A Handbook of Best Practices in the Integration of Learning Technologies into Higher Education

Illustrated with case studies from innovative institutions in Canada and around the world

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Introduction

The Need for Educational Technologies and Institutional Change

The need for institutions of higher education – universities and colleges – to change the way they teach, and to integrate technology into the teaching process, is now beyond question. While the development, maintenance and dissemination of knowledge has been the primary goal of higher education institutions – traditionally, the universities – for centuries, numerous dramatic social and economic changes are now converging that must inevitably force changes in the way each of these goals is achieved.

Volkwein (1999) quotes Pascarella & Terenzini (1991) who report that:

> *"Parents believe and research suggests that the most effective educational experiences are usually found in academically oriented living and learning communities in which full-time students receive a good deal of faculty contact and many academic support services in the residential setting"*

Unfortunately, many elements in this magical formula are now under pressure.

First and foremost are financial considerations: the kind of idealized educational experience described above is very expensive, but federal, state and provincial government financial commitments have either failed to keep pace with increasing enrollments, or have even been reduced (Rossner & Stockley, 1997; Bates, 2000). Institutions must increasingly compete for grants and capital funds that often carry with them the requirement that technology be integrated into the teaching project.

Simultaneously, economic and political shifts (including a philosophy of public accountability and a climate that increasingly positions education as a social and political right, rather than a privilege) in many parts of the world, coupled with an increasingly corporate and consumer-oriented popular culture have focussed public attention on efficiency, productivity, effectiveness and accountability (Volkwein, 1999). Concern about high costs

has raised concerns about 'productivity': something that is notoriously difficult to measure in an educational context. 'Customers' (students and parents) are increasingly concerned about universities' and colleges' effectiveness, and are demanding evidence that higher tuition translates into higher quality and better service; stakeholders are less and less convinced of the value of campus autonomy, and – especially for public institutions – are more likely than ever to expect and demand evidence of good management and return on investments in the educational sphere.

Secondly, parents and young undergraduate students are no longer the only stakeholders in the higher education market. Student demographics are radically shifting, especially in the industrialized world, as a result of the shift from the industrial society towards a "knowledge society". Overall, student numbers are rising, and there is an increased emphasis on the value of higher education for future career prospects. In addition, universities and colleges are being asked to meet new needs. The changing world of work means that fewer and fewer people can count on a lifetime commitment to a single trade or institution; a large proportion of new jobs require a higher skill level than those they are replacing. In a 1995 study, Dolence & Norris predicted that workers will need to upgrade skills every five to seven years. Education and training of a working adult workforce is now therefore a priority for governments, and colleges and universities are now facing increased demand from people in the workforce who need to continue learning if they are to stay employed and if their employers are to stay economically competitive. In addition, growing awareness of unequal access to education for historically marginalized communities – for example, Canada's aboriginal communities, or rural communities – has focussed public attention on questions of access to quality education. Working people and those in remote areas often cannot afford to give up jobs or move house to become full-time or even part-time campus-based students again, highlighting the gap between the way educational services are currently offered and the needs of the new learner audience. These working, adult and non-urban populations are increasingly looking for more flexible and responsive forms of education and training.

Finally, Stockley (2002) suggests that as the knowledge society evolves, it is creating an audience of learners who are more discerning about how they learn, what they learn and when they learn it; this audience may be less and less willing to accept the 'traditional lecture' model of higher education.

In short, colleges and universities are facing myriad competitive pressures: they must compete for resources, students and faculty; they must increase access to higher education for more and more varied students, but must also be able to demonstrate that in responding to these pressures they are not reducing the quality of education they offer.

Internet and communication technologies such as the World Wide Web and multimedia, have the potential to widen access to new learners, increase flexibility for traditional students and improve the quality of teaching by achieving higher levels of learning, as well as providing students with the everyday technology skills they will need in work and life.

Knight (1997) has argued convincingly that none of these challenges can be met by reactive and piecemeal institutional responses, and require no less than a re-inventing and re-engineering of higher educational institutions. Twigg (1994) similarly argued that for organizational change to have any effect, it must occur across an institution, at many levels. In this compendium, we hope to continue the efforts of Bates (2000) and others who have convincingly argued the need for institutional strategic planning and adoption of best practices in learning technology management as institutions transform themselves in the new millennium. We offer here a snapshot of contemporary best practices in learning technology planning and management, based on case studies from leading higher educational institutions in Canada, the United States, Australia and Spain. While we make no claim to completeness, it is our hope that this collection and the associated resources we note will be of interest to key decision makers in the academic communities of universities and colleges, including heads of departments, deans, vice presidents, and presidents. It is also aimed at faculty members concerned with teaching and learning policies and practices.

The Problems of Piecemeal Development (Non)-Strategies

As the use of Internet and communication technologies in higher education began to accelerate in the early 1990s, it became increasingly clear that instructional staff and faculty members – those actually teaching with technology – do not work in a vacuum, and that piecemeal development of technology-mediated courses and programs by scattered early-adopter faculty is not a sustainable, scalable or educationally effective approach to teaching and learning with technology.

✗ *lack of scalability*

As more and more mainstream college and university faculty members have followed their 'early adopter' colleagues into the world of teaching with technology, institutions are coming to realize that their early strategies (or non-strategies) for encouraging and supporting faculty in the use of technology are not scalable across the institution. Hartmann & Truman-Davis (2001) call this the 'tipping point': the point at which technology adoption begins to grow exponentially, and the size of the population needing support increases exponentially. Supporting faculty in teaching with technology becomes even more challenging as number grow, and there are large populations at various stages of adoption, each with different needs.

Commonly, early adopter faculty were or are 'lone rangers' (Bates, 2000) whose enthusiasm and self-reliance motivated them to experiment with innovative technologies. While this allowed individuals to experiment with the potential of technology-assisted learning, common problems include: poor user and graphics interface, excessive technical time demands, failure to complete the project, and lack of dissemination of results or expertise. In addition, since lone ranger-driven initiatives are most often closely associated with one or a few individuals, they are not scalable (or sustainable) as technology is integrated across the institution, and do not often contribute to institutional capacity building

A second common approach, the 'boutique model' involves offering individual faculty members one-to-one support when they decide to take the

plunge into technology-mediated teaching. However, as numbers increase, the support structure for this model again suffers from lack of scalability, leading to the 'support crisis' that McClure, Smith & Sitko describe (1997).

One challenge, then, is that of achieving scalability while maintaining quality of instruction.

✗ *lack of attention to quality and innovation in teaching with technology*

Bates (1997) argues that in order to justify the extra cost of using technology, it must be accompanied by the reorganization of the teaching process, moving away from fixed, scheduled group instruction to more flexible and individualized modes of learning. In piecemeal processes of adoption of educational technology adoption, however, mostly driven by enthusiastic early adopter faculty, quality educational design features are often lacking from online courses. Inappropriate technology decisions may be made in the early stages of development. The graphics and interface are often poor, compared with commercial packages with which students are familiar, and the potential for high quality learner interaction with the multimedia materials is often lost. When finished, courses often have limited applicability because they are not of high enough standard, or capable of handling enough students, to be widely used.

✗ *poor response to the need for increased e-learning*

As discussed above, there are many and interrelated factors pressuring higher education institutions to integrate technology into their teaching and learning project in order to adapt to new social realities. Student numbers in postsecondary education have been rising since the 1960s, but this has generally not been met by a pro-rated increase in funding, so class sizes have increased, and teacher-student interaction has decreased. There is increasing demand for professional development and retraining education by adults who are also working part-time and who may be remote from college or university campuses. The politicization of learning technologies means that grants and capital funding from governments are often now directly linked to

technology integration (Lewis, Smith & Massey, 1999). Internet and communication technologies and increased e-learning allow institutions to respond to the pressures on both on-campus teaching and new off-campus student markets, as well as to access government funding. In an increasingly competitive educational market, universities and colleges ignore e-learning at their peril.

✗ *unsustainable approaches to teaching with technology*

As Bates (1997) notes, technology implementation – with high fixed costs for both infrastructure and maintenance – is too often driven by external grant funding or by 'special' funding arrangements, such as student technology fees. Dependence on external sources for funding comes with its own special problems – not least that funding allocation is not determined by the institution based on its own strategic plan for institutional change, but by government agencies far removed from the teaching and learning coal-face, whose decisions are usually driven by other agendas. Even more problematic is the reality that such funding is limited in duration. What happens when the funds run out? Successful projects then become a real challenge, and the institution must grapple with how to continue or extend the project. In addition, grant-funded contract staff tend to be employed on a temporary basis, and will leave when funding ends, meaning that institutions also lose their experience and wisdom. While special funding has proven successful in stimulating innovation with educational technologies, it offers no long-term sustainability for technology planning.

✗ *poor understanding of cost-effectiveness*

Hypothetically, the integration of technology into higher education can increase cost-effectiveness: by freeing faculty and instructors from labour that can be better handled by technology and allowing them to make more productive use of their time; by improving the quality of learning, either by enabling new skills and learning outcomes to be achieved, or by enabling students to achieve existing learning goals more easily; and by enabling institutions to reach more and different students (Bates, 2000). Since the

absolute costs of technology tend to be high, however, simple acquisition of technological infrastructure and equipment will not, in itself, make higher education more cost-effective.

✗ *lack of faculty and departmental 'buy-in'*

Even if senior management and scattered individuals recognize the need for institutional change in order to integrate technological innovations in teaching and learning, no vision or plan will work without the support of faculty, staff and students (Bates, 2000). Resistance to change is a reality so common, it hardly bears elaboration here. Indeed, numerous writers have noted that a firm resistance to the changes that may be created by integration of e-learning must be expected (Levy, 2003 and references therein). Effective change management is an art form that can be employed through a range of strategies to catalyze, encourage and motivate organizational change. The introduction of technologies into teaching may be seen as a time-consuming imposition, as something that diverts faculty from current research and teaching activities, or as antithetical to the current institutional culture. Faculty and staff may see technology as bringing an extra (and unpaid) workload. The potential for learning technologies to enhance teaching and learning may be poorly understood by faculty and students. In particular, faculty may worry that spending time on technology will actually hamper their career. Such concerns are not without foundation: academic culture still rewards faculty for verifiable teaching expertise, publication output as a measure of research success, and independent achievement. The (often) context-specific nature of online teaching, the current lack of standardized methods of assessment of online teaching expertise, the time-commitment needed for quality instructional design, and the cooperative nature of effective team-based course development mean that incentives are often very low for faculty to invest time in working with technology (Oslington, 2004).

✗ *failure to consider the institutional culture*

While faculty may resist technology itself, a more serious form of 'institutional resistance' is found in the very culture of academic institutions – no less than a cultural clash. Bates (2000) characterizes the dominant western university and college culture as 'agrarian': in which learning is tightly regulated in a cohort/semester system; in which the faculty member is responsible for all aspects of teaching from selection of content to delivery to student assessment; and in which the accepted route for handing down knowledge is one of 'apprenticeship' via supervised graduate study within a discipline.

At the institutional level, this 'quality-and-effectiveness'-focussed culture offers a number of major obstacles to change: consensus governance (rather than industrial-style hierarchical management); faculty control over the major goal activities (teaching and research); an organizational culture that supports change by adding resources rather than by reallocating resources, and a curriculum structure that makes false (though some would argue, necessary) assumptions about learner homogeneity (Volkwein, 1999). University Presidents are expected to be forceful leaders, but any interference in faculty democracy is not welcome. Similarly, introduction of policy that is seen to impinge on faculty autonomy in teaching is usually strenuously resisted, especially if it is perceived to derive from the 'cost-consciousness-and-efficiency' culture of a management bureaucracy or industrial model for education.

Bates (2000) argues for a Post-Fordist or 'Post-industrial' model for management of university and college teaching, modelled on successful post-industrial businesses such as Apple, Sony and Honda. These companies make heavy use of technology, depend on collaborating teams of decentralized, creative workers, and have clear leadership, global operations and the capacity to adapt rapidly to changing environments. Innovative educational institutions such as the University of Phoenix (p. 31 and p.68) are emerging as educational analogues of these corporate successes.

Nevertheless, one size does not fit all. Colleges and universities must ask themselves "What kind of institution are we, and what kind of institution do we want to be?". There may be no correct answers. But without making an assessment of the whys and hows of the current culture, planners are seriously challenged in developing a realistic plan, or for recruiting support for institutional change across their institution.

✗ *inattention to institutional capacity-building*

As described above, when educational technologies are implemented without planning for faculty training and support, or resource allocation, skills acquired, experience gained and lessons learned do not contribute to the growth and learning – capacity-building – of the wider institution. 'Lone ranger' projects tend to be available to and used by the lone ranger him/herself. Experienced staff hired on soft money development projects will leave, often taking their skills away from the institution entirely while tenured research faculty are forced to devote valuable teaching and research time to laborious technical and graphical work (for which they lack the training). Dissemination of expertise tends to be minimal, as independent designers/developers re-invent the online learning wheel across the institution, reducing the possibility for institutional buy-in, precluding any cost-saving economies of scale and dooming the institution to an endless cycle of inefficient, unsustainable and cost-ineffective course development.

Searching for Best Practice Development Strategies

In 1997, Bates initiated closer scrutiny of effective strategies for bringing about institutional change and effective integration of technology into the higher education project. He asked:

> *"What do we have to do to re-organize, re-structure or re-engineer the university to ensure that we achieve cost-effectiveness from the application of technologies to teaching?"*

At the time, Bates outlined twelve organizational strategies for change, chronicled from his experiences at the University of British Columbia, Canada. Some of these strategies, he explained, had been developed deliberately and thoughtfully by senior management at UBC. Others were developed from past experience, or emerged in response to challenges that needed to be addressed. Importantly, Bates noted that in 1997, it was still too early to tell whether these strategies were in fact "useful or validated strategies for change".

Seven years later, we hope to continue the undertaking he began, by reporting on strategies that have been tried and tested in higher education institutions: "best practice" strategies that contribute to successful organizational change in the management and integration of e-learning and learning technologies.

What Do We Mean by "Best Practices"?

