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Institutional Research and IT: Bringing Data, Information, and Insights to the Accreditation Process

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At the 2006 EDUCAUSE Annual Conference, EDUCAUSE President Brian Hawkins announced a “Grand Challenges” Initiative to explore ways that information technology (IT) professionals and organizations might play a stronger role in helping college and university leaders address major challenges facing higher education. Some of these challenges include the accessibility, affordability, assessment/accountability, and effectiveness of IT services. This research bulletin describes the results of recent organizational changes and work at Colorado College (CC) aimed at improving collaboration among IT, institutional research, and other campus offices, with the goal of enhancing the data, information, and insights that influence policy and planning activities in general and an upcoming reaccreditation visit in particular.

Highlights of Institutional Research, IT, and the Accreditation Process

In a recent *EDUCAUSE Review* article, K. C. Green wrote:

...the issue before us in the wake of the Spellings Commission report concerns *when* college and university IT leaders will assume an active role, a *leadership* role, in these discussions, bringing their IT resources and expertise—*bringing data, information, and insight*—to the critical planning and policy discussions about institutional assessment and outcomes that affect all sectors of U.S. higher education. (2006, p. 46)

The proliferation of IT on college and university campuses is an obvious and important change that has occurred during the past two decades. Like many of its peer institutions, CC has made a substantial investment in digital space during this time, and today we spend between 4 and 5 percent of the annual college budget (discounted for financial aid) on IT equipment, staff, and services. A great deal of the energy of the IT staff goes into day-to-day operations as well as planning and preparing for the next wave of hardware and software. As pressures to respond to questions about access and affordability increase, we expect even more scrutiny of our spending and a growing need to focus on the return on our investment in this area.

Organizational Changes and Partnerships

At CC, we made important organizational changes in 2003 by combining our Information Technology Services (ITS) organization with our Institutional Research and Planning Office (IR) to create a new organizational unit called the Information Management (IM) division. Both ITS and IR serve all campus constituencies. By combining these services into a single umbrella organization, we brought those with expertise in educational technology, instructional design, institutional databases, data structures, and reporting tools together with those charged with translating raw data into meaningful patterns and informative reports—data, information, and insights.

We also worked hard to develop strong partnerships with the library and the Learning Commons, our center in support of teaching and learning, by creating an Integrated

Learning Support Services (ILSS) group and by working together to create the new Learning Commons in our existing library facility. These collaborations keep the ILSS partners grounded in teaching and learning—support for learning is the glue that binds us together. In a related development, our long-standing Information Technology Policy Board, chaired by faculty, has expanded its scope to include library issues and is now called the Information Technology and Library Policy Board.

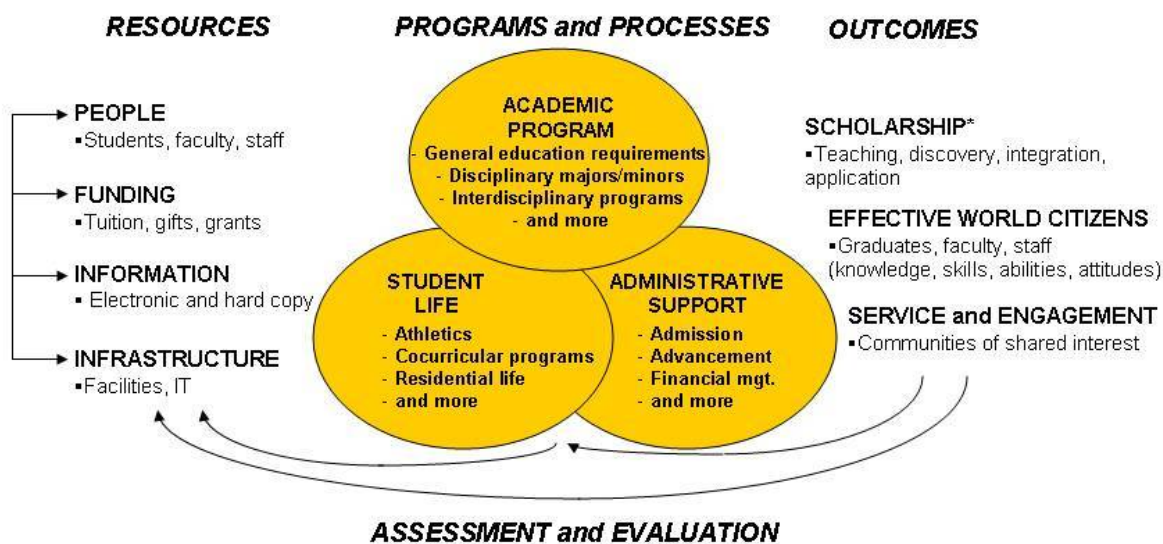
Finally, at the trustee level, we created a new standing committee nominally focused on IT issues but evolving to include ILSS and IR perspectives. The chairman of the board of trustees has issued the following charge to this new committee:

