

Technology Influences and Trends

Higher Education Issues and Trends

State and Federal Policy Impact (from the American Association of State Colleges and Universities)

Two contradictory movements:

- At the national level, President Barack Obama placed higher education near the top of his policy agenda, focusing on increasing college access and participation by all Americans and backing it with an ambitious slate of proposed federal policies and programs.
- At the state level, most attention focused on mitigating the effects of state funding cuts to public postsecondary education institutions.

States' Fiscal Crises - The overwhelming force behind much of the policy action that will occur in 2010 is the quarter-trillion-dollar collective deficit that has devastated states' budgets in the past 24 months. Public colleges and universities throughout most of the U.S. are performing budgeting triage in the wake of major reductions in state appropriations.

President Obama's American Graduation Initiative - The ambitious American Graduation Initiative proposed by President Obama calls for America to lead the world again in college graduates by 2020 and to have every American enroll in at least one year of college or career training after high school. The impact on states is multifaceted. While state community colleges are getting the lion's share of attention and funding, states are also being pressured to graduate more students from both two-year and four-year colleges and universities. This means states and their four-year public institutions will be required to demonstrate more accountability and more precise measurement of where students go after high school—be it to a community college or a four-year institution—in order to document their contributions to the Obama administration's goals.

Tuition Policy and Prices - The complex issue of tuition and fee increases at state colleges and universities will continue to be a major issue in 2010. This includes how college price increases affect access to higher education for not only the neediest students, but also middle-class students and families battered by the recession

Enrollment Capacity - The tail end of the Baby Boom Echo generation is graduating from high school in large numbers. Combined with a return to college by thousands of unemployed and underemployed workers, this has contributed to an enrollment surge at public two- and four-year colleges and universities throughout the nation. As state tax revenues continue to dissipate, legislators have substantially reduced higher education budgets. The reduction in public investment to higher education is having a tangible impact on student access in some states. Nationwide, state appropriations per students declined by 5.7 percent in 2008–09 in inflation-adjusted dollars, with funding likely to decline further in the current and coming fiscal year.

State Student Aid Programs - According to The College Board's 2009 *Trends in Student Aid* report, preliminary numbers indicate a flat-lining of total state grant aid during the 2008–09 academic year.

Federal Focus on Community Colleges - A major portion of the federal American Graduation Initiative focuses on community colleges, calling for an additional 5 million students to graduate from these institutions by 2020. Further, the creation of the initiative's Community College Challenge Fund injects approximately \$9 billion in challenge grant funding into the sector for innovative programs such as workforce partnerships and \$500 million to develop online courses. Another \$2.5 billion is slated for investment in upgrading community colleges' facilities so they can expand their infrastructure to meet the challenge of graduating considerably more students. The total cost of the program is expected to be \$12 billion over the next decade.

Expansion of Statewide Data Systems and New Reporting Metrics - There is widespread consensus that improved information on student outcomes is needed if the nation is to meet its ambitious educational attainment goals. In the year ahead, states will strive for continued progress in the development of comprehensive data systems designed to measure student growth and success, with momentum fueled by federal support

Veterans Education (Implementation of the Post-9/11 GI Bill and State Issues) - As the Post-9/11 GI Bill (formally known as the Post-9/11 Veterans Educational Assistance Act of 2008) enters its first full year of implementation in 2010, states are evaluating how this federal program meshes with state-level assistance programs for veteran students

College Readiness - Though states have made significant progress over the past decade in implementing K-12 education standards, there is currently great variation among states in the rigor of these standards and lack of alignment with college and workplace expectations. As a result, many students can pass all required tests for high school graduation, but still need remedial work in college; many of these students will ultimately not reach their education goals.

Teacher Effectiveness – Issues of teacher quality and effectiveness will be front and center in 2010 as the federal government and states work to improve student readiness and success. Recognizing the well-documented assertion that teacher quality is the most important school-based factor affecting student learning,

Accessibility – The refresh of Section 508 requires that all technologies used must be defined and publicized to all campus units and administrators (Section 508 and/or WCAG 2.0)

Security and Data Privacy Regulations and Compliance

- Healthcare - HIPAA, HITECH
- Education – FERPA, TEACH Act
- Financial - Gramm-Leach-Bliley Act (GLBA), PCI DSS, Sarbanes-Oxley Act (for publicly traded companies)
- Government – FISMA
- Plus a whole host of additional state and federal regulations!

Sustainability Initiatives – Environmental responsibility is emerging as an important topic for corporate IT organizations and their technology suppliers.

- EPA findings report that data centers consumed about 60 billion kilowatt-hours (kWh) in 2006, roughly 1.5 percent of total U.S. electricity consumption
- Today's trends in IT management show undeniable proof of the benefits from server consolidation and optimization through the use of virtualized and automated environments, which include greater efficiency in overall server utilization.

