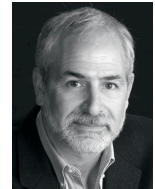




The State of Technology in Higher Education

A Conversation with Kenneth C. Green of The Campus Computing Project

Kenneth C. Green is the founding director of The Campus Computing Project (campuscomputing.net), the largest continuing study of the role of information technology in American colleges and universities. Begun in 1990, Campus Computing is widely cited by both campus officials and corporate executives as a definitive source for data, information, and insight about information technology planning and policy issues affecting American higher education. A keynote speaker at the *Learning Impact 2010* conference in June, IMS Global recently spoke with Green about trends in higher education technology and what we can expect during the coming decade.



IMS Global: *You've had your finger on the pulse of higher education technology since 1990. What are some of the significant ways technology has changed higher education over the past two decades?*

GREEN: Let's set the context correctly: we've now officially entered the fourth decade of the much discussed – and yes, much-hyped! – IT "IT revolution in higher education" that began with the arrival of microcomputers in the early 1980s.

What's changed? First and perhaps most significant during this period has been the movement of IT from the periphery to the center: technology no longer resides in just the campus computing center or the computer lab, and it is no longer the domain of just the campus IT "experts." Technology is everywhere, in virtually every place and space on campus, and IT touches almost everything and everyone on campus, and beyond campus, through online programs. The technology is ubiquitous, and all of us – on campus and as consumers – feel entitled to access.

Second, although the technology has improved in dramatic ways since the arrival of the Apple II, IBM PC, and Macintosh computers of the early 1980s, it still has a long way to go: our reach, needs, and aspirations continue to exceed our grasp. Despite great gains, we continue to struggle with many of the core issues that were part of the conversation 30 years ago about our aspirations for the effective and widespread instructional integration of IT.

Finally, we have come to recognize the key – and continuing – technology deployment and utilization issues are not about technology, per se. Rather, at core, they focus on the human and organizational factors: people and personnel, planning and policy. The technology, in one sense, seems to be the expensive part because IT is a hard cost. But in other ways, we in higher ed probably spend less on the technology than we do on the personnel who use it – all of us – and those who support IT.

IMS Global: *The 2009 Campus Computing Report reveals that fully half the institutions participating in the survey last fall experienced cuts in their IT budgets, up from 31 percent in 2008. These budget cuts come at a time when enrollments continue to increase. How are colleges and universities managing to meet the demand for more and better service to their constituents with less resources?*

GREEN: We know from past experience that budget cuts have compounding consequences. Not only do campuses experience year-to-year cuts, but our survey data over the past 20 years shows that many of these annual budget reductions are accompanied by mid-year budget recessions. So we actually experience a compounding set of budget reductions: it takes several years for colleges and universities—and their IT budgets – to recover from the compounding consequences.

Of course, the old mantra of college presidents that we should all "do more with less, and do it better" does not help when you actually have to do more and have less. The challenge is that there's been no let-up in the demand for IT resources and services. I mentioned earlier that IT resources have become an entitlement. As one example, look at just the proliferation of Wi-Fi phones: students, faculty, and staff come to campus thinking they should be entitled to bandwidth for their phones, as well as their notebook computers. Wi-Fi is a hard institutional cost that few campus officials outside of the IT office ever consider as new technologies arrive and expectations for resources and services rise.

As for strategies to address the budget cuts? Yes, we are seeing some technologies that provide leverage. Virtualization – not just servers in back rooms, but software and services in campus labs--has helped a bit. A small but growing number of campuses are outsourcing tech support services to help control costs while improving user support services. The corporate experience and early campus experience suggests that hosting core services such as learning management systems or key administrative or ERP applications such as student information systems, finance, and human resources could provide some savings.

Too, we are also seeing campuses engage in delay and defer: delaying the investment in infrastructure, deferring the purchase of computers for campus labs, and delaying the upgrade of a campus network and their ERP systems. Finally, layoffs affecting IT personnel have also become an unfortunate response to budget cuts at many institutions.

IMS Global: *In a survey that Campus Computing conducted with WCET, you reported that 94 percent of the 186 campuses participating in the fall 2009 survey said their institutions had*

experienced enrollment gains in their online programs between 2006 and 2009, and that nearly half the institutions expected their online enrollments to grow by 15 percent or more over the next three years. A lot of the advantages of online programs are obvious. What do you see as some of the major challenges?