Just a few decades ago, there were no digital computers, local area network, Internet, or IT staff on our campus. Now this infrastructure, staff, and the related services are mission-critical. Just as Colorado College has established a committee for oversight, support, and advocacy for its physical space at the board of trustee level, it now needs a committee that focuses on digital space.

The Importance of a Systems View

College and university leaders must operate from a “big picture” or systems perspective as they carry out their responsibilities. If we in IM are to support their work, we must have a shared understanding of their viewpoints. Figure 1 serves as an example of such a view.

Figure 1. Typical College—Systems View



* Boyer, E.L.: *Scholarship Reconsidered: Priorities of the Professoriate*

A systems view helps us contemplate the whole, relationships among key elements of the whole, and patterns of change. College planning and policy discussions revolve around resources, programs and processes, and outcomes. As indicated in Figure 1, resources include people (students, faculty, staff), funding (tuition, gifts, grants), information (electronic and hard copy), and infrastructure (facilities and IT). Programs and processes include academic programs, student life, and administrative support.

Outcomes include scholarship production and outstanding teaching; student learning that allows for the development of effective world citizens; and a commitment to service and engagement that spans the institution.

Data and information are not only essential ingredients for learning and knowledge acquisition, but they also can serve as the basis for institutional decision making. Both ITS and IR have custodial responsibilities for data—collecting and storing it. In both organizations, we work closely with leaders and managers to identify the data and information they need to do their work. IR has specific responsibilities to restructure and analyze data and to generate timely and understandable information that can be used to influence decisions.

Preparing for Accreditation

While accreditation visits are sometimes viewed with considerable cynicism, skepticism, and trepidation on college and university campuses, they can be very useful opportunities to reflect on the recent past, think collaboratively and systematically, and prepare for the future. CC is reviewed by the Higher Learning Commission of the North Central Association of Colleges and Schools. As of this writing, we are in the final stages of preparing a self-study that is responsive to the following five accreditation criteria (Higher Learning Commission of the North Central Association of Colleges and Schools, 2003):

Criterion One: Mission and Integrity. The organization operates with integrity to ensure the fulfillment of its mission through structures and processes that involve the board, administration, faculty, staff, and students.

Criterion Two: Preparing for the Future. The organization's allocation of resources and its processes for evaluation and planning demonstrate its capacity to fulfill its mission, improve the quality of its education, and respond to future challenges and opportunities.

Criterion Three: Student Learning and Effective Teaching. The organization provides evidence of student learning and teaching effectiveness that demonstrates it is fulfilling its educational mission.

Criterion Four: Acquisition, Discovery, and Application of Knowledge. The organization promotes a life of learning for its faculty, administration, staff, and students by fostering and supporting inquiry, creativity, practice, and social responsibility in ways consistent with its mission.

Criterion Five: Engagement and Service. As called for by its mission, the organization identifies its constituencies and serves them in ways both value.

A large committee has been assembled to collect and report on patterns of evidence related to these criteria. IR has, quite naturally, played a central role in this work, but it has been aided by many others throughout the entire IM division.

Data, Information, and Insights

We identified four specific examples of data, information, and insights that were developed by IM in collaboration with others and in support of our accreditation effort. The first, counting staff, provided clarification of a resource issue of concern to the faculty. The second, external reviews of academic departments, describes the mechanism for our comprehensive analysis of the external reviews that were conducted throughout the past decade. These reviews have served as the basis of our approach for the assessment of academic achievement. The third, the impact of IT in the classroom, discusses our methodology for understanding how teaching and learning are influenced by the use of IT. The fourth, technology tools for courses and more, illustrates how we have used our learning management system (Moodle) not only as a tool for teaching and learning but also to support institutional governance and the accreditation visit.

Counting Staff

In response to concerns expressed by CC's Faculty Executive Committee about the rate of staff growth at the college, our president authorized a comprehensive study of staffing and how it has changed during the past decade. The study was conducted during the fall semester of the 2006–2007 academic year with the following goals: 1) to help us understand, and communicate to others, the human-resource allocation decisions we make in support of our mission, and 2) to achieve improved clarity regarding our data definitions and processes for counting and authorizing staff additions.