Bates (1997) initially reported educational technology management and planning strategies from his own experience, while Stockley (2002) identified four critical areas of strategic planning based on "practical and theoretical reasoning". Epper & Bates (2001) later explain that "best practices" are not "thought experiments" or the result of networking, reading the literature, or conference visits. Rather, they are practices that we identify through the process of *benchmarking*, and are practices judged to be "exemplary", "better", "good" or "successfully demonstrated" according to previously determined criteria for what "success" would look like. Benchmarking is not a quantitative analysis, but a process, one that organizations can use to ask "Where are we? Where do we want to go? And how do we get there?" in the midst of organizational change. Benchmarking is not a process of soliciting solutions from experts, but one in which participants learn about successful practices in other organizations, and then draw on those cases to develop solutions that fit their own organizational culture. Importantly, benchmarking not only reveals "best practices" through case study research, it helps to

create sharing networks for future benchmarking, continuous learning and improvement, and exchange of best practice ideas.

Methodology: Benchmarking for Best Practices in Learning Technology Management

The American Productivity & Quality Center (APQC) is an internationally recognized nonprofit source for performance improvement and decisions support. Organizations of all sizes – business, government, education and healthcare – partner with APQC to discover global best practices and to facilitate their development.

The APQC has developed a systematic benchmarking methodology, one that has been effectively employed in a number of consortium benchmarking studies in higher education (see resources and references below). We modelled this small study on APQC methodology.

In Phase One, the 'planning' stage, we:

i. determined our criteria for best practices in management of learning technology (see above) with reference to the literature and the experience of experts in the field including Dr. Tony Bates, and colleagues in UBC Distance Education & Technology. These criteria are:

   - scalability
   - attention to quality and innovation in teaching with technology
   - increased e-learning
   - sustainability
   - cost-effectiveness
   - achievement of faculty and departmental 'buy-in'
   - consideration of the institution's culture in planning
   - attention to building institutional capacity

ii. drafted a letter of invitation to participate in the study, and directed it to national and international MAPLE Partner Institutions

and Associates (see http://www.maple.ubc.ca/associates_partners/index.html), as well as to experienced faculty, administrators and managers of learning technology in institutions across North America; these individuals were invited to speak about specific best practices at their home institution, to comment on our criteria for selection of best practices, and to offer descriptions of other practices that might be considered 'exemplary'

iii. designed an interview survey tool (see Appendix) to direct telephone interviews with selected individuals

In Phase Two, the 'collecting' stage, we undertook institutional case studies and:

iv. carried out face-to-face or telephone interviews with thirteen individual faculty members or leaders from ten institutions in Canada, the United States, Australia and Spain.

v. examined research literature, publications, web sites, and other reports describing learning technology management strategies at the selected institutions

Here, in Phase Three, we present our analysis: best practices identified in the institutions under study, as determined by our best practices criteria. We illustrate these practices with excerpts from case study interviews, and supplement each thematic area with suggestions for further resources and reading, and links to relevant institutional web sites.

Resources on Benchmarking and Best Practices

- American Productivity & Quality Center: http://www.apqc.org
- APQC Benchmarking & Best Practices Resource Site: http://www.apqc.org/portal/apqc/site/generic?path=/site/benchmarking/overview.jhtml

  Includes numerous free resources on benchmarking approaches and methodologies, as well as reports for purchase.

- APQC. (1999). *Today's Teaching and Learning: Leveraging Technology: Best Practice Report*. Available for purchase at: http://www.apqc.org/portal/apqc/site/store?paf_gear_id=1300011&pageselect=detail&docid=102611
- APQC. (2000). *Technology-Mediated Learning: Enhancing the Management Education Experience. A Consortium Learning Forum Best Practice Report*. Available for purchase at: http://www.apqc.org/portal/apqc/site/store?paf_gear_id=1300011&pageselect=detail&docid=102620
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Best Practices in Management and Integration of Learning Technologies

Best Practice 1: Creating a Vision for Teaching and Learning

Bates (2000) argues that developing a vision for the use of technology in teaching and learning may be the most important strategic step in learning technology integration, noting that "the visioning process is at least as important as the goal itself" (Fritz, 1989; Senge, 1990). In this context, 'vision' implies the creation of a concrete description of *how* teaching and learning should take place in the future, taking into account the current institutional goals, and the potential for technologies to further these goals. It describes what stakeholders would like to see or happen. It helps members of the institutional community to identify and share certain goals. And, importantly, a shared vision provides a benchmark against which to assess future strategies and actions in the development of technology-based teaching.

✓ *Case Study: Visioning at The University of British Columbia*

For UBC's Associate Vice-President Academic, Dr. Neil Guppy, the best evidence that the university's visioning process – spear-headed by a cross-campus committee entitled the Academic Committee for the Creative Use of Learning Technologies (ACCULT) – has had a lasting, systemic effect across the institution is that the process itself is still spoken of as if it were 'alive' and evolving. Many members of the UBC community may never have read the final report of the ACCULT Committee – published and submitted to Senate in 2000 – or the later Recommendations paper (2002). But the range of public outreach activities, town hall forums and faculty-based scenario-building activities that this committee initiated raised awareness of the potential uses of new learning technologies, prepared the ground for future uses of learning technology at UBC, and sparked inter-faculty sharing of ideas, and even some friendly inter-faculty competition in technological innovation. What was important, explains Guppy, is that the visioning

process was not intended to be a 'prescriptive' strategic plan. Instead, the guiding idea was always the exploration of creative use of technology, with the focus firmly on pedagogy and quality of learning.

Established in 1915, UBC is the largest and oldest university in British Columbia, currently enrolling almost 40,000 students, as well as 40,000 non-credit, certificate, and distance education learners. It is the second largest employer in the Province, and is routinely ranked as one of the top five Canadian universities by Maclean's Magazine – an annual ranking that measures the undergraduate experience at Canadian universities, comparing post-secondary institutions in three groupings: medical/doctoral, comprehensive and primarily undergraduate.

What prompted UBC to begin the visioning process? Guppy describes the University of British Columbia as "amazingly decentralized" – the university's teaching and research activities, carried out by almost 2,000 full-time faculty members, are concentrated in twelve inter-connected but internally autonomous faculties. A great strength of this decentralized institutional structural and cultural model is that it allows independent innovations to flourish, and by the late 1990s, the new AVP Academic realized that numerous experiments with instructional technologies were developing in different in corners of the campus: WebCT literally "grew up" at UBC, developed in 1995 by Murray Goldberg and Sasan Salari in the Department of Computer Science; also in 1995, UBC's Distance Education & Technology unit had acquired as its new Director Dr. Tony Bates, a world-renowned expert in distance education and learning technology management. Awareness of learning technologies was increasing across the university. At the same time, IT Services at UBC had begun to play a more central coordinating role for technology on the campus; a previously established Centre for Educational Technology had folded when its funding expired; the newly established Centre for Teaching and Academic Growth (TAG) was reporting increased demand for professional development and support from faculty members in the area of learning technology and instruction; Distance Education &

Technology was rapidly increasing the number of new courses it offered online; the university was in the process of establishing Telestudios – a central state-of-the-art facility focussed on digital media and communications for the support of educational projects; the UBC Library was beginning to make journal databases and other learning resources available online; individual faculties were starting to establish their own learning technology units; and student services and enrollment were exploring options for introducing online registration and payment options for students.

For Guppy, and other senior UBC colleagues, this decentralized flourishing prompted important questions for which they had no answers: How should UBC be thinking about technology in the context of learning? What did they know about quality of learning and pedagogical challenges in the realm of learning technologies? What were the faculties doing? What would they like to be doing? What were the possibilities for learning technologies? Were the right things decentralized? Hade they minimized redundancies? Were learning technologies adding value for students?

The ACCULT Committee was therefore established to investigate the creative possibilities that technology offered teaching and learning at UBC. Determined to make this Committee representative but 'functional' (and recognizing that it could not represent all voices all the time), membership was kept small, but activities were directed outwards, into as much outreach as possible. The Committee itself was comprised of representatives of important UBC stakeholder groups: faculty members, who are at the teaching front-lines; undergraduate and graduate students – the lifeblood of the university; the Faculty Association, who are responsible for negotiating faculty conditions of work and questions of intellectual property; the Centre for Teaching and Academic Growth, whose central focus is on pedagogy and instructional support; the UBC Library; Distance Education & Technology; and members of UBC's Senior Administration responsible for information technology, student services and academic programs.

The Committee was tasked with engaging students, staff and faculty across the UBC campus in a visioning process: of imagining where learning technologies might take UBC in the next decade. Rather than creating a dry report that would collect dust on someone's shelf, the Committee constructed this process as a participatory project that would stimulate debate and raise awareness.

Over a two-year period, the Committee tried to involve as many members of the UBC community as possible. Several 'town hall' style public meetings were held at which applications of learning technologies were presented, and input was sought on future technology use from the wider community. Focus groups were held with students, and with educational technology support staff. Consultations were held with several senior members of the UBC community. Perhaps most importantly, day-long workshops were held in each one of UBC's 12 faculties, in which faculty members, staff and students participated. These facilitated workshops began with a discussion of general teaching and learning strategies within the faculty, and included demonstrations of possible applications of learning technologies within that faculty. Later, in a scenario-building exercise, groups of participants were asked to develop a description of a day in the life of a student and faculty member in five year's time that would reflect the group's desired approach to teaching and learning. Altogether, a total of 18 scenarios were developed; these were made available in print and on the web – some as short films – to provoke further community discussion. Later, the Committee analyzed the content of these scenarios to identify common concerns and wishes.

While Guppy acknowledges that the ACCULT Committee faced some great challenges – for example, determining what the scope of their efforts should be – he emphasizes that its efforts at community engagement had exactly the effect that they had wished for: catalysis of disagreement, discussion and heated debate at all levels of the institution. In addition, the Committee itself in effect carried out an informal benchmarking process, by consulting discussion papers, policy

reports and other sources from peer institutions across North America. This diversity of opinion and approaches is, they hope, reflected in the Committee's final report: "we reported everywhere we could think of" says Guppy.

While ACCULT did not itself produce a strategic plan for learning technology use at UBC, Guppy feels that – in addition to simply raising awareness – it had two additional major effects on the university's strategic planning processes, as administrators continued to work to meet the learning and IT challenges posed by Trek 2000 and UBC's Academic Plan. It renewed the university's commitment to facilitating decentralized and faculty-based use of learning technologies, and it sowed the ground for the establishment of a number of new technology user groups across the campus. At the same time, UBC went on to established an Office of Learning Technology, "created to serve as a central facilitation and resource hub for faculty, professional staff and students that are using learning technology in support of pedagogical goals."

Finally, Guppy feels that the ACCULT process laid a critical foundation upon which the university's eStrategy project now rests: this dynamic and evolving strategic plan funds and develops projects in the areas of e-Learning, e-Research and e-Community which use technology to enhance UBC's core activities and resources: learning, research, community and people; it also supports projects in e-Business that use technology to transform administrative processes and ensure they support UBC's strategic goals. In addition, eStrategy coordinates the sharing of information and resources across the campus, promotes collaboration, communicates successes and innovations across the UBC community, and reports directly to the UBC Board of Governors to ensure accountability, innovation and cost-effectiveness.

UBC Web Sites

- The University of British Columbia: http://www.ubc.ca
- Trek 2000 – UBC's Strategic Vision: http://www.trek2000.ubc.ca/index.html
- UBC Distance Education & Technology: http://det.cstudies.ubc.ca
- Dr. Tony Bates Home Page: http://bates.cstudies.ubc.ca/bates.htm
- UBC IT Services: http://www.itservices.ubc.ca/
- UBC Centre for Teaching and Academic Growth: http://www.tag.ubc.ca/
- UBC Telestudios: http://www.telestudios.ubc.ca/
- UBC Library: http://www.library.ubc.ca
- UBC Office of Learning Technology: http://www.olt.ubc.ca/
- UBC eStrategy: http://www.estrategy.ubc.ca

UBC ACCULT Committee Publications

- *Discussion Paper on the Creative Uses of Learning Technologies* (2000): http://www.maple.ubc.ca/research/accult/index_accult.html
- *Report: Advancing the Creative Use of Learning Technology* (2002): http://www.maple.ubc.ca/research/accult/index_accult.html
- ACCULT Faculty Scenarios: http://www.maple.ubc.ca/research/accult/index_accult.html

What can be learned from this case study? UBC's visioning process in essence produced an 'environmental scan', clarifying for administrators both the diversity of current technology use in the institution, and the opinions and wishes of the UBC community. By benchmarking UBC's efforts at learning technology integration against those of other institutions, the Committee and senior administration gained a clearer picture of their own university's successes and failures. It is arguable that without having undertaken this

campus-wide accounting process, no effective strategic planning would be possible today.

Resources on Institutional Visioning

- Bates, A. W. (2000). "Visioning and Strategic Planning", in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp 44-55.
- Conway, K. (1998). "Designing Classrooms for the 21st Century", in D. Oblinger and S. Rush (Eds.), *The Future Compatible Classroom.* Bolton, MA: Anker.
- Fritz, R. (1989). *The Path of Least Resistance.* New York: Columbine.
- Noblitt, J. (1998). "Making Ends Meet: A Faculty Perspective on Computing and Scholarship", in D. Oblinger and S. Rush (Eds.), *The Future Compatible Classroom*. Bolton, MA: Anker.
- Senge, P. (1990). *The Fifth Discipline.* New York: Doubleday.

Best Practice 2: Strategic Planning for Learning Technology Integration

Bates (2000) explains that strong and detailed vision statements contribute directly to effective strategic planning, just as UBC's visioning process directly contributed to development of the UBC eStrategy. But developing and implementing a strategic plan for educational technology can be a complex process (Bruce, 1999; Dill, 1996; Ford, 1996). One size does not fit all, and all planning processes suffer from limitations. Even when plans are developed, they are sometimes poorly disseminated, arbitrarily changed, or simply ignored. Moreover, and as Bates (2000) argues, most successful strategies are *not* totally planned in advance, but rather, tend to emerge from patterns of small, individual decisions that can emanate from anywhere in an institution.

Some critics even argue that the world of technology moves too fast for long-term strategizing; that planning of this kind is too rigid, or is unsuitable for organizations such as universities and colleges where faculty autonomy is a central value; or that planning is a feature of industrial organizations, unsuitable for the post-industrial knowledge-based organization.

