Navigating the Academic "White Water": Strategic Issues for Computer Information Systems Education

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Abstract

This paper invites Computer Information System (CIS) program stakeholders to consider several strategic issues in light of the current turbulent economic and political climate. Areas discussed include the Business Model & Value Proposition, Curriculum & Pedagogy, Student Success and Completion, The Academic Workplace, and Diversity & Inclusion. The paper does not offer prescriptive solutions; rather, it broadly frames some strategic issues and suggests areas for stakeholder consideration. Ideally, each program should weigh strategic issues against the backdrop of the particular environmental factors (opportunities and threats) within which it operates, and in the context of its own strengths and weaknesses. Moreover, each program should consider its own relevant strategic issues from the perspective of its mission, values, and aspirations.

Keywords: Strategic Planning, Business Model & Value Proposition, CIS Pedagogy, Student Success & Completion, The Academic Workplace, Diversity & Inclusion.

1. THE ACADEMIC ENVIRONMENT – "PERMANENT WHITE WATER"

Peter Vaill (1996) introduced the term "permanent white water" to describe the turbulent environment in which we all live and work. Since the introduction of that phrase, the speed with which change occurs has accelerated, and Vaill's term "permanent white water" has proven to be prophetic. All college students, regardless of their field of study, need to be prepared to contribute in a world marked by open or unscripted problems — problems where the right answer is far from certain and where solutions are therefore created under conditions of uncertainty.

Today we are educating our students for jobs and career paths that do not yet exist, using technologies that have yet to be invented, to solve problems that we don't even know are problems yet. These are the kinds of problems we face in today's economy, which is fueled by innovation and ongoing, turbulent change. As Schneider (2015) so aptly writes, "These are also … the kinds of problems we face both in the global community and in our own diverse and deeply divided democracy. Indeed, our graduates are entering a world of extraordinary complexity and uncertainty. The solutions they create will hold lasting consequence for our shared future."

Hap Klopp (2012), founder and past CEO of *The North Face*, advises us to embrace this ongoing state of permanent white water, viewing disruption as an opportunity to engage in "possibility thinking"; i.e., looking for what can possibly be done and deciding on how best to go about doing it, rather than finding reasons why it cannot be done. He opines that to achieve positive results in this disruptive white water world we must adopt a "no excuses" mind set and

assume personal responsibility for success in our own lives as well as for the academic success of our students. Klopp believes that this seemingly monumental task can be reduced to manageable size and accomplished if we remember the "80:20 Rule": that 80% of our positive results come from but 20% of our activities. He refers to this 20% of activities as the "success drivers" of our lives and organizations, and advises that regardless of our vocation we stay focused on the "success drivers."

2. THE HIGHER EDUCATION LANDSCAPE – ON THE NEED FOR CHANGE

Despite the presence of time-honored academic traditions, higher education is not immune from the world of "permanent white water," and has been in a state of continuous evolution. Lately much has been heard about the "disruptive" forces that are challenging higher education, forces that are requiring colleges to rethink fundamental academic and business practices. For example, competition from the for-profit sector coupled with the decline of the traditional pools of college-aged students are in combination strong enough to threaten the well-being of some Computer Information Systems (CIS) programs and the very institutions in which they are housed (Sellings, 2017). Simultaneously, this is a promising time for the colleges in which our CIS programs exist because innovation is redefining the concept of higher education at an astonishing pace, resulting in changes in the marketplace that provide an opportunity to shape new strategies that will strengthen both our institutions and our departments.

