New Media and Learning in the 21st Century*

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ABSTRACT. The historical perspective makes visible the fundamental changes linked to the use of New Media in learning and the impact of IT in learning institutions organization. The two decades after the personal computer and networked learning revolution were caracterized by resistance to change. Nevertheless, nowaday IT has reached a remarkable role, and the way in which universities adopt the latest generation of infrastructure for teaching and learning will make the difference between institutions and build their prestige in the future. It is crucial to create institutional responses for a new generation of learners that are fully engaged with technologies. Institutions still have to learn how to optimize the use of IT not only for teaching and learning, but also for research and to develop creativity in several fields: from art and science to medical experimentation. On the contrary, for students the use of IT for all sort of activieties is already felt as natural.

KEYWORDS: *Academic institution, IT infrastructure centric-role, New media, Evolutionary transformation, Networking collaboration*

Every revolutionary transformation has a natural evolution. Uncurbed enthusiasm, rising expectations, disappointment, and sometimes counter-revolutionary activity are usually part of the evolution of transformations whether in politics, agriculture, economics, learning, or technology. It is only through the advantage of a historical lens that the fundamental and dramatic change becomes visible.

Early in the personal computer and networked learning revolution, visionaries, evangelists, and commercial interests imagined rich-media, shared landscapes with novel opportunities for multisensory learning. In the two decades since, the road has been uneven at best. Glorious failures and half-wins litter the landscape, with no shortage of analysis about the resistance to change or, more pointedly, the resisters to change.

Not surprisingly, in the first decades of the IT revolution, disproportionate amounts of intellectual energy and financial investment were expended in building out the technology foundations. Despite prophesies of transformational learning environments with new media, immersive environments, and even artificial learning agents, the nascent infrastructure was neither robust enough nor architected fully enough to deliver on the vision. More important, the first generations of networks,

operating systems, and tools inherently disrupted the habitual rhythms of most working environments. As a result, campuses now rely heavily on technology and Web resources that, though radically altering the academic landscape, have remained centered on the build-out of core services around the core infrastructure.

Today, the traditional infrastructure-centric role of IT has reached an important juncture. To be sure, these core enabling facilities and commensurate investments retain an important and indeed indispensable role. In addition, new demands, such as for improved cyber-security infrastructure investments, will undoubtedly develop. But it will be the ways in which we leverage the latest generation of infrastructure for teaching and learning that will differentiate and distinguish academic institutions. Along with the next-generation network, powerful microsystems that fuse processors, storage, graphics, and network instructions on single chipsets and advanced services-oriented software architecture provide opportunities for learning environments that would have been construed as fantastical just a few years ago.

And the transformation has already begun. A growing number of institutional and organizational initiatives are documenting what amounts to significantly more than random acts of new media literacy. Networked collaboration - in real time, across considerable physical distances - is ushering in exciting opportunities, ones no longer limited to high-energy physics or computer science. For example, new forms of performance art are being conducted on a routine basis over advanced network infrastructures. It is not only that existing needs are being met by connecting musicians, dancers, and choreographers to each other remotely. Never-before-possible learning outcomes are changing the very form of the art itself. New curriculums are being built on the regular, Net-based collaborations between artists and performers. This virtual stage carries with it significant promise (and, of course, its share of critics).

Finally, we are also being challenged to develop institutional responses to the realities brought to us by a new generation of learners. The "box" of the classroom will not contain or meet the needs of the new global culture that the Net has spawned. Both millennials, with their native technology proclivities, and the larger population of lifelong learners, returning to education for career enhancement and life enrichment, will have little tolerance for "playing school." Colleges and universities need to validate and capitalize on the propensities of these learners and leverage their abilities for engaging authentic challenges and each other.

In agreeing to take on the editorial role for the *EDUCAUSE Review* New Horizons department for the next two years, I expressed an interest in - and was pleasantly surprised to receive approval for - dedicating the column to stories about innovative institutional strategies for addressing this new and exciting frontier. Readers of the New Horizons column will be exposed to pioneering - and often daring - efforts in the transformation of learning environments through the integration of multimedia. To capture the breadth of compelling stories in this area, I have invited an eclectic collection of distinguished colleagues to reflect on the impact of new technologies in areas such as curriculum design, the nature and meaning of literacy for learners, and the profound, long-term changes to human cognition occasioned by the intersection of new media, the learning environment, and work.

