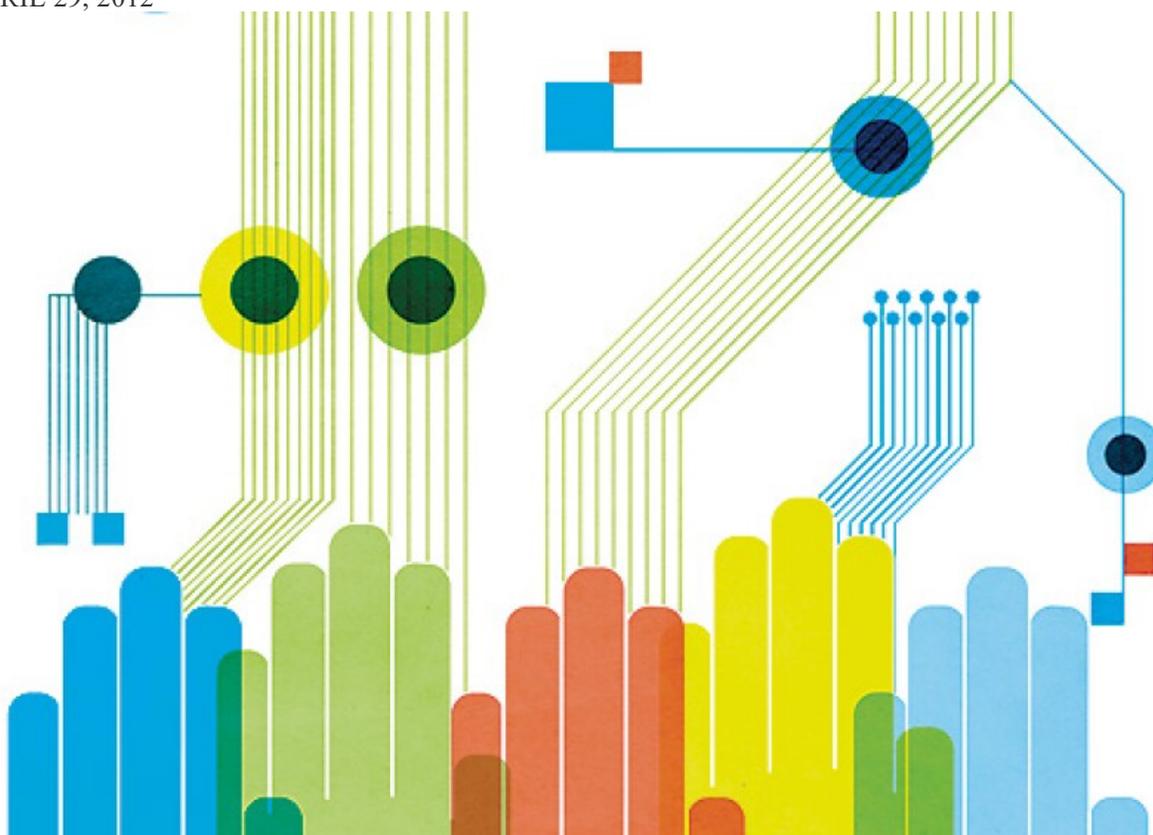


Cloud Technology Can Lift the Fog Over Higher Education

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We are now more than a decade into the 21st century. Much has changed in terms of how we use online and mobile technology to interact with one another, learn about world events, look up facts, or share who we are with everyone else online. However, for all the innovations that new technologies have brought to consumer affairs, business, entertainment, and government, one sector of society—education—remains stubbornly planted in the 20th century.

Our colleges and schools continue to operate in a highly rigid world driven by a precise sense of time, a concrete place, a fixed set of roles, a deliberate set of content, a single diploma, and a strict hierarchy in which students are inferior to instructors.

Contemporary society, meanwhile, is becoming increasingly open: Institutional and political boundaries are being erased, and people of all ages are participating in their respective social spheres in myriad ways. It is as if a new ocean has been discovered on which all members of society (at least in theory) can set sail. Yet many of our younger students are required to live double lives—one in which they can creatively manage their information and social identities, and another where they must conform to an old-fashioned, one-size-fits-all culture.

I call this collision of worlds the Cloud versus the Fog. I believe that the future of higher education lies in the cloud. Colleges that can leverage three key cloud-based technologies—identity management, dynamic social networks, and real-time data mining—will be more innovative and productive, educate more effectively, and develop students with a far greater stake in their own education. This is not an argument for anarchy or completely open education. Rather, it is an argument for bringing young people who practically live inside the cloud, and those who work within it, into discussions about how to lift the fog so that we can more clearly see the palette of learning options.