There have been calls for innovative approaches to higher education before (Tagg, 2003; Bok, 2006; Saulnier, Landry, Longenecker, & Wagner, 2008; Sullivan, 2008; Colby, Erlich, Sullivan, & Doyle, 2011), but somehow this time seems different because there are now cheaper and far more effective technologies available than there were a mere decade ago. While many have concluded that the arguments for remaking higher education are the same ones that they have heard before, others in the academy (DeMillo, 2015; Schneider, 2015; Pelletier, 2016), have concluded just the opposite: that higher education has to be examined and remade because it has become unsustainable in its present form. What makes this time different is the presence of new "tools" to bring about change; i.e., ways of transmitting content information are now available in a wide variety of rich and appealing online formats. As Zakaria (2015) notes, technology is transforming higher education, opening up access to the best courses and classes in a vast array of subjects around the world, and we are thus at the dawn of the greatest expansion of education in human history. Coupled with both (1) data analytics, via which we can effectively monitor the students' learning and provide individual strategies to maximize their learning, and (2) our rapidly increasing understanding of the biological basis for how people learn (Bransford, 2000), we can now design new ways to disseminate knowledge and deploy much better individualized strategies to maximize learning.

Given the presence of these "tools" and the overwhelming need to address the disruption in our society, why the resistance to change among many in higher education? In 1934 American populist Upton Sinclair devised a utopian scheme for ending the depression in his home state of California, a proposal which became the major plank in his failed campaign to secure the governor's mansion. In his analysis of his failed campaign (Sinclair, 1935) he posited that the reason that insiders reject innovation is that "… it is difficult to get a man to understand something when his salary depends on his not understanding it." DeMillo (2015) posits that the current denial of the need for drastic change by many in higher education is "… not too far removed from Sinclair's Depression-era politics: there is little good that will happen to academic insiders who embrace the idea that the system is in a state of collapse."

This paper is not intended to offer prescriptive solutions. Rather, its purpose is to broadly frame some CIS strategic issues and suggest areas for stakeholder consideration. Ideally, each program should weigh strategic issues against the backdrop of the particular environmental factors (opportunities and threats) within which it operates, and in the context of its own strengths and weaknesses. Moreover, each program should consider their own relevant strategic issues from the perspective of its own mission, values, and aspirations. But if Abraham Lincoln was correct in his assertion that creating the future is the best way to predict it, then we need to embrace the technology-fueled innovation which is transforming higher education, introducing new ways to disseminate knowledge and better ways for students to learn – all at a lower cost. This paper should be considered an invitation for program stakeholders to begin that conversation at both the program and national levels.

3. THE BUSINESS MODEL & VALUE PROPOSITION

Today most college business models are experiencing some degree of financial stress, and the business models that brought colleges to their current state may not serve them well in the future. Most colleges actually use multiple business models; one set of financial structures may be employed for traditional undergraduate programs, while alternative financial structures may be in place for programs geared toward adult and online students.

Many people are questioning the value of college in monetary terms, despite the fact that surveys consistently show that college degrees enhance individual earning power and that graduates earn significantly more over time. Given the availability of content information online and the presence of "for profit" education alternatives, it is becoming increasingly difficult to argue for the current academic structure on the basis of exposure to content alone. Indeed, the real value of the residential college experience lies not in the delivery of content, but in the exposure to faculty and the overall college environment, including contacts made with other students and alumni.

Driven by the current dialogue questioning the value of higher education and the difficult economic times in which we live, public funding to support higher education appears to be either decreasing or holding steady at best at both the federal and state levels. To offset this loss of government revenue, tuition has been rising at a much faster rate than both inflation and most family incomes. To offset the potential loss of students due to high cost, higher education institutions employ deep tuition discounting to meet their enrollment targets; i.e., using institution financial aid to offset the sticker price to help low-income students pay for college and attract certain students they want to recruit. But as that practice has expanded, it has become increasingly less tenable. Additional financial constraints currently faced by colleges include volatile endowment returns, uncertain philanthropic support, and limited debt capacity.

The squeeze on revenues combined with the ongoing need to contain or lower costs creates powerful motivation for institutions to rethink fundamental business models and practices. Colleges and universities are reconsidering their programmatic offerings; looking at costs, efficiencies, and market interests and working to identify and develop new revenue streams. There

is increased pressure to do more with less at all levels of the organization.

