More than one hundred years before the “high touch vs. high tech” metaphor migrated from John Naisbitt’s 1982 book Megatrends into the now perpetual discussions about curriculum goals and campus technology policies, the basic tenants of “high touch” were articulated in the middle of a contentious faculty meeting at Williams College. The Williams alumnus (and future U.S. president) James A. Garfield, “responding to a professor’s complaint . . . that Williams College was falling behind the times,” defended his beloved alma mater by stating: “The ideal college is Mark Hopkins [president of Williams] on one end of a log and a student on the other.”
Increased Access.

Assessment

EDUCAUSE. What assessment models
Déjà Vu.
Convergence.
speak of convergence with
tech Ubiquitous Information Technology.
The Productivity Conundrum.
and to
How do individu-
live MBA students, or schoolteachers on
to technology in the curriculum and as a
matters.
strut in almost any direction on almost
learning industry: "What the rail-
time...that is, to serve as
matters at the heart of the instructional
mierial growth. And the
university is at the center
creations, media, content and more—all
ed with the growth of the knowledge in-
rials and the goals of higher
metics, and deeper research
ies, there appears to be little argument over
role of technology. By consensus,
ue that the state, a federal
, a corporate sponsor—will pay for the technology
pay and now pay again to replace it
the impact of new technologies, coupled
edue, and the explosion of the knowledge
admit this list is not complete.
cluded the following five issues:
other academics aged seventeen to sixty-seven—
ly, and departmental segments of the aca-
ated new demands for services across
dad content and certification: an
sitions, media, content and more—all
edited at high speed and in large quan-
tin the previous war, not the next one.
ning the curriculum in executive educa-
versus/distributed/online learning. Others have and will con-
ents already have a college or
fornia's aerospace and defense in-
ders aged seventeen to sixty-seven—
ties, but it is also possible to manipu-
tcation community. For example, con-
various segments of the higher edu-
ted services. In contrast, community col-
ent and Minneapolis; Chicago;
for educators and teachers.
reaching of the demographic downturn
firms across and beyond higher edu-
content; rather, they have placed
cobol; accounting and other man-
agement courses to replace engineer-
artists and physicists. Most four-year insti-
university degree.
California already have a college or
nooling, and physics. Most four-year insti-
agement courses to replace engineer-
and other man-
agement courses to replace engineer-
and physicists. Indeed, one of the ironies
societal, economic, and social
admonish the public to care for their
the curriculum in executive educa-
tion, extension programs, and other services.
In contrast, community col-
university degree.
ment of the demographic downturn
and state graduates entering college has
enormous technological changes—
the curriculum in executive educa-
action. The difference today is not
academic leaders appear to be
ad to the classroom and into the syl-
discussions regarding the mis-
and the explosive growth
demic origins and the explosive growth
As a matter of fact, the truly impor-
eld content and certification: an
 Alternatives to course substitutions—such as bundled
and departmental segments of the aca-
computer system; the advent of a
by lowering cost or by
amount of time. By consensus,
provision of a new service or a
"Be careful what you wish for, as it may
average for two or three years from now.
ning of the demographic downturn
other than the growth of the knowledge
institutions rise with in-
without—are attending traditional two- and
puter science; rather than adding
ademic leaders appear
ticentury.
Read more at the EDUCAUSE Review website.

The log is now digital. Indeed, a casual stroll in almost any direction on almost any college campus or university will provide ample evidence of the growing presence of computing and information information technology. What we are seeing is a fundamental, core component of academic life. Tech-
ology has become ubiquitous. Today’s students tend to live in the “touchscreen culture.” For a single course, forty-five-year-old execu-
MBA students, or schoolteachers on
matters.
lonely, and state graduates entering college
rational growth. And the
manual labor, and the explosive growth
University degrees, many without—
"for the technology
indicators of things past—emerge.

views as well as academic administra-
tors and trustees—about the current
luations for educators and teachers.
are attending traditional two- and
students aged seventeen to sixty-seven—
various segments of the knowledge
focusing on the fact that the bachelor's degree is not the end of the educational journey but is just another milestone. The growing de-
mand for lifelong learning has gener-
ated new demands for services across
vantages of increased access, lifelong learning, and ubiqui-
tous information technology in the
"Be careful what you wish for, as it may come true." Three things at the top of academic leaders’ minds in the coming decades—increased access, lifelong learning, and ubiquitous information technology—are indeed “coming true.” Unfortunately, the campus community is largely unprepared for their converging consequences.

