

# *High-Tech Future: A Scenario for Higher Education*

*By J.N. Musto*

**W**ill technology affect all aspects of higher education? It's inescapable. But how will technology change teaching and learning? Developing scenarios is one way to provoke a discussion of the effects of technology. A provocative scenario may also encourage others to fashion their own vision of the future. Here for discussion—and possibly for action—is a scenario for American higher education that reflects the impact of technology.

First, let's set the stage:

Slowly, without any major notice, computer applications have changed American culture. The Internet—at first the sole realm of the military, then the scientists—has connected researchers and teachers in our colleges and universities for over 20 years. Now, an Internet address is just as likely to appear on the business card of a linguist. Anyone can buy software that provides access to Internet for less than \$100.

The lines between communication and computer networks are converging. A modem-like device will convert a single telephone into a two-line speaker telephone, answering machine, and fax—no need for a separate telephone instrument.

A communications company is testing “electronic receptionist” programs that screen calls, faxes, and e-mail, then forward calls or messages based on your priorities. These programs

---

*J.N. Musto is executive director of the University of Hawaii Professional Assembly. He has served in this position for 15 years. He received his Ph.D. from the University of Michigan in 1973 and has taught at Northern Michigan and at the University of Hawaii. In addition to his interests in labor and economics, he has been active in the development of alternative dispute resolution in the State of Hawaii.*

***A professor proposes a “model classroom” that sends class notes from a “blackboard” to the notebook computers of each student.***

---

promise to flush out the “junk” from the information highway. By the end of the century, another corporation plans to have completed the largest commercial application satellite project ever attempted. The project will use 66 satellites to provide direct telephone communications to anywhere in the world, and another commercial project with twice the number of satellites is being planned. One phone number is all it will take.

A DePauw University professor proposes a model classroom that sends class notes from a “blackboard” directly to the notebook computers of each student. Students could annotate the margins and perform key word searches. Small 80-mm CD-ROM players would permit the integration of text and graphic examples into the notes.

Technological advances are producing powerful teaching and research tools. Some examples:

The 1991 Computer Systems Policy Project facilitates technical cooperation among executives from the 13 leading U.S. computer companies.

The Hawaii Interactive Television Service provides distance learning opportunities and credit course work between the Hawaiian Islands and remote locations.

The price of teleconferencing equipment is declining—another Hawaiian corporation and its mainland affiliates use equipment that costs less than \$1,000 per location. Educators could use this system today without any modifications.

The National Information Infrastructure will permit access to all public and private computer networks.

Discovering these examples required no extensive research—they all came from one issue of *Popular Science* (March, 1994).<sup>1</sup>

Technology, for all its help to government and the private sector, may have its greatest impact on America’s 3,500 colleges and universities. Some perpetual questions—do we need or want students on campuses; what will be taught; by whom—take on a new

***Earlier distance learning programs were television projections of traditional classrooms that encountered faculty resistance.***

---

perspective as we face the twenty-first century.

American higher education may look very different in a few decades. Technology's ability to offer more effective and efficient learning environments, the business-government-university partnerships that fund research, and the development of new planning systems all suggest major changes.<sup>2</sup>

Here's one possible scenario. Remember, a scenario is a story, not a prediction.

Two factors substantially changed American higher education at the turn of the twenty-first century—continued decline in the real growth of financing for public education and reliance upon the free market to address the educational demands of new technically sophisticated enterprises.

The 1934 Federal Communications Act had allowed monopolies, large and small, to keep new, innovative companies out of cable and telecommunications competition. But S. 1822, passed by Congress in 1995, eliminated the FCC, thereby permitting competition in these services and lowering the costs of worldwide communication networks to businesses.

Investors immediately began to finance applications for education. A year later came the SeaHawaii Corporation, a for-profit endeavor that sought to expand and improve existing distance learning programs. Earlier distance learning programs, mostly offered by public higher education institutions, were usually television projections of traditional classrooms. These programs lacked imagination—many were just plain dull—and, in any case, encountered faculty resistance.

SeaHawaii—jointly funded by cable companies in Seattle, Washington and Kona, Hawaii—took a different approach. These companies formed a partnership with a consortium of faculty associations—including west coast and Hawaiian faculty unions—to create programs for distribution throughout the Pacific rim and southeast Asia. The RIMPAC Organization of Faculty Unions

***SeaHawaii provided newly emerging nations with access to sophisticated higher education tailored to their objectives.***

---

brought in faculty members from former British Commonwealth states, newly independent Pacific island nations, Japan, Taiwan, and the Philippines. These organizations recruited expert faculty members from around the world to design and implement the curricula for these programs.