In the future, while some prominent, well-financed institutions may be able to continue to employ the same business models as those that have served them so well in the past, many other institutions may have to budget for revenues that are declining or flat at best – a function of declines in net tuition revenue due to flat or declining enrollments. Demographic shifts in the student bodies may drive shifts in enrollment targeting and marketing practices at the university levels. Individual programs may need to become more sophisticated and strategic in their enrollment management operations. Programs may also need to consider revisions of academic course offerings as well as reconsiderations of academic schedules, educational delivery systems and locations, and services to attract students in new and different demographic groups and markets.

At the surface level, much labor intensive work is needed to redesign and reengineer programs, channels for educational offerings, business practices, and business models. However, at a more fundamental level, today's higher education environment may require that programs ask themselves more foundational questions such as: In which academic program offerings can we truly excel? Have we allowed program expansion and "scope creep" to muddy our department/school mission and is some clarification needed? If constant growth in enrollment, revenue, programs and facilities is no longer a sustainable or realistic expectation, how can we best position ourselves for a future that might look quite different from the past? Can we adopt a mindset that is more innovative and agile while carefully preserving our programs' traditional strengths?

4. CIS CURRICULUM & PEDAGOGY

Discussions of our curriculum and pedagogy should start with an examination of who we perceive ourselves to be and who we wish to become. As with any organization concerned with finances, these two fundamental questions should be considered in the context of both our market space, composed of both students who purchase of our service and employers who hire our graduates, and our program's mission.

As DeMillo (2015) accurately points out, the "gold standard" for analyzing the competitive needs of organizations was developed by Howard Porter (1980) who laid out forces that need to be managed in order to understand an industry. These forces include bargaining power,

competitive rivalry, threats posed by new entrants, and the likelihood that consumers will find a substitute for your products/services. By applying Porter's forces to higher education, DeMillo (2015, p. 192) astutely concludes, "The only (positive) strategic choices available to an academic institution are those that it uses to differentiate itself to students and gain an advantage over new entrants as well as existing, competitive peers … Yet this one driving concern of strategic plans … is almost completely absent from the plans of most colleges and universities."

Though each CIS program should develop its own unique mission, it is highly advisable that we be familiar with both our respective program's historical context and the development of our national curricular models/norms. The First National Conference on Information Systems Education was held in 1982, a mere 35 years ago, at McCormick Place in Chicago. Our discipline has since evolved with the changes in technology, and it is probably best to consider those evolutionary curricular changes in light of the technological and educational advances of the past three decades.

A mere three years after the initial Chicago conference, Alexander Astin, founding director of the Higher Education Research Institute at UCLA, published his seminal work (Astin, 1985) which advocated for a new approach to higher education, driven by the concept of "student improvement" as opposed to the traditional "curricular mastery" models in effect at that time. During the past three decades calls have been increasingly heard from higher education leaders to move from a solely curriculum driven to a more learner-centered approach (Barr & Tagg, 1995; Weimer, 2002; Fink, 2003; Tagg, 2003; Doyle, 2008), and similar calls have been increasingly heard in business and CIS education in the last decade (Sullivan & Rosen, 2008; Saulnier, et al., 2008; Colby et al., 2011; DeMillo, 2015).

Thus, our discipline has evolved in close coordination with advances in information technology and in loose coordination with the shift from a content-centered to a learner-centered educational environment. If we are to survive and thrive as academic departments offering a world-class education in information systems to our students while simultaneously supplying industry with the highly competent employees that we so desperately need for our country to retain its competitiveness in the global arena, then it is becoming increasingly necessary for us to engage in an ongoing self-examination process at both the curricular and teaching-learning levels.

5. STUDENT SUCCESS AND COMPLETION

The primary mission of a traditional college is to support student learning. Now, in addition, a vibrant national conversation is emerging around the importance to society at large that students succeed in college and complete their degrees. This conversation is fueled by growing expectations that colleges and universities do a much better job of helping students graduate in a timely fashion, obtain jobs, and consequently contribute to both local and national economies. Two important demographic trends merit close attention regarding improving student graduation rates. First, colleges now typically serve a more diverse student population than they did a mere decade or two ago. Second, and no less important, institutional efforts to support student success – to help students complete their studies in a timely fashion and obtain their degrees – are becoming much more focused and sophisticated.