The study required the combined resources of our administrative computing staff, the IR Office in IM, the Budget Office, and all members of the senior staff of the college. It produced tables summarizing staffing changes for the past decade and comparing the results with those of the previous decade; detailed organizational charts for the entire college; and a new way of illustrating benchmarking data, comparing our staffing with that of similar institutions. As a result of this work, a new and much more rigorous process of review and approval has been established for filling staff vacancies.

Another important consequence of this work was a widespread recognition of the difficulty of simply comparing staff numbers between institutions. Several years ago our Budget Office participated in a comparative staffing survey among 17 private liberal arts institutions, developed on behalf of Kenyon College.¹ The problem with the staff counts from such surveys is that all colleges, even those with similar missions, label and group staff functions differently. For example, in our response to the survey, the telecommunications function was included in the staff count for ITS. We reported 7.26 FTE in telecommunications—well above the mean (2.90 FTE) for all 17 participant schools. However, at the time of the survey, our telecommunications office, which was not in ITS, was performing the following six functions: 1) billing and accounting associated with both landlines and cell phones, 2) procurement advice and limited support for cell phones, 3) management of outsourced technical support for our phone switch and some billing services, 4) answering the phone (console operators), 5) in-house move/add/repair services for phone lines, and 6) support of summer conferences. Only one of those functions is technical and normally associated with ITS. We need

additional context for the numbers, and before we can make sense of staff count comparisons, we also need a detailed understanding of the functions that are being done, how much of the work is done by staff, how much is done by students, and how much is outsourced. This example and others like it have made it clear to our leaders that the best way, and perhaps the only way, to benchmark our staffing against peers is through campus visits, though such comparisons are time-consuming and expensive.

External Reviews of Academic Departments

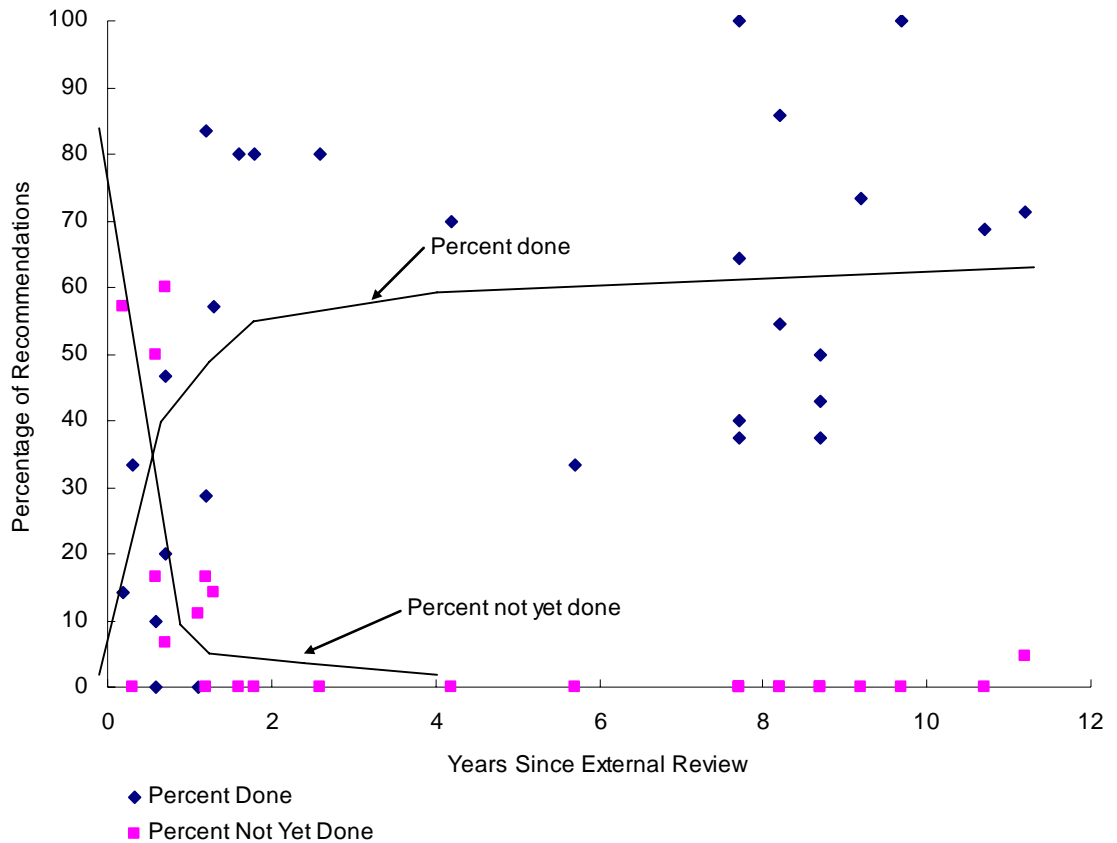
CC is deeply invested in making sure that students receive an excellent education, and we believe that departments are the appropriate locus (and level) of decision making that guarantees this excellent education. Assessment at CC, therefore, is substantially department-based and occurs through the process of departmental external reviews. In the early 1990s, CC initiated this process in a systematic and comprehensive way, and as a result, the reviews have become the primary vehicle for assessment of student learning outcomes. Reviews are conducted approximately once every 8 to 10 years; as of today, every department at CC has undergone at least one review. As might be expected, the process has been streamlined over time, and current procedures call for departments to begin preparing up to a year in advance and to work with the IR Office to create materials for reviewers. External reviewers are sent materials in advance, and during their visit they meet with department members, students, faculty in related departments, and the dean of the college. Reviewers are asked to submit written evaluations within three weeks of the visit that include recommendations for improvements. Following the review, the department must produce a written response that forms the basis for the development of a departmental plan for the future.

