ACADEMIC REDESIGN: ACCOMPLISHING MORE WITH LESS

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ABSTRACT
Community colleges are under persistent pressure to spend more on technology. In lieu of bolting technology onto essential academic and administrative process at additional net cost, savvy community college leaders are planning and implementing academic service redesign strategies to achieve measurable outcomes constituting gains in academic productivity. This paper presents case studies of four higher education institutions that contracted with Collegis for a range of planning, marketing, student recruiting, academic, and technology management and support services. To be able to accomplish more with less, three strategies are discussed: (1) redesigning individual course sections to increase learning and convenience, (2) redesigning common courses to decrease costs and increase learning outcomes, and (3) redesigning program delivery to participate in flex markets.

KEY WORDS
academic redesign, course redesign, community colleges, technology, flex markets, flex programs

I. INTRODUCTION

The three As of accessibility, affordability, and accountability are front and center in the lexicon of today's higher education policymakers. Coming at a time when the percentage of institutional operating expenses covered by public funding is shrinking, and public institutions are busy cutting costs, raising tuition and fees, and capping enrollments, the three As appear to some leaders in public institutions to represent unfair pressures to accomplish more with less. Community college leaders, in particular, may believe they should be exempt from these mounting academic productivity pressures. Accessibility and affordability, after all, have always been keystones in the community college mission, and community colleges by design and service philosophy have always tried to be accountable to their stakeholders. Is it fair, then, to expect community colleges to accomplish more with less? Fair or not, internet and web technologies are allowing increases in the flexibility (accessibility), efficiency (affordability), and effectiveness (accountability) of the design and delivery of services throughout the economy, and therefore are legitimizing three-A expectations among policymakers and the public.

Community colleges are under persistent pressure to spend more on technology, but their technology investments will generate returns only through three-A strategies designed to accommodate increasing enrollments, improve access, measurably improve the learning outcomes of instruction, generate new

program revenues, or stabilize or reduce critical institutional costs. In lieu of bolting technology onto academic and administrative processes at additional net cost, savvy community college leaders are planning and implementing *academic service redesign* strategies to achieve measurable outcomes constituting gains in academic productivity.

In creating service relationships with about 40 community colleges (accounting for approximately 40 percent of all client colleges and universities), we at Collegis started by posing some of the following questions to campus leaders to help them focus on strategic three-A opportunities to use technology-enabled redesign strategies to increase academic productivity or accomplish more with less. How would you answer these questions?

1. Are your classroom technologies and student PC labs well managed? Are instructors taking advantage of these investments and aware of best practices in using technology in instruction? Is your technology-related faculty support or development program designed to produce measurable institutional results beyond increasing the number of instructors or courses using technology? If so, what are those institutional results? For example, do they include any of the following measurable goals?

    a. Improve student learning. How will you account for improved learning outcomes?

    b. Improve key institutional metrics such as the retention rate, persistence rate, graduation rate, or time-to-graduation rate. Have you determined which courses correlate to the retention rate or to other of the aforementioned critical measures of academic success?

    c. Improve student satisfaction with the institutional experience, especially the instructional experience. Student satisfaction often influences persistence rates and other measures of academic success. Increased student satisfaction follows in part from the increases in student learning enabled by common course redesign (see Item 2 below) and in part from the self-service convenience factor of having online access to a rich array of academic and administrative services —the expectation of the new internet generation and the form of access now required or favored by many adult students.

    d. Use technology to make instruction and other services more flexible for students and their instructors.

    e. Offer a one-stop online self-service center backed up with just-in-time high-touch help. Even traditional undergraduate students value the convenience factor, and your institution accordingly may wish to build more flexibility into instruction and other student services, while redesigning and strengthening the critical high-touch interactions expected and needed by students from time to time.

2. Is your institution aware of the base of nationwide successes in working with faculty teams to redesign *common courses*—required courses and high-demand electives—to reduce per-enrollment instructional costs while improving learning outcomes? The common course redesign process, described elsewhere in this volume by Carol Twigg, focuses on active learning, the differentiated learning styles and needs of individual students, and effective high-touch mentoring provided by instructors and other course assistants. Are these outcomes and the redesign process required to achieve them part of your institution's experience base? If not, are you willing to import them?