Increasingly Diverse Student Bodies
Over the last two decades the student bodies of most colleges have become increasingly diverse. Part of this trend is a function of demographics – the overall population of the United States is becoming more diverse. The National Center for Educational Statistics (NCES, 2017) projects a 7% increase in the number of white students in postsecondary education between 2011 and 2022, compared to increases of 26% for black students and 27% for Hispanic students. Additionally, colleges and universities are enrolling more first-generation students; about 20% of students today are the first in their families to pursue higher education. These first-generation students encounter many barriers to completing their degree, as they usually come to campuses with little to no familiarity with what will be expected of them in college.

To address the national need for greater numbers of graduates, colleges and universities are drawing from beyond the traditional cohort of recent high school graduates and serving more adult students, transfer students, international students, and students from immigrant populations, including undocumented students. Some of these students are less prepared academically and financially for college than others, so getting them successfully through to graduation can be very challenging. Others are working full time, which makes it much more difficult for them to stay in school and finish their degrees.

Another demographic factor is the declining number of potential students in many states. NCES projects that from 2009-10 to 2022-23, the number of high school graduates will decrease by 10% in the northeast and by 8% in the Midwest, while at the same time the number of high school graduates will increase by 9% in the south and by 5% in the west.

Maximizing Student Completion
In recent years, many colleges have increased their institutional resources dedicated to helping students succeed academically and obtain a college credential. Colleges are collecting volumes of data about student performance and analyzing that data at a granular level to identify students at risk, prompting early interventions at a time when the interventions might have optimal impact. Typical interventions include: increased support for freshmen seminars and other academic and co-curricular programs that orient students toward success, offering more intentional advising for students about academic paths and career goals, providing increased opportunities for tutoring, helping faculty to become better advisors, and providing dedicated support staff whose main focus is academic advising and career development.

Adult students also present a distinct set of challenges. Departments used to serving 18-to-22-year-olds often find that adult students require a unique set of support services such as day-care for their children, financial-aid counseling, and consultations with faculty members and advisors after normal business hours. Online students, many of whom are working adults with children, often have similar service expectations.

Another area which may warrant program consideration to support student completion is the consideration of competency-based education and other alternative forms of credentialing, which represent additional ways of moving students through the educational pipeline and into the work force more efficiently (quicker) and economically (at a lower cost to the student) than the traditional academic-credit degree model. In contrast to the typical college degree based on credits earned from courses completed, competency-based education focuses on student demonstration of competency/ mastery in specific "chunks' of subject matter. A burgeoning number of competency-based programs have been started at mainstream colleges and universities, and as part of this effort "micro credentials" such as badges, certificates, and licenses have been gaining workplace acceptance.

6. THE ACADEMIC WORKPLACE

The work that professors typically do has always been evolving, but the latest iteration of faculty work and life appears to be rife with both change and associated challenges. The challenges include the growing predominance of adjunct faculty, faculty governance issues, increasing faculty responsibilities, faculty research challenges, and new technological demands on the faculty.

Adjunct Faculty
While many prominent colleges compete to recruit and hire top faculty talent, and some smaller colleges retain a largely tenure or tenure-track faculty, the professoriate as a whole has changed significantly. Overall, more than three quarters of faculty today (76%) are adjunct or contingent faculty (occupy part- and full-time non-tenure-track positions), whereas this figure was but 22% in 1969 (Edmunds, 2015). While some adjunct faculty are business professionals who come to campus to share their expertise, many adjuncts commute between several institutions in a given semester. Additionally, many who work in "part time" positions actually teach the equivalent of a full-time course load.

