QUESTIONS FOR EXCELLENCE:
A BOARD GUIDE TO COLLEGE AND UNIVERSITY PLANS
Essay 10

Nathan Dickmeyer
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Asking About Technology

Making sense of proposals from the technology experts on campus is challenge peculiar to modern times. Comprehending the strengths and weaknesses of these programs is critical, however, because technology decisions have price tags so large that mistakes hurt the entire college or university. New computer systems sometimes appear to take a college "two steps forward, then one step back." Time and again colleges have played "follow the leader" with a new technology to their later regret. Benefits turn out to be ephemeral, unlike the costs. Unused, expensive technology sits in college and university storerooms across the country.

The questions below allow an institution to demonstrate that technology decisions are analyzed broadly, realistically, and within the structure of institutional goals. The chapter avoids framing questions on the specifications and performance of any particular technology. It asks about the effectiveness of planning in guiding decisions.

This chapter first provides a set of general questions that explore the depth of the college's general approach to technology and the quality of technology planning. Three specific areas are then examined: communications, instructional technology, and the acquisition of a new enterprise system. New enterprise systems include computer application modules that process student records, student registration, student billing, financial recording, human resource records, payroll, and fund-raising.

Technology Overview

The following questions help the college or university show that it has integrated its principles about technology into the framework of institutional strategic and financial plans. The questions also examine the extent to which assessment is built into technological design processes. Information management appraisals along with demand

and performance measures are examined from a broad perspective, not just from the perspective of the latest technology. The final question emphasizes the need for rigor, and perhaps even skepticism, when evaluating a new technology.

How will technology help fulfill the goals of the strategic plan within financial constraints? In other words: What business is the technology group in? The goals of a strong technology team will focus less on technology itself and more on the expected impact of technology on learning, either directly or through increased administrative effectiveness. Technology planners should, of course, set goals for upgrades and reliability but should not neglect the original justification for technological additions: improvements to learning and to institutional effectiveness. Planning frameworks for judging proposals to add or upgrade technology should compare the addition's benefits with what could be accomplished without the technology. The strengths of existing methodologies should be presented without bias. This seems rather fundamental, but the mystique of new technology does occasionally lead educators to lose creativity when viewing existing methodologies. Three-dollar videotapes of classes appeared to lose relevance when televised classes could be "uplinked" to satellite broadcast for three million dollars. Some institutions, however, did very well with the "old" technology.

The goals of technology planning should be in line with the strategic priorities of the institution, not independently derived. Obtaining "best of breed" hardware and software has a good ring to it, but not all such solutions can be justified by the extra expense. A solution that falls short of "best of breed" by one or two functions may be the correct choice, especially when the functions are not likely to be used, and the price difference is in the millions of dollars.

How does the college or university plan to manage information? In other words: Are we focused on managing technology or knowledge? The convergence of many technologies is enabling colleges and universities to gain a unified approach to the management of information. In the past, the separation of information technologies, such as print, speech, bits, and film, split the management of these sources. Libraries had books; telephones had analog receivers; bits survived in memories; and films required projectors. We

Nate@DickmeyerConsulting.com
(845) 358 5527
(cell) (914) 441-7630

recognized information as the bits of a database, the words of a voice over the telephone, and the colors of a film. Today we know that information is information, and our goal is to make it more uniformly available and usable. Technology planners nowadays are concerned with the efficient dissemination of information regardless of source. The answer to this question will show how the needs of the campus community for information are being met, not how each separate technology is being optimized. A good response will demonstrate the integrity of the college's conception of information, not the independent resources of competing silos.

How are technology demand and performance measured? In other words: Are we using benchmarks and standards to guide planning for technology? One of the keys to managing technology is measuring and predicting demand. Keeping up with college and university demands on technology is an ongoing challenge. A good plan will give measures of demand and measures of institutional ability to meet demand, in other words, performance measures. Many technology performance measures are updates of familiar production "downtime" measures. Performance measurements against benchmarks from high-performance organizations and clear programs for quality improvement are both important elements of good planning.