3. Does your institution offer academic programs or clusters of courses to the *flex market* of students unable or unwilling to participate in instruction requiring significant real-time structured interaction between instructors and students? Has your institution selected at least one program to offer to the flex market as a flex program, perhaps a degree or certificate program to meet workforce or

professional needs? Have you verified through market research that there is a niche flex market for that program? Have you developed or redesigned that program for delivery into the flex market? Have you developed a business plan for taking the program to the targeted flex market? Do you have the capital to proceed with development and recruiting? What is the break-even point? Are you willing to import the curriculum to avoid development costs and quicken the time to market? Does your institution have the full range of services required for success in a flex market—services such as market research, development of a marketing plan, development of a business plan, course and program development services to enable your instructors to take advantage of best practices, marketing and student recruitment services to ensure a successful enrollment effort, course and program evaluation services, and infrastructure and call-center and help-desk services to ensure student satisfaction and a successful 24/7 service model? How will you measure the success of your flex programs? For example, are you trying to achieve one or more of the following goals?

a. Generate new profitable revenue streams by participating in high-demand flex markets.

b. Increase the supply of qualified workers or professionals to meet the priority needs of employers in your community.

c. Increase access for those who otherwise could not complete a degree or certificate.

d. Give all students a scheduling and delivery option for completing a degree or certificate program or a high-demand course of study such as general education requirements.

e. Make a degree more affordable for those who otherwise would incur a higher *total* price.

f. Increase the college-going rate in your community.

g. Accommodate increasing enrollments.

h. Avoid new classroom construction costs.

i. Decrease declining enrollments.

4. Does your institution have the experienced expertise, management structures, venture funds, business plan, and governance structures to succeed in any of the endeavors cited above that happen to be mission critical for your institution? If not, are you willing to form mutually beneficial partnerships with companies or other institutions to gain access to the necessary resources?

II. CASE STUDIES

A few examples from the Collegis client base will illustrate the possibilities implied above and the way that some institutions responded to the readiness and resource questions raised in Item 4. These clients have contracted for a range of planning, marketing, student recruiting, academic, and technology management and support services, some through a fee-for-service contract and others through a contract providing a Collegis co-investment in market assessment, program development, and support and marketing and recruiting services in return for an enrollment fee assessed on each enrollment supported by Collegis.

A. Brookdale Community College

To meet high-demand IT workforce needs in its community in New Jersey, Brookdale imported and institutionally branded an IT certification solution (noncredit), including a full range of marketing, recruiting, academic mentoring, and student support services. The flex delivery model for the program is based on open enrollment, asynchronous access to online self-study materials, access to a local computer lab and network center for hands-on work and mentoring as needed, and proactive intervention strategies designed to minimize attrition and maximize the probability of certification. In its first year, the program

enrolled 137 students, sustained a 98 percent retention rate, and experienced a certification success rate of 89 percent on 164 vendor exams. The program now has a revenue run rate approaching $1,000,000 per year to supplement the college's non-tax-based discretionary revenue stream. Brookdale has also increased the quality of its institutional IT services and the satisfaction of students, faculty, and staff with those services while containing IT costs through an outsourced IT management solution.

B. Broward Community College

Broward Community College in Florida has experienced increasing demands for both for-credit and noncredit flex programs that address Broward County's workforce shortages—in nursing, for example—and workforce training needs in allied health professions and the IT industry. Lacking the rapid program development capacity to meet these educational demands, the college outsourced additional capacity to develop flex programs and provide 24/7 technical support for the students and instructors in those programs. Earlier attempts to fill open instructional technology support positions failed persistently, and so the college's instructional technology professionals now work collaboratively with a mix of externally contracted onsite and project professionals. The collaborative effort has resulted in (1) new discretionary revenues generated by contracted flex training for local companies and (2) grants enabling the redesign of an online nursing degree program into three different flex tracks tailored to meet the differentiated nursing needs: LPN to RN, RN refresher program, and so on. The new revenues are partially used to cover the costs of expanding instructional technology support as an entitlement for the college's faculty.