Nevertheless, Bates (2000) argues convincingly that some degree of planning for learning technologies is critical for successful learning technology integration into higher education, and we hope that this is also illustrated by case studies of successful learning technology integration in this collection. What is important, argues Bates, is that planning strategies must be emergent, iterative (non-rigid) processes that makes use of what has been learned from patterns of individual actions. Key features of a model strategic plan for technology integration include: that it fits within the wider institutional plan for teaching and learning; that it is detailed and concrete, with identifiable goals for action over a three to five year period; that it clearly identifies the range and needs of the students it intends to serve; that it aims to exploit the institution's strengths and minimize its weaknesses; that it considers the institution's competitive advantage(s) locally and globally; and

that it clearly defines the desired balance between face-to-face and technology-based teaching.

✓ *Case Study: Institutionalizing a Culture of Planning at the University of Central Florida*

The relatively young and rapidly growing University of Central Florida (UCF) was initially established as a technical university near Orlando, Florida in the late 1960s, with the goal of training scientists and engineers for the United States Space Industry, located nearby. As the institution fulfilled the demand for trained professionals in that field, it began to broaden its academic range beyond technical disciplines.

UCF's early and foundational sense of a clear identity and mission, and an emphasis on the use of technology have persisted in its highly planning-oriented culture, explains Dr. Joel Hartman, Vice Provost for Information Technologies and Resources. As demand for higher education boomed in the late 1980s and early 1990s, UCF initiated an active strategic planning process that has allowed it to keep pace with student demand, to make higher education available to more students remote from physical campuses, to integrate and leverage developments in learning technologies and to manage its staggering rate of growth with an eye always on learning outcomes and transformative pedagogy.

In 1995, UCF reorganized its information and technology units into the division of Information Technologies and Resources, and embarked on a series of major technology-enabled projects. In that same year, the university completed a new strategic planning cycle, allowing for the first time a synthesis of campus and IT panning. The new institutional plan, published in 1995, contained more than 60 explicit links between institutional goals and objectives and information technology. Indeed, plans for integrating technology into teaching and learning were so tightly woven into the institutional plan, Hartman explains, that a separate technology plan was not needed. The new technology-based

initiatives specified by the plan were supported by an institutional assessment strategy designed to "keep close to the users" and pay careful attention to the quantitative and qualitative impact of technology on UCF life (see p. 80).

UCF's initial venture into e-learning began as a distance learning initiative – with the objective of making credit-level education available to a new and growing demographic of students who did not have convenient access to campus-based education, especially working adults. New offerings of fully online courses (in the context of fully online programs) were also part of a strategy to decelerate physical growth on the main UCF campus in Orlando, while still accommodating students. In fall 2004, UCF expects to enroll more than 43,000 students, with projections for a student population approaching 58,000 students by 2010. To keep up with this rate of growth, the university must construct 8,000 square feet of new classroom space and hire more than 100 new faculty each year. Establishment of 21 remote attendance sites and an online learning initiative that enrolls nearly 9,000 students in online degree programs have also helped UCF manage this rapid rate of growth.

In parallel with early ventures into online learning (and the requisite development of technology infrastructure and faculty development to support it), institutional assessment quickly showed administrators that approximately 75% of online students were not true "distance" students, but were also registered in on-campus classes. These students, they discovered, were electing online courses primarily for their convenience as a way to help them manage work, family and scheduling demands.

Institutional planners subsequently conceived of a new blended model of "mixed-mode" instruction (courses that combine both online and *face-to-face instruction) that would continue to maximize learning flexibility for students, make more efficient use of scarce classroom space, and also improve learning outcomes, especially in large*

enrollment classes. While a typical traditional lecture course might involve an on-campus class meeting three times per week, a prototypical mixed-mode class meets one per week, with remaining collaborative coursework being completed online in a WebCT-based course environment. Hartman notes that this offers the physical campus a potential 66% "scheduling advantage," but he emphasizes that the driving motivation in the development of mixed-mode instruction was pedagogical. By skillfully combining face-to-face and online instruction, this instructional model has become a force for the transformation of teaching and learning at UCF, moving instruction away from a teacher-centred content-delivery model toward an "active student" learner-centric model.

While mixed-mode courses need careful design, and comprehensive faculty support and professional development, Hartman says it is well worth the investment. Ongoing institutional research at UCF (now published in peer-reviewed academic journals) has shown that while student withdrawal rates and satisfaction in online courses are similar to face-to-face courses, mixed mode instruction has consistently shown improved learning outcomes. Evidence of transformation can be found in the significant number of students and faculty engaging in some form of online learning, and the transference by faculty of pedagogical approaches learned in the online environment to their face-to-face courses. (During the 2003-2004 academic year, fully 60% of UCF's students enrolled in one or more online course, and the annual growth rate of online course activity has been increasing at a compound rate of 25% to 30% per year.)

UCF courses now employ technology in at least three modes: as fully online courses (online degree and graduate certificate programs), in the mixed-mode format, and through web-enhancement of predominantly face-to-face courses. Online learning has become so thoroughly embedded in UCF's culture of teaching and learning, says Hartman, that it is no longer possible for the Research Initiative in Teaching Effectiveness (RITE) group to undertake direct comparisons of

technology-based courses with purely "face to face" courses because so few of these latter remain.

With regard to ongoing strategic planning at UCF, Hartman points out that planning at UCF is neither "top-down" nor "bottom-up"; rather, it is both. His organization mediates a constant flow of information between the institutional 'strata', through briefings of senior administration, consultations with Deans, the creation of faculty development and feedback mechanisms, formal planning with Deans and other academic administrators, and through all-important ongoing assessment of student needs and learning outcomes. This is a planning strategy that harnesses the executive insight, decision-making experience and strategic expertise of senior management, with a sensitivity to and awareness of student and faculty wishes and needs. Says Hartman, "good planning must be 'of' the institution, not 'by' it; compartmentalized planning processes are surely destined to fail."

University of Central Florida Web Sites

- The University of Central Florida: http://www.ucf.edu
- UCF's Strategic Planning Web Site: http://www.spc.ucf.edu/
- UCF's Research Initiative for Teaching Effectiveness: http://pegasus.cc.ucf.edu/~rite/
- UCF's Online Course Gallery: http://reach.ucf.edu/vaults/account_list.html

✓ *Case Study: Planning for a Culture of Customer Service at the University of Phoenix*

It may come as a surprise to many people to learn that the University of Phoenix (UoP) – possibly the best known "online university" in North America, and the United States' largest private accredited university – was originally established in 1976 as an 'on-ground' institution with no

distributed learning capacity at all. Nevertheless, even in its pre-Internet stage as a non-traditional degree completion institution for working adults and mature students, UoP came close to being what Bates (2000) calls a 'post-Fordist' or post-industrial university (see description, p. 12). UoP's experiments with online learning only began in 1989, when the university's founder, Dr. John Sperling – a Cambridge-educated economist and professor-turned-entrepreneur – wanted to be able to reach students who were remote from the on-ground campuses. An 'online campus' was established as "just another UoP campus" offering the same courses as the physical campuses. For some years it remained a small-to-medium campus, and early online courses simply used bulletin boards to allow text-based 'usenet'-style discussions. Through the 1990s, however, communications and learning technologies continued to evolve, offering new pedagogically effective and cost-effective possibilities for online learning, and UoP quickly developed a business plan designed to grow the online campus. As of 2004, and while the university now has physical campuses in 35-40 US states, the online campus is experiencing dramatic growth in enrollments of 60-70% per year. Online students now represent almost half of the university's total student body of 200,000 students, and online associate faculty make up half of UoP's 17,000 faculty members.

Russ Paden, Vice President of Academic Services for the University of Phoenix, and Chief Academic Officer of the Online Campus, credits three major planning elements with UoP's phenomenal growth in the last decade: the conscious development of a new and non-traditional university culture, a focus on customer service, and a future-oriented strategic business plan for managing growth.

The University of Phoenix is, first and foremost, a university, Paden emphasizes…but, as a subsidiary of the Apollo Group Inc., it is a university that "thinks like a business". Moreover, the opportunity to develop a brand new and innovative multi-level institutional culture from scratch, rather than having to negotiate and manage the cultural change of a pre-existing traditional institution, offered UoP a great advantage

that most older institutions do not have. At the client (learner) level, Paden explains, UoP continues to evolve and grow by responding to the educational needs and demands of the "new demographic" of working adult learners – individuals who expect their interactions with their university to be "as smooth and service-oriented as their interactions with their bank".

UoP's large pool of predominantly part-time 'practitioner' faculty effectively function as a bridge with the professional world of businesses and industries, allowing course and program curriculum to be created, updated or removed "on a dime" as the work world changes. Faculty members are selected both for their teaching expertise and for their professional backgrounds: as practitioners in the professional areas relevant to UoP's applied programs – business, management, nursing, teaching, information technology and related fields – they bring an unprecedented level of hands-on know-how into professional courses and programs.

Tenure, on the other hand, is not part of the UoP culture – a feature that has obvious financial and organizational advantages for the university, but which also offers professional advantages to faculty members themselves. This institutional culture selects and attracts a new generation of instructors – individuals who often also teach at other online or on-ground institutions, or who have the possibility of pursuing a non-academic career in parallel to their university teaching. With more than a thousand accelerated online courses beginning every week, UoP teaching loads are flexible and can be shaped to fit variable career demands. In addition, all faculty – who must first successfully complete a comprehensive training and mentorship phase, have access to ongoing professional development in a range of areas relating to university teaching (see p. 68). And while UoP does not consider itself to be a "research institution" and offers no research-based graduate degrees, a recent faculty survey found that many faculty members are involved in research, either in their professional careers or in other universities to which they may be cross-appointed.

Regarding course curriculum, Russ Paden explains that UoP is a believer in, and advocate of, academic freedom, but within that framework, the university uses a system of centralized curriculum to ensure that learning outcomes and course content are consistent across the UoP system. Through what he describes as an 'unbundled faculty model', and in response to changing student demographics and professional standards, teams of faculty develop or revise courses and curriculum in a cooperative and collaborative process.

Finally, the non-traditional UoP also facilitates a careful strategic and business planning approach to managing UoP's current explosive growth. As Paden explains, in the context of such rapid growth, no resting on laurels is possible, and management must always be thinking ahead, monitoring new developments in technology, the changing workforce conditions and emerging student needs. Rather than promoting senior academics into management positions, UoP has the luxury of recruiting and appointing senior administrators with experience and expertise in financial planning and organizational management (although administrators responsible for academic issues, such as Deans are of course recruited for the more typical academic background and expertise).

Creation of a new business-style education culture has not happened without challenges (Sperling, 2000) – Paden readily admits that language describing students as 'customers' still makes some traditional academic faculty cringe; the US higher education accreditation system at one point balked at the idea of accrediting a for-profit institution. Indeed, UoP has broken new ground within North American higher education that other institutions are now benefiting from. But while some e-universities have not lasted long, UoP's conscious construction of a comprehensive new institutional culture – one foot in the academic world, one foot in the corporate world – and focus on customer-oriented service is sustaining its continued growth.

University of Phoenix Web Sites

- The University of Phoenix: http://www.phoenix.edu
- The University of Phoenix Online: http://onl.uophx.edu/
- Apollo Group, Inc.: http://www.apollogrp.com

University of Phoenix Publications

- Sperling, J. (2000). *Rebel With a Cause: The Entrepreneur Who Created the University of Phoenix and the For-Profit Revolution in Higher Education.* New York: Wiley.

✓ *Case Study: A Bottom-up Strategic Planning Approach at the University of Waterloo, Canada*

Founded in 1957, and long regarded as one of the most innovative universities in the country, the University of Waterloo is a midsize Canadian university, with the largest cooperative education program in North America. At any given time, roughly 60% of Waterloo's 18,000 full-time students are on cooperative work placements.

Waterloo's strategic planning approach to the integration of learning technologies has sought to leverage its strengths as an innovator in learning and a leader in the uses of technology, but at the same time takes into account the reality of Waterloo's highly decentralized institutional culture. Centralized initiatives have historically not been strong at Waterloo, explains Dr. Tom Carey, Associate Vice-President for Learning Resources and Innovation, and former Director of the university's strategic innovation unit, the Centre for Learning and Teaching Through Technology, or LT3. Rather than attempting to devise or impose a top-down system-wide model for learning technology implementation, LT3 was established in 1999 with a mandate to work with, encourage and support innovative faculty scattered across the

campus, as they began to explore ways of using technology to support learning goals.

One unique strategic decision made by LT3 was to 'skip' a developmental stage that many institutions have passed through – the stage at which the institution adopts a system-wide basic courseware management system that many faculty members may then use in simple ways to distribute course materials or manage course grades. Instead, Waterloo elected to license the source code of a lesser known open enterprise courseware management system, ANGEL, brand it, and develop on top of it an innovative system that provides enhanced teaching and learning support and allows more sophisticated instructional design possibilities. Carey notes that the additional tools built by the innovation team have allowed innovator faculty to get around the design limitations imposed by some better known courseware systems and encourage a learning-centred focus for faculty activity.

Now into the next stage of learning technology integration, Carey does acknowledge that a certain amount of 'backfilling' is now needed, in order to disseminate best practices across the campus, beyond the early adopter faculty. In a cross-campus partnership with Waterloo's Chief Information Officer and Information Systems and Technology, basic courseware management systems and support are now being made available to a broader faculty audience, with a team of staff from the LT3 Centre as faculty liaisons. These individuals are hired in collaboration with individual faculties, and have a mandate to continue to encourage innovations and to promote sharing of knowledge and best practices throughout the campus. The ANGEL enterprise course management system extends a commercial product to incorporate some of the innovations pioneered in LT3; meanwhile, and in parallel, the LT3 Centre operates an "Exploration" version of the enterprise course management system, to prototype a next generation of instructional innovations.

Significantly, Carey highlights the vision of Waterloo's President as being critical in facilitating learning technology innovation at Waterloo. In addition, he points out that campus-wide buy-in to the innovation strategy has been assisted by the ways in which it has harnessed the institution's own culture of and reputation for innovation; by 2002, the credibility of innovation with learning technologies was firmly established and woven into Waterloo's innovation culture with the creation of Carey's AVP role in Learning Resources and Innovation.