What is our methodology for assessing a new technology? In other words: How can we tell a good technology idea from a bad one? Additions of new technologies have unpredictable results. Closed circuit television (one in every classroom!) received enormous investment beginning in the 1960s and less than significant use (after the first year). E-mail caught on slowly in the 1980s, then suddenly exploded, going from brief messages sent to privileged colleagues to an important adjunct to classroom communication. Only a kernel of the deployed technology now appears to be well utilized in expensive "smart classrooms" and advanced language labs. Perhaps utilization will change, but the need for careful assessment remains. Good technology planners will steer clear of uncritical praise for the latest fads and will have procedures for pilot testing and evaluation. Plans that allow huge investments into unproven technologies that sound good and that "other excellent schools have adopted" should be viewed with wariness.

Nate@DickmeyerConsulting.com
(845) 358 5527
(cell) (914) 441-7630

Rapid Changes in Communication

Voice, video, and data transfer technologies have been changing as fast as has computer technology. Some colleges have been successful leaders, some have stayed with older technologies with no difficulty, and some have moved down blind alleys. Trustees can provide insight into how to approach this difficult area. They can ask about vision, next steps, and flexibility.

Why do we always seem to need more sophisticated communication technologies? In other words: What is our communication vision? A vision should present dynamic communication standards for mobility, responsiveness, asynchronicity, cost, permanence, privacy, breadth, and penetration. None of these criteria can be neglected, nor is each of the same importance on all campuses. A mobility standard means the degree to which information can reach me no matter where I am. A responsiveness standard indicates the speed with which information can be fed in and pulled down and the degree to which the whole system is able to respond to new initiatives. A standard for asynchronicity determines the reliability of communications between users not simultaneously engaged. (Electronic mail is asynchronous. You do not have to be online for someone else to send you a message.) Breadth standards give the range of communication modalities. Penetration standards give the desired degree of availability of fixed location communication modalities.

What makes the planning sufficiently flexible for this dynamic field? In other words: How will we ever keep up with the changes in communication technology? This is a difficult question. The best answers will demonstrate how the institution's professionals are keeping up with the field, running pilot tests, and evaluating new ideas.

Instructional Technology

Many instructional technologies have been oversold and have appeared faddish. Suspicious testimonials, expensive approaches to traditional instruction, and vendor

Nate@DickmeyerConsulting.com
(845) 358 5527
(cell) (914) 441-7630

instability have become commonplace. Expending $200,000 on a smart classroom must be justified with proven improvements in learning. The investment ought to produce more than just the general use of an overhead projector and balky electric window shades.

Instructional technologies can spread like viruses. Careful evaluation is overrun by a few exuberant supporters who are infatuated with the latest thing (that only *they* will ever master). New instructional technology evaluation methodologies should be outlined in technology plans and should focus on measuring learning improvements.

How will instructional technology additions be evaluated for their effects on student learning or the creation of knowledge? In other words: How will learning or research be improved? Much research is being done on the impact of distance learning and computer-based instruction on student learning. Results suggest that not all technologies are beneficial and that not all users benefit equally. Nevertheless, retention of teaching by students and their involvement with course activities have been shown to improve in many cases. A good response will point to research that has been done or is being done to measure the learning benefits of planned new technology explorations. The theories are always interesting, but only experience allows evaluation.

What technologies do faculty and students say they need? In other words: Will the faculty use it? This is a simple question: “Have you asked the students (or faculty)?” Too often, information on the effectiveness of a technology is based on anecdotes from a few students or faculty. A good technology plan will include designs for surveys or other means of keeping in touch with technology needs as perceived by students and faculty in general. There are always a few people who seem to benefit from every new instructional modality. New technologies are only worth pursuing, however, when more than a handful of faculty or students find a gain.

What will the costs of hardware, software, infrastructure, training, incentives and increased overhead come to for getting into this technology? In other words: What is the true cost of filling this need? Calculating the cost of any technologically sophisticated

Nate@DickmeyerConsulting.com
(845) 358 5527
(cell) (914) 441-7630

instructional support methodology, especially distance learning, is notoriously difficult. Faculty members often suspect that the hidden costs of such programs make the decision to get into them foolish. The college or university should study all incremental costs, especially those related to managing the added complexity of the technology.

New Enterprise Computing Systems

Leaders at many colleges and universities, after struggling to implement a newly chosen suite of administrative computing systems, too often have said, "If we had only known what we know now, we would never have done this." The decisions to replace existing systems ought not to be based on system appraisals that ignore existing advantages, cost estimates that are too low, and benefit estimates that are too optimistic. To slow the "rush to replace," the questions below press the college or university to explain factors such as motivation, benefits, safety, and hidden costs.