C. Montgomery College

Montgomery College in Maryland has successfully outsourced course management system infrastructure and related technical and academic support services on behalf of the faculty and the college's distance learning program for three years. Cost savings have accrued from (1) the economy-of-scale leverage inherent in a remotely hosted course management system and related remote 24/7 systems administration and help desk services (undetectably shared with other institutions in the external provider's client base); and (2) the efficiency of mixing full-time onsite instructional technology support professionals and other professionals available on a part-time basis as needed for planning, training, and other project functions not requiring full-time personnel. One such project is the current effort to redesign a critical math course focused on upgrading the skills of students who failed the college's math placement exam. Another will generate new revenues by preparing students to transfer to a new flex business program at the University of Baltimore supported and marketed by Collegis.

D. Tennessee Board of Regents

Tennessee Board of Regents (TBR) governs 13 community colleges, 6 universities, and 28 technology centers. The Regents mandated in mid-2000 that the constituent institutions would collaborate to create the Regents Online Degree Programs (RODP), initially offering five fully online degree programs in the fall semester of 2001—three associate programs articulated with two baccalaureate completion programs. The economic development goals of the RODP are to increase the state's college-going rate and the percentage of the population holding postsecondary degrees. Expecting approximately 400 enrollments in the first semester, TBR was pleasantly surprised to have to cap enrollments at 2,000. Demand pressures continue to necessitate enrollment caps, most recently at approximately 7,000 enrollments per semester. Over 70 percent of the students enrolled in RODP would not be in higher education today were it not for the flex programs of the RODP. All degrees are granted by the TBR institutions, which share the RODP courses and curricula so that a student can be a degree candidate in one institution and take RODP courses at other institutions for reasons of convenience or scheduling. The Regents did not provide start-up funding for the RODP. Instead, the institutions shared the start-up costs and are now sharing enrollment

revenues (tuition and fees) in an equitable split among a student's declared degree-granting institution, the institution offering a course taken by the student, and the RODP office. RODP has affordably increased access to postsecondary education in Tennessee, and has done so on a self-supporting, sustainable basis without access to additional statutory public funding.

III. THREE-A ACADEMIC REDESIGN STRATEGIES

With the above examples in mind, we offer some three-A strategies for accomplishing more with less. The strategies are grouped around three overlapping ends corresponding to the issues and possibilities raised in Items 1 through 3 in the introductory section: (1) redesigning a course instance, (2) redesigning a common course, and (3) redesigning a program or course cluster for flex delivery.

A. Redesigning the Course Instance to Increase Learning and Convenience

A *course instance* is a course taught by one instructor to one group of students in one prescribed timeframe. Calculus I, for example, is a course at the University of North Carolina at Chapel Hill, but Calculus I, Section 20, Fall Semester of 1992 is a course instance I may have taught there. Redesigning a course instance, such as my section of a common course like Calculus I, is generally institutionally tactical and difficult to measure or benchmark because its impact is on one instructor and one group of students. Redesigning a course instance to improve learning outcomes by incorporating effective pedagogical or andragogical practices enabled by technology, however, can become strategic in either of two ways: (1) as an institutional strategy to provide instructional design support and technology resources and support to instructors on an institutionally systematic basis to prepare them for possible participation in more strategic redesign projects; or (2) by applying a common redesign effort to all sections of a multisection or common course and focusing on total instructional costs, as well as common learning outcomes. Needless to say, strategies for redesigning a course instance or a common course should be incorporated into any strategy for redesigning a program or course cluster for flex delivery.

The primary, but not only, software tool for redesigning courses and program delivery is the course management system (CMS). The CMS needs to be understood as much for what it is not as for what it is. Although every CMS offers content authoring functions, no CMS was designed primarily as a tool for authoring course materials. Many instructors, however, focus their use of a CMS primarily on authoring content. In contrast, few instructors have authored a commercially published textbook. Every instructor, nevertheless, is a content expert who is accustomed to selecting, organizing, and annotating content for study by students. The course content organized by the CMS-savvy instructor is typically expressed in text in a printed or digital format. That text may be supplemented by graphics, photo images, animations, sound, or video often prepared, as is the text, using software other than the CMS. The content might even be in the form of *learningware*, *i.e.*, software requiring the student not only to read, listen to, or view content materials, but also to answer questions, solve problems, and make decisions designed to foster active learning. In any case, access to content is a necessary but not sufficient condition for learning, and is only one aspect of the learning process. Most students are neither expected to learn solely on their own through self-study of content nor able to do so, even with easy access to the world's greatest libraries, best organized web-based content repositories, or most immersive and engaging learningware. There is more to learning than structured access to content and content experts, and there is more to the effective use of a CMS than tapping its capacity to organize and present content.