University of Waterloo Web Sites

- The University of Waterloo: http://www.uwaterloo.ca
- LT3: http://lt3.uwaterloo.ca
- Dr. Tom Carey's home page: http://avp-lri.uwaterloo.ca
- ANGEL Open Enterprise Course Management System, from CyberLearningLabs: http://cyberlearninglabs.com/

What can be learned from these case studies? While the University of Phoenix has certain luxuries that older research universities do not, its demonstrable success (academically *and* financially) is arguably the result of careful strategic planning and underscores the ways that institutional culture can facilitate or limit change. UoP clearly identified its target audience, developed an institutional culture that allowed market responsiveness, minimized its financial burden through a strategic decision to hire part-time associate faculty, and guaranteed a standardized, accredited learning experience to its client-students through centralized curriculum. Comprehensive support and training of faculty (see p. 68) assists with retention and continuity, and sound business planning and monitoring means that expansion relies on educated decision-making.

In a very different context, senior administrators at the University of Waterloo instead chose to strategically support early-adopter faculty members in technologically sophisticated ventures into teaching with

technology – a strategy more consistent with a campus culture of innovation. This case study also highlights the critical importance of institutional leadership in aligning institutional strategies with community vision.

Meanwhile, UCF's strategic plan has allowed that institution to maintain and even improve student learning outcomes through careful integration of learning technologies, at the same time maximizing efficiency of classroom space use and allowing sustainable institutional growth.

Although each of these three institutions has adopted learning technologies in different ways, and with somewhat different objectives, it is beyond question that none would have achieved their current level of success through piecemeal technology adoption.

Resources on Strategic Planning for Technology

- Bates, A. W. (2000). "Limitations and Advantages of the Strategic Planning Approach" & "The Limitations of Planning", in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp. 55-58; 210-212.
- Birnbaum, R. (2000). *Management Fads in Higher Education*. San Francisco: Jossey-Bass.
- Bruce, R. (1999). *Educational Technology Planning: A Framework*. British Columbia: Kwantlen University College.
- Dill, D. D. (1996). Academic Planning and Organizational Design: Lessons from Leading American Universities. *Higher Education Quarterly*, 50(1), 35-53.
- Dolence, M. G. (2004). The Curriculum-Centred Strategic Planning Model. *ECAR Research Bulletin*, 10. http://www.educause.edu/asp/doclib/abstract.asp?ID=ERB0410
- Educause, National Learning Infrastructure Initiative. (2004). *Strategic Planning and Alignment for Institutional Transformation*. http://www.educause.edu/nlii/keythemes/alignment.asp

- Levy, S. (2003). Six Factors to Consider When Planning Online Distance Learning Programs in Higher Education. *Online Journal of Distance Learning Administration*, 6(1). http://www.westga.edu/~distance/ojdla/spring61/levy61.htm
- Moran, C. (1998). Strategic Information Technology Planning in Higher Education, in D. Oblinger and S. Rush (Eds.), *The Future Compatible Classroom.* Bolton, MA: Anker.
- Noblitt, J. S. (1997). Top-down Meets Bottom-up. *Educom Review*, 32 (3), 38-43.
- Rowley, D. J., Lujan, H. D. & Dolence, M. G. (1998). Achieving Strategic Transformation, in *Strategic Choices for the Academy. How Lifelong Learning Will Re-Create Higher Education*. San Francisco: Jossey-Bass, pp. 261-279.
- Stockley, B. D. (2002). *Strategic Planning, Infrastructure and Professional Development for Technological Innovation in Canadian Post-secondary Education*. PhD Thesis, Simon Fraser University, pp. 19-23. Available from the National Library of Canada at http://www.collectionscanada.ca/thesescanada/
- TechnoPlanning: http://contract.kent.edu/change/articles/julaug96.html

  A searchable collection of 120 resources related to technology planning.

Best Practice 3: Resource Reallocation for Sustainable Integration of Learning Technologies

Funding decisions are the most important strategy available for university and college leaders who want to move their institution into technology-based teaching and learning. In traditional and established institutions, funding arrangements are often based on historical practices that may no longer reflect current ways of teaching and learning. As already noted, short-term and external funding options for funding learning technology initiatives have significant disadvantages and can be a real challenge to sustainability. Bates (2000) argues that university and college leaders must look very closely at how well current financial strategy and decision-making approaches match the rapidly changing institutional environment and teaching and learning goals.

✓ *Case Study: A Strategic Business Planning Approach to New Program Development at the University of Sydney*

The University of Sydney is exploring an approach to "Innovation and Technology" that takes into account the culture of this large multi-campus university, the realities of the Australian higher education funding system, and the changing educational needs and demands of emerging 'client groups'. International education is now Australia's third largest service export industry, with rapid growth in online delivery – particularly at the postgraduate level and in professional development programs. Anne Forster, Director of the university's "Innovation and Technology in Education Ventures" unit, iTEV, explains however, that as Australia's leading research university, the University of Sydney's strategy aims to balance international and commercial growth opportunities to enhance its established academic and research culture. The University of Sydney – like UBC, is a devolved, dispersed research-intensive university that that generates its revenue from a diversity of sources – and faces significant challenges: the need to invest

strategically, the need to support faculty through professional development, and the need to minimize redundancy in program and project development, while retaining a faculty-driven quality-assured model of program development that motivates departmental and faculty buy-in.

At the same time, Forster explains that an increasing awareness across the University of Sydney's nineteen faculties of new educational demands from the changing community of learners has resulted in recognition of the need for more flexible and interdisciplinary models of education that go beyond the face-to-face classroom model. The iTEV project was established within the Vice-Chancellor's Special Projects Unit to demonstrate critical success factors in the commercialization of flexible postgraduate programs. The focus on innovation is to encourage creativity, not only in delivery to new markets, but also in the design of the learning environments and collaborations across disciplines. Foundational to this change project is a carefully crafted business assessment model for investment in development of new programs that are multidisciplinary, innovative, relevant, and that have the potential to grow and to meet the needs of emerging student markets. Forster's job is to work with Deans to identify new opportunities, and to put in place support systems that enable a business approach. Initial funding for venture identification and investment comes from a strategic development fund managed by the Office of the Vice-Chancellor. Typically, funding is managed as a repayable loan reported against a business case, but has also been allocated for initial business scoping and market analysis. Preparation is thorough, to determine whether a proposed program has the potential to be self-sustaining in the future.

Proposals with business cases that indicate student demand and potential for future sustainability receive matched investments from Faculties and from iTEV, who can then continue assisting with business planning, marketing, communications planning, digital rights management, project management and coordination with other support

units that are part of the existing university infrastructure. Ultimately, once successfully launched, and programs have grown sufficiently to meet their costs, the original strategic investments will be ploughed back into the Strategic Development Fund, creating a sustainable funding feedback loop. Forster notes that iTEV has so far facilitated fourteen business cases across the University of Sydney; these projects are in various stages of development as of early 2004.

Forster's approach is akin to regarding new programs as small businesses. Her team includes people with e-learning, business consulting and commercial business planning experience, together with external consultants in project management and international market research. They assist with the preparation of preliminary and final business plans in conjunction with the academic team, as well as with project review. The planning and review documents are much more commercial in flavour than is usual within a university.

Both the plans and the reviews are as quantitative as possible, requiring a financial reporting system that is largely foreign to university administration at the course level. Ultimately, the "business planning" approach will enable calculation of the return on investment from new programs to each of the investors: the University, Faculty and School. This will facilitate comparison of "returns" from different programs, and even an interesting comparison with other commercial investments of similar risk.

The commercial focus of the iTEV project is easily interpreted as the University 'Dancing with the devil' and gaining legitimacy is a constant challenge. Lessons learned from the numerous ventures in development are now being analyzed to identify issues of common concern. Moving from an atomistic approach, where programs are developed in isolation and struggle to find sufficient resources for growth, iTEV has identified a shared services model based on the best practices of mature programs. It is clear that a project-based approach with expertise drawn from a mix of content, instructional design, education technology and

business specialists, working closely and effectively together, will lead to well managed, high growth programs.

University of Sydney Web Sites

- University of Sydney: http://www.usyd.edu.au
- Innovation & Technology in Education Ventures (iTEV): http://www.itev.usyd.edu.au/
- Program Initiatives Under Development at the University of Sydney: http://www.itev.usyd.edu.au/info/initiatives/

University of Sydney Publications

- Forster, A. (2002). Discussion Paper: Online Teaching and Learning at the University of Sydney. *Synergy*, 18. http://www.usyd.edu.au/su/ctl/Synergy/Synergy18/forster.htm

What can be learned from this case study? Reallocation of central funding is a critical strategy for long-term sustainability of technology-based teaching. This reallocation may be made at one or more levels, from governmental to institutional to departmental, but must be undertaken with an eye to cost effectiveness, economies of scale and sustainability. The University of Sydney's strategy is an example of effective funding re-allocation at the institutional level. It combines careful (almost conservative) business planning for sustainability with educational and technological innovation, without assailing the institution's cultural tenets of academic freedom and scholarship. Most importantly, the university has set aside central funding for technology initiatives in a fund which nevertheless is not at risk of becoming a 'black hole' because grants are eventually repaid when projects become self-sustaining – and therefore should not burden the financial status of the university as a whole. (Bates (2000) offers examples of funding reallocation strategies at other levels).

A final note: a continuing challenge to strategic planning for funding technology-based teaching is the challenge of costing e-learning. References below offer suggestions for developing costing models, and discuss the challenges of calculating true costs.

Resources on Resource Allocation for Learning Technology

- Bates, A. W. (2000). "Funding Strategies", in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp. 153-163.
- Educause. (2003). *Funding Information Technology*. Educause Executive Briefing #2. Available at: http://www.educause.edu/asp/doclib/abstract.asp?ID=PUB4002

Resources on Costing e-Learning

- Bartolic, S. & Bates A. W. (1999). Investing in online learning: Potential benefits and limitations. *Canadian Journal of Communication,* 24, 349-366.
- Bates, A. W. (2000). "Calculating the Costs of Teaching with Technology", in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp. 122-152
- Middaugh, M. (1999). *The Delaware Study of Instructional Costs and Productivity: A Consortial Approach to Assessing Instructional Expenditures*. http://www.udel.edu/IR/cost/consortial.html
- Qayyum, A. (2003). *Comparing apples and apple™ computers: Issues in costing e-learning and face-to-face teaching.* http://www.maple.ubc.ca/publications/index.html
- WCET. (2004). *Technology Costing Methodology Project*. Western Cooperative for Educational Telecommunications, Boulder, Colorado. http://wcet.info/projects/tcm/

• Winston, G. (2000). A guide to measuring college costs. *New Directions for Institutional Research*, 106, 31-46.

Best Practice 4: Development of Collaborations and Partnerships

Learning technologies and online learning expand teaching and learning horizons for institutions, faculty and students; but development and maintenance of online learning projects is not cheap. In addition, online learning is increasing the global competition for students and student dollars. Institutional competitors are no longer simply other colleges and universities in the region, but include institutions all over the world. Increasingly, colleges and universities are adopting collaborative and partnering strategies that reduce the risk of investment in technology, share the costs of new developments, promote low-cost or free exchange materials and expertise, and/or reach wider student audiences while avoiding unnecessary course of program duplication that would reduce cost-effective for competing institutions.

✓ *Case Study: Inter-institutional Partnering by the University of Waterloo*

At the University of Waterloo, Dr. Tom Carey explains that in addition to leading LT3 – Waterloo's strategic innovation centre (see p. 35) – he was also given responsibility in the late 1990s for positioning Waterloo as a leader within various collaborative opportunities relating to learning technologies. The premise is simple, he clarifies: to achieve an effective return on investment in high quality highly interactive instruction using learning technologies, it is critical to amortize costs over as large a number of users as possible. While larger institutions like the UK's Open University, or the University of Phoenix can do this internally, smaller institutions need to share expenses with partner institutions.

Waterloo's partnerships are diverse in size and scope, and address a range of different possibilities for inter-institutional collaboration. An early affiliation was with the Canada-wide TeleLearning Network of

Centres of Excellence (TL-NCE) (1996-2002): a federally funded research consortium formed to advance knowledge, technology and practice in networked collaborative learning. More recently, as a partner in COHERE – Canada's Collaboration for Online Higher Education and Research – Waterloo is participating in a five-university project to develop an online program in Canadian Studies. At a different level of "granularity", Waterloo is affiliated with MERLOT – the Multimedia Educational resource for Learning and Online Teaching – in the development of cross-institutional learning objects: online teaching materials that can be shared by faculty in participating universities and colleges. Similarly, Waterloo was instrumental in initiating the Ontario-wide consortium CLOE – Co-operative Learning Object Exchange – to enable cross-institutional sharing of learning objects, teaching materials, animations and related high quality multimedia materials between Ontario-based institutions.

Establishing new partnerships, and affiliating with existing consortia is a significant element in Waterloo's strategic plan for learning technology integration.

University of Waterloo Web Sites

- The University of Waterloo: http://www.uwaterloo.ca
- LT3: http://lt3.uwaterloo.ca
- Dr. Tom Carey's home page: http://avp-lri.uwaterloo.ca
- University of Waterloo Strategic Partnerships: http://lt3.uwaterloo.ca/Partnerships/

✓ *Case Study: System-Wide Support for Integration of Learning Technologies by the California Virtual Campus Initiative*

Since 1999, the California Virtual Campus (CVC) initiative has provided technical support on web-based distance education to the entire

California Community College System: a network that now includes 109 autonomous community colleges in more that 70 districts. CVC currently operates as a group of four regional centres and a statewide Professional Development Centre that provide a range of services to this rather decentralized network of colleges.

Originally established as the 'California Virtual University program' by the State Governor in 1998, the CVC currently has central State funding – in fact, CVC is a line item in the California State Budget. Consistent with Bates' (2000) caution that government funding for technology initiatives can often be affected by changing government priorities, Director of the PDC, Joe Georges, and Training Director Judith Norton describe how CVC has had to evolve and adapt in the face of recent State Budget cuts. Nevertheless, through implementation of a series of grant-funded projects, this centralized group of service units continues to address common needs relating to development and maintenance of online learning across the community college system, offering small institutions access to skills, technology and services that would otherwise be out of reach. Interestingly, while CVC itself is feeling the impact of budget cuts, Georges and Norton explain that CVC services are actually assisting in redistributing student demand for courses and offering services that help colleges themselves weather their own budget cuts.