The term cloud describes the virtual, server-based world that is controlled by the Web or by mobile networks. Because cloud technology is driven by common data standards, cloud-based systems learn about their users very quickly. Such systems can mine data about users because each log-in and keystroke is analyzed in order to synthesize that data, feed it back, and share it with researchers and other users and systems.

In contrast, the fog that has settled over higher education represents historical inertia, a bureaucratic loss of imagination, and policy traffic jams, layered over a world of bricks and mortar, rules and regulations. The fog does not adapt to a more open and transparent world. Example: Cloud technology could systematize transfer and articulation issues for students and institutions, especially in community colleges, while the fog's array of physical practices make them more confusing and costly.

While I am not condoning unchecked data mining, I understand that big data, real-time analytics, and digital identities are here to stay. If my son, a college freshman, logs on to Facebook or Twitter, plays a game on Zynga.com, buys something from Amazon, downloads a song from iTunes, posts a blog, or communicates with a friend through the campus Gmail system, a rich assortment of data about him is immediately seized by multiple algorithms owned by many different firms that now have a sense of who he is, what he likes, who he knows, and what he does.

Although some colleges have started using analytics to track students' progress, many remain driven by "dumb" technologies that know very little about their users. My son's college data is not retained, reorganized, safeguarded, or fed back to him—whether to make him a better student or to improve his college experience. By comparison, the "smart" information systems prevalent on Amazon, Google, and Facebook know their users very well—maybe too well.

The right information systems in higher education would be able to parallel smart and secure systems found elsewhere.

During the past decade it was widely assumed that a variety of new information technologies would clear the fog. But they have not. In fact, in some ways they have added to it by introducing another layer, depriving students of the chance to design and participate in their own learning experiences.

Simply extending the existing campus with online courses, digital content, and largely unproven apps misses the point entirely, because these technologies do not fully follow the data-rich nature of the cloud. There can be no transformation of education if data flows only in one direction.

How can we pierce the fog? Colleges must embrace the principles of the cloud as part of a strategic redesign rather than as an add-on. And they must adopt the three key principles that separate the cloud from the fog:

- **Identity formation and management.** Because the cloud requires and supports identities for its users, individuals have a stake in maintaining their own identities. That can inspire pride of ownership, along with the ability to carve out a personal niche or become a member of a social network. Cloud-based systems are conscious of an individual's transactions and communications, which further reinforce a sense of membership and community. A student wondering whether he or she spent money effectively could find out with a single click. Similarly, a student might wonder, Am I on track? Where have I veered off, and what will help me get back on course? For a student with a cloud-based learning identity, another click could help provide the answer.
- **Social networks and learning communities.** Students should have their own secure learning accounts, similar to Web-based social identities, where they can manage their own learning in one place, receive feedback from other students or mentors, and view their transcripts. Under such an interconnected system, no student would have to be held back by demographic circumstances or be lost in a maze of buildings, regulations, and inattention.
- **Data mining and assessment.** Colleges can use data to help students and faculty members monitor learning and teaching, and take adaptive actions in nearly real time. With adequate safeguards in place, similar to those that protect online trading and banking, new health-record systems, and security transactions, these tools can be extended to campus settings.

The problem with many academic systems is that they are “dumb” to who their users are, what they are doing, and what other systems they are using. This is largely because colleges have different buyers for different functions—learning

management, student-information systems, digital-content management, campus analytics, and e-mail systems.

While there are single sign-on systems to get to all of these systems with one log-on, that does not make them “smart.” A smart system integrates all of these functions to do two things: serve the end user (students, faculty, administrators) and interpret the data to improve performance.

At the moment there is no clear path to smart systems in higher education. The big data and identity engines of Silicon Valley are not idling, however. They are starting to accelerate, with the higher-education market squarely in their sights. While private equity is rearranging many of the traditional education-technology and content players, mostly on the East Coast, a new breed of venture-backed education start-ups are taking what their founders learned at Google, Facebook, Zynga, and Twitter and focusing on education.

As the head of a new nonprofit group devoted to academic transformation (and based in Northern California), I can see this happening. It is the talk of the Valley. As huge initial public offerings make millionaires out of many relatively young technologists, a good number of them are looking at higher education with interest. They had the benefit of good educations recently, see what technology can do, and want to “do good.” But they don’t yet know much about piercing fog.

Higher-education leaders, unlike the cloud-based companies of Silicon Valley, do not easily comprehend the social and commercial transformation gripping the world today. Indeed, there was a certain amount of gloating that the centuries-old higher-education sector survived the dot-com era. After all, textbooks are still in place, as are brick and mortar campuses.

The simple fact is that life is becoming more horizontal, while colleges remain hierarchical. We can expect the big shifts in higher education—where the smart use of digitization leads to degrees—to come from other countries.

And that’s sad, because the United States makes most of the new technologies that other parts of the world are more cleverly adapting, especially in education.

For once, putting our heads in the cloud might be a good thing.