Faculty Governance
One important ramification of increased reliance on adjunct faculty is that adjuncts are usually not positioned to deeply engage in the life of an institution; governance structures usually do not invite them to do so in the same manner as those offered to traditional tenure-track faculty. Adjunct faculty usually do not contribute as much as tenure-track faculty to important work such as serving on governance committees, advising students, or developing impactful research that advances both the body of knowledge and a program's reputation. Cumulatively, such phenomena can diminish the overall quality of a department's academic life because significant reliance on contingent faculty leaves a department with a small cadre of faculty members to contribute to shared governance and carry the responsibilities of curriculum development and innovation. Therefore, departments that rely significantly on adjunct faculty are likely to see a radical change in their fundamental culture.

Increasing Faculty Responsibilities
As cost containment and tighter budgets have emerged as the operating framework for many departments, many programs have been forced to cut their budgets, course offerings, and faculty positions. Yet simultaneously, the institutions expect their faculty to shoulder greater

responsibility for teaching, research, and campus service. As institutions in many states engage more competitively to recruit students from a shrinking applicant pool, they are placing an increasing work load on the faculty to assist with the student recruitment process. Similarly, institutions want faculty members to do more to retain students by asking professors to participate in rapidly growing institutional efforts to support student success, including providing developmental support for students in need of remediation. Given the increased public demand for evidence of value added by attending college, institutions are also requiring faculty members to take a more active role in measuring and assessing student outcomes, usually in the form of increased faculty involvement in preparing for accreditation visits at the institutional and/or program level.

Faculty Research Challenges

In many departments CIS faculty are under more pressure to conduct applied research that can bring economic gains to the local community. Other CIS professors find themselves being strongly encouraged to produce research that can return funds to the institutional bottom lines. Yet slashed campus budgets often mean that faculty have decreased access to financial resources to support their research, such as travel to conferences and/or work in their field. Additionally, professors who rely on federal support for research through government agencies face a current environment where available federal support is likely to decrease considerably, a trend not likely be reversed any time soon. This reduced budgetary trend has emerged simultaneous with the AACSB requirement that faculty in member institutions must demonstrate the "impact" of their scholarship.

New Technological Demands

Most faculty seem to feel that the presence of technology has added significantly to their workload (Jaschik & Lederman, 2015). Even in technology related fields such as CIS, most professors feel that they do not have adequate support in learning to use the new learning technologies. Some faculty also fear that it is only a matter of time before technology will replace them.

Yet most professors have little choice but to adapt to the virtual explosion of online courses and evolving course formats. Many of our undergraduate students are now taking online courses as part of their requirements, and in an ever increasing number of courses professors are using a hybrid and/or flipped pedagogy that mixes lectures, classroom discussions, and student learning on a computer. The deployment of technology expands the amount of information accessible to both students and faculty, which in turn has prompted changes in the faculty role from dispenser of knowledge to expert human resource that helps students to analyze and synthesize information. Technology also makes possible adaptive and/or personalized learning tailored to the individual student's needs. Due partially to this trend toward more personalized learning, instructional design, once the sole province of the professor, is now in many cases being partially handed off to instructional designers who are frequently charged with developing effective and often compelling learning activities targeted toward specific course student learning outcomes in ways that can be effectively measured and assessed.

7. DIVERSITY & INCLUSION

As colleges and universities continue to enroll more students from traditional minority populations, representation of those populations among the faculty has not necessarily kept pace. "To be truly inclusive, institutions must both engage and embrace not only people from different ethnic and racial backgrounds, but also lower-income students, first-generation students, LGBT students, transgender students, and many other less traditional constituencies." (Pelletier, 2016, p.24)

Pelletier (2016) opines that when colleges and universities consider the interrelated issues of diversity and inclusivity they need to recognize/consider three key imperatives: (1) the social and moral imperative – the need to provide access to higher education to people who historically have not had access to it; (2) the economic imperative – in the 21st century, if we are to remain economically competitive as a nation, our most important strategic resource is our diverse human capital; and (3) the educational imperative – students learn when they see differences within groups and similarities across group lines and overcome stereotypes through face-to-face interaction that we can provide on our campuses.