By 2003, the PDC and regional centres had trained over 3,700 community college faculty, staff and administrators through workshops on topics ranging from the basic use of online courseware applications, to broader issues such as student services and support; "train the trainer" workshops have assisted in disseminating skills and knowledge within individual colleges Latterly, the PDC has been focussing their energies on developing online just-in-time training "courselets" for faculty and staff to continue professional development, while other CVC regional centres have concentrated on face-to-face and online training opportunities.

CVC also promotes dissemination of best practices in online course design and online pedagogy. The program has hosted annual international conferences on issues relating to learning technologies and online learning, and has also coordinated conferences on student services issues in distance learning. A recent and successful two-week virtual conference, for example, attracted more than 500 participants, who interacted via the Web and a conference call system. Different CVC regional centres host online resources and databases accessible by staff and faculty system-wide, and offer small course development grants to faculty as incentives for continued innovation and experimentation with learning technologies; an annual "best online teaching website award" competition stimulates further efforts at course development and offers innovative faculty small financial awards and media visibility for their work. CVC also coordinates the California Community College system's participation in the MERLOT project, networking college faculty and staff with international colleagues and a resource of internationally developed high quality learning objects.

A major regional economy of scale is achieved through CVC's hosting of online courses. While some colleges choose to host their own online courses, all may take advantage of free hosting of WebCT- or BlackBoard-based courses, and free support for faculty using course management software through the hosting program. Rather than purchasing expensive standard licenses for course management software, colleges may purchase licenses at discounted rates from through CVC and the Foundation for California Community colleges. The 2002-2003 Legislative Progress Report notes that as of 2003, CVC was hosting almost 4,000 online courses and more than 52,000 student enrollments.

One of CVC's most significant roles – and a responsibility that it inherited from the California Virtual University project – is ongoing development and maintenance of an annual catalogue of distance and

online courses offered by community colleges and most universities throughout the State. Now available online, the catalogue offers information on more than 4,900 courses from accredited institutions, both public and private, in the State of California, and is currently receiving more than 800 hits a day from students seeking online courses and/or courses not available through their home institution. Norton points out that statewide budget cuts have also forced colleges to cut course offerings, even though demand is actually rising; whereas once students showed more loyalty to their home institution, they are now "shopping around" more, in search of preferred courses and timetables. The catalogue has therefore become a critical tool to allow students themselves to optimize their access to education in challenging financial times.

California Virtual Campus Web Sites

- California Virtual Campus: http://www.cvc.edu/
- CVC Professional Development Centre: http://pdc.cvc.edu/common/
- CVC Legislative progress report 2002-2003: http://www.cccco.edu/divisions/esed/aa_ir/disted/attachments/2003_CVU_Legislative_Progress_Report.pdf

Course Management Systems Web Sites

- WebCT: http://www.webct.com/
- BlackBoard: http://www.blackboard.com/

Consortium Web Site

- MERLOT (Multimedia Educational Resource for Learning and Online Teaching: http://www.merlot.org/Home.po

✓ *Case Study: Public-Private Partnerships at the Open University of Catalunya (UOC), Barcelona, Spain*

Untrammelled by an established institutional culture, the relatively new Open University of Catalunya (UOC) has established itself via a unique public-private partnership structure, with the intention of harnessing market forces to support public and culturally-relevant higher education. UOC is a regional, Catalan university serving Catalan students in the Catalan language (and also in Spanish since 2000). It was created by the Catalonian government to maintain and strengthen cultural identity within an increasingly globalized world. At the same time as serving regional needs, it also aims to exploit the potential of the Internet for global reach and influence. UOC has very strong support from all political parties in the Catalonian Government (Generalitat). Founded in 1995 UOC now boasts 33,000 students. It is highly innovative in its business structure, its organization, its research focus on the information and knowledge society, its programming (especially its doctoral program), and its use of technology.

UOC is another good example of a post-Fordist or post-industrial organization (see p. 12). As an institution, its culture reflects a collection of different ideologies and value systems within an overall unified structure: its activities are influenced by academic and commercial values, technology-driven and student focussed perspectives, globalization and regionalism. Tensions between values are mediated by strong leadership, regional pride, and a focus on being an Internet-based organization.

An important feature of UOC's organization is its public/private structure, and disaggregation into 'companies'. There is an overall 'holding' company, owned jointly by the Catalan Government and *by a Trust of Members (including a regional Savings Bank, the Chamber of Commerce, and several local foundations), called the Open University Foundation (FUOC). The Open University of Catalonia is a wholly owned component of the Foundation. In addition the Foundation wholly or*

partly owns a number of private companies, as follows (the % of FUOC ownership is shown after the name of the company).

- *Ensenyament Obert (pre-university training for business): 50%*
- *Ediuoc (Internet publishing/Web course production): 100%*
- *Eurecamedia (digital/paper production company): 70%*
- *Gestion del Concimiento (knowledge management): 66%*
- *Graduado Multimedia a Distancia (multimedia degree): 50% - the other 50% is owned by Universitat Politècnica de Barcelona)*
- *Planeta UOC (services to students outside Catalonia): 100%*
- *Xarxa Virtual de Consum (online sales of materials): 2%*

Some of these companies sell 'fixed price' services to OUC, and all have a mandate to market services to other organizations and individuals. These companies are all expected to contribute to the overall revenues of the Foundation, through profits or profit sharing. At time of writing, all of the companies are breaking even, financially, and are projected to generate sustaining revenue for UOC in the future.

UOC Web Site

- Universidad Oberta de Catalunya (Open University of Catalunya): http://www.uoc.edu/

What can be learned from these case studies? Each of the collaborative strategies described has allowed the institution to more cost-effectively finance the integration of online or technology-supported teaching and learning, in the context of very different local and institutional cultures, and with somewhat different goals. For the University of Waterloo, a significant goal in participating in institutional consortia is maximizing technological innovation within the framework of a research-based institution committed to faculty autonomy and academic freedom. The California Virtual Campus initiative has dramatically increased access to higher education for learners in that State. In Catalunya, UOC's novel public-private structure is harnessing

the power of a global market in the service of enriching and strengthening local education and culture.

Bates (2000) notes, however, that partnerships and collaborations also come with risks and challenges. Katz (2003) offers a detailed analysis of different kinds of institutional collaborations and partnerships, and offers a step-by-step "E-Learning Partnership Roadmap".

Resources on Partnerships and Collaborations

- Bates, A. W. (2000). "Developing Partnerships or Consortia", in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp. 163-180.
- Katz, R. N. (2003). Selecting Models and External Partners for E-Learning Initiatives. *ECAR Research Bulletin*, Vol. 2003, (3). http://www.educause.edu/ecar/research/research.asp
- WCET. (2003). *Distance Learning Networks and Partnerships.* http://www.wcet.info/resources/ElectronicResources/distancelearningnetworks.asp

Best Practice 5: Putting in Place the Physical and Technological Infrastructure

'Infrastructure' for teaching and learning with technology in the first instance includes desktop or laptop computers and mainframes or servers that link them; it also includes the physical network (cables and wires, fiber and Ethernet) that connect them, operating systems and software, course management systems, routers, telecommunications links, videoconferencing equipment and networks, and Internet access. Importantly, Bates (2000) also touches on a second critical element of infrastructure: the physical space itself, including teaching and recreational space, and other campus facilities. In addition to 'technology', development of an effective campus infrastructure must involving rethinking campus spaces, and especially teaching spaces, rather than attempting to shoehorn new learning technologies (and the associated new pedagogical practices) into spaces designed to support more traditional forms of teaching and learning.

As might be expected, there are multiple challenges to transformation of infrastructure, not least the financial: in 2000, Bates estimated that it might cost $4-5 million Canadian annually to maintain its technological infrastructure. While this reality makes the need for budgetary reallocation of funds (see p. 10) even more important, Noblitt (1997) has emphasized that in order to reassure faculty and the campus community, it is important that the funding of technology and infrastructure development not be seen to be diverting funds from traditional educational endeavours. A further challenge is often that many faculty and staff lack computer skills, and instructional staff may have no experience of technology-mediated teaching and learning, making faculty training and support (p. 10, p. 63) and development of an effective 'human' support infrastructure (p. 10, p. 72) just as important as the development of technological infrastructure.

A final challenge to infrastructure-building is the reality that college and university leaders with little or no experience of learning technologies often find themselves in the position of having to make choices about technology

and course management platforms, and must also develop strategic plans for technology infrastructure that will keep pace with the rapid pace of technological change.

While simple acquisition of technology has often been assumed to be an end in itself, then, Bates (1997) highlights the complex realities of selecting and maintaining technology and designing or redesigning physical spaces for new modes of teaching and learning. Infrastructure, he argues, it should never be allowed to lead the institution's teaching vision and strategy, but should, rather, be driven by it.

✓ *Case Study: Strategic Planning of Technology-Friendly Learning Space at the University of Central Florida*

As a relatively new university and a rapidly growing institution, the University of Central Florida (UCF) has a distinct advantage in its ongoing strategic planning for technology and infrastructure to support technology-based teaching and learning. Dr. Joel Hartman, Vice Provost for Information Technologies and Resources explains that at the same time that his institution began introducing technology into pedagogy in the mid-1990s, the institution undertook a major initiative to equip all university classrooms with full multimedia presentation facilities.

By now, nearly 80% of teaching spaces have a standard university-designed multimedia presentation package that includes a networked computer, high-speed Internet connection, DVD player and high-resolution video projection, and sound system. All multimedia classrooms have a similar design and layout, making it easy for faculty to move from classroom to classroom as needed. Without this parallel effort to advance and upgrade university infrastructure, explains Hartman, UCF's extensive blended learning model (see p. 28) would not have developed so rapidly or become nearly as widespread.

While one strand of infrastructure development has been the 'upgrading' of existing classroom facilities, UCF's core strategic

infrastructure plan has also been focussed on designing the infrastructure of new learning spaces to support the new modes of technology-enriched instruction. Since the mid-1990s, UCF's information technology facilities planning group has routinely consulted with the university's facilities planners on the design of new buildings, and in particular of teaching space. The design philosophy is intended to make classrooms "transparent to information" (as opposed to the "closed box" classroom model) and provide a window from each classroom to the outside world through, video, audio, and data communications. This concept extends far beyond decisions about hardware and software, and also includes space design, layout and lighting. Multimedia console designs have been refined over the years based on faculty input to maximize ease of use. Certain classrooms have been designed with new layouts to support a team-based collaborative learning model – a design that has proved so popular that demand now outstrips supply. A central Instructional Resources unit, based in a new high-tech classroom building, provides university-wide support for multimedia classrooms. Located in the same building is the Faculty Centre for Teaching and Learning, which works with faculty to develop new instructional methods suited to the collaborative classrooms.

Hartman notes that the classroom infrastructure projects have effectively 'broken' the old costing model for construction of teaching spaces, and agrees that funding such intensive technological development is an ongoing challenge. But demand for and acceptance of technology is so great, he explains, that building by building, departments and faculties are continuing to find the necessary dollars, through a mixture of central construction funding and special fundraising. The ongoing challenge will be to keep pace with new developments in multimedia and technology, while continuing to build out the campus.

University of Central Florida Web Sites

- The University of Central Florida: http://www.ucf.edu
- UCF's Strategic Planning Web Site: http://www.spc.ucf.edu/
- UCF's Office of Instructional Resources (ITV): http://www.oir.ucf.edu/ITV.asp
- UCF's Faculty Center for Teaching and Learning: http://www.fctl.ucf.edu/

✓ *Case Study: Strategic Infrastructure Choices Promoting Pedagogical Transformation at the University of Queensland*

At the University of Queensland (UQ) in Brisbane, Australia, infrastructure development has been strategically used to kick-start new ventures in teaching and learning with technology, in the wake of a detailed and consultative campus-wide visioning process. The University of Queensland is one of Australia's older universities, a research-based institution that regularly ranks in the top three national universities for annual research funding. Denise Chalmers, Director of UQ's Teaching and Educational Development Institute (TEDI) explains that a fortunate synchronicity has allowed new infrastructure development to go hand in hand with strategic planning decisions. In 1997, the university's Academic Board concluded a lengthy and iterative consultation process with the campus community to develop a new vision for teaching and learning. UQ is a university that values its traditions, she explains, and feedback from the university community very strongly highlighted that the university "wanted to be primarily an on-campus experience", that would nevertheless offer resource-rich courses and programs that would take advantage of learning technologies. The output from the consultation process was the university's first Flexible Learning Policy – a document that identified key directions and funding strategies for integrating technology into teaching and learning, guided by the university community's vision and strategy for teaching.

In parallel, the university had already contributed funding and political support for the development of a new satellite UQ campus in the city of Ipswich, some 45km away from the main campus – a decision that did not initially attract much enthusiasm from faculty members at the main campus. The timing of this development, however, and the direct involvement of TEDI's Director in planning the design, management and program offerings of this campus turned the new Ipswich campus into a crucible for new, innovative and technology-rich program adventures in teaching and learning.

With a centrally managed planning structure, the Ipswich Committee made key strategic decisions designed to develop this campus as a dynamic testing ground for new modes of teaching. It was decided that the campus would not compete with the main campus by offering identical programs, but would instead aim to be distinctly different: to grow innovative programs that would be high-tech and well-resourced, to attract a different student demographic. Deliberate decisions were made with regard to design of teaching and learning space, so that although some faculty members would come from the main campus to teach, they would be "coming to Ipswich to teach differently". Teaching space offers no traditional lecture theatres for example, and no video-conferencing facilities, nor does it simply feature banks of computer labs. Instead, Chalmers explains, the Ipswich Committee focussed on development of "hybrid" teaching space – multifunctional non-square rooms that feature movable seminar furniture, with networked computers at the perimeter to facilitate interactive student-centred collaborative learning, as well as multimedia facilities to allow faculty members to demonstrate ideas, make presentations or introduce class content. Some teaching space, in addition, has been custom-designed to suit new programs: a new interdisciplinary "Information Environments" program, for example, takes place in state-of-the-art studio space that facilitates student work in graphic design, architectural design and information technology. Importantly, the Ipswich Campus led the way for the university in adoption of a common

course management system – WebCT – and TEDI's graphic and interface designers have customized and augmented this platform so that it connects seamlessly with program print materials. Now into its fourth year, the Ipswich campus boasts 3,000 students and some 150 academic staff, and many more lecturers come and go from the main campus. It is self-sustaining, and has truly developed its "own culture" says Chalmers. TEDI has consistently offered comprehensive assistance and project management for faculty in developing new technology-supported programming, and in addition undertook an extensive evaluation process through the early years of Ipswich's development to investigate and record student and faculty experiences of and satisfaction with the learning spaces and integration of technology into their learning. Chalmers explains that the Ipswich Committee deliberately designed space and technology infrastructure in a way that could be changed, because they "knew they wouldn't get it right first time". Student and faculty feedback has thus continued to feed into planning for faculty training and development, and into space design plans.