Increased Access.

Both developed and developing nations are experiencing exploding demand for access to higher education. For example, in the United States, the proportion of recent high school graduates entering college has risen from just over half at the begin-
ning of the demographic downturn of the early 1980s to almost two thirds today. Rising demand—cou-
pled with the introduction of new strategies—has been pushed by an escalating set of demographic, economic, and social forces. For example, the number of high school graduates over the past five years has been the simultaneous presence of increased enrollment and high employment. This confounds the conventional wisdom that enrollments at higher education institutions rise with in-
dividuals aged seventeen to sixty-seven—
"for the technology
increasing online courses and beyond higher edu-
cation. The difference today is not just the computers, the Internet, or the World Wide Web but the aggre-
gated power of institutions that could virtually all facets of daily life across
so many sectors of the economy. Higher education leaders—leading indi-
Now so what do we do?
Like aging generals, many academic leaders appear to be planning for the previous war, not the next one.
a few years, millions of schoolchildren will have access to what Philip of Macedon’s son Alexander enjoyed as a royal prerogative: the services of a tutor as well-informed and as resourceful as Aristotle.4

Suppe’s vision clearly hits the high notes that drive the current campus discussion, engagement, and investment: more-powerful computers, more content, more interaction.

In contrast, consider a 1972 Chang editorial written by the magazine’s founding editor, George Bonham, about the failures of television in education:

‘For better or worse, television dominates the teaching and learning processes of American higher education. . . . Part of [the] backlash record of the educational uses of television is of course due to the heretofore merciless economies of the medium. But profound pedagogic mistrust of the medium also remains a fast of life. The proof of the pudding lies in the fact that on many campuses, fancy television equipment . . . now lies idle and often unused. . . . Academic indifference to this enormously powerful medium becomes doubly incomprehensible when one remembers that the present college generation is also the first television generation. Television has shaped much of their lives and attitudes, and taught them much of what they know.’

Substitute computers for television, and Bonham’s terse assessment speaks directly to many of the instructional challenges (and, some might say, instructional disappointments) that colleges and universities confront in the Internet era. The recommendations offered by Bonham almost thirty years ago—set na-tionally for the appropriate uses of television, cooperate with federal agencies to translate goals into public policy and practice, begin national pooling of instructional resources, and assess the economics of instruction with television—may seem strangely similar to some of the recommendations found in the recent final report of the congressionally chartered Commission on Web-Based Education.7

The Productivity Conundrum

There are numerous notions of quality and productivity cast a long shadow over both public and private conversations about the role of information technology across all levels of education and in all sectors of the educational community. This is not surprising, given the great aspirations among many—teachers and professors, secondary school principals and college and university administrators, parents and public officials—for what technology might/could/should do to enhance teaching and learning.

In 1968, Robert Persig’s Zen and the Art of Motorcycle Maintenance echoed the concern (and the complaint) of many in head-some. Searching for an absolute measure of qual-ity, painfully conscious of his own experiences as both graduate student and young faculty member, Persig asked in his journal entries: “What the hell is quality?” What are the real and true attributes of quality in higher education? Is it found only among the elite institutions? If so, what does that suggest about the learning experience at ‘other’ colleges and universities?

Fortunately, we can turn to economists to help us resolve any potential ambiguity regarding the definition of productivity. Productivity may be a new concept for most in academe, at least in the context of institutional values and priori-

ties, but it is certainly a core concept for our colleagues in economics. Economists seem to agree that there are three components of productivity: cost, quality (ambiguous though that may be), and quan-ty. And they also seem to agree (if they agree on anything) that there are three circumstances under which productivity occurs:

1. The cost of production declines while quality remains constant (i.e., it costs less to produce each widget).

2. The cost of production remains con-stant while quality improves (i.e., it costs the same to produce each widget, but the firm produces a much better product).

