnerships with community agencies and corporations that link learning within classrooms to problem solving in settings beyond them;
■ demand integrative learning experiences within our general education programs;
■ link the service projects led by student organizations to projects requiring learning in our classrooms;
■ use our libraries, museums, performance spaces, and recreational facilities as places for developing active creative work;
■ make assessment of learning outcomes a mandate and require creative performance of every graduate.

A lot of work is implied in the five statements above, but it can be done, and within our current budgets. My own university has multiple ongoing projects, programs, and initiatives that are aimed at achieving these objectives, and I would guess that most universities in America have their sights set on them as well. And they better. Let me leave you with one more reason why.

The day-to-day press of activity in today’s universities, responding to the limits of state budgets, the demands of accrediting agencies, and the expectations of parents, employers, and governing boards, leaves little time for administrators to talk freely about the ultimate role of public higher education in America. Yet such constraints should never keep us from fulfilling it. And creativity is what? It is both our American legacy and future; it is our obligation to do democracy.

Reference

Results of the Peer Review Readership Survey

In January 2005, Peer Review readers were invited by e-mail to participate in a self-response, Web-based readership survey. Through a brief anonymous survey, information was collected about readers and their satisfaction with the journal’s contents. Here are some of the highlights of these the 

■ 83% of respondents look at Peer Review two or more times before they are finished with the issue.
■ 81% of respondents save their copies of Peer Review for future reference.
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■ 80% of respondents rate Peer Review as a “5” or “4” (the highest ratings) for timeliness of topic.
■ 78% of respondents rate Peer Review as a “5” or “4” for quality of writing.
■ 84% of respondents think that the Peer Review article length is “About Right.”
■ 85% of respondents find that Peer Review is valuable to their career.

Thank you for your participation in this study. Your opinions, criticisms, and comments will help us to improve Peer Review.
Diversity & Learning
A Defining Moment

October 19–21, 2006 • Philadelphia, Pennsylvania

AAC&U’s sixth biennial Diversity and Learning conference will examine:
- consensus, contested, and evolving definitions of diversity
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- points of tension that propel or hamper progress
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Faculty Work in the New Academy:
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Faculty Work in the New Academy will concentrate on the implications of new challenges for the future of faculty work at two levels: 1) faculty’s changing roles, contributions, evaluation, and rewards; and 2) institutional agency to appropriately support these changing roles and responsibilities. Special attention will focus on the alignment of faculty priorities and fundamental institutional purposes.

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New Publications from AAC&U

Why Do I Have to Take This Course?
A Student Guide to Making Smart Educational Choices
By Robert Shoenberg

This practical guide, written for undergraduate students, is intended to take some of the mystery out of curricular requirements and educate students about what really matters in college—the broad learning outcomes developed over the entire course of their undergraduate years. The ideas presented represent a consensus of contemporary thinking about the purposes of undergraduate education. This publication is ideal for use in new-student orientations and first-year programs. (36pp)

$10 for AAC&U members

Making Diversity Work on Campus:
A Research-Based Perspective
By Jeffrey F. Milem, Mitchell J. Chang, and Anthony Lising Antonio

The authors discuss recent empirical evidence, gathered on behalf of the University of Michigan Supreme Court defense, demonstrating the educational benefits of diverse learning environments. These are environments that must be intentionally planned and nurtured, where diversity is conceived of as a process toward better learning and not merely an outcome that one can check off a list. (52pp)

$15 for AAC&U members

Advancing Liberal Education:
Assessment Practices on Campus
By Michael Ferguson

This publication presents the stories of six colleges and universities that have developed innovative programs to advance and assess key liberal education outcomes. Originally written for AAC&U News, these stories—which focus on writing, information literacy, understanding of diversity, critical thinking, quantitative reasoning, and civic engagement—offer models for effective assessment practices. Also included is information about finding additional assessment resources. (18pp)

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