Project Tomorrow (K-12 Students Speak Up About Their Future)

What technology and tools do students want? There are three essential elements of the new emerging student vision for American education.

1. Social-based learning – Students want to leverage emerging communications and collaboration tools to create and personalize networks of experts to inform their education process.
2. Un-tethered Learning – Students envision technology-enabled learning experiences that transcend the classroom walls and are not limited by resource constraints, traditional funding streams, geography, community assets or even teacher knowledge or skills.
3. Digitally-Rich Learning – Students see the use of relevancy-based digital tools, content and resources as a key to driving learning productivity, not just about engaging students in learning.

Coming Soon: Free Agent Learners (these students will be entering Universities in the next 4-5 years)
Current middle-school students want learning that is enabled, engaging and empowered.

Their vision includes -

- Self-directed learning
- Power of connections
- Experiential learning is key
- Expert at personal data aggregation
- Everyone is a content developer
- Process is as important as the knowledge gained
- Un-tethered to traditional education

Summary

There is a great deal of discussion nationwide about new ideas for leveraging emerging technologies to drive student achievement, to reclaim our nation's predominance in college graduation rates, and how to take back our global leadership role in innovation. Ground-breaking policies, programs and plans are being unveiled to jumpstart a new standard for 21st century learning in America.

Technology Issues and Trends

Key Issues

- Conflict between the role of IT in promoting organizational efficiency versus its role in promoting personal productivity. (Organizational efficiencies often come at the expense of the administrative freedom of students and professors.)
- The “Greening of IT”
- Role of IT in College Completion -- IT is at the intersection of student needs and university practice.
 - o Need to restructure student experience
 - o Improve effectiveness of teaching and learning
 - o Use data for intervention
 - o The “Next Generation Learning Challenge”
- Horizon Report - Key Technology Trends
 - o Technology has enabled an abundance of resources and relationships made easily accessible via the internet and this challenges us to revisit our roles as educators.
 - o People expect to be able to work, learn and study whenever and wherever they want to.
 - o Technologies we use are increasingly cloud-based
 - o The work of students is increasingly seen as collaborative by nature, and there is more cross-campus collaboration between departments.

General Emerging Technology Issues (from 2010 Gartner Review)

Benefit	Years to Mainstream Adoption			
	Less than 2 years	2 to 5 years	5 to 10 years	More than 10 years
Transformational		Cloud computing Cloud/web platforms Media tablet	3D Printing Content delivery architecture Extreme transaction processing	Autonomous vehicles Human augmentation Mobile robots Terahertz waves
High	Mobile application stores Predictive analytics	eBook readers Electronic paper Interactive TV Internet micropayment systems Location-aware applications Private cloud computing Social analytics	Augmented reality Internet TV Virtual assistants Wireless power	Mesh networks
Moderate	Consumer-generated media Pen-centric tablet PCs	3D flat-panel TVs and displays Biometric authentication methods Gesture recognition Idea management Microblogging Speech recognition Video telepresence	4G standard Public virtual worlds Speech-to-speech translation Video search	Computer-brain interface
Low				Tangible user interfaces

Higher Education Emerging Technologies to Watch

One Year or Less	Two to Three Years	Four to Five Years
Mobile Computing Open Content	Electronic Textbooks Simple Augmented Reality (augmented reality is accessible to almost anyone)	Gesture-Based Computing (devices controlled by natural movement of the body) Visual Data Analysis (discovering and understanding patterns in large data sets)

Higher Education Technology Hype Cycle (from 2010 Gartner Review)

Technology Adoption Expectations				
On the Rise (Technology Triggers)	At the Peak of Inflated Expectations	Sliding into the Trough of Disillusionment	Climbing the Slope of Enlightenment	Entering the Plateau of Productivity
Quantum computing Affective computing SIS International Data Interoperability Standards Business process reviews Open source student information system Digital preservation of research data Cobit (security framework) Open source middleware suites	Mobile-learning on low range/midrange handsets Social learning platforms Using the cloud for high performance computing Media tablet Social data portability Web-based office productivity suites Lecture capture and retrieval tools Mobile-learning Smartphone Open source financials Enterprise architecture frameworks	Electronic textbooks Unified communications and collaboration Microblogging Virtual environments/virtual worlds Hosted virtual desktops Global library digitization projects e-learning repositories Mashups Hosted PC virtualization software Emergency/mass notification software Intellectual property rights and royalties management software ITIL 802.11n (encrypted wireless standard) Software-as-a-service administrative software IT infrastructure utility	Game consoles as media hubs Social media ePortfolios Open source portals Wikis Customer relationship management for enrollment management Podcasting learning content Federated identity management Web and application hosting Open source e-learning applications	Cloud email Pen-centric tablet PCs Grid computing Blogs