To see what impact these external reviews have had on student learning during the past decade, our self-study committee reviewed the reports from the external review teams and, for each department or program, pulled from the last external review (available when the analysis of each department was undertaken up to 2005–2006) those issues related to learning and teaching. Committee members then interviewed each department or program chair to ascertain each department's responses to the reviews' issues and recommendations concerning learning and teaching since the time of the external reviews. The self-study committee then organized into 10 discrete categories the student learning issues that were raised: 1) curriculum design, 2) use of technology, 3) assessment, 4) department literature and communication, 5) faculty positions, 6) faculty development, 7) student research and independent learning, 8) physical facilities, 9) diversity, and 10) other. The actions taken to address them were categorized in terms of four degrees of completion: 1) completed, 2) partially complete, 3) not yet done, but would like to, and 4) not intending to follow the recommendation.

We found that more than four-fifths of reviewers' recommendations during the past 10 years have been completely or partially addressed by departments, and slightly more than 10 percent have been rejected due to lack of resources or disagreement with the recommendation. This high rate of acceptance of reviewers' recommendations indicates strong departmental buy-in to the review process and a commitment to increasing excellence in academic programs. A statistical study of external review

recommendations and responses indicated that the process of responding completely to recommendations can take some time, as shown in Figure 2.

Figure 2. Summary of Time Dependence²



- It takes up to about five years for a department to bring to the “complete” level many of the recommendations. If some time to live with the recommendations is also included, our current cycle of about 10 years is probably close to optimal.
- About half of those recommendations categorized as “not yet complete” will be completed within a year of the review, and the other half will likely never be completed, possibly because they involve fiscal resources beyond the department’s reach.

Because departments need up to about five years to completely address most or all of the recommendations offered them, and because departments need a period of time to determine how well the implementations are working, we have concluded that CC’s current cycle of approximately 10 years between external reviews is appropriate.

The Impact of IT in the Classroom

While the costs of IT at our college are relatively clear, its benefits are less tangible. In Table 1,³ CC’s director of academic technology services uses a categorization scheme

for the impact of IT in the classroom taken from a 1991 *Change* article (Kozma & Johnston) to illustrate its impact in teaching and learning today.

Table 1. Information Technology Impact in the Colorado College Classroom

IT Impact in the Classroom	Colorado College Examples
From Reception to Engagement: Passive knowledge absorption becomes engagement in knowledge construction	<ul style="list-style-type: none"> * Students creating Wikipedia entries in Southwest Studies * Students build Internet portfolios around specific class topics * Use of active learning technology in physics classes
From the Classroom to the Real World: Practice in application of academic information to real-world situations in course contexts	<ul style="list-style-type: none"> * Use of spatial analysis (using geographic information systems) * Use of online survey tools to better collect data in psychology * Use of real-world “tools of the discipline,” such as statistical analysis tools in economics and sociology
From Text to Multiple Representations: Movement beyond strictly linguistic forms of text	<ul style="list-style-type: none"> * Faculty use of digital images in class to better illustrate concepts * Student digital video assignments to expand student analysis beyond the traditional essay
From Coverage to Mastery: Use of IT in teaching/drilling supplements student-faculty interaction	<ul style="list-style-type: none"> * Student use of primary, digital data sources to perform very sophisticated undergraduate research for thesis in economics and other disciplines * Online course readings
From Isolation to Interconnection: IT supporting learning as a collaborative activity and setting ideas in larger contexts	<ul style="list-style-type: none"> * Online student discussions, simultaneous or non-simultaneous * Creating communities of scholars with “outside” students/experts * Distance education classics courses, in which other schools participate
From Products to Processes: Focus on how scholars create knowledge by writing, thinking, and solving problems	<ul style="list-style-type: none"> * The process of creating digital videos is more valuable than the end product * Scholarly selection/design of multimedia assignments allows for a new and different analytical approach
From Mechanics to Understanding in the Laboratory	<ul style="list-style-type: none"> * Students create and explore energy efficiency simulations in environmental science * Sophisticated mathematical modeling using programs such as Mathematica