What is the goal of the acquisition of this new system? In other words: Why are we buying this headache? Major ERP (Enterprise Resource Planning) systems acquisitions can include the purchase of a student information system, a finance/human resources/budgeting system, a student recruiting system, and a fund-raising support system. With training, modifications, report writing, documentation, hardware, and auxiliary software, the installation of such systems can cost well over three times the price of the enterprise software alone, which is itself millions of dollars. With such an investment, the purchase proposal needs to document how the new system better meets the needs of students and faculty. The presentation should demonstrate that responding to these needs is consonant with the strategic direction of the college and the strategic priorities of the technology plan. True costs and benefits, especially non-quantifiable benefits, should be presented. The proposal should show a favorable balance between the expense and the gain. Benefits, such as better decisions through enhanced and more accessible information and improved course registration service, are important and difficult to value, but must be shown to come at least close to justifying the costs.

Nate@DickmeyerConsulting.com
(845) 358 5527
(cell) (914) 441-7630

How secure, confidential, reliable, and accurate will the new system be? In other words: Is there system integrity? While this area is highly technical, trustees need to feel confident that a professional evaluation of the security of information and the integrity of systems has been undertaken. The track record of the software should be clear. There should be safeguards to keep private information private. Access should be controlled such that users are limited to viewing and changing only the information required for them to do their job. A good response will describe the process for evaluating information and system security protections.

How will this college or university take advantage of the change in systems to improve the efficiency, logic, and reliability of existing business processes? In other words: Are we just going to automate our current, outdated business processes? Colleges and universities often regret hurried, emergency system implementations, where there was no time for the analysis and streamlining of business processes. These institutions also lament modifying the software to match idiosyncratic (and often unnecessarily complex) business processes. A strong implementation design includes an early period of process analysis and has a strong bias against software modification or customization. Modifications are difficult to document and maintain. Any upgrades from the software vendor may conflict with the modifications, forcing later maintenance to be "manual." Institutional technology people are service-oriented, but they sometimes regret saying yes when a modification in software is requested. This regret is most deeply felt when just changing a business process would gain the same result.

Non-standard business procedures that might require software modification to handle often arise because a dean or other administrator designs a paper system that treats his or her students, faculty members, or staff differently from the way current systems do. These changes include new tuition discounts, payment structures, special fees, new work hours, non-standard class hours, and irregular pay timing. In many cases these alternate business processes are necessary for the people in the program, and the business software may be easily modified to accommodate the new process. In other cases, the advantages bestowed are marginal, and the costs to modify software and run parallel business processes are enormous. Because the changes happen slowly, the evolution of business

Nate@DickmeyerConsulting.com
(845) 358 5527
(cell) (914) 441-7630

process into twisted mazes is hard to notice. The introduction of new and more powerful software provides an excellent time to evaluate and prune those business processes that do not advantage the institution and that the new software is not designed to support.

What contingency plans do we have for problems that arise during conversion? In other words: Will we make the same mistakes that other schools have made? New system implementation is seldom without hitches. Data conversion from old systems may prove difficult. New hardware is not well "tuned" to the software at first. Interfaces between modules may not work properly. Yet, critical functions, such as payroll, accounting, budget control, registration, and the distribution of financial aid, must not be interrupted. A contingency plan should exist to guarantee the continuation of critical systems if the new system does not come alive as scheduled.

How will upgrade implementations be handled? In other words: After implementation, must we buy every half-tested "upgrade" that vendors offer? A good presentation would include the full costs of maintaining the system. The testing and installation of regular software upgrades and the cost of maintenance for both software and hardware are significant, contractual, and unceasing. Users must test every upgrade, and these problem-repair "patches" can come weekly. The testers are, unfortunately, the same group of college or university employees who are supposed to get the regular work of the institution accomplished. This extra burden is a cost frequently overlooked. Many institutions find that they cannot afford to properly implement upgrades, causing their software to accumulate known problems and to lack expected capabilities.

Boards of trustees should not let their oversight of the technology area slip because they fear that their technical expertise is inadequate. The questions above do not require that trustees have strong technical backgrounds. The questions are good "common sense" kinds of trustee questions. Trustees will want to know all costs, not just the cost of the software. Trustees will now want to know how continuity is guaranteed. Fancy vendor demonstrations to the trustees often provide only shallow answers. Trustees who focus on this area can help the college avoid embarrassment and loss.

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(845) 358 5527
(cell) (914) 441-7630