Critically, and as they hoped, instructional technology developments at the Ipswich Campus have now begun to spill over and influence teaching and learning decisions and strategies and new teaching space design at UQ's main campus in Brisbane. Inspired by developments at Ipswich, the WebCT course management platform was adopted on a trial basis by the main campus. More recently, UQ has undertaken a university-wide comprehensive review of course management systems and has made the decision to adopt the BlackBoard course management system in 2005. This will allow an integrated whole-university approach to the development of course materials and – eventually – a web presence for all courses. Some courses originally developed in the Ipswich model have now been 'moved over' to the main campus, and have become integrated into other programs; instructors who teach on both campuses are porting teaching strategies and possibilities with them back into their 'traditional' courses and

programs. Moreover, TEDI is now coordinating the planning process for a new centrally controlled teaching buildings on the main campus, informed by lessons learned in Ipswich, and in consultation with faculty, students and other stakeholders. As on the Ipswich campus, innovative design of space and infrastructure is intended to move programs away from "traditional lectures and tutorials" and to promote studio-style collaborative learning, supported by technology resources. Non-square classroom space will include concave and convex pods of computers to allow different styles of group work, as well as some more 'formal' teaching space; desk space will be maximized by investment in flat screens and a move to server interfaces (rather than individual hard drives); positioning of multimedia resources will allow instructors to work with all of just part of a class; and the facility will also include meeting space, casual study space, a 24-hour coffee shop and (secure) outdoor areas. On completion, faculty and staff will be invited to test out this new teaching space, report Chalmers – a 6-month period for 'playtime' has been factored into the development timeline, to allow TEDI to showcase the facility and its possibilities to increasing numbers of faculty.

While the Ipswich campus is still small, and technology-supported teaching and learning is distributed unevenly across UQ's main campus, the technology innovations sparked by the focussed development of the Ipswich campus are now impacting many areas of UQ life. In 2002, UQ's Academic Board completed its most recent round of consultation and strategic planning. In reports (available below) the Board focussed on development of academic guidelines for UQ's flexible learning policy, and continued to define and refine flexible learning with reference to UQ's own traditions and academic culture.

University of Queensland Web Sites

- The University of Queensland: http://www.uq.edu.au

- UQ Teaching and Educational Development Institute (TEDI): http://www.tedi.uq.edu.au/
- UQ's Ipswich Campus: http://www.uq.edu.au/ipswich/
- UQ's Academic Board: http://www.uq.edu.au/academic-board/
- UQ Academic Board Reports: http://www.uq.edu.au/academic-board/policy/papers_index.htm

See: Ipswich Review, Flexible Delivery

What can be learned from these case studies? At both institutions, decisions about technology and space design have been made *in response to* (and *not* in advance of) strategic plans that have taken into account institutional culture, student demographics and the pedagogical goals and vision of the university community. Interestingly, in both places, the strategic introduction of new technologies and technology-enhanced teaching spaces has in turn encouraged faculty members to experiment with new approaches to teaching, beginning what it is hoped will be an iterative cycle of innovation and feedback as use of learning technologies increases.

Both institutions have also undertaken extensive processes of consultation to make decisions about technology and learning platforms – some resources to guide technology selection are offered below. Both are investing strategically in technology and infrastructure with an eye to sustainability and to future technology developments.

Most importantly, both institutions have – in different ways – introduced new technologies and infrastructure in ways that respond to faculty and student feedback and wishes, maximizing buy-in across their respective campuses.

Resources on Making Infrastructure and Technology Choices

- Bates, A. W. & Poole, G. (2003). "A Framework for Selecting and Using Technology", in A. W. Bates & G. Poole, *Effective Teaching with*

Technology in Higher Education. Foundations for Success. San Francisco: Jossey-Bass, pp. 75-109.

- Bates, A. W. (2000). "Technology Infrastructure and Student Access", in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp. 76-85.
- Bruce, R. (1999). *Educational Technology Planning: A Framework*. British Columbia: Kwantlen University College.
- Hawkins, B. L. (1999). Developing the Necessary Infrastructure. *Educom Review*, 34(3), 56.
- Hawkins, B. L. (1999a). Distributed Learning and Institutional Restructuring. *Educom Review*, 34(4), 13.
- Ingerman, B. L. (2001). "Form Follows Function. Establishing the Necessary Infrastructure", in C. A. Barone & P. R. Hagner (Eds.). *Technology-enhanced Teaching and Learning. Leading and Supporting the Transformation on Your Campus.* Educause Leadership Strategies No. 5. San Francisco: Jossey-Bass.
- National Learning Infrastructure Initiative (NLII). (2003). *Knowledge and Learning Management Systems*. http://www.educause.edu/nlii/keythemes/transformative.asp
- Pantel, C. (1997). A Framework for Comparing Web-based Learning Environments. Unpublished Masters Thesis, Simon Fraser University, Burnaby, British Columbia. Available: http://fas.sfu.ca/pub/cs/theses/1997/ChristianPantelMSc.pdf
- Stockley, B. D. (2002). *Strategic Planning, Infrastructure and Professional Development for Technological Innovation in Canadian Post-secondary Education*. PhD Thesis, Simon Fraser University, pp. 25-28. Available from the National Library of Canada at http://www.collectionscanada.ca/thesescanada/

- Western Cooperative for Educational Telecommunications (WCET). (2003). EduTools: Course Management Systems. http://www.edutools.info/course/

  This site was built to assist higher education in using a more rational decision making process to review the many options for a course management system.

Best Practice 6: Putting in Place Faculty Training and Support

It goes without saying that faculty members and instructional staff are central to the work of universities and colleges, and that core institutional activities – teaching and research – are completely dependent on their skill and support. No matter how comprehensive a plan for integration of learning technologies and transformation of teaching and learning, without the support of faculty members, nothing will change. Indeed, in his 1998 survey of campus IT strategies, Green identified "assisting faculty to integrate technology into instruction" as the single most important information technology issues that educational institutions were facing.

The following year, an APQC benchmarking study carried out in partnership with the State Higher Education Executive Officers Association (1999) identified a number of interesting, important and even surprising features of best practice in supporting faculty use of learning technologies at participating institutions. Faculty development works best, they reported, when use of technology is comprehensively woven into the institutional culture, and is supported by multiple strategies. Successful faculty development focusses first on teaching and learning, rather than on the technology itself (although faculty computer literacy must often be addressed first). The most effective faculty development strategies usually involved collaborations between a number of institutional units offering complementary training, rather than by a single centralized unit. Importantly, this study found that faculty members learn best from their peers, through 'show and tell' demonstrations by faculty "stars" who have developed good models of technology-based teaching.

✓ *Case Study: Supporting Faculty in Teaching with Technology at the Université de Montréal*

With its two affiliated schools, École Polytechnique and HEC Montréal, the Université de Montréal (UdeM) is Québec's leader in higher education and research, with an enrolment of more than 54,500

students, and almost 5,000 professors and instructional staff in all disciplines. Within this successful research university, Professor Rhoda Weiss-Lambrou, Director of the Centre for Faculty Teaching and Learning (Centre d'études et de formation en enseignement supérieur, CEFES) has played a key role in developing a strategic plan to spark faculty interest in teaching with technology.

Like the University of Waterloo (p. 35), UdeM has made a strategic decision to foster a 'bottom-up' introduction of technology into teaching and learning by initially supporting innovative and early adopter faculty across the campus. In January 2000, a small but distinct service division was created (separate from CEFES) to provide faculty members with the specialized training and instructional support needed to embrace the potential of learning technologies: the Support in Using the Internet and Technology in Education (SUITE) program. The SUITE unit developed a three-stage model of supporting faculty through the transition to Web-enhanced pedagogy, with three central goals: to promote greater technology awareness and interest; to constitute a 'Team SUITE' – an interdisciplinary group of 20 faculty members who were early adopters; and to create opportunities for grant funding of special technology-based teaching projects.

In Stage One of this faculty training and support model, the SUITE program organized campus-wide symposia on the uses of technology in teaching and learning, and SUITE staff and early adopter faculty made presentations to departments and faculties to showcase best practices in online course design, and to arouse interest in learning technologies across the campus. A critical and central component of Stage One, moreover, was the selection and training of annual SUITE Teams of about 20 faculty members, who were collectively offered support in course development and integration of teaching materials into the WebCT course management platform, and in the rethinking of pedagogy for teaching with technology. (As an aside, Weiss-Lambrou adds that the University's early and informed decision to adopt one single course management platform – WebCT – was in itself a strategic

decision that later enabled CEFES to tailor and focus its training programs). Participating faculty members agreed to develop at least one WebCT-based course during the year, to participate in various Team SUITE meetings, seminars and activities, and to act as a "faculty mentor" for their peers. Uniquely, the Team SUITE process was a "technology-driven cooperative" that paired students with faculty members in the development of Web-based courses (Weiss-Lambrou, 2002); groups of students (mostly graduate students with computer skills) were offered WebCT and instructional design training in parallel with the faculty team. Later, and in a model that leverages the reality of greater student technological expertise in the current era, faculty members of the SUITE Team were given about 50 hours of student support time to assist with technical and organizational aspects of their WebCT-based course. Weiss-Lambrou points out that within the traditional university culture of faculty autonomy, the interdisciplinary, collaborative process supported by Team SUITE offered participating faculty members extraordinary opportunities for cross-disciplinary exchange of ideas, materials and experiences. In addition, it also required them to "open the doors to criticism and feedback" from peers, and to learn to rely on instructional designers and student assistants for support rather than "doing it all" themselves. The Team SUITE process significantly contributed to a shift in institutional teaching culture, and catalyzed greater ongoing knowledge exchange across the institution.

In Stage Two, the number of WebCT courses created increased dramatically over a three year period as a result of the support, training and activities provided to faculty by the Teaching Centre. To date, there are more than 1,000 web-enhanced courses developed in the WebCT platform course site, and more than 15,000 students have participated in at least one WebCT course. Now, in Stage Three, Weiss-Lambrou points out that because it is no longer necessary to separate technology from pedagogy, the SUITE program has been assimilated into and integrated with CEFES; the two units merged into one institutional

service under the leadership of the Vice-Rector of undergraduate studies and continuing education. Today, the Centre has moved into a new era of centralized staff, graduate student and professional development training and support across the campus. As evidence of this development, she notes that increasingly, it is not individual professors who are approaching CEFES asking for support and training, but rather, departments and faculties. "Different faculties have different technology and teaching needs" she argues, so that standardized and centralized support and training is not always the most effective approach. The Team SUITE cohort process ended in 2003, and in its place CEFES has created a Faculty Community of Practice (with more than 150 faculty members) for whom the Centre organizes a monthly series of conference sessions – open to all – that include guest speakers, faculty presentations of their WebCT courses, discussions on topics relevant to technology-based teaching (Internet plagiarism, academic integrity in online learning), as well as invited members of senior management to talk about future decision-making issues with regards to IT.

This synopsis of the various strategies used by the Centre to successfully support faculty in teaching with technology would be incomplete if attention would not be drawn to two other kinds of institutional support that faculty require in the current context of a move towards a more learner-centered teaching environment. Firstly, the support role that non-instructional staff and teaching assistants can and should provide to faculty is a critical issue that must be addressed and clearly defined by senior management in all institutions of higher education. For example, secretarial staff members need to acquire the basic computer skills that will enable them to upload a professor's PowerPoint presentation to an online course site, to convert a Word file into an HTML document and/or to create online surveys or test questions. Similarly, teaching assistants (by and large graduate students) must have the technological competencies needed to support faculty in their online course design and teaching; they can play a

pivotal role by moderating online discussions, acting as tutors in collaborative learning projects, searching digital information resources and evaluating student learning with the latest interactive technology tools. In today's challenging environment of higher education, faculty should not have to persuade non-instructional staff to learn to use technology nor to convince them of the value of e-learning but rather it is the role and responsibility of senior management, human resource personnel and IT specialists to work more closely together with faculty so that the upgrading of technological competence is extended across campus.

Secondly, to meet the needs of faculty development, support and training, it is pivotal that professors of all levels be encouraged to integrate technology in their teaching practices for the purpose of improving and enriching student learning. Many faculty members will go through the experience of online course design and teaching once, notes Weiss-Lambrou, but why would they continue to spend enormous amounts of time in experimenting with new teaching approaches, given the reality that promotion and tenure continues to be dependent more often than not on research performance (i.e. grants and publications)? In order to help faculty embrace instructional technology and to use it effectively, there must be a shift in the culture of the academy, so that innovative quality teaching is encouraged, valued, supported and rewarded. For this reason, it is of crucial importance that senior management in all institutions of higher education now focus on establishing new strategies, incentives and policies for making technology use integral to faculty's teaching practice.

Université de Montréal Web Sites

- Université de Montréal: http://www.umontreal.ca

- The Centre for Faculty Teaching and Learning « Le Centre d'études et de formation en enseignement supérieur » (CEFES), Université de Montréal: http://www.cefes.umontreal.ca
- WebCT courses at the Université de Montréal: http://www.coursenligne.umontreal.ca
- Weiss-Lambrou, R. (2002). Faculty Support for E-learning: Educating the Educator Model at the Université de Montréal, in *Proceedings of the 3rd International Conference on Information Communication Technologies in Education,* July 17-20, Samos, Greece, pp. 123-129. Available from Professor Rhoda Weiss-Lambrou: rhoda.weiss-lambrou@umontreal.ca

✓ *Case Study: Comprehensive Faculty Training and Professional Development at the University of Phoenix*

Russ Paden, Vice President of Academic Services for the University of Phoenix, and Chief Academic Officer of UoP's Online Campus, explains that part of UoP's commitment to an ethic of customer service includes treating faculty members like "internal customers". As a result, UoP has evolved one of the most comprehensive and successful models of selecting, training and supporting online associate faculty currently in existence. In the recruitment phase, candidate associate faculty members are interviewed by distance – usually by phone – and must also undertake some online proficiency testing to ensure that they have a bare minimum of Internet skills and access to technology. Having passed this hurdle, candidate faculty members must complete a four-week online course. In addition to covering basics of online instruction, course administration and UoP philosophy, this offers potential instructors first-hand experience of learning and working in an online environment. Paden reports that some 75% of candidates successfully complete this phase – while 25% self-select themselves out of the process, after they have a better idea of the nature and demands of online instruction.