The CMS is a tool for organizing and managing the instructional delivery process and can be a tool for redesigning pedagogy to improve learning outcomes and increase the flexibility of the instructional process, independent of whether instruction is delivered in a classroom or online or in some blend of the

two. The pedagogy redesign process often integrates other technologies into the instructional process through the CMS and takes advantage of the instructional tools embedded in the CMS to employ instructional strategies that otherwise would be too inconvenient or costly to practice.

The redesign strategies below can be applied to the course instance to improve learning outcomes and instructional flexibility for both instructor and students—*i.e.*, to make instruction more effective and convenient from the perspectives of all those involved.

1. The components of the course instance can be organized and amended dynamically as an online syllabus by the instructor. For example, a CMS-constructed syllabus can include these elements:
   a. The instructor's policies; links to departmental and institutional policies; instructions for accessing and using equipment or accessing required software tools and databases; instructions to help students create and mange their public and private work spaces within the CMS course instance or within an institutional e-portfolio application; and class rosters.
   b. A course outline; learning objectives; schedules and deadlines; project assignments; self-study and group discussion assignments drawn from print or digital content, learningware requiring active engagement; self-help quizzes; and a webliography of supplementary self-study content sources.
   c. Links to classwide discussion threads and private peer-group discussion threads.
   d. Links to tests to be accessed, completed, graded, and recorded at appropriate times in the course schedule.

2. Discourse need not be restricted to real-time discussions in a classroom or an online chat room, and individual student-instructor interactions need not be constrained by the traditional office-hour or appointment model. Asynchronous (time-shifted) web-threaded discussions can be flexible for both students and instructors, and they provide an opportunity for even the most inhibited students to collect their thoughts and participate in classwide and private peer-group discussions.

3. More responsibility for learning can be shifted to the student. For example, the instructor can
   • Require each student to participate weekly in classwide or smaller peer-group threaded discussions;
   • Require students to comment constructively on the work and observations of their fellow students in discussion threads designed to effect discourse and peer-grading strategies;
   • Require each student at least once during the course to initiate, moderate, and synthesize a classwide discussion thread for a grade; and
   • Organize the class into small peer groups and assign and grade group work and projects designed to promote collaboration and collaborative learning and reduce the need for individual assessments.

4. Self-study learningware assignments and the collaborative pedagogical strategies described here can reduce the instructor's workload or allow class size to increase with no increase in the instructor's workload.

5. The time spent in structured real-time interactions between instructor and students—required contact hours—can be reduced or eliminated through the above strategies.

6.   Assessment of student learning can be designed to be more continuous than occasional by taking advantage of the preceding bulleted pedagogical strategies and by requiring students on a frequent basis to complete automatically graded quizzes generated in learningware or from test banks. Continuous assessment also can reduce the probability that a third party—another student, for example—would be willing to complete graded work for a student. Continuous assessment can therefore reduce or eliminate the need for test monitors, an especially important consideration in instruction that is completely online.

7.   The instructor, working with any assistants who might be involved in the instructional process, can design strategies for individualized student interventions by using the preceding continuous assessment strategies and then tracking the student's participation and work enabled and recorded by the CMS or an e-portfolio application. Simple tools such as email and the telephone can be proactively used in such intervention strategies.

8.   The instructional process can be individualized, in conjunction with continuous assessment strategies and individualized intervention strategies, to accommodate the disparate learning styles and learning accomplishments of different students as they navigate the course's learning objectives.

9.   Student satisfaction can be surveyed using the CMS or other software designed for that purpose. Administered on a more frequent basis than once at the conclusion of the course, such surveys can help instructors continuously improve their communication with students and their effectiveness as instructors as a course progresses. Whatever the frequency of polling, such satisfaction surveys are a powerful quality assurance mechanism.

10. Student grades recorded by the instructor in the CMS can be automatically transferred to the institution's student information system as part of the permanent record for the students enrolled in a course instance. This automation, of course, requires the integration of the two systems by information technology professionals internal or external to the institution.