Historically, a fundamental role of higher education has been to help students learn to understand and value different perspectives as part of the process of discerning their own opinions, world view, and approach to the world. Unfortunately, recent campus unrests both here and abroad have made it clear that many people,

especially underrepresented students, feel that their voices are neither welcomed nor effectively heard on their campuses. Simultaneously, as illustrated by recent controversy regarding the cancellation of graduation speakers, many colleges and universities are finding it difficult to create and maintain environments that are conducive to productive discussion among parties that disagree about important issues.

A primary challenge for most colleges is to find a way to rejuvenate a campus environment where different points of view can be expressed and argued with equanimity. This process can start at the department level, by intentionally supporting and sustaining a diverse, inclusive, and civil culture that is welcome to a wide range of people and diverse points of view. Diversity and inclusion considerations may need to be present in recruiting faculty and staff, recruiting perspective majors and minors, and accepting the responsibility for providing the programs and services necessary to provide underrepresented populations access to full involvement in campus life and their long-term success as students, faculty, and staff.

8. CONCLUSION

As with so many other facets of the 21st century "white water" environment, the pace of change in higher education has never been faster – and it is only accelerating. As a result, it is increasingly necessary that departments address both the immediate challenges and opportunities that they face and also keep an eye on emerging trends, some of which have the potential to quickly bring significant change to the higher education landscape. Many observers are pointing to evolving market forces that rapidly brought revolutionary change to other industries and warning colleges that they too will have to contend with such changes. For example, the healthcare industry is transforming in significant ways, upstarts like iTunes have turned the music industry upside down, and new ventures like Airbnb and Uber have brought disruptive change to their respective industries. Could higher education currently be in the formative stages of a process of transformation not unlike some of those other industries?

Although competition has always been a part of the higher education system, it is now coming from new directions and at a faster rate than ever before. The business community is now competing directly in the higher education market space. Startups like 2U, which offers a cloud based Software-as-a-Service (SaaS) platform

coupled with a suite of technology-enabled services, including coursework design and infrastructure support, are partnering with top colleges to offer complete degree programs online. Companies like Coursera, a silicon valley based company founded by Stanford professors Andrew Ng and Daphne Koller, provide free online courses from top educational institutions, along with credentials upon completion. Companies like Udacity, the outgrowth of free courses offered by Stanford in 2011, specialize in Massive Open Online Courses (MOOCs) and are developing what they refer to as "nanodegrees". Credentials such as these may in time come to challenge the primacy of the traditional college degree. Companies like Knewton, an adaptive learning company that has develop a platform to personalize educational content and develop courseware primarily in the STEM fields, are developing and mastering the use of data analytics to improve student learning by deploying "just-in-time" teaching techniques.

Hockey great Wayne Gretzky was once asked how he had been able to attain athletic success far in excess of his contemporaries. His response: "Most people skate to where the puck is; I skate to where the puck is going to be." Though the future is unpredictable and we can't necessarily "skate to where the puck is going to be," today's highly disruptive environment creates new opportunities for colleges and universities to take stock of their position in the marketplace, their challenges, and their goals. The challenges that confront us require program stakeholders to think strategically in new and perhaps very different ways, with a willingness to make significant changes in the long-term best interest of stronger and more sustainable programs.

The strategic issues framed herein invite CIS program stakeholders to engage in strategic dialogue at their individual program levels. It's not necessarily about finding the "right" answers; rather, it's about asking the questions that speak to us and trusting the process of consideration. It really is about the process; it's the dialogue itself that truly matters. In light of the ongoing disruptive "white water" reality, this current time is a particularly opportune moment for us to begin the conversation. May conversations at the local level "kick start" a national dialogue regarding the benefits and challenges of these new educational opportunities, and may such conversations help to sustain the continued success of our CIS programs well into the future.

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