Successful candidates are then paired with a mentor – an experienced senior faculty member – who will shadow them throughout the delivery of their first scheduled course; the mentor will later provide feedback to the instructor and to UoP's Academic Officer. If the course has gone well, the new faculty member will join UoP's pool of online instructors who are offered courses according to their 'matching' with faculty profiles for courses in each area. Subsequent periodic peer reviews allow individuals and the institution to track their progress, and the faculty member also has access to monthly online professional development programming in more sophisticated elements of online teaching and learning: facilitating online discussions, effective ways to offer feedback online, ways of dealing with academic misconduct, managing online conflict, and similar.

Although UoP does not operate a tenure-track faculty system, it experiences less than 1% faculty attrition per year; clearly this institution is attracting and retaining a floating pool of associate practitioner faculty who may not 'fit' the agrarian/apprenticeship culture (Bates, 2000) of traditional universities. Paden believes that UoP's model of faculty training and support is a significant factor in nurturing faculty buy-in to the institutional culture and instructional model.

University of Phoenix Web Sites

- The University of Phoenix: http://www.phoenix.edu
- The University of Phoenix Online: http://onl.uophx.edu/

What can be learned from these case studies? The Université de Montréal's successful three-stage and evolving faculty development strategy can almost be regarded as a 'textbook case' of best practices in faculty training. The CEFES initiative now coordinates semi-decentralized faculty training and support across the institution, continues to make heavy use of peer-to-peer knowledge exchange, and is increasingly focussing on

pedagogy (rather than technology) as faculty computer skills develop. In addition, Dr Weiss-Lambrou is now a member of the Advisory Board of a new peer-reviewed bilingual journal, the International Journal of Technologies in Higher Education (IJTHE) established by Québec universities as a forum to facilitate international exchange of information on the current use and applications of learning technologies in higher education. As with UCF's RITE initiative (see p. 80), this publication initiative again offers faculty members incentives of publications and academic credibility for their ventures in online pedagogy, and contributes to the scholarship (including French-language scholarship) of teaching with technology.

The University of Phoenix, meanwhile, has strategically utilized what might be considered a weakness – the remoteness and dispersal of associate faculty – and turned it into a strength. Online faculty training and support through UoP immerses new and continuing faculty in the actual experience of being an online learner, allowing them to experience student realities 'from the inside' while they acquire new skills.

Resources on Supporting and Training Faculty

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- Journal of Technologies in Higher Education (IJTHE): http://revue.profetic.org
- Stockley, B. D. (2002). *Strategic Planning, Infrastructure and Professional Development for Technological Innovation in Canadian Post-secondary Education*. PhD Thesis, Simon Fraser University, pp. 19-23. Available from the National Library of Canada at http://www.collectionscanada.ca/thesescanada/
- Weiss-Lambrou, R. (2002). Faculty Support for E-learning: Educating the Educator Model at the Université de Montréal, in *Proceedings of the 3rd International Conference on Information Communication Technologies in Education,* July 17-20, Samos, Greece, pp. 123-129.

Best Practice 7: Development of Human and Organizational Infrastructure

Bates (1997) has argued that "people structure" is just as important as technological and physical infrastructure in facilitating technology integration into higher education. Three critical groups of people are needed: the technical support specialists (those who keep networks, computers and telecommunications operational); media services and production specialists (who produce educational projects and supply educational technology services); and educational services specialists who supply services such as instructional design, faculty development, project management and evaluation. The cost of human infrastructure is recurrent – it has to be found each year, and can rarely be supported from special funding. Human infrastructure is therefore a sometimes 'invisible' but vital element that must be comprehensively outlined and budgeted for in strategic planning for technology integration.

✓ *Case Study: Transforming Institutional Support for Teaching at the University of Ottawa*

As part of a major and long-term strategic planning process beginning in the late 1990s, the University of Ottawa built on directions elucidated in an extensive community visioning process to make long-term plans for the integration of technologies into teaching in learning. Not content with a focus on early adopter faculty, this 150-year old bilingual university in Canada's capital made radical changes in organizational structure and leadership by creating a new university-wide network of services to support all aspects of teaching, including teaching with technology.

Dr. Christian Blanchette, Director of the University of Ottawa's recently established Teaching and Learning Support Service (TLSS) explains that before 1999, various groups and units on the UO campus were offering professional development and training to faculty, assisting in

development of online courses, and assisting with other aspects of IT and technology use in the work of the university. Dispersed across the university, these units tended to work in isolation, using a range of approaches and philosophies, resulting in a predictable amount of duplication and platform incompatibilities. The consultation process that asked the UO community "What kind of university are we? And how can we be better?" brought home the message loud and clear that the university needed to support teaching better – in all its modes. To help reach this goal, the university recruited Blanchette – a physicist by training, who had amassed considerable experience in the management and integration of learning technologies – to rationalize and integrate all teaching support services across the university, and create the TLSS.

Simply by deciding to recruit an external expert, UO leaders broke the old organizational mould, explains Blanchette, since like many older universities, UO had a well-established cohort of senior academics who traditionally held responsibility for academics and teaching. At the same time, he feels that his particular credentials assisted in the change process. "Support of teaching is an academic endeavour" he argues, and should be led by academics. His own academic credentials and history of active research have, he feels, gained him acceptance in the university's academic community, and have allowed him to occupy a uniquely political position for a director of learning support services: one that requires him to bridge the academic and 'teaching support' worlds. In addition to creating and managing the multi-unit TLSS, Blanchette also participates in all academic planning activities. He is a member of the Deans' Council, sits on the Executive of the University Senate, and participates in numerous other university-wide committees and initiatives. While Deans continue to be responsible for intra-faculty program management and for enabling change within their own faculties, Blanchette has responsibility for institution-wide strategic planning for teaching and learning support.

Hired in 1999, Blanchette was given a mandate to develop a plan that would "create conditions for excellence in teaching" and "enable

innovation", with a special focus on making UO an effective user of learning technologies. He developed seven different possible scenarios, he explains, ranging from "TLSS as cheerleader" to "radical institutional mutation", and presented these to senior academic and finance administrators – each with a detailed budget attached. To his great pleasure, senior management elected a bold strategy that went further in investment than could have traditionally been expected – allowing Blanchette to rapidly begin recruiting key leaders for specialized TLSS units and launch the transformation process.

Existing university units were restructured, and some changes were made to staffing and unit responsibilities, to create TLSS, which now comprises five sub-groups with distinct responsibilities. The Centre for e-Learning develops online course content and nurtures change in all areas of online learning; instructional designers in this Centre consult with faculty on course design, manage course and program development projects, and develop new online teaching tools. The Centre for Mediated Teaching and Learning oversees all aspects of distributed learning, including audio- and video-conferencing, delivery of distance programs to 13 remote sites in central Canada, and coordination of a national francophone videoconferencing network. This unit also has responsibility for all e-learning infrastructure and support, including course management platforms and software. The Multimedia Distribution Service coordinates all 'AV' support of 'active teaching' on the UO campus, as well as participating in planning activities relating to classroom design and integration of learning technologies into classrooms. The Reprography Service produces all paper-based course packs and supplementary materials for technology-mediated learning activities, and is responsible for issues relating to intellectual property and copyright. And The Centre for University Teaching "integrates all of the professional development for faculty members from pedagogy to educational technology," explains Blanchette, in particular by designing and implementing models of professional development that go beyond the simple workshop. For the design and delivery of training and

professional development for staff and faculty in the use of learning technologies, experts from other TLSS units are often involved in delivery of specialist training coordinated by CUT.

Most evident in Blanchette's detailed description of the process of bringing about organizational change and the creation of TLSS is the central importance of 'the human element' and of interpersonal skills and communication. The team assembled is the core unit of action. Bringing about such radical change was not without challenges, he clarifies, especially because of the degree of job uncertainty it brought to existing teaching support staff across the institution.

To begin the process of unification of TLSS – with some 85 staff – Blanchette initiated the development of an internal TLSS strategic plan, within the framework of the wider community vision. Initially, TLSS staff and senior management were invited to attend and participate in weekly presentations on a diversity of issues relating to transformation of teaching at UO: the changing student demographic, institutional decisions regarding investment in technology, the transformative potential of technology, online pedagogy, theories of "the information society" and technology diffusion. In particular, he challenged TLSS staff to think 'big', "to imagine they were serving 1000 people instead of 20". Next, unit leaders participated in a 3-day planning retreat (with an eternal facilitator) that has now become an annual event: a time for developing long-term objectives, building TLSS cohesion, clarifying values, roles and objectives and identifying key success factors. This was a critical activity that allowed TLSS to 'gel', he believes, setting the framework for future work, and allowing TLSS units to function semi-autonomously within the bigger structure. Finally, unit managers and directors returned to their teams to involve all levels of staff in the development of (now annual) detailed project plans. This level of consultation and involvement generated great excitement throughout TLSS, says Blanchette, and has been so successful that the service has undertaken this activity as an annual cycle that allows staff and management to see projects being completed, and problems being

addressed. In addition, TLSS routinely liaises with other internal partners – the libraries, computing services, the 'Student Academic Success Service', and the institutions buildings and facilities managers – to plan future strategies for support of teaching ventures.

Four years later, Blanchette explains that the new culture and structure of TLSS is now well established and is continuing to nurture teaching and learning at UO. Over the past three years, faculty participation in TLSS's professional development activities has tripled, and absolute numbers of participants have doubled. Faculty members are now moving on from technology-driven professional development to activities that are driven primarily by pedagogy. Organizational change and new TLSS-coordinated infrastructure projects mean that technicians are now able to troubleshoot classroom technology problems from their central control site, reducing the average time for troubleshooting from 25 minutes (in 1999) to 3 minutes. 50% of UO classrooms now have integrated technology and multimedia. Their own benchmarking research and evaluation studies demonstrate significant productivity gains, with one technician now able to support teaching in 18 classrooms (while a typical ratio is 1 to 10). TLSS now works on the principle that the quality of faculty and student experiences with technology-mediated teaching are linked, and tracks problems using a combination of ongoing surveys, interviews and a novel complaints mechanism that identifies things that "may not be going quite right". Individuals who make complaints are actively consulted on planned solutions, making the "negative voices" into active partners in this very proactive problem-solving solution…although TLSS had logged no complaints in the spring semester 2004, at time of interview.

Finally, proposals for new "efficiency projects" – projects that require initial investment but which will bring about savings in time or money later – are an integral component of TLSS's annual project planning. Future planned efficiency projects include, for example, the institution-wide implementation of a new customized virtual learning environment (rather than off-the-shelf course management systems) that will be

'technodiverse' and support integration of multiple additional applications.

Blanchette feels that key success factors have been the focus on development of effective teams, the raising of team awareness of community needs, and the development of a team attitude that "everything is possible"…in other words, he says, "if a project is determined to be worthwhile for the community, a "no" or a lack of short term opportunities only means that a different timeline and more imagination are required."

University of Ottawa Web Sites

- The University of Ottawa: http://www.uottawa.ca
- UO Teaching and Learning Support Service (TLSS): http://www.uottawa.ca/services/tlss/index.html

What can be learned from this case study? The changes effected at the University of Ottawa might as easily have been offered here as an illustration of "intra-institutional partnerships" (p. 45) or of strategic planning for learning technology integration (p. 27). Most significant in this example of effective management of organizational change are its focus on the human component of organizations, and on the question of scalability. Blanchette and his colleagues have successfully brought about significant organizational change by paying attention first and foremost to the human voices of the institution: to the community members who participated in constructing an institutional vision, to the faculty and students who made complaints or offered feedback about support needs in teaching and learning, to the support service staff across the institution whose jobs were restructured by incoming strangers, and to the university leaders whose traditional responsibility for teaching has undergone change. Through consultation, active listening and active responsiveness, the TLSS has attracted incredible buy in at all levels of the university. Second, UO leaders and TLSS have kept their eyes on the issue of

scalability, by building into their strategic plan the reality that as technology becomes a ubiquitous tool for teaching, they must plan to support not just the early adopters but thousands of instructors and professors campus-wide.

Resources on Institutional Transformation and Change Management

- Barone, C. A. & Hagner, P. R. (2001). Assessing Conditions for Campus Transformation, in C. A. Barone & P. R. Hagner (Eds.). *Technology-enhanced Teaching and Learning. Leading and Supporting the Transformation on Your Campus.* Educause Leadership Strategies No. 5. San Francisco: Jossey-Bass, pp. 93-106.
- Bates, A. W. & Poole, G. (2003). "Supporting Technology-Based Learning", in A. Bates & G. Poole, *Effective Teaching with Technology in Higher Education. Foundations for Success.* San Francisco: Jossey-Bass, pp. 213 – 252.
- Hartman, J. L. & Truman-Davis, B. (2001). The Holy Grail: Developing Scalable and Sustainable Support Solutions, in C. A. Barone & P. R. Hagner (Eds.). *Technology-enhanced Teaching and Learning. Leading and Supporting the Transformation on Your Campus.* Educause Leadership Strategies No. 5. San Francisco: Jossey-Bass, pp. 45-56.
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Best Practice 8: Ongoing Evaluation and Assessment

What good is a strategic plan if your institution is unable to track or document any of the quantitative or qualitative changes in its teaching,

learning and research activities that may result from the plan's strategic initiatives? Even more importantly, in the development of an effective evaluation and assessment program, careful consideration must be give to what kind of information is needed, and what kind of data are sought. As Bates (2000) emphasizes, in establishing an evaluation process, it is vital to "ask the right questions". Many investigators have already undertaken simple comparisons of technology-enhanced teaching and learning with traditional classroom teaching, and have produced a large body of literature that concludes that there is "no significant difference" in learning outcomes (Russell, 1999). As long ago as 1974, Schramm pointed to the reality that technologies can allow the achievement of *new* or *different* learning outcomes to those achieved through classroom lectures.