GREEN: In many ways the key challenges of online and hybrid learning are no different than the challenges involved in on-campus/classroom learning. One of the biggest issues, of course, is quality, and by extension, assessment: how do we know what students – on-campus and online – are learning? Unfortunately, some of the questions about quality have been isolated and used to attack online learning when, in fact, the quality issues apply equally to online and on-campus courses and programs.

Although many institutions often offer the same courses online and on campus, more than 40 percent of the campuses participating in the fall 2009 Managing Online Education Survey reported that they do not use a common syllabi or common assessment metrics for "common" courses. Concurrently – and on the plus side – more than half (54 percent) of the surveyed campuses reported mandatory training for faculty teaching in their online programs, training that averaged 27.5 hours, a significant investment of both institutional and individual resources. The mandatory training requirement for online instructors is striking when compared against what often happens when institutions hire part-time instructors for on-campus courses: the on-campus part-timers are handed the syllabi the last person used and are told, in essence, "Here's your course outline; we wish you and your students well this term."

Online learning also presents other types of challenges in terms of infrastructure and user support issues, and not just for faculty. And here, as elsewhere, budget cuts have consequences. For example, in winter 2009, we surveyed community college presidents about the impact of the economic downturn. Presidents reported exploding enrollments in two-year colleges. So yes, they are hiring more faculty, primarily part-timers, to teach the courses. But because of budget cuts, community colleges have fewer resources to support both faculty and students. The absence of support personnel is also a quality issue.

IMS Global: *In an [opinion piece](#) titled "LMS 3.0" published by Inside Higher Education last November, you talked about the growing volatility in the market for learning management systems (LMS), commenting that many institutions are re-evaluating their current systems and considering open source alternatives. Could you elaborate on what you see as the growing trend among Learning Management Systems?*

GREEN: The arrival of learning management systems began in the late 1990s. A number of for-profit firms – Blackboard, WebCT, and Desire2Learn were some of the more prominent – emerged on the landscape. Moodle, an early Open Source LMS, was in development in Australia during this same period. And then in 2004, we saw the Mellon Foundation act as kind of a venture capitalist, providing significant seed money for Sakai. Just after the Mellon Foundation-Sakai announcement, I wrote an [article](#) that described learning management systems as a mature market with immature products. At the time, the products were six or seven years old, and yet, the LMS market was, by business school metrics, "mature" because every campus had one. Taken together, these factors suggested a market in motion.

Much has happened since 2004; we are experiencing that

motion today. Since 2004, Blackboard has purchased two major competitors, WebCT and Angel; while dominant, data from the Campus Computing Survey reveal that Blackboard's share of the higher ed LMS market continues to erode and is lower now than in the months following the WebCT acquisition in 2006. Desire2Learn remains competitive despite the lengthy and expensive litigation with Blackboard that was finally resolved in December 2009. Sakai and Moodle have each gained a growing share of the campus LMS market in the United States: in aggregate, these two Open Source LMS applications now account for about 15 percent of the higher ed LMS deployment on US college campuses, up from 7 percent in fall 2006.

The actual and the anecdotal evidence indicate that the two Open Source LMS applications, Moodle and Sakai, are gaining traction. Many institutions, and not just the elites that were at the core of the Sakai initiative, have had solid experience with an Open Source LMS. These campuses are now coming back to report to other campuses that: "Yes, we did it and it works for us." The early adopters are going public to discuss their transition experience to Open Source, and are also often offering to assist other campuses make the transition to an Open Source LMS.

IMS Global: *There are other benefits to be gained from e-learning systems. What trends do you see developing? And what other offerings are institutions expecting from these systems?*

GREEN: Our expectations of the LMS have changed dramatically over the past decade. Metaphorically, LMS 1.0 asked: "How do I get stuff on to the Web?" LMS 2.0 added features and functions to serve students and assist faculty. LMS 3.0 is about extracting transactional data from the LMS which can be used for student feedback and interventions, and also for institutional assessment and outcomes efforts.