I hope that emerging from this open dialogue will be a new agenda that will help to inform strategies for institutional engagement, teaching, faculty support, original lines of scholarly inquiry, and even innovative research projects. For the first time in human history, we can create an analyzable data set combining DNA, neurological scans, and nearly unlimited amounts and unsurpassed quality of human stories and personal histories. The possibility of developing a human sociology of biomedical research (or vice versa) is every bit as provocative as it is likely to generate demand for a whole new set of skills and Ph.D.'s.

Recently, two events at Case Western Reserve University have led me to an epiphany. The first involved wireless access. After rebuilding the campus network, we layered a ubiquitous wireless network and created a cloud that rained down connectivity. Next, we connected our campus and more than 1,200 metropolitan educational, library, museum, research, cultural, and government assets through the OneCleveland initiative. Then I met with a group of students at Case. They said: "Wireless is cool, but we already have that here. What are you planning for us this year?" For students, the issue of wireless access is "academic". Wireless - and more generally - network access is, in large measure, an extension of today's physical reality. Asking students at Case about how they use wireless services is the equivalent of asking a fish about how it uses water. Wireless access, like water, simply "is".

Then, early in the 2005 academic year, the instructional and academic computing group at Case assembled an extraordinarily exciting rich-media search tool for video-captured lectures for almost all large, first-year courses at the university. MediaVision Courseware, as the project is called, provides a comprehensive learning-management environment with a video-centric design. The learning outcomes are compelling. Students

are spending two to three times more hours on their subject matter and are able to watch and search for key concepts, to outline subjects, and so forth. In some courses, historic benchmarked performance data is shifting positively for the first time in decades. When students are surveyed about MediaVision Courseware, they say it is "cool". But, like wireless access, such courseware is simply de rigueur. For them, integrated streaming media courseware is an entirely normal extension of how they live, play, and learn.

And so, the epiphany for me is that the issues related to integrating new media and learning are every bit as much about helping *institutions* learn (and change) as they are about transforming the individual learner. As we like to say in the IT world, students already "get it". The point is to help higher education institutions "get it" in a meaningful way that aligns with the vision and mission of these complex organizations.

The signs are incredibly promising. After early skepticism and even some obstruction, new media literacy is being seriously debated and integrated into core curriculums at a number of the most forward-thinking and prestigious colleges and universities in the world. New media, human creativity, and the legal system represent a core disciplinary offering in the best law schools in the United States. Storytelling through new media, once relegated to "soft science", is gaining currency in the social sciences and humanities, as are fascinating collections of human stories tied to health sciences research. Gaming curriculums as a multidisciplinary undertaking with engineering, art, human interface design, medical, and business students have exploded in popularity. Gaming, simulation, and emulation research is promising in disciplines as diverse as surgical practice, electrical engineering, and computer science. Virtual reality and augmented reality technologies are forming another platform of innovation for forward-thinking institutional leaders.

The next decade may well be seen by future historians as transformational. The internalizing of the institutional imperative to absorb and project future success through new media will change the dynamic forever. Clearly, old patterns of hierarchies, research traditions, and teaching and learning practices will not disappear overnight. However, just over the horizon, many of the contradictions experienced during the first evolutionary phase of the new media revolution will be resolved. The prestige of our institutions may well depend on that.

Sintesi

I grandi cambiamenti prodotti dall'utilizzo dei nuovi media per la formazione e l'impatto delle tecnologie informatiche sull'organizzazione delle istituzioni formative possono essere chiariti in una prospettiva storica. I due decenni successivi alla rivoluzione del personal computer e dell'apprendimento in rete sono stati caratterizzati da varie forme di resistenza al cambiamento. Nonostante questo, oggi le tecnologie informatiche occupano un ruolo indispensabile per le università tanto che l'autorevolezza e il prestigio delle università nel futuro dipenderà sempre più da quanto queste siano in grado di adottare le infrastrutture per l'insegnamento e l'apprendimento più innovative e di ultima generazione. In particolare, è di cruciale importanza fornire risposte istituzionali adeguate ad una nuova generazione di studenti, ormai pienamente immersi nel mondo delle tecnologie informatiche. Infatti sono le Istituzioni a dover apprendere come utilizzare i nuovi media, non solo per la formazione, ma anche per lo sviluppo della ricerca e della creatività nei campi più diversi, dall'arte alla scienza, dalla sperimentazione medica a quella tecnologica.