Of greater interest and importance, then, are evaluative studies designed to investigate questions relating to achievement of new learning outcomes, technology selection, instructional design, organizational structure and support, learner support, cost-effectiveness, accessibility, and related issues that will hopefully offer useful information to leaders and administrators for future rounds of decision-making. How accessible is a particular technology for the target learner group? How easy is the technology to use? How do costs differ, depending on technology choices? What kinds of teaching and learning are needed? Which instructional strategies will best meet these learning needs? And which technologies best support these strategies? What organizational changes are needed? How quickly can courses be mounted or revised? Which course development strategies are most effective within a given institutional culture? In other words, evaluation should not be restricted to examining whether learning outcomes achieved through classroom lectures can be replicated by technology-mediated instruction.

✓ *Case Study: Transformative Assessment at the University of Central Florida*

Like many of the institutions illustrated mentioned in this Handbook, the University of Central Florida recognized early the importance of initiating a parallel program of evaluation and assessment, at the same time as it

initiated programs to introduce learning technologies into teaching. UCF's Research Initiative for Teaching Effectiveness (RITE) and Center for Distributed learning (CDL) gather and analyze both quantitative and qualitative data such as student numbers and demographics, student and faculty satisfaction, student learning styles and learning outcomes, growth rates, and course offerings.

Dr. Joel Hartman, Vice Provost for Information Technologies and Resources, explains that data gathered through these research activities inform institutional strategies and policies in an ongoing process. Hartman observes that the use of assessment data has tended to develop in stages of maturity: initially, data were needed to respond to questions about "whether online learning works." Subsequently, data are being used to inform a process of continual quality improvement. By now, in a 'maturity 'stage, assessment has engaged both researcher and teaching faculty in a process to contribute to the scholarship of teaching and learning.

Interestingly, UCF's ongoing efforts at transformative assessment (NLII, 2004) have also played a key role in creating incentives for faculty to become involved with online learning. First-stage incentives include a one-course load reduction (or an equivalent stipend), a wireless laptop, and ongoing course development assistance from a team of instructional designers and online course production experts in Course Development & Web Services (CDWS).

Meanwhile, the RITE team offers to work with faculty from across the campus to undertake research projects relating to their use of technology. If the faculty member identifies a research interest, RITE will assist in developing the research question, obtain or develop research instruments and protocols, collect and analyze the data, and offer the results back to the faculty member in "publication-ready format" as the faculty member's intellectual property. At any time, RITE is working with about 40 faculty members across UCF, who are now contributing to an extensive body of high quality educational research literature – building

their professional portfolios, adding to their publication records, and leveraging creative teaching to build toward "recognition and reward."

University of Central Florida Web Sites

- The University of Central Florida: http://www.ucf.edu
- UCF's Strategic Planning Web Site: http://www.spc.ucf.edu/
- UCF's Research Initiative for Teaching Effectiveness: http://pegasus.cc.ucf.edu/~rite/
- UCF's Center for Distributed Learning: http://online.ucf.edu and http://distrib.ucf.edu
- UCF's Course Development & Web Services: http://cdws.ucf.edu
- UCF's Office of Instructional Resources (ITV): http://www.oir.ucf.edu/ITV.asp
- UCF's Distributed Learning Faculty Development and Support Resources

  IDL6543 faculty development for teaching online: http://reach.ucf.edu/~idl6543

  ADL5000 faculty development: http://reach.ucf.edu/~adl5000/

  Essentials (for faculty teaching E courses): http://reach.ucf.edu/~essentials/

  UCF Teaching Online: http://teach.ucf.edu

  WebCT Zone: http://www.webctzone.org/

  Web Development Academy: http://reach.ucf.edu/~webdev/

What can be learned from this case study? UCF's RITE initiative has effectively harnessed the research expertise of key faculty members and the enthusiasm of early (and later) adopter faculty, to kickstart a program of ongoing research and evaluation that offers academic credibility to innovative ventures with instructional technology, and incentives to faculty to undertake such ventures. RITE's high quality research output has made UCF a leader in the field, increasing the visibility of this relatively new institution. Findings have reassured senior administrators and faculty members that technology-

mediated teaching and learning strategies are not only 'as good as' traditional classroom teaching, but are actually increasing student success. In addition to building scholarship in the field of instructional technologies, RITE's activities make important contributions to UCF's continued strategic planning by complementing other areas of institutional research and facilitating ongoing informed decision-making in all areas of institutional planning.

Resources on Assessment and Evaluation Strategies

- Bates, A. W. (2000). "Research and Evaluation", in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp. 198-209.
- National Learning Infrastructure Initiative (NLII). (2003). *Transformative Assessment Systems.* http://www.educause.edu/nlii/keythemes/transformative.asp
- North Carolina State University. (2004). *Internet Resources for Higher Education Outcomes Assessment.* http://www2.acs.ncsu.edu/UPA/assmt/resource.htm
- Russell, T. (1999). *The No Significant Difference Phenomenon*. Raleigh, NC: North Carolina State University Office of Instructional Telecommunications.
- Schramm, W. (1974). *Big Media, Little Media*. Thousand Oaks, CA: Sage Publications.
- Volkwein, J. F. (1999). The Four Faces of Institutional Research. *New Directions for Institutional Research,* 26(4), 9-20.

Conclusions, and Best Practices Yet to Come

In this handbook, we have offered fifteen 'insider view' case studies from ten very different higher education institutions in four countries and on three continents to illustrate at least eight best practice strategies in the integration of learning technologies into teaching and learning. Each case study was selected because it exemplifies good practice in learning technology management according to the criteria we previously developed from the literature: scalability and sustainability, attention to quality and innovation, responsiveness to need/demand for increased e-learning, cost-effectiveness, institutional buy-in, attention to institutional capacity-building, and, critically, careful consideration of the particular and individual nature of an institution's culture. Many of the cases detailed here show evidence of multiple best practices and strategies within a college or university: indeed, dissecting individual best practices one from the other is ultimately an impossible task, when one considers that good strategic plans by definition employ bundles of strategies that hang together and are mutually reinforcing.

In concluding, several important points must be made. First, this handbook should not be read as a 'roadmap' for college and university leaders to simply follow. The APQC explicitly envisions the benchmarking process as a cycle, as the process by which organizations learn. Phase Four in this cycle is the 'adaptation' stage, in which participants and readers implement best practices by selecting and adapting those that are most suitable for their own institution and institutional culture. We hope we have emphasized clearly the critical importance of careful assessment of each institution's culture, context, community wishes, goals and challenges in developing an effective strategic plan for integration of learning technologies.

Second, this handbook can provide no more than a snapshot of best practices in the current era: one in which most institutions are still in the first decade (at most) of innovation with learning technologies. Many institutions have barely begun to explore the possibilities that learning technologies offer their learners. Technology continues to involve and change at a rapid pace,

and future evolution of technological possibilities, institutional cultures, strategic collaborations and learner populations will continue to drive the evolution of new strategies and practices to keep pace.

Lastly, the scope of this study inevitably means that we cannot present here a *comprehensive* listing of all best practices in the management and integration of learning technologies. It is our hope, however, that the range of practices offered in this handbook will contribute to the growing body of literature on educational technology management, and offer instructors, faculty, department heads, deans and senior administrators in higher education new insights and strategies that they can adapt in the process of managing successful institutional change.

Additional Collections of Best Practice Descriptions and Case Studies

- Educause. (2004). *Effective Practices and Solutions. Transformation of Education Through Information Technologies*. http://www.educause.edu/ep/ep.asp
- Eduventures, Inc. (2001). *Meeting the Mission: E-Learning Implementation Stories from Twelve Postsecondary Institutions*. Available at: http://www.eduventures.com/research/industry_research_resources/mission.cfm

Resources on Additional Best Practices and Strategies

- Creation of Institution-wide Management and Leadership Structures
  - Rowley, D. J., Lujan, H. D. & Dolence, M. G. (1998). Creating a Flexible Concept of Academic Organization, in *Strategic Choices for the Academy. How Lifelong Learning Will Re-Create Higher Education*. San Francisco: Jossey-Bass, pp. 106-125.
  - Hanna, D. E. (2003). Building a Leadership Vision. Eleven Strategic Challenges for Higher Education. *Educause Review*, July/August, 25-34.

- Engaging Middle-Management as Leaders in Institutional Transformation
  - Lucas, A. F & Associates. (2000). *Leading Academic Change. Essential Roles for Departmental Chairs.* San Francisco: Jossey-Bass.

- Link e-Learning and e-Administration Initiatives
  - Eduventures, Inc. (2001). "University of Wollongong" in *Meeting the Mission: E-Learning Implementation Stories from Twelve Postsecondary Institutions*. Available from http://www.eduventures.com/research/industry_research_resources/mission.cfm

- Choosing Course Development Models
  - Bates, A. W. (2000). "Planning and Managing Courses and Programs" in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp. 59-75.
  - Bates, A. W. & Poole, G. (2003). "Course Design, Development and Delivery", in A. Bates & G. Poole, *Effective Teaching with Technology in Higher Education. Foundations for Success.* San Francisco: Jossey-Bass, pp. 109-250.
  - Hanley, G. L. (2001). "Designing and Delivering Instructional Technology: A Team Approach", in C. A. Barone & P. R. Hagner (Eds.). *Technology-enhanced Teaching and Learning. Leading and*

Supporting the Transformation on Your Campus. Educause Leadership Strategies No. 5. San Francisco: Jossey-Bass, pp. 57-64.

- Development of Policies on Intellectual Property and Copyright Issues

  - Bates, A. W. (2000). "Intellectual Property, Copyright, and Revenue Generation", in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp. 107-121.
  - Hilton, J. L. & Neal, J. G. Responding to Intellectual Property and Legal Issues, in C. A. Barone & P. R. Hagner (Eds.). *Technology-enhanced Teaching and Learning. Leading and Supporting the Transformation on Your Campus.* Educause Leadership Strategies No. 5. San Francisco: Jossey-Bass, pp. 65-78.
  - Levy, S. (2003). Six Factors to Consider When Planning Online Distance Learning Programs in Higher Education. *Online Journal of Distance Learning Administration*, 6(1). http://www.westga.edu/~distance/ojdla/spring61/levy61.htm

- Ensuring Student Computer Access

  - Bates, A. W. (2000). "Student Access to Technology" in *Managing Technological Change. Strategies for College and University Leaders*. San Francisco: Jossey-Bass, pp. 85-94.
  - Resmer, M., Mingle, J. & Oblinger, D. (1995). *Computers for All Students: A Strategy for Universal Access to Information Resources*. Denver: State Higher Education Executive Officers.

- Streamlining Student Access Using Web Portals

  - Katz, R. N. & Associates. (2002). *Web Portals and Higher Education. Technology to Make IT Personal.* San Francisco: Jossey-Bass.

- Putting in Place Student Services and Support for e-Learning

  - Arabasz, P., Boggs, R. & Baker, M.-B. (2003). Highlights of E-Learning Support Practices. *ECAR Research Bulletin*, 9. http://www.educause.edu/asp/doclib/abstract.asp?ID=ERB0309

- Brindley, J. & Maxim, J.-L. (1990). Student Support Services. The Case for a Proactive Approach. CADE: *Journal of Distance Education*, 5(1) http://cade.athabascau.ca/vol5.1/13_dialogue-brindley.html
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- UCF Learning Online: http://learn.ucf.edu
- UCF's eCommunity: http://ecommunity.ucf.edu/

Rethinking Library Resources

- Creth, S. D. (1996). *The Electronic Library. Slouching Toward the Future or Creating a New Information Environment*. Follett Lecture series, Cavendish Conference Centre, London, UK, 30th September 1996. http://www.ukoln.ac.uk/services/papers/follett/creth/paper.html

Anticipating Future Demand

- Oblinger, D. (2003). Boomers, Gen-Xers & Millenials. Understanding the New Students. *Educause Review,* July/August, 37-47.

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About the MAPLE Centre

The Centre for Managing and Planning Learning Environments in Higher Education (MAPLE) is a research and consultancy centre based at The University of British Columbia with a mandate to conduct research, run workshops, publish and disseminate best practice, and provide consultancies.

The activities of MAPLE assist educational institutions, and provincial and state governments in the planning, managing and evaluation of learning technologies. Through its internal and external research projects, consultation services, workshops and training, MAPLE provides advice to institutions of higher education undergoing rapid organizational change.

MAPLE develops tools and resources for institutional analysis related to the impact of information and communication technologies on university teaching, learning, and on the uses of campus space and services. In addition to its collaborative research with international partner institutions, the work of MAPLE contributes to the UBC's Trek 2000 goal of "*fully integrat[ing] information technology with instruction in all areas*".

International research partnerships, workshops, publications, and consultation services all contribute to the building of a practical foundation for the work of MAPLE.

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Dr. Anne Forster, The University of Sydney, Australia.

Judith Norton and Joseph Georges, California Virtual Campus, USA.

Dr. Francisco Rubio Royo, Dr. Emma Kiselyova and José Esquerré Victori, Universidad Oberta de Catalunya, Spain.

Dr. Denise Chalmers, The University of Queensland, Australia.

Dr. Rhoda Weiss-Lambrou, L'Université de Montréal, Canada.

Dr. Christian Blanchette, The University of Ottawa, Canada.

Appendix

Interview Questions for "Best Practices" Case Study Interviews*

- What do you feel were the objectives of this process? How/why was the decision made to initiate it?
- What do you believe were the criteria that influenced the establishment and implementation of this process? What were the steps involved?
- Who else was involved? How did you recruit participants? How were they chosen? By what criteria?
- Can you describe how the process functioned? How long did it last?
- What worked well about the process? What didn't work so well? What was difficult?
- What would you say were the most significant learnings achieved by this process?
- What would you say were the significant outcomes of the process? How has this process influenced ongoing IT integration in your institution?
- How were the outcomes disseminated? Who do you think it reached?
- What recommendations would you make to another institution embarking on this process?
- Is there anyone else you think I should speak to for additional perspective on this process? Can you recommend any publications or websites where I might find more information on this process?
- Would you be willing to be named as a contact person for future readers who may wish to hear more about your institution's experience with this process?

* *This case study questionnaire represents a 'template' that was modified for each individual case study interview. 'The process' here represents whichever specific practice or strategy was under discussion with a particular interview (for example 'faculty training' or 'infrastructure development').*