The early question that we all asked about learning management systems was: "Does the LMS affect student learning?" Some of the early studies didn't provide meaningful answers, in part because of small sample sizes or methodological issues. Fortunately, we've had some very good work done by both Catherine Finnegan at the University of Georgia System and also John Campbell at Purdue. Their work, independent of one another, has been with large samples and has had sufficient scale and it tells us, in sum, that the LMS can make a difference. Moreover, the LMS offers a metric of time on task. It takes us back to key principles of learning theory and engagement: the more you invest your time, the more likely you are to do well and learn more.

I'm on record stating that the LMS really is the higher ed equivalent of the supermarket scanner. It's the one real-time, online metric we have for monitoring student activity and engagement. We are now seeing a number of campuses beginning to use the LMS transactional data in conjunction with resources from other parts of the IT infrastructure--using the data to inform assessment and outcome efforts, and also to create timely interventions to aid and assist students.

IMS Global: *As e-learning and the systems that support it continue to expand and evolve, what role does standardization play in their development? Are institutions increasingly clamoring for interoperability among e-learning systems and practices? And if so, do you sense the vendors supplying these systems are sensitive to that increasing demand?*

GREEN: Standards matter for several reasons. First, higher education is, in essence, a collaborative community. Students

and faculty routinely share stuff, including the instructional "stuff" they create for an LMS.

Second, many faculty have built their own course widgets, have spent a tremendous amount of time and effort to develop or enhance instructional resources within various learning management systems. Interoperability becomes a huge resource and a huge benefit for collaboration and also for migration. In sum, standardization allows "stuff" to move from one context to another, from one course or campus to another, from one LMS to another.

Finally, let's acknowledge that the IMS interoperability standards were an early and important part of the product map for many LMS providers. It was--and often remains--integral to their advertising and promotion efforts.

IMS Global: *Gazing at your crystal ball, what major changes can we expect to see in higher education during the next 10 years?*

GREEN: Ten years? Just three years out is hard to predict!

We know that each decade has been marked by one defining technology that has been a catalyst for change. We saw this with the arrival of the "microcomputers" in the 1980s. During the 90s, we witnessed the proliferation of the Web. And we've experienced the emergence of the Cloud and Web 2.0 as the defining technology of the past decade.

Admittedly, and this will sound trite, but my digital crystal ball shows that change is the only constant. Beyond change, other constants will be budget pressures as well as a very high sense of IT entitlement on the part of anyone tied to a college or university. Campus constituencies believe that IT resources and services are core, they are essential, that these services should be free, they should be fail-proof (and idiot proof), and, finally, these services and resources must continue to improve.

We should also acknowledge that over the past last decade the consumer economy, rather than the campus environment, has led on the issues of technology expectations for students and faculty. It raises the questions of: "I can do this here. Why can't I do this on campus or online with the campus with which I have an affiliation?" There are so many examples of this gap between the campus and consumer experience. For example, think about the ways data are used in the consumer economy to enhance services to consumers: higher education is only just beginning to exploit the benefits of data mining, data warehousing, and large-scale data analytics.

Finally, despite the recurring predictions regarding the death of textbooks over the past 40 years, we can predict that "something" will happen with digital textbooks in the coming decade. How soon and exactly how remains to be seen. To date, the first generation of "digital textbooks" have not provided compelling value or features for students: they have been little more than PDF versions of printed text. Student Monitor reports that used textbooks remain the preferred purchase for most undergraduates. How much the Amazon Kindle, Apple iPad, Sony Reader, or other eBook technologies will transform the traditional textbook and the college textbook market really will depend on the enhanced functionality of the digital environment coupled with the reduced student cost of the content. In other words, to transform the textbook market, digital texts will have to do more and cost less: that's a real challenge to the technology and the textbook providers, but it is the only way the migration to digital texts will occur. **IMS**

About IMS GLC: IMS Global Learning is a nonprofit member organization that strives to enable the growth and impact of learning technology in higher education, K-12, and corporate education worldwide. IMS GLC members are leading corporations, higher education institutions, school districts and government organizations who are enabling the future of education by developing interoperability and adoption practice standards for educational and learning technology. IMS GLC sponsors Learning Impact: a global program and conference that recognizes the impact of learning and educational technology on access, affordability, and quality - the world's most significant educational challenges. For more information, visit www.imsglobal.org.

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