Earlier educational experiments concluded that students who went overseas for their higher education often wished to remain in their host country. Indigenous students, in contrast, not only remained at home after completing their education, but also helped to adapt their learning to their unique cultural environments.

With this information, SeaHawaii provided newly emerging nations with access to sophisticated higher education tailored to their objectives. The corporation first identified the educational needs of specific areas, and then utilized technological means to access library resources and research simulations that supported the basic course presentation. SeaHawaii students could complete full courses of study in their native countries, and then apply their new knowledge to the peoples of their home country.

Technology strongly contributed to the success of this enterprise. Access to worldwide satellite networks through the PEACESAT and the Tonga Pacific Satellite system made it possible to receive instruction with small, relatively inexpensive receiver systems. Interactive hardware produced a "real time" experience, supplemented with easy to use computer notebooks. SeaHawaii's work with faculty organizations brought the best, brightest, and most entertaining faculty to remote locations without an administrative intermediary.

On the home front, in American higher education, by 2005, major state research universities continued to thrive, despite declining public support, through aggressive research partnerships with private sector corporations. Corporate executives, realizing that their business structure was not suited to basic research, concluded that practical applications would soon dry up without basic research conducted at these universities. Conversely, large

***Technological advances permitted the community colleges to gain even more stature than the research institutions.***

---

universities relied upon external funding derived from successful applications of academic output. A symbiotic relationship between business and education flourished.

Technological advances permitted the community colleges to gain even more stature than the research institutions by transforming lower skill vocational programs into high-level technical programs. Application specialists in energy resource management, including bio-mass gasification facilities, computer simulations, and artificial intelligence, language translation, broadcast technology, and aviation turned to community colleges for certification and credentials. The length of community college programs increased from one- and two-years to three- and four-years. These programs, deemed efficient and effective by corporate managers, usually led to higher paying jobs.

Many community college students still desired the traditional baccalaureate degree, so community colleges established articulation agreements with some public four-year universities. But other community colleges also asked private-sector educational consortia, like SeaHawaii, to provide the liberal arts component. Students could take their liberal arts courses on the community college campus but the community college did not have to retain a full liberal arts staff. The technological ability of SeaHawaii and similar companies provided direct access to the best ideas, performances, and visual experiences. Student exposure to the arts and to culture surpassed anything they could have experienced 20 years earlier. Students, for example, didn't *talk* about politics, they saw politics in action and interacted with other students from around the world.

Unfortunately, the private-sector educational corporations, made efficient through new communication technologies and computer applications, strongly contributed to undermining the financial stability of many enrollment-driven, comprehensive state colleges and universities and even more independent baccalaureate institutions. Some small, strong private colleges continued to provide a traditional education, but the four-year bachelor's degree

was either not enough or was too much for most students. Pressure from the community colleges and the research universities made the four-year college redundant.

Surviving four-year colleges were located in small states, served small population bases, or collaborated with community colleges on specialized degree programs—the aviation flight training and technology program at San Diego State, for example. Within these categories, it was too late for some baccalaureate institutions. Some community colleges had already established programs directly with graduate schools—the physicians assistance program and allied health programs at the University of Michigan, for example.

Faculty unionism grew during the first decade of the twenty-first century, but the nature of contracts and representation changed. Fewer faculty members were associated with one institution. Instead, large faculty organizations now wrote cross-institutional agreements. Representation shifted from a collective to an individual basis. Broad “industry-wide” standards and contracts remained, but individuals sought out faculty unions to place them with institutions and private companies offering the greatest exposure for their ideas and teaching. These faculty organizations also became involved in planning the future direction for higher education, since they made faculty accessible to people from broad geographic locations.

Many faculty organizations, following the lead of SeaHawaii, formed educational services centers. Responding to the new K-100 lifelong learning society, these organizations actively participated in “Virtual Villages,” thereby substituting themselves for traditional “brick and mortar” institutions. Faculty members became “the university without walls.”

Roles and expectations changed, but the mission of higher education remained the same as always—to discover, preserve, and transmit knowledge to the societies it served. Technology opened the world to higher education because some academics understood its potential and chose to act upon the opportunity.

### **Endnotes**

<sup>1</sup> March, 1994.

<sup>2</sup> A study of Hawaiian higher education addressed these factors. See James Oglivy, “The Future of Hawaii: Higher Education,” *Thought & Action*, 9 (1) (Fall, 1993), 69-124.