3. The rate of production declines while quality improves (i.e., it costs less to produce each widget, and the firm produces a much better product).

Admittedly, production models and manufacturing metaphors are generally offensive to most faculty. But in the emerging new world of higher education, it is increasingly clear that costs—tuition costs, operating costs, and “production” costs—really do matter.

In the emerging new world of higher education, it is increasingly clear that costs—tuition costs, operating costs, and “production” costs—really do matter. The Commission recommends the creation of a national effort led by insti-tutions of higher education, the philanthropic community, and others to study and consider alternative approaches to collegiate instruction which might improve productivity and efficiency. The Commission believes significant gains in productivity and efficiency can be made through the basic way institutions deliver most instruction, i.e., faculty members meeting with groups of students at regularly scheduled times and places. It also believes that alternative approaches to collegiate instruction deserve further study. Such a study should consider ways to focus on the results of student learn-ning regardless of time spent in the traditional classroom setting.8

In this context, state initiatives such as the Michigan Virtual University, the Kentucky Commonwealth Virtual University, and the Western Governors University reflect, in part, an assumption.
that technology can be used to expand educational access and also reduce edu-
cational costs; state officials hope to offer more opportunities for more learners by
investing in bits and bytes (content and technology), rather than mortar and
bricks, as a new form of infrastructure for higher education. Concurrently, faculty
across all types of institutions argue that technology is part of the new infra-
structure that enhances the quality of content available to their students, who can both
wander the stacks and surf the Web. In-
vestments in technology are essential to supporting student and faculty access to
online resources—that is, to enhancing the quality of teaching, learning, and
scholarship.

So here’s the conundrum: does technology improve productivity by lowering cost or by raising quality? Cost-conscious administrators and public officials might support technol-
ogy because of the potential to reduce educational costs: state officials hope to offer
educational access and also reduce edu-
cational costs, typically labor (i.e., faculty) costs
and other direct operating costs. In
contrast, faculty might argue to leave
funding constant but to focus on quality—to support technology as the
catalyst that enhances how and what
students learn.

Must we choose between the two? Unfortunately, this is where the conver-
sation about productivity begins to get subjective. Our colleagues in economics
may be able to define productivity, but they cannot tell us which outlook is more
appropriate under what circumstances.

Assessment
Assessment and outcome issues consti-
tute one of the most distressing aspects of the current conversations about in-
formation technology in higher educa-
tion. Reduced to the most direct con-
cerns of parents, faculty, and public officials, the key question is, “Does tech-
nology really make a difference?”

“Learn better” with technology tools and
with technology-based instructional in-
terventions? Does technology at least
improve standardized test scores and, if so, by how much?

The research literature is ambiguous,
at best, about the impact of various in-
structional technologies on learning outcomes. A pre-computer tome, The
History of Instructional Technology, pub-
lished in 1968, set the stage for future
assessments: “The general conclusion from among all this research was that no
significant difference was found among the treatment comparisons and, when
significant differences were obtained, they seldom agreed with other findings
on the same problem.” Thus began the contentious debate over the “no signifi-
cant difference” findings. An early foray
into this debate appeared as a chapter ti-
tled “Will Information Technologies Help Learning?” published as part of a
1973 report from the Carnegie Commis-
sion on Higher Education:

Were it not that the “no significant
difference” findings fly in the face of common sense and other myths, one
EDUCAUSE Sets the Mark
for IT Professionals in Higher Education

EDUCAUSE 2001 EVENTS

January
The National Learning Infrastructure Initiative Conference (NLI)
New Orleans, Louisiana—January 28–30

February
EdUCAP—an EDUCAUSE Regional Conference
San Antonio, California—February 21–23

The EDUCAUSE Institute, Management Program
Palm Springs, California—February 25–March 1

March
NERCOMP, The North East Regional Computing Program
Worcester, Massachusetts—March 18–20

April
Council of Independent Colleges (CIC) and EDUCAUSE
Information Technologies Workshop for Independent Colleges
Pittsburgh, Pennsylvania—March 29–31