At CC we find that the IT-related challenge is not so much to convince faculty of the benefits of technology in teaching and learning but rather to find ways to support faculty demand for the technology and knowledge that will help them reach their teaching goals. The college has limited financial, technical, and human resources. How do we best use these to enhance the teaching and learning process? Moreover, how do we, as a community, choose which projects, initiatives, and needs to support if others must go unaddressed? How, finally, can CC continue to provide excellent support in the current situation when we know that more demands are always forthcoming and new products are increasingly available?

In terms of faculty support, for example, CC faculty have needs that include simple but time-consuming production support and pedagogy enhancement, among others. Such needs all rely on a foundation of hardware and software budgeting, life cycle budgeting,

and purchasing support. CC is currently challenged by a budget reality in which funds are not available to effectively address either life-cycle issues for current faculty hardware and software needs or new and increasing needs. We are revisiting how money is allocated for IT life cycles and how decisions are made to fund new initiatives, hardware, and software. Currently, requests for hardware and software are part of two different request cycles, made months apart from each other. CC's decision-making process might be improved by bringing together hardware and software requests in the same process and structure.

In terms of faculty development, while CC has been quite successful in providing in-person and online training options, many faculty members have not had sufficient time to learn about, reflect on, and implement technology in teaching. Technology used well can be transformative in the classroom, but such enhancements often demand dramatic redesign of courses, assignments, or teaching techniques (or all three). The opportunity to support such transformation, through college-supported course-development leave time, has been very successful at other schools and could benefit CC.

Technology Tools for Courses and More

During the past two years, CC implemented Moodle, an open source Web-based learning management system. It has been quite successful on our campus and is now used by about 20 percent of our faculty in more than 80 courses. This same tool has proved quite useful for establishing a secure Web site for our trustees. Following a self-evaluative assessment workshop in 2006, one of the suggested enhancements that came forward was the creation of such a site so trustees could have better access to information between meetings. This site serves a variety of functions including archiving key information from past meetings, posting information for each of the trustee committees, offering discussion space, and providing links and feeds to information of special interest to trustees.⁴ We are creating a similar site for the upcoming accreditation visit so that the visiting team can have electronic access to critical information before, during, and after its time on campus.

We are in final stages of completing a major upgrade of our network infrastructure (both wired and wireless) and are now developing plans for the integration of Moodle with our ERP system and our Web portal. We expect the synergy of these tools to bring significant enhancements to the speed, efficiency, and effectiveness with which we can bring data, information, and insights to all of our constituencies.

What It Means for Higher Education

While issues of accountability, accessibility, and affordability have been highlighted by the work of the Spellings Commission (U.S. Department of Education, 2006), they are certainly not new issues in higher education. During much of the past 20 years, IT organizations have been viewed as providers of tools and as sources of ever-increasing costs on college and university campuses. It is indeed time for IT professionals to demonstrate the return on investment in IT that is possible by delivering the data,

information, and insights that college and universities leaders—both faculty and administrative—need now.

The academic program remains the core focus at every college, and, especially at small, private liberal arts colleges like CC, IT services clearly play a supporting rather than central role in teaching and learning. IT services have become pervasive on our campus, however, along with new concepts and tools that can help faculty and staff at all levels of the institution. By combining the people with IT skills with our IR Office, we have emphasized the importance of data and information—the primary products of our investment in IT—and we have enabled new and important collaborations on our campus.