11. A course instance, as expressed through and managed by the CMS, can be saved as a digital record. This record can be useful in accreditation processes, and it can inform any student-appeal process allowed by policy during a limited period of time. It can also be stripped of students' work as appropriate and saved as a template from which to plan, amend, and launch subsequent course instances of the same or a similar course.

B. Redesigning Common Courses to Decrease Costs and Increase Learning Outcomes

The common courses cited in the introductory section are (1) the ones required of all students, (2) the few other general education courses consistently in high demand as electives, and (3) the major courses required of all degree candidates in heavily subscribed degree programs. Any institution can easily identify 20 to 40 common courses which, counting all enrollments in all course sections, collectively account for at least 35 percent of total enrollments at any academic moment. Most of these courses are common to most institutions in terms of both content and high enrollment demand and are usually offered as multiple course instances—*i.e.*, in multiple course sections taught by different instructors. For multiple sections there might be a common syllabus, common content resources, a common pedagogical framework, common learning activities and assignments, and common learning assessments, but there often are not, leaving no way to assure some degree of instructional consistency and to compare the

quality of learning outcomes across multiple course instances. Perhaps this is as it should be for those institutions content to leave a student's foundational learning entirely in the hands of the instructors the student draws during registration. Common courses, however, provide an opportunity to assure that foundational learning outcomes are more systematic and institutional than random. The Center for Academic Transformation and the 30 institutions it supported with a grant from The Pew Charitable Trusts over a three-year period have conclusively demonstrated that common courses can be redesigned for efficiency as well as for effectiveness—improved learning outcomes achieved at a reduction in per-enrollment instructional costs.

The key to success is to redesign the common course, not each of its course instances. Treating the course as a whole is an opportunity not only to improve learning outcomes, but also to achieve economies of scale, because the common course typically has enrolled a significant number of students and involved multiple instructors. The preceding list of strategies for using technology to improve the instructional effectiveness of a course instance can be applied to the common course as a whole and, along with other strategies dependent on the scale of the common course, can be deployed to reduce per-enrollment instructional costs.

1. Practice the strategies listed in the preceding section to increase instructional effectiveness, not for each course instance, but for the course as a whole. Doing so can contribute to reductions in the cost of instruction. For example,
   a. Increase students' responsibility for their own learning through immersive self-study learningware and strategies for encouraging or requiring collaboration and discourse among students, thereby reducing the instructional workload;
   b. Automate or reduce the labor in grading and other forms of feedback by using test-bank software, learningware, or peer-grading strategies, thereby reducing the instructional workload.

2. Use instructional assistants to replace some faculty functions, thereby changing the labor mix, decreasing per-enrollment instructional costs, and increasing the number of students served. For example, assign high-achieving students or other instructional assistants to functions that do not require the higher-paid expertise of a faculty member—functions such as
   - administrative and course management tasks;
   - maintaining the course website;
   - grading;
   - monitoring threaded discussions; and
   - tracking students' progress, intervening with individual students when appropriate, and otherwise selectively referring problems to a faculty member.

3. Administer common assessments and exams across all course instances. If any of these are nationally prepared or administered, the results can be compared to national norms.

4. Aggregate all course instances into a single course instance and deploy economy-of-scale strategies:
   a. Deconstruct the course into a number of modules, designate one faculty member to teach one module to create a one-to-one pairing of faculty team members with modules, and assign the faculty team responsibility for the course and any instructional assistants assigned to the course.

b. Divide the students into cohort groups, further divide each cohort group into small private peer-groups for group study and interaction, and assign an instructional assistant (or instructor) to manage and assist each cohort group.

Most of the strategies outlined to this point could be practiced in the absence of technology. Only technology, however, makes it systematically convenient, practical, and affordable for (1) an instructor to redesign pedagogy to improve the learning outcome of teaching a course instance and (2) a faculty team to redesign a common course not only to improve learning outcomes, but also to decrease instructional costs. Any institution hoping to use technology to improve instructional effectiveness and efficiency systematically should, as a first step, provide opportunities for its faculty to explore and adopt these technology-enabled redesign strategies to improve academic quality and productivity. This will require not only technology support and training opportunities, but also technology-savvy instructional redesign support, which is in short supply and often absent in the resident instructional design staff. The pertinent analogy is that new administrative systems can be implemented and technically supported by the technology staff, but the effective and efficient use of these systems in the provision of administrative services requires administrative officers and their staffs to engage in the redesign of administrative service processes, which often requires the help of experienced external consultants and support specialists.