April
Networking 2001
Washington, D.C.—April 10–12

Gathering of State Networks
Denver, Colorado—April 29–May 1

May
CUMREC 2001
Phoenix, Arizona—May 13–16

May
EDUCAUSE in Australasia (CAULD & CAUL)
Queensland, Australia—May 20–23

June
The Frye Leadership Institute
Lily, University, Atlanta, Georgia—June 3–15

The EDUCAUSE Institute, Management Program
Boulder, Colorado—June 10–14

NVAAC, Northwest Academic Computing Consortium
Portland, Oregon—June 14–15

AACTC and EDUCAUSE Technology Institute
Denver, Colorado—June 17–19

The EDUCAUSE Institute, Leadership Program
Boulder, Colorado—June 21–23

EDUCAUSE Southeast Regional Conference
Orlando, Florida—June 27–29

August
The Seminars on Academic Computing (SAC)
Stroemness, Scotland—August 3–6

September
Australia Institute (CAULIT & EDUCAUSE)
Port Stephens, New South Wales, Australia—September 2–6

October
EDUCAUSE 2001
Indianapolis, Indiana—October 28–31

November
EDUCAUSE Mid-Atlantic Regional Conference
Baltimore, Maryland—December 3–4

December
EDUCAUSE conferences
Interesting ◆ Informative ◆ Career-Enhancing

Have you been to an EDUCAUSE conference lately? Maybe it’s about time you marked your calendar.
might dismiss technology as irrele-
vant to learning. But who can deny the
impact it has made on educational tech-
ning? Or is it really a question of dis-
section of belief or personal or social
This, they argue, is richer—content.
and quality of learning. But who can deny
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impact it has made on educational tech-
ning? Or is it really a question of dis-
section of belief or personal or social
This, they argue, is richer—content.
and quality of learning.
many faculty to identify with the early adopters, the “techies,” says much about the technology challenge that lies ahead.

We do need the early adopters, but their presence alone does not ensure technology innovation and instructional integration. The rest of us must—almost every day. And as the rest of us visualize our own adventures in cyberspace, we need to know that our institutions are building and sustaining the technology infrastructure—the hardware, software, networks, user support, online resources, and recognition—that will support both our efforts and our aspirations.

Digital Light or Digital Shadows? What lies ahead for colleges and universities and other sectors of higher education? What consequences will technology have on the instructional missions and mandates of the higher education enterprise? An extreme view of the future has been offered by the management sage Peter Drucker: “Universities won’t survive . . . higher education is in deep crisis. Already we are beginning to deliver more lectures off-campus via satellite or two-way video at a fraction of the cost [of traditional courses]. The college campus won’t survive as a residential institution. Today’s [campus] buildings are hopelessly unsuited and totally unequipped.”

Yet universities and residential colleges will not vanish in the next two, three, or even four decades. With all due respect to Professor Drucker, the simple proof is probably to ask which college or university he wants his great-grandchildren to attend when they spend the trust-fund money. My guess is that he would likely cite the kinds of institutions where he held faculty appointments—institutions like Bennington College, New York University, and the Claremont Colleges—as opposed to Western Governors University, UNext.com, or Jones International University.

Similarly, it is increasingly apparent that colleges and universities have little to fear from Disney or Microsoft or other technology and entertainment/infotainment firms that were once demonized as probable providers of courses and degrees. These firms (and others) will continue to offer and certify certain kinds of largely technical training. Certainly, campus-corporate alliances in the distance and distributed market will be an important part of the broad educational landscape in the coming years, but it seems highly unlikely that technology will provide the core tools or key distribution channels that will make these firms serious competitors in the evolving world of higher education.

Clearly, information technology will play a major role in higher education during the twenty-first century. But the impact of technology on learning and on the instructional mission of academic organizations is the issue that should command our attention and concern.

Does the mantra of the Internet economy (“the Internet changes everything”) apply to higher education? Of course. The reason the Internet changes everything is because there are few or no precedents for anything. And the absence of precedents absolutely applies to our discussions about the impacts of technology on the instructional mission of the colleges and universities in the twenty-first century.

Notes