We have well-developed *help services* for IT throughout our organization, including a help desk, media services, telecommunications, academic technology services, network and systems services, and administrative computing services. As we look to the future, we see the evolution of two other major themes among these services, especially now that there is a clear link with IR. The first theme is *reporting*—getting data and information to the people who need them in a timely manner and in the form they want and can understand. This is what faculty want, what our ERP users need, and what key decision makers must have if they are to be effective. The second theme is that of *contact centers*. Today, we have a number of offices on campus that are recipients of data and information from outside the college—admissions, advancement, alumni office, and the call center. In the future, we anticipate more sophisticated two-way communication as these service areas store and process the data and information they receive in sophisticated databases and respond in increasingly helpful and intelligent ways as a result of the insights developed by those staffing the contact centers.

Finally, if IT leaders are to respond to K. C. Green's challenge noted at the beginning of this research bulletin, we recommend using the language of informatics—the art, science, and human dimensions of IT. Only by including the social consequences of technology in its application can we provide the insights needed in critical policy discussions.

Key Questions to Ask

- Is the senior IT or technology officer a participant in critical policy discussion and decisions at your institution? If not, why?
- To what degree are trustees or the governing board of your institution actively involved in the work of IT? Do you have a trustee committee that provides oversight and support for IT?
- What is the relationship between IT and institutional research at your institution? Could you consider merging these two functions?
- How would you describe the degree of executive support at your institution for collaborative efforts between IT and institutional research?

Where to Learn More

- Dickerson, C., Kuerbis, P., & Stiles, R. (2007, February 27). *Learning centers, libraries, and IT: Providing integrated learning support services in a learning commons* (Research Bulletin, Issue 5). Boulder, CO: EDUCAUSE Center for Applied Research. Available from <http://www.educause.edu/ecar/>
- Goldstein, P. J. (2007). *IT collaboration: Multi-institutional partnerships to develop, manage, and operate IT resources* (Research Study, Vol. 4). Boulder, CO: EDUCAUSE Center for Applied Research. Available from <http://www.educause.edu/ecar/>
- Hawkins, B. (2006). The EDUCAUSE “Grand Challenges” Initiative. Boulder, CO: EDUCAUSE. Available from <http://www.educause.edu/LibraryDetailPage/666?ID=EDU06059>
- Indiana University School of Informatics. (2006, April 12). *Frequently asked questions*. Retrieved May 24, 2007, from <http://www.informatics.indiana.edu/overview/faq.asp>
- McLaughlin, G. W., & Howard, R. D. (2004). *People, processes, and managing data, Second edition*. Tallahassee, FL: The Association for Institutional Research. Available from <http://www.airweb.org/p.asp?page=726>
- Senge, P. M. (1990). *The fifth discipline: The art & practice of the learning organization*. New York, NY: Doubleday.
- UC Irvine, Donald Bren School of Information and Computer Sciences. (2006, November 1). Department of Informatics Web site. Available from <http://www.ics.uci.edu/informatics/about/>
- Udis-Kessler, A. (2007). On the need for a Colorado College Trustee Information Technology Committee. Retrieved May 25, 2007, from <http://www.coloradocollege.edu/IM/pubs/TrusteeIT.pdf>

References

- Green, K. C. (2006, November/December). Bring data: A new role for information technology after the Spellings Commission. *EDUCAUSE Review*, 41(6), 30–46. Available from <http://www.educause.edu/er/erm06/erm0661.asp>
- Higher Learning Commission of the North Central Association of Colleges and Schools (2003). *Handbook of accreditation, 3rd edition*. Available at http://www.ncahlc.org/index.php?option=com_content&task=view&id=37&Itemid=116
- Kozma, R. B., & Johnston, J. (1991, January/February). The technological revolution comes to the classroom. *Change*, 23(1), 10–23.

- U.S. Department of Education (2006, September). *A test of leadership: Charting the future of U.S. higher education*. A Report of the Commission Appointed by Secretary of Education Margaret Spellings. Retrieved May 24, 2007, from <http://www.ed.gov/about/bdscomm/list/hiedfuture/reports/final-report.pdf>

Endnotes

1. The Kenyon College Comparative Staffing Study discussed here is one in which Colorado College and 16 private liberal arts institutions participated in 2004. The study was conducted by an independent consulting firm, Powers Straker, LLC, on behalf of Kenyon College.
2. This figure was developed by Professor Nathan Bower of the Colorado College chemistry department in support of the writing of our self-study report.
3. This table was developed in collaboration with Marla Gerein, director of academic technology services at Colorado College.
4. The trustee Web site was jointly developed by Brian Thomson, Colorado College trustee; Kristine Jones, director of information technology services; and Linda Petro, trustee coordinator.

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