C. Redesigning Program Delivery to Participate in Flex Markets

The strategies for redesigning course instances and common courses neither assume nor preclude an online instructional delivery model. The strategy for the course instance, however, notes that several strategies for improving instructional effectiveness can be applied to reduce or eliminate the need for structured real-time interaction between instructor and students—the key to redesigning programs as flex programs for niche flex markets. Students who seek to enroll in flex programs often do so of necessity and so require flex services in all academic and administrative aspects of the educational service process. Online self-service, however, can easily fall short in the absence of a convenient opportunity for the student to request and receive individualized help from the instructor or other service provider, either in person, on the phone, or online in real time—just-in-time help as needed by the individual student. Instructional services are no exception. Indeed, when instructional processes are redesigned to be offered primarily asynchronously online as flex instruction, the provision of just-in-time, real-time individual assistance becomes especially critical.

Flex education is not synonymous with distance education, a distinction too often overlooked in discussions of distance education. Nor is flex education synonymous with online education. The dominant feature of flex instruction, whether delivered entirely online or not, is the time-shifting of instruction typically accomplished by using real-time interactions only for learning activities for which asynchronous (time-shifted) delivery is arguably impossible or would put important learning objectives at high risk. Programs delivered online asynchronously, except for any practicum-like requirements, are the most flexible of flex programs and are especially appropriate for audiences not within a reasonable radius of access to a campus or its extended instructional facilities. Flex programs marketed within that radius have a greater degree of freedom to risk market share by insisting on some degree of structured real-time learning activity that might otherwise have been delivered asynchronously. Time shifting, however, is a powerful convenience factor which should not be dismissed as a competitive edge just because a target audience is within driving or walking distance of instructional facilities.

We listed in the introductory section nine possible reasons for redesigning degree and certificate programs for flex delivery. Now we offer strategies for success in flex markets. There is more involved than the effective, efficient, and convenient delivery of courses.

1. Verify the viability of the market.
   - Conduct market research to discover or verify one or more niche markets for the particular degree or certificate program that is under consideration for flex delivery.
   - Decide whether to focus on a consumer offering or a contract offering to businesses and other organizations—or both.
   - Evaluate the competitors already serving the market niches of interest.
   - Estimate potential market share, and develop a draft business plan projecting enrollment revenues, expenses, profits and losses, and a break-even schedule.
   - Decide whether to enter the market with a flex offering.

2. Redesign or develop the program for flex delivery.
   - Assign a faculty team to take responsibility for the redesign and development process.
   - Provide technology infrastructure for the development process, and assign a technology services team to support the development process.
   - Assign a team of curriculum design, instructional design, and course development and evaluation professionals to support the faculty team.
   - Provide project management for the redesign and development process.
   - Establish a curriculum delivery and access model with enrollment options designed to meet market needs: semester model, reduced term model, cohort model, open enrollment model, and so on. The more flexible the model, the more attractive the program will be in most flex markets.
   - Select instructional effectiveness strategies described in the section on the course instance and, for required courses, the instructional efficiency strategies described in the section on common courses.
   - Adapt the modular approach, described in the section on common courses, in order to facilitate the development of niche variations on the program or the re-use of major course components in other programs.
   - Develop templates, common features, and common interfaces to ensure the coherence of the program from a student perspective.
   - Redesign and develop the courses on a schedule that is aligned with the curriculum delivery and access model.
   - Design course and program evaluation services to help assure the quality of the program and its courses from the perspectives of student and instructor satisfaction.
   - Design a process to train the instructors and instructional assistants who will be recruited initially and periodically thereafter to deliver the program.

3. Develop a cost-effective marketing and student recruitment plan.
   - Acquire prospect databases or reuse the ones used in the market research phase.
   - Design a recruiting campaign using email, telemarketing, the web, and traditional media to penetrate the program's target flex markets.
   - Acquire and implement a leads management system to track, manage, and report the recruiting process and its yield—cost per enrollment, for example, which will be a critical factor in adjusting the draft business plan and recruiting process, as needed.
   - Design the integrated service processes, such as online loan processing and admissions and registration processes, required to enroll the recruit.

