

## **THE EDITOR'S COLUMN**

### **Cisco Kids: Education in the New e-Marketplace**

Two Cisco managers recently related a revealing anecdote over lunch. One of their staff had passed the daunting Cisco Certified Internetwork Expert (CCIE) exam and was enjoying the cheers and congratulations of his office mates when he suddenly realized he was, by necessity, about to break a longstanding Cisco tradition. He wouldn't be buying the rounds at the local bar tonight, he announced apologetically. At nineteen he wasn't of legal drinking age.

The young staffer was not an intern. Nor was he a real life "Doogie Houser," a prodigy that graduated college at age eighteen. Indeed he had never attended college at all and had no immediate plans to do so. He had, however, passed the Cisco Certified Network Associate (CCNA) exam on his first day at work and has since earned the full confidence and respect of his college-educated colleagues (though his client site travel can be difficult since no one will rent him a car.)

Cisco recruited this "whiz kid," and others like him, straight from a growing number of high schools that participate in the Cisco Networking Academy program. Launched in 1997, this \$20M program includes an eight semester curriculum, taught at the secondary and post-secondary levels, with the goal of producing what Cisco, and partners Sun and Adobe, see as a desperate and growing need—an e-skilled (certified) labor pool. This example and others like it provide indisputable evidence of a "sea change" under way in teaching and learning as described by Denning (1996). This ground-breaking article notes a number of market conditions impacting the educational status quo, including:

- a rising level of industry requests for professional education after the bachelor's degree,
- rising competition from private companies offering courseware, seminars and other educational services,
- the rise of education brokerages,
- certification of certain professionals, such as software engineers and network engineers,
- distance education and virtual universities, and
- accreditation of virtual degree and certificate programs.

Emerging high technology has, at the same time, both induced and enabled the transformation; induced it by spawning a new marketplace that demands extensive and quickly evolving technical knowledge and enabled it by providing the infrastructure and tools for anytime/anyplace delivery of interactive engaging, dynamic educational material, or eLearning. The economic pressure is clear—Cisco alone boasts of investing \$120M in eLearning. Like nature, the marketplace abhors a vacuum, and industry's needs will be met. To remain relevant then, the teaching and learning community must respond by adopting new models and methods and leveraging the technology where appropriate, and it is incumbent on the research community to inform and illuminate the transformation.

Given the e-marketplace as the driving force of change and technology as the vehicle, those whose expertise lies in the intersection of the two stand well positioned to address the emerging issues. Consider, for example, that Cisco CEO John Chambers has called eLearning *the* killer app for the web. The idea makes sense—free of physical artifact, learning can not only be pitched and sold, but also delivered over the Web, and enjoys palpable added value from accessibility and interactivity like no other intellectual content. Even if his prediction proves correct only to a small degree, the implications

for the marketplace and particularly the academic world are enormous and what we have seen so far only the barest beginning. Obviously all those who teach will be affected as new educational paradigms emerge to exploit the enabling technology. But along the way, a significant new industry is developing, challenging business scholars in general, and Information Systems (IS) scholars in particular, to explain the resulting phenomena and explore unexploited opportunities.

In this special issue of the *e-Service Journal*, we present five examples of such research from the IS community. While a small sample cannot be considered representative, taken together, this eclectic ensemble can be viewed as a set of orthogonal vectors that map the far reaching, multidimensional nature of the issues. The frontiers of the new learning landscape are illuminated by papers such as these that represent outposts for further exploration and that stimulate ideas about how and where to explore next:

- In “Applied Technology in Business Program: An Industry-Academia Partnership to Support Student Learning,” Tanniru and Agarwal describe experimentation with a new pedagogy for corporate partnership learning in an IS curriculum, while
- Wild and Griggs offer insights on using technology to support a geographically dispersed team learning paradigm in “Collaborative Tele-learning: and Experiment in Remote Project Management.”
- In “Measuring Student Learning: An Empirical Solution with Implications for IS Education and Beyond,” Taylor, et al. present an empirical approach for assessing an intuitively desirable but

heretofore slippery concept—the degree to which students achieve deep (conceptual) learning versus a surface level understanding of fundamental IS concepts.

- In addition, Schell and Burns describe a national initiative for a multi-disciplinary repository of e-learning materials—a new kind of learning marketplace, bringing together the users of educational learning modules directly with the authors, in “*Merlot: A Repository of e-Learning Objects for Higher Education.*”
- And finally, in “The Limits of Information: A Cautionary Tale About One Course Delivery Experience in the Distance Education Environment,” Salisbury, et al. present a unique empirical study, focusing on non-informational aspects of learning and the effects of distance delivery.

Each paper provides its own valuable individual contribution, but on the whole, they are indicative of a growing recognition that the change in learning is real, profound, far-reaching and important. The emerging e-marketplace is demanding new ways of learning. This e-marketplace is giving rise to an e-learning sub-marketplace that will provide the services and materials it needs. The learning sub-marketplace is in place now and is likely to be a major, if not primary, segment of both education and the economy. The phenomenon of this new marketplace and the new issues it presents are, themselves, important and worthy subjects for academic research. The questions of how the technology will be plied in the service of that marketplace is a critical question that holds a key role for those who endeavor to understand the interplay of new commerce, technology and learning.

As the future of learning begins to take shape, a staggering array of possibilities comes into focus. We have seen examples of experimental pedagogies (dispersed teams, corporate partnerships), innovative

assessment methods (deep learning), module exchange programs (MERLOT), and expanded (non-informational) considerations in distance learning. At the same time, experiments are underway with Web-streamed replays of classroom sessions, voice recognition-enabled searching and mining of recorded content, and wireless interaction pedagogies enabling mobile learning, or m-learning, for increasingly “nomadic” students. (See Hewlett-Packard’s “Cooltown,” a vision for educational “ecosystems” of intelligent, context aware, networked mobile appliances.) Meanwhile, e-marketplace evolution marches on as The Lydia Global Repository (<http://www.lydialearn.com/index.cfm>), a Web-based brokerage of reusable e-learning materials, solicits e-content authors with promises to “Let the world share and use your learning content while you are financially rewarded.” Clearly, the paradigm is shifting and the opportunities for research abound and entice with the intimation of inestimable future understanding as embodied in a simple question from the past: "But what ... is it good for?"

- Engineer at the Advanced Computing Systems Division of IBM, commenting on the microchip, in 1968.

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## References:

Denning, P. J., "Business Designs for The New University", *Educom Review*, Vol. 31, No. 6, 1996. (<http://www.educause.edu/pub/er/review/reviewArticles/31620.html>)

“cooltown: the ecosystem explained”, *mpulse: a cooltown magazine*, November 7, 2001

(<http://www.cooltown.hp.com/mpulse/backissues/0601/0601-cooltown.asp>)