- Assign and train a recruiting and service professional responsible for enrollments and enrollment management.

4. Identify a reliable, redundant, secure, scalable infrastructure for hosting the technology systems required by the program at time of rollout and beyond.

5. Integrate the various systems (leads management system, CMS, student information system, portal system, e-commerce system, and so on) required to support the program at time of rollout.

6. Develop online academic and technical support services for students who will enroll in the program.
   - Identify, redesign, and integrate the various student service processes that must be delivered online to provide a comprehensive, competitive student service environment: academic advising, bursar, registrar, bookstore, career counseling, and other services.
   - Design a toll-free call center to support the above services with just-in-time help.
   - Plan the rollout of a 24/7 technology help desk and online support system for students who will enroll in the program—and for their instructors.

7. Deliver the program.
   - Train all instructors, adjuncts, and instructional assistants who will deliver the courses.
   - Recruit and enroll students, and monitor the progress of the recruitment process against plan.
   - Assess and address issues continuously during the rollout phase of instruction and academic and technology support services.
   - Evaluate the courses and the program to track student and instructor satisfaction on a periodic basis, as a means to ensure quality and continuously improve the program.

8. Calculate program expenses and revenues on a dynamic basis, and adjust the business and resource plan accordingly.

IV. CONCLUSION: ACADEMIC RETURN ON TECHNOLOGY

Viewed through the demanding and not always sharply or agreeably focused lens of academic productivity, the current financial and policy pressures on the community college can best be relieved by technology-enabled academic service redesign strategies capable of generating a measurable academic return on technology. The governing board for any nonprofit higher education institution has the unenviable task of trying to balance these external expectations within the mission of the institution and its resource plan. Indeed, the governing board represents the following external constituencies:
   - Students and, often, their families
   - Executive and legislative branch policy and decision makers who exercise control over any public funds made available to the institution
   - Donors
   - Organizations contracting for services on a fee-for-service basis—employers and grant organizations expecting specific educational or research services in return for their directed investments in the institution

The governing board and the chief executive who reports to it are responsible for generating an academic

return on technology from the perspectives of the above external constituencies. We have accordingly suggested focusing the investment in technology on strategies and support services designed to

- Help instructors redesign their pedagogical and andragogical practices to increase the learning outcomes they assess in delivering a course instance—a form of academic accountability and productivity that uses the desire of the faculty to help students learn in order to create more effective learning environments and increase student satisfaction;
- Help academic officers and deans engage their department chairs and faculty colleagues in the systematic redesign of common courses to improve learning outcomes on an institutionally established basis while reducing overall instructional costs for those courses—a form of academic accountability, affordability, and productivity capable of meeting the policy expectations; and
- Help academic officers work with deans, chairs, and program heads to meet external expectations and competitive pressures for delivering high-demand for-credit and noncredit programs with minimal requirements for real-time interactions between instructors and students—a form of academic accessibility, affordability, and accountability responsive to policymakers and market demands.

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VI. ABOUT THE AUTHOR

Dr. William H. Graves is Vice Chairman of the Board of Directors and Chief Academic Officer for Collegis, a product-neutral services company solely serving higher education with a range of planning, technology management, marketing, student recruiting, academic support, and curriculum solution services. His perspective derives from over 30 years of experience as a professor and academic

administrator in higher education and from his role in encouraging the systemic use of technology in the educational process. He has given hundreds of invited presentations at conferences and on campuses, advised hundreds of institutions, and published over 60 articles on technology-in-education themes. He is a past member of the board of directors of the Instructional Management Systems Global Learning Consortium, EDUCAUSE, and CAUSE, and is on the Advisory Board for the Center for Academic Transformation funded by the Pew Trusts. He helped launch Internet2 and EDUCAUSE's National Learning Infrastructure Initiative and still chairs the NLII planning committee. Graves earned a mathematics doctorate at Indiana University. He joined the faculty of the University of North Carolina at Chapel Hill and served there also as dean for general education, interim academic officer, senior information technology officer, and founder and director of the Institute for Academic Technology, a University partnership with IBM. He became Professor Emeritus of Mathematics upon leaving the University with his Institute colleagues